UNIVERSITY OF EDUCATION, WINNEBA

AUDIOVISUAL COMMUNICATION: THE USE OF VIDEOS FOR ANTENATAL EDUCATION

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DECLARATION

Student's Declaration

I, Emmanuel Joel Ayu Nyarko, declare that this thesis, except quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my original work, and it has not been submitted, either in part or whole, for any degree elsewhere.

Signature: ……………………………

Date: …………………………………

Supervisor's Declaration

I hereby declare that the preparation and presentation of this work were supervised in accordance with the guidelines of supervision of thesis as laid down by the University of Education, Winneba.

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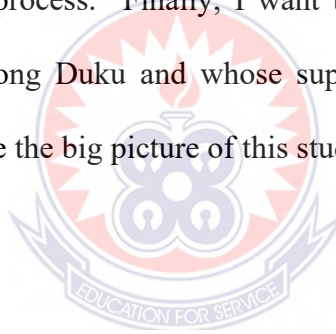
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DEFINITION OF TERMS

Aesthetics: A branch of philosophy that studies how the concept of beauty and visual pleasure relate to human experience and interpretations.

Anaemia in pregnancy: This is a medical condition where a pregnant a woman's l haemoglobin level is lower than the recommended level of 10.1 grams

Animation: A process and techniques of creating moving images to communicate

a message

Audiovisual content: the combination of video, pictures and sound into an artform

Campaigns: A set communication design artforms synergised to promote health

Issues through mass media channels

Communication Design: The use of visual communication material to inform, educate and persuade an audience to adopt healthy lifestyles

Educational Video: Video material that is designed purposively to educate people on a specific message

Focus Antenatal: The regular visit of a pregnant woman to a midwife or a medical doctor to ensure a safe childbirth outcome during the period of pregnancy

Gestational Age: Medical term for describing the number of weeks of a pregnancy

Health Communication: The process of designing, disseminating and evaluation of health messages to inform, educate and persuade audiences to adopt healthy lifestyles

Health Promotion: The use of integrated effort to create awareness of diseases and issues affecting public health

Health Information: Messages that are presented to patients to inform and persuade them to comply with health care delivery

Health Literacy: The ability to access health inform, consume and the ability to such information to make appropriate decisions to improve one's health

Health Behaviour: The cultural beliefs and outlooks that affects a person's action towards good health.

Media Artforms: Artistic works through which messages or information are presented to shape perception and views

Motion Graphics Design: A time-based Visual Communication Design that combines photos, text, images, videos, sound, computer-generated images into a composite whole to communicate a message to a particular audience

Millennium Development Goals: Eight long-term international goals of the United Nations that commits member nations to improve the socio-cultural, health and living conditions of their citizens by 2015

Midwife: A trained health professional who cares for women during childbirth

Pregnancy School: A special day set aside every week or month by health officers for providing health information to pregnant women on issues that can affect their health

Public Health: It is the managed and concerted effort to educate and promote healthy living and to protect the health of public members

Public Service Advertising: Advertising messages that are focused on public- interest. The focus is to inform, educate and persuade members of the public to act in the interest of the public

Sustainable Development Goals: Seventeen developmental goals set by the United Nations to member states to improve the social and economic life of their citizens by 2030. These are poverty, hunger, health, education, Climate change, gender equality, water, sanitation, energy, urbanisation, environment, and social justice

Visual Communication Design: The use of Visual Communication Design materials like posters, billboards, film animation etc. used in sending a message to a receiver with persuasive intent.

ABBREVIATIONS

CS: Cultural Studies

CTML: The Cognitive Theory of Multimedia Learning

GHS: Ghana Health Service

HPD: Health Promotion Department

MGD: Millennium Development Goals

MHC: Maternal Health Care

MHE: Maternal Health Education

MOH: Ministry of Health

NAFTI: National Film and Television Institute

PEU: Perceived Ease of Use

PSA: Public Service Advertising

PU: Perceived Usefulness

SGD: Sustainable Development Goals

TAM: According to the proponents of the

UEW: University of Education Winneba

USAID: United State Agency for International Developments

ABSTRACT

In recent times, the use of audiovisual media to communicate and support maternal health messages have become germane to antenatal health education in Ghana. Despite this interest, studies on the use of audiovisual media for maternal health education in general and its reception are relatively scanty in Ghana. Hence, the study focused on designing persuasive audiovisual on maternal nutrition and examining health workers and pregnant women perceptions about the use of the audiovisual media antenatal educational setting. The study amalgamated the Persuasive Health Message Framework, the Multimedia Learning Theory, the Technology Acceptance Model and the Decoding-Encoding Model into a conceptual framework to situate and ground the study. The study was situated in the interpretivism paradigms; hence the qualitative approach was used. The study used the artistic research design and structured it along three stages: pre-studio, studio and post-studio research. The research employed the purposive and convenience sampling techniques with a total sample of thirty (30) participants from government health facilities in the Ga South Municipal Assembly. Interviews, observation and visual study were used for data collection. Again, the study used thematic and textual analysis used during data analysis. Findings from pre-studio research revealed that there were no officially designed videos from the Ghana Health Service to support antenatal education. Thus, available visual aids on maternal nutrition are predominately print materials even though it emerged that videos were mostly preferred. Consequently, health officers resort to exotic videos from internet sources despite serious communication limitation. During studio research, storyboards and animatics were used to conduct audience research which helped to refine the form and content of the video. During actual production cinematic elements and aesthetics decisions were guided by cognitive theory of multimedia learning. The post-studio research revealed that health workers viewed the persuasive video very useful and easy to use due to threat and efficacy elements which improved understanding among pregnant women and efficiency among health workers. Despite the positive impact of efficacy and threat elements which shaped and generated preferred readings among the selected pregnant women, susceptible elements produced negotiated meanings and identities among pregnant women due to strong religious beliefs. The study concluded that integration of audiovisual media into antenatal education sessions improved the effectiveness the education and reception among the selected pregnant women. The study recommends the adoption of persuasive audiovisual media into all pregnancy schools to support effective antenatal health education.

CHAPTER ONE

INTRODUCTION

1.0   Overview

This chapter opens this research. It presents the background to the study, describes the research problem and the purpose of the research. This chapter also outlines the research objectives that guided the study. Additionally, the scope of the study and the importance of the research to practice and society, in general, is also discussed. Moreover, this chapter provides an overview of major chapters for this study and their organisation. In the following paragraph, this research starts with the description of background issues for this research.

1.1   Background of the Study

Audiovisual media as a branch of communication design refer to the use of organised multimedia elements to communicate messages to a specific audience. It is a process of selecting and combining audio and visual elements into a composite message or a complex sign based on shared codes between an encoder and a decoder in a cultural setting. The audiovisual art form can be described as a by-product of a conglomeration of traditional artforms due to advances in technology and the changing needs of human communication (Musburger, 2010; Zettle 2010). It combines elements from painting, theatre arts, music, dance, fashion, photography and literature or poetry into a multimedia content that engages both the eye and hear for effective communication. The purpose may be to share information, persuade an audience to attend to a specific message or to provide entertainment for a specific audience. This artform or communication design is represented through various art forms like animation, documentaries, television commercials, educational videos, films, motion graphics etc. These audiovisual media artforms have become an integral

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part of our modern culture of communication and permeate through all facets of our society. In the fields of military and security, governance, education, business and commerce and advertising, audiovisual media has emerged not only as an effective means of communication but also has a hub for cultural production and sharing of ideologies that are aimed at shaping the believes and attitudes of specific audiences (Thompson et al., 2003; Rice et al., 2017).

In the context of health care, the purpose of using audiovisual media goes beyond advertising and promotion of a medical product, demonstrating of product or for medical education and training purposes. Audiovisual media has emerged as an important strategy for providing essential health information to the general public to improve health literacy which is seen as critical to effective health care delivery. In the context of health education, the use of audiovisual media engages both sight and hearing senses to inform, educate, persuade, and some instances provide education through entertainment to audiences on specific messages to empower them to play an active role in the health care process (Wang et al., 2015; Bello-Bravo, Zakari, Baoua, & Pittendrigh, 2019; Thompson et al., 2003; Rice et al., 2017)

Over the years, improved production technologies and production styles have simplified the production, sharing, and consumption of health information. More recently, the emergence of internet technologies and mobile applications makes it possible to marry video content with other visual media into multimedia content to support health education to a larger and varied audience at a reasonable cost. Stakeholders believe that effective video may allow health caregivers to share messages with patients and the general public on essential health messages that affect their health. However, there may be reasons that may explain the growing interest in the use of audiovisual for health education.

The surge to integrate multimedia content into health education and promotion underscores an essential issue that effective health care is beyond the parameters of medical procedures. Generally, the incorporation of visual media artforms into health education and conventional health care process indicate a critical point: humans are the product of culture. Their values and beliefs are shaped by their experiences and actions. These constructed cultural experiences may sometimes create disparities that lead to challenges for healthcare. For example, globally, factors like globalisation, migration, education, beliefs, gender, language, and other socio-economic factors continue to could be a challenge to the delivery of health care (World Health Organisation, 2018; Glanz, K., Rimer, B. K., & Viswanath, K., 2008). Hence, these factors could create complexities that call for social intervention like education and persuasion which are beyond medical parameters.

In the case of Ghana, health care is threatened by several socio-cultural factors like beliefs and values, low literacy skills, low health literacy, poverty, behaviour, lifestyles, misinformation etc. (Buor, 2003). These factors indicate that effective health care delivery is controlled by social and cultural forces that rest beyond the parameters of medical health systems. For examples, cultural believes regarding food believes prevent both rural and urban pregnant women to have good nutrition that could improve pregnancy outcomes. Misinformation about a specific food, lack of health literacy among both rural and urban pregnant women continues to be a major challenge to safe maternal health (Ghana Health Service Report, 2017). These sociocultural challenges could have serious implications.

For example, in the area of maternal health care which is the focus of this study, recent figures in maternal and child mortality rate justify maternal health caregivers' quest to leverage the power of audiovisual content to support educational

efforts. Globally, it is reported that out of the 5 million children who die before reaching age 5, 45% are from sub-Sarah African as a result largely due to maternal health complication and poor nutrition (WHO, 2016). In Ghana, whiles, there has been a significant improvement in reducing the maternal and child mortality rate, the current report indicates that Ghana record 319 death per every 1000 pregnant women during birth. Additionally, for every 1000 babies, a ratio of 38 died before they are born and 41 infant mortality per every 1000 births (Ghana Health Service, 2017). These issues confirm the need for effective health education to support other medical interventions if Ghana could achieve the new SDG goal on maternal health charge Ghana to reduce maternal mortality to 70 per every 1000 birth.

To respond to these challenges, the Ghana Health Service and other stakeholders have advocated a multi-faceted approach to health care. In addition to medical interventions, health care workers are mandated to provide quality and effective education. For pregnant women, the providing of health information through the use of visual media artforms has become a constant feature of the Focus Antenatal Care for women. A visit to many government clinics reveals the effort of midwives and nutrition officers to make maternal health information available to all pregnant women. Additionally, midwives and other health officials are taking advantage of the ever-growing innovative communication technologies and multimedia contents to support educational activities in antenatal clinics. Additionally, mobile messaging has also been adopted to broadcast essential health messages to subscribed pregnant women. Since 2010, the "GoodLife, Live it Well" public health campaign materials like videos, television commercials, animations, and other educational media art forms have been aligned with other interventions to promote maternal-child health and related messages (Ghana Health Service, 2017; United State Embassy 2016).

For all indications, the use of audiovisual media for supporting health education will remain an important communication strategy especially in the context of an audience with literacy challenges. As a media artform, audiovisual media has its complex, unique language that has its root from cinematic techniques and practices. The nature of the audiovisual art form, visual and sound elements and their functions as semiotic systems can affect audience may receive and interprets such communication artforms.

Given the current surge in the use of audiovisual media to support health education, it is imperative to generate and sustain interest in academic researches about the use of audiovisual media for health education. Such a pool of knowledge will be useful in improving public health education and improved health education and promotion policies in Ghana. Moreover, it will help to expand the existing narrow literature on the use of audiovisual media as an alternative strategy for health education.

1.2   Statement of the Problem

The use of audiovisual media as an educational strategy has become germane health education especially to antenatal health promotion due to the need to augment maternal health care delivery with education to improve birth outcomes (Ghana Health Service 2017; Daily Graphic, 2018). According to the Ghana Health Service, despite the positive effort to manage the current maternal mortality ratio (319 per every 1000 birth), maternal health, especially nutrition and related issues remain a major threat to the nation's effort to attain the goals of SDG 3 which request Ghana to reduce maternal mortality ratio to less than 70 per 1000 live birth by 2030 (Daily Graphic, 2018). Hence, the Ghana Health Service is poised to adopt the use of innovative communication and multimedia content to support antenatal education

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(Daily Graphic, 2018). Stakeholders believed that the use of multimedia content like videos could support and improve antenatal education, deepen understanding, make maternal health information more accessible to all sorts of pregnant women, and motivate them to play an active role in the maternal health care process (Daily Graphic, 2018; Ghana Health Service Report, 2017). Hence, the integration of audiovisual media into maternal health education is seen as a keen strategy to effective antenatal education.

Despite the shown interest, anecdotal evidence suggests that there is a lack of audiovisual media to support antenatal education in the Ghanaian context. More importantly, studies on the use of audiovisual media for antenatal education and how pregnant women or audience receive and interpret cinematic techniques and persuasive strategies are relatively scanty in Ghana. Even when researched, it tends to dwell on the use of the importance of mass media. For example, Prilutski (2010), Asmah, Twerefou, & Smith, (2013) Cofie et al., (2014) and Lori, Ofosu-Darkwah, Boyd, Banerjee & Adanu, (2017) have focused on the examination of mass media communication, oral communication and health education, the use of mass media channels for health promotion and evaluation of general mass media channels for health communication.

On the global level, the few existing works have focused on the use of audiovisual media for postnatal education, the use of community approach to the projection of videos on maternal health. For example, Dest an et al. (2014) related study focused on the use quantitative approach to examine the use of community mobile video show to access audience's knowledge, attitudes, and beliefs about maternal and new-born health on seeking skilled attendant for birth and postnatal care. Fiore-Silfvast et al. (2013) studied the impact of mobile video technology on the

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workflow of Nurses and Midwife during Postnatal care. Also, Kumar et al. (2015) were on the use of community approach to health video production and dissemination on the general issue of maternal health in rural Uttar Pradesh (India) using the Community-led Video Education (CVE) approach. Moreover, in Eastern Uganda. Mutanda study centred on the evaluating the use of indigenous video made by community members with local language for persuading women to respond to recommended message and practices on maternal and child health messages. Even though there are some related, there are still huge gaps that need qualitative research approach to fill such lacunas. For example, little is known about the current issues surrounding the use of audiovisual media to support antenatal education in Ghana, the impact of such videos on antenatal educational settings. Also, how an audience receives and interprets such video elements has been in the lurch and have always been based on anecdotal evidence.

Given the above gaps, there is a need for qualitative research to deepen understanding of the use of video as an alternative educational strategy. It is also important to explore the nexus between communication, persuasive elements, perception and audience interpretations of such audiovisual art forms. Such a pool of knowledge can provide valuable feedback to shape maternal health communication strategies and policies has Ghana works towards the achievement of SDG goal three.

1.3   Purpose of the Study

The purpose of this research is to examine the use of audiovisual media for antenatal health education to inform the design of effective educational videos on selected antenatal message and to explore health workers experiences of the designed video and how pregnant women with limited reading skills interpret the

communicative strategies and persuasive elements of the videos during antenatal education setting.

1.4 Research Objectives

The following objectives guided the study,

1. Examine how maternal health officers communicate antenatal health messages on nutrition to pregnant women with limited reading skills and the dominant visual communication materials available for communication during antenatal health education.

2. To design persuasive audiovisual media elements on antenatal nutritional messages.

3. Examine health officers' perceptions and experiences about the use of the video during antenatal education

4. Study how pregnant women interpret the communication and persuasive elements of the videos

5. Analyse the nature of the video as a text for audiovisual communication.

1.5 Research Questions

The following questions will guide the study

1. How do maternal health officers communicate antenatal nutrition messages to pregnant women with limited reading skills and what are the dominant visual communication materials available for communication during antenatal health education?

2. How can effective educational video on selected antenatal health education messages be designed to support antenatal education on nutrition?

3. What are health officers' perceptions regarding the use of persuasive videos on nutrition during antenatal educational settings?

4. How do pregnant women interpret the communication elements, cinematic techniques and persuasive strategies of the videos?

5. What are the functions of the communication elements and design structure of the video as a text for audiovisual communication?

1.6 The Significance of the Study

This research contributes to the expansion of the scanty literature media on the use of audiovisual media for antenatal education and audiovisual production for health education (Fiore-Silfvast et al., 2013; Kumar et al., 2015; Mutanda, Waiswa & Namutamba 2016).

Specifically, the study will bring to fore issues surrounding how midwives and nutrition officers combine visual media to support antenatal education. This feedback will be critical to the National Health Promotion Division of the Ghana Health Service in the quest to develop a comprehensive communication strategy to guide maternal health education in Ghana.

Again, the study contributes to knowledge through the designed videos which become an embodiment of knowledge on audiovisual media and health education (Given, 2009; Sullivan, 2015). Additionally, the video will serve us as a source of knowledge health workers and pregnant women antenatal sessions.

Also, the outcome of the post-production research on health workers perception about the use of the videos during antenatal education and pregnant women reception and interpretation of the persuasive elements of the videos will illuminate on the issues about the integration of audiovisual media into the Focus

Antenatal Care process. A clear understanding of this issue will serve as a principal guideline for stakeholders on how to integrate videos into a health education strategy.

Finally, for academia, this study will serve a reference material for students and researchers who want to merge their artistic practice with academic research in the field of designing for health communication. Moreover, the journey of this study will help the researcher acquire more knowledge in the area of health educational media design which will be helpful in his practice as a multimedia designer and as a professional teacher.

1.7   Delimitation

The purpose of this research is to examine the use of audiovisual media as a strategy for health promotion and education for pregnant women. The study was limited to government hospitals in the Ga South Municipal Assembly in the Greater Accra region of Ghana.   The study is limited to the use of audiovisual communication for nutrition education during antenatal education. Additionally, the findings from the study were collated from pregnant women who can see and hear. Hence, the study does not discuss the use of videos for visually or hearing-impaired pregnant women since it lies beyond the focus of this study

1.8   Facilities Available for the Research

The following facilities and resources are available

1. University of Education, Winneba library

2. Balm library, University of Ghana

3. National Film and Television Institute library

4. National Film and Television's TV studios

5. National Film and Television Institute's Multimedia Labs

1.9   The Organisation of the Study

This work is organised into seven chapters. Chapter One gives a background to the study and also presents the statement of the problem, research objectives, and questions, significance of the study, delimitations, and limitations of this study. Chapter Two deals with the review of theory and related literature for this study. The first sections dealt with the theories and frameworks that underpin this study. The second review is about current studies that situate this study. Chapter Three described the methodology and research design that was used for the study. Additionally, the chapter also justified the chosen methods and why that was preferred over other methods. Furthermore, the research approach, sources of data and collection procedure, population sample size, and procedure for data analysis are also explained. Chapter Four presented the design processes for designing and producing audiovisual media. Chapter Five focused on the presentation of findings and discussions concerning the objectives and the reviewed literature for the study. Chapter Six presents a textual analysis of the video as a text for audiovisual communication. Chapter Seven concluded the study by discussing the summary, conclusions, and recommendations for this study. Moreover, references for this study have been arranged in alphabetical order in the appendix page and followed by the APA referencing (6th edition) format.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter discusses the literature that underpins and situates the production and examining of culturally appropriate educational video. The review will be done in two phases; the first phase will concentrate on theories that ground the study. The second phase will focus on empirical literature on media production, the use and production of videos for health education, video production practices, culture and communication. The quality of every academic work largely depends on its theoretical foundation. Hence, this chapter now starts with the theories that frame this study. Next, it will discuss the conceptual framework that was constructed from related theories that are germane to this study.

2.1 Theoretical Framework

The foundation for this study is built on several theories from related disciplines. The study draws from health education, psychology, and communication and user experience technology. The specific theories that ground this study are the Cognitive Theory of Multimedia Learning (CTML), Persuasive Health Message Framework (PHMF) and the Technology Acceptance Model (TAM).

2.2 Persuasive Health Message (PHM) Framework

The PHM was developed by Witte (1993). This framework is an amalgamation of three prominent persuasive theories for creating educational media. The PHM framework takes audiences centred approach to examine beliefs and perceptions of a targeted population about specific health beliefs, practices, and recommended messages that will help in designing to educational media. The PHM

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framework is a merger of three major persuasive theories: The Protection Motivation Theory (PMT) the Elaboration Likelihood Model (ELM) and the Theory of Reason Action (TRA). The significant constructs of the PHM framework are a threat, and efficacy elements which were borrowed from the PMT, central and peripheral persuasion route from the (ELM) and finally, the salient beliefs construct from the TRA. In addition to these significant constructs, the PHM framework also adopts the McGuire (1987) persuasion variables. These are the destination, source, message, channel, and the receiver.

According to Witte (1993), the PHM can be grouped into two main constructs and these constructs must be reflected in every educational media. These are Transient Factors and Constant elements, as shown in figure 1. The transient factors include message goals, salient beliefs, referents, culture, and environment. The Constant Factors are threat, susceptibility, severity, efficacy factors, and cues factors.
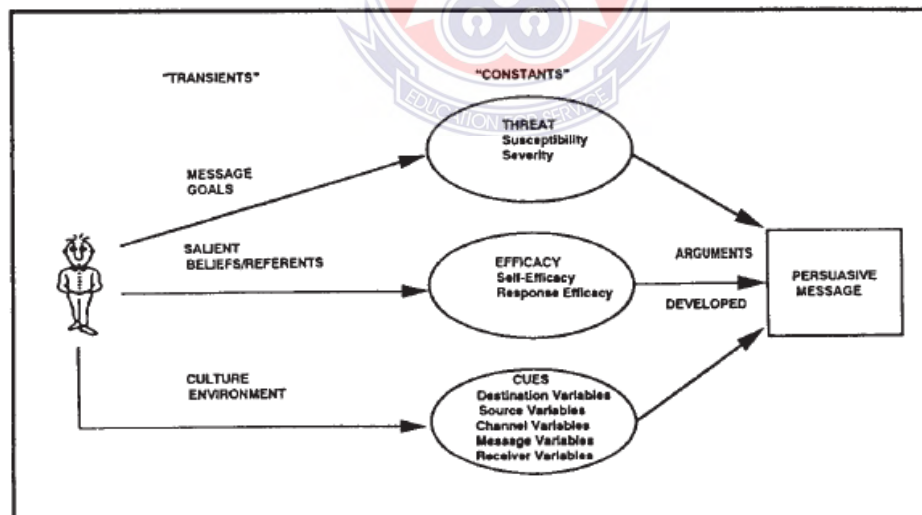
Figure 1: The Persuasive Health Message Framework
Source: Witte (1993)

Though the PHM was designed to aid the production of health messages, previous studies on the use of the framework are very few. For example, Witte, Peterson, Vallabhan, Stephenson, & Plugge (1993), used the framework to conduct

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formative research on farmers and agricultural safety equipment. The study focused on using the constructs of PHMF to explore farmers' perception and knowledge about the importance of safety farm equipment. Similarly, Hall & Johnson-Turbes (2015) study described how the PHM framework was used to conduct formative studies to inform the development of messages to promote low- or no-cost mammogram examination services among low-income African American women in the united states of America. From these two examples, the PHM help in conducting preproduction research and guided the production of effective educational media for health education.

Even though the above studies have demonstrated the application of the PHM, the available literature is silent on its contribution concerning the visual and aesthetic elements. In the context of this study, the adoption PHM framework will be helpful in two ways. First, it will not just demonstrate how the framework can be used in the context of maternal health education design; this present study will add how PHM framework impacted on message design aesthetics during the production process. Secondly, the outcome of this study adds to how the design process can incorporate the use of health education theories during the design process: an issue that has been lamented over by health education experts. Moreover, the study will demonstrate how the PHM affected the cinematic and other aesthetic decisions during the production of the video. Hence the application of the PHM to this study will be useful to the study and also add to the literature on the application of the PHM for health media productions.

The process of designing health content for effective education is beyond the parameters of conducting audience research to formulate content. It requires a deep understanding of perceptive factors that interface between message representation and

cognitive processes. Hence, the following review, the cognitive theory of multimedia learning, which affects how communication elements are received and processes for understanding, is reviewed

2.3 The Cognitive Theory of Multimedia Learning (CTML)

The multimedia learning theory stipulates that learners receive and process information signals through two separate channels. The audio or verbal signals go through auditory systems, and visual cues go through the visual system for processing in the human brain. Furthermore, the theory also suggests that learning is less active and more cumbersome when only auditory or visual channels are used for communication through multimedia content. Hence, the audience learns better when both channels are engaged in productive cognitive activities that allow mental representation, organisation and comparison to previous knowledge (Mayer & Moreno, 1996). Even though these two channels have limitations to how the nature of information and can be received and processed at a given time, using both channels appropriately can facilitate the learning process than otherwise.

The theory also draws from Shiffrin's (1971) three distinct memory systems for processing text, pictures and sound. According to Shiffrin, as quoted by Mayer, (2014), sensory registers, working memory, and long-term memory operate differently under peculiar limitations to process the visual and audio signals. The relation between the three memory systems is illustrated in Figure 2. These are the sensory memory (SM), the working memory, and the long-term memory. The sensory memory refers to the use of the eyes and ears to capture information from the environment(Brame, 2016). Hence, crude information that is obtained from mediated communication artforms like videos is stored relatively for a short time.

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The capturing process is a cognitive process of comparing the perceived information to already stored information to establish similarities or differences through the two separate channels as depicted by figure 2 (Mohamed Ibrahim, 2011; Brame, 2016). According to Mohamed Ibrahim, due to limited capacity in sensory memory, there could be channel loaded and would not support effective communication if too many messages are presented through any of the channels at the same time. The implication of this construct of the cognitive theory to the study is that communication design elements must be specific devoid of any other elements that could overload the sensory memory systems.

The captured information from the sensory memory (SM) is then sent to the working memory (WM) for processing and storage. Klatzky (1975) as quoted by Mohamed Ibrahim (2011) describes the working memory is a cognitive space for preparing and packaging information for cognitive activity. However, due to the limitations of the working memory, audiences go through a voluntary and automatic selection process to focus on a specific part of media information to ignite the process of learning while less conspicuous ones are relegated. The implication for this to multimedia design is that designers must organise audiovisual elements to support the function of the working memory due to its limitation. Again, it also unnecessary to marshal all kinds of communication elements since, by default, the working memory will only focus on the selected area. At the long term memory, the processed information is permanently encoded for future recovery and application (Brame, 2016).
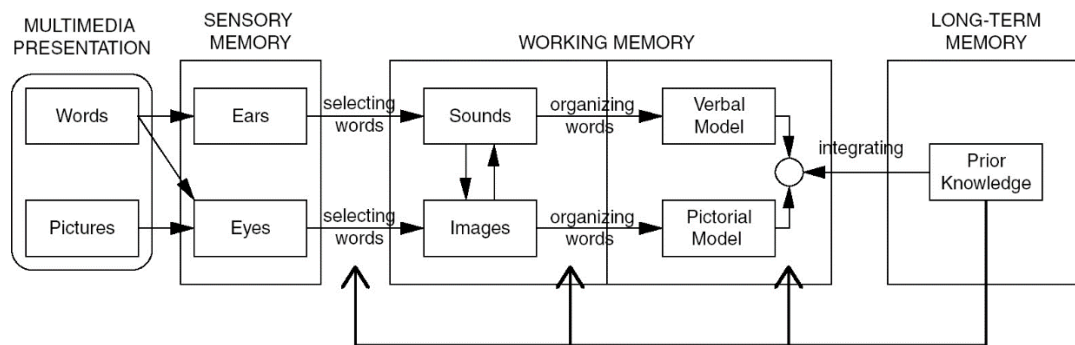
Figure 2: The Three Sub Memory Systems and Cognitive Theory of Multimedia Learning (Mayer 2014)

The multimedia learning theory, which was developed by Robert Mayer draws heavily from the cognitive load theory. According to the cognitive load theory, the output of processed information from both channels can lead to three distinct possibilities. Homer, Plass & Blake, (2008) explained that the working memory capacity always limits these three processing outcomes hence there is strong competition for the "limited resources of working memory" (pg. 787). These three output possibilities are intrinsic load, extraneous load, and germane load.

The intrinsic load describes the nature and degree of difficulty of subject matter that is presented through multimedia contents for learners to consume. According to Homer, Plass, & Blake (2008) and Ibrahim (2011), intrinsic cognitive load is dependent on personality, cognitive makeup of the learner, and the contextual topic under consideration. Similarly, Mayer (2014) and Brame (2016) noted that intrinsic load is pertinent to message characteristics that are presented to an audience for decoding. Additionally, Brame (2016) concluded that given the intrinsic variables and other limitations, the cognitive effort of learners must well be utilised to manage complex intrinsic elements. Hence, the easier the topic or the concept that needs to be communicated to the faster audience can comprehend. The implication of this to this to educational media design is that designers must simplify the message content if the maximum effect can be achieved. In the context of this study, the level of difficulty in

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negotiating meanings about the subject of nutrition through an audiovisual media could be described as the intrinsic load.

The second cognitive load output is called the extraneous load. It is generally described as a negative output in the learning process due to unnecessary cognitive effort that is imposed on the audience due to poor selection and organisation of communication elements and failure to consider cultural factors decoding educational media messages. For example, (Mayer (2009) described extraneous processing overload as learning situation where an audience used much effort to receive and process of information to the point that there is little mental processing power to "engage in essential or generative processing" (pg. 85) Available literature indicate, this undesired effect is caused by poor design and the aesthetic decision that does not support effective communication and learning. For instance, Mayer, (2014) and (Brame, 2016) emphasised that extraneous frequently ensue in learning contexts when the messages are constructed ambiguously and as such learners may have to use much of the working memory to negotiate through several elements which leads to ineffective learning.

Mayer (2009) further explained that there two types of extraneous load, namely extraneous material and extraneous processing. Material extraneous refers to a learning media artform that is ineffective for learning due to poor visual and message design. Extraneous processing occurs when the processing capacity and effort from learners do not support the focus of educational goals due to extra elements that have to engage in due to the nature of the learning material. The implication of the extraneous processing factor on educational media is that designers must structure design and message elements in a way that will require less cognitive effort. Mayer again supported this view by stating that the most critical activity in the design proves

of educational media is to eliminate extraneous load by eliminating unnecessary elements to make space for working memory capacity to ensure active learning.

Germane load is the third cognitive load output factor that can affect mediated learning. This is described as the intellectual activities that required efforts to decode the meaning of a mediated communication artform successfully. Homer et al., (2008) and Mohamed Ibrahim (2011) argued that Germane load is the active construction, acquiring new knowledge and permanent storage due to learners' efforts and availability of cognitive capacity. Similarly, Mayer (2014) stressed that germane load is the most desired cognitive outcome since it describes the reserved mental capacity the manages the nuances of memory intrinsic cognitive to ensure effective learning. The implication of the germane load in a learning situation is the quantum of the working memory devoted to the intrinsic load and where there is less extraneous load it will lead to active learning due to lager germane load is very critical to ensure permanent encoding of a message into the long-term memory (Brame, 2016)

The relationship between these three factors and the cognitive load has bearings on the use of mediated media for education. Due to the implications of the extraneous load, educational media designers must simplify the intrinsic load by carefully selecting and organising communication elements in a way that will enhance learning. Again, designers must also eliminate communication elements that cause extraneous load in the long term memory to improve the germane load process (Brame, 2016; Mayer, 2009).

Based on the impact of the cognitive factors, the multimedia learning theory stipulates a set of design principles that must be followed during educational media production to reduce extraneous load which might mitigate the educational goals. This

control will help increase germane load factors to ensure effective communication (Mayer, 2009). Examples of Mayer's principles stipulated that:

1. Multimedia Principle: People learn better from words and pictures than from words alone.

2. Modality Principle: People learn more deeply from pictures and spoken

3. Segmenting Principle: People learn better when a multimedia message is presented in user-paced segments rather than as a continuous unit.

4. Personalisation Principle: People learn better from multimedia presentations when words are in conversational style rather than formal style.

5. Temporal Contiguity Principle: Students learn better when corresponding words and pictures are presented simultaneously rather than successively.

6. Spatial Contiguity Principle: Students learn better when corresponding words and pictures are presented near rather than far from each other on the page or screen.

7. Redundancy Principle: People learn better from graphics and narration than from graphics, narration, and printed text.

8. Signalling Principle: People learn better when cues that highlight the organisation of the essential material are added.

9. Coherence Principle: People learn better when extraneous material is excluded rather than included.

The interrelationship that exists between the multimedia learning theory and the underpinning theories cognitive suggest that educational media designers must leverage the power of the two channels to support education by creatively designing educational messages in a way to allow each channel to complement each other (Brame, 2016). In effect, this allows audiences to interact with media messages by

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using both visual and audible sense at the same time to decode media messages and to personally encode into the long-term memory (Mohamed Ibrahim, 2011). Additionally, this also explained that the media production process for educational media should focus on three core efforts. First, designers should minimise extraneous processing by employing coherence principle, signalling, principle, redundancy principle, segmenting, principle, temporal, contiguity principle. Secondly, educational media designers must also manage essential processing through the use of the pre-training principle modality principle multimedia principle. Finally, effective informative content must foster generative processing by using the personalisation principle (Mayer 2014).

2.4   The Theory of Sign

The theory of sign thrives in the concept of semiotics. The term semiotics has a long history. It reflects man's quest and desire to define the expense of form. The term may have been first used as "semiotics" by Hippocrates (460-377 BC) to refer to indicators of specific medical conditions that give clues and meaning to what is happening in the human body. Also, the term may have been used by Greek philosophers as "semeion" to describe an actual "mark" or a "sign" (Danesi, 2004). The current term semiotics or semiology is seen as the study of signs which is the attempt to examine how signs form the building blocks of communication.

Semiotics is seen as not just the study of the basic block of communication. It is a systematic process and approach of understanding the value of using tangible and intangible element represent ideas and how meaning is constructed through the use communication elements like words, sound, gestures, visuals and objects in general (Chandler, 2007; Littlejohn & Foss, 2009) Semiotics is not the technological study of how messages are transmitted or share with people but rather, is concerned with the

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process of producing meaning through the combination of signs as elements of communication and how such signs are deconstructed to produce meanings at different settings. (Danesi, 2004).

The theorisation of the concept of semiotics has been dominated generally by the works Ferdinand de Saussure (1 857-1 9 13) and Charles Sanders Peirce (1839-1914). Ferdinand de Saussure model of sign presents that objects of images have two parts though they are not linked. According to Chandler, (2007 p.14), Ferdinand de Saussure explained his concept of the sign by stating that

> "A linguistic sign is not a link between a thing and a name, but between a concept [*signified*] and a sound pattern [*signifier*]. The sound pattern is not a sound; for a sound is something physical. A sound pattern is the hearer's psychological impression of a sound, as given to him by the evidence of his senses. This sound pattern may be called a 'material' element only in that it is the representation of our sensory impressions. The sound pattern may thus be distinguished from the other element[s] associated with it in a linguistic sign. This other element is generally of a more abstract kind: the concept (Chandler, 2007 p.14)

Saussure model of the sign is based on the constructed relationship between two concepts: signified and the signifier (As shown in Figure 8).

Figure 3: Theory of sign, according to Ferdinand de Saussure.
Source (Chandler, 2007)

According to Chandler (2007), Saussure posits that the signifier is a label that is assigned to an object or an image. The signified is the corresponding idea that is created in the mind of people whenever the label is initiated, both signified and the signifier immaterial and product of psychology. Similarly, (Rose, 2016) and (A. Parsa, 2004) also argue that Saussure sign is made up of two parts that are psychologically liked but cannot be explained but rationally. The relationship between the signifier and the signifier is accidental and conventional. This assertion presupposes that the use of a label for a concept is illogical and their acceptances are based purely on conventions of communication within a society (Littlejohn & Foss, 2009). Hence, a sign is an abstract relation that is created between the signifier with the signified within a society and without the association between these two psychological concepts there will be no sign because it will not produce any meaning (Danesi, 2004; Littlejohn & Foss, 2009)

On the other hand, Charles Sanders Peirce also presented that sign is made up three parts consisting of (1) representamen which describe the form sign takes or how the form is identified. (2) The interpretant which refers to what meaning is made from the sign. (3) The object which describes what the sign refers to (Chandler, 2007) (As

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shown in the figure) Object or images can only become as a sign if all the three elements operate together because the sign is a unification of the overt object, how it has visually constructed and how it is perceived and explained

According (Chandler, 2007) Peirce provided three typologies of sign to further explain his concept of the sign which he describes as the basic constituents of all signs. These constituents of signs are Iconic, Symbol/symbolic, and Index/ indexical. Iconic signs have a direct connection or relationship with the object they represent. For example, Chandler (2007) Peirce describes Iconic signs as "resembling or imitating" the concept they represent. Harrison, (2003) also added that iconic sign has a similarity and share a high level of likeness an object or person. For Landa, (2006) Icon signs are more illustrative and "shares a quality with it" with the object they refer to. (Parsa, 2004) "They are more 'motivated' signs" Indexical signs are based on cues and necessary representative. Several definitions including Peirce own explanations indicate that indexical signs have a logical and direct link to things or idea they represent rather than a direct resemblance to the object. According to Peirce by Chandler (2007) indexical is kind of signifier that is less random and overtly associated with its signified. Landa, (2006) argued that index as a visual sign guides audience attention to make meaning from a sign by providing internal and external cues. Harrison, (2003) also added that indexical function in communication not because of any visual link but because of associated relationship or external cue that has been accepted by society.

Symbolic signs, on the other hand, are the most abstract of all Pierce theory of signs and their usage are based on conventions of society. (Chandler, 2007) mentioned that symbolic sign has not related and does not reflect the natural representation of the object it reflects hence the relation between its signifier and the

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signified the "arbitrary or purely conventional "which means that it must be learned and agreed upon by at least two people for meaning to be produced and shared (Parsa, 1999). Symbolic signs have no relation with the object of the concept it has been assigned or forced to represent or in other words it there is no has no "visual or conceptual connection" to an object or person (Harrison, 2003, p. 50). Hence symbolic signs are conventional and may have different meaning depending on the context and the audience involved. Santoro (2014) and Lester (2014) Symbols signs are assigned and learned because they function more in abstract forms, deeply rooted in culture and its values which have been shaped by many generations. Hence Santoro further explained that symbols have no visual relation between the concept and the actual image, object represent. They function as cultural currency for communication because it has been accepted as a means of communication within a culture (Santoro, 2014).

The sign theory will have two major implications for this study. The theory will be applied to production and postproduction. The study will use signs as the basic communication elements to encode meaning on the studying subject. During the postproduction research, the study will examine how the selected audiovisual signs affect the perceived efficacy of the videos as a culturally appropriate educational intervention.

2.5   Technology Acceptance Model

The Technology Acceptance Model (TAM) is a framework for assessing the perception of the acceptability and usefulness of the technology. The model was developed by Fred Davis and other associates to determine the acceptability of information technology products (Lah, Lewis & Šumak, 2020). TAM is very effective in examining users' behaviour and intentions regarding technology because it heavily

draws from the theory of reasoned action, designed by Fishbein and Ajzen (1975). The TRA also proposes that behaviour is controlled by intentions which are also dependent on beliefs and attitudes (Dishaw & Strong, 1998).

According to the proponents of the TAM, the likelihood that people will adopt and use technology to enhance their workflow or learning is dependent on two perceptions: perceived usefulness (PU) and perceived ease of use (PEU). The PU is described as the level of a perception regarding the usefulness of new technology or novelty if adopted. Also, the PEU is the perception that the use of technology will be easy and will require fewer efforts. The PU and PEU are the core constructs of the TAM (Walker, Kho, Tan & Lim, 2019).

Additionally, TAM posits that the PU is controlled by factors such as the nature of the new technology and the process involved in applying new technology. Consequently, the PU is affected by PEU because people access how what effort, resources and cognitive processes are required to use new technology (Dishaw & Strong, 1998; Venkatesh & Davis, 2000; Lah, Lewis, & Šumak, 2020). Hence, according to Lah et al., (2020) explained the symbiotic relation between PU and PEU by stating that the higher someone higher a favourable perception about the usefulness of technology the higher the chance that the technology will be accepted and used. The TAM framework, therefore, indicates that designers of ICT technology have little control over how users might perceive the usefulness and accept technology (Venkatesh & Davis, 2000; Lah et al., 2020).
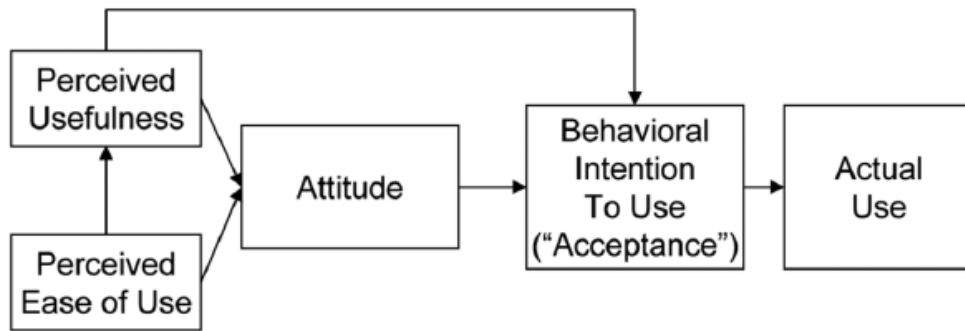
Figure 4: The relationship between PU and PEU. Source: Ketikidis, Dimitrovski, Lazuras, & Bath (2012)

Ketikidis et al. (2012) further argued that the TAM was later revised to include two additional theoretical additional constructs. The first is the social influences which encompass subjective norm, voluntariness, and image. Social influences describe social factors that can influence and may include viewpoints from excellent sources like supervisors, friends and colleagues. Much of the available evidence suggests that the variables of the subjective norms play a critical role in ones intention to accept technology and it (Venkatesh & Davis, 2000; Walker et al., 2019) (Ketikidis et al., 2012). The second additional constructs is the cognitive instrumental processes variables which refer to factors as job relevance, output quality, performance, demonstrability and perceived ease of use (Venkatesh & Davis, 2000; Ketikidis et al., 2012).
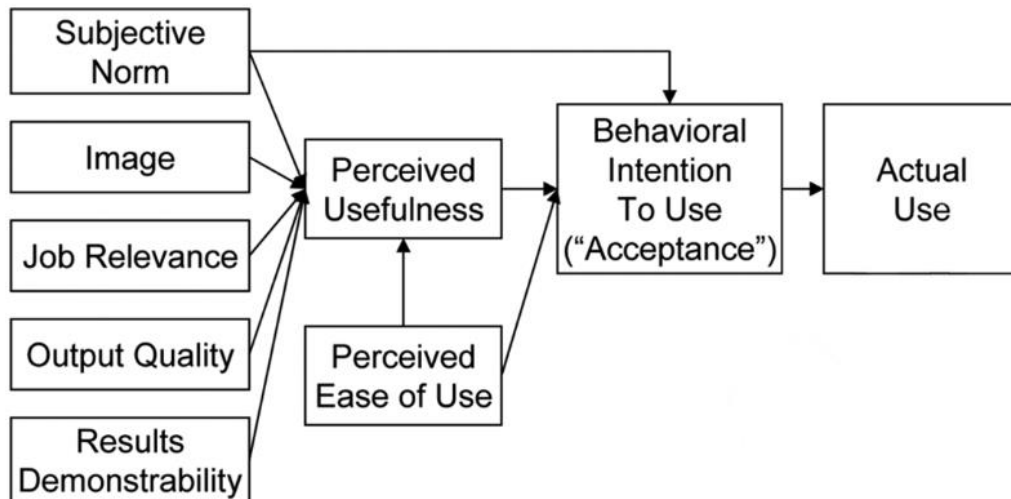
Figure 5: The modified technology acceptance model by Ketikidis et al. (2012)

Previous studies on TAM in health care settings have produced various findings. While the majority of them have confirmed the PEU and the PU constructs of the model, others have also argued that current constructs of TAM are inadequate, thereby recommending the some to the TAM. For example, Ketikidis et al. (2012) used a modified version technology acceptance model (TAM) to examine the importance of beliefs and acceptance of ICT by health professionals. The study reported that perceived usefulness, relevance and subjective norms played a small role in health professional intention to ICT technology in their workflow compared to the perceived ease of use. Hence the study recommended that a modification is needed to current TAM to understand patterns of acceptability among healthcare professionals better.

In a similar study, Strudwick & McGillis Hall (2015) argued that due to underutilisation of ICTs by healthcare professionals the factors mediating the acceptance of ICTs among nurses go beyond what is prescribed by current literature. Using the literature survey approach, the study concluded that current models need adjustment to understand better health professional's acceptance of ICT in health

information management workflow. Hence their study proposed a new model that incorporates unique characteristics of health professional preferences as shown by Figure 3. The model Strudwick & McGillis Hall added the nature of health information; individual nurses' characters and the context in which such technologies are deployed are meditating factors that can determine the usefulness and ease of use ICTs among healthcare professionals in the area of health information management.
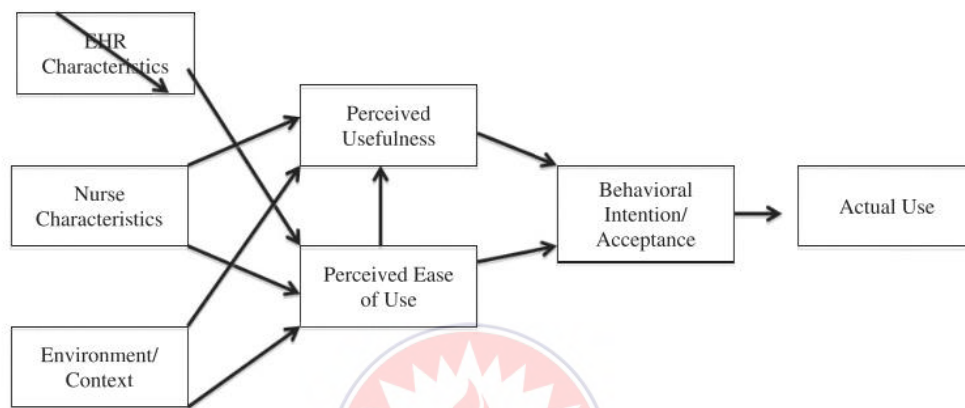
Figure 6: Nurses' acceptance of electronic health records model

Studies from the perspective of the patient's acceptability of ICT in healthcare are not different from reviews from healthcare professionals. For instance, Guttman et al. (2018) The study designed website based videos to examine ICTs acceptability among Amharic Israeli Ethiopian with limited literacy skills. Findings indicate that the acceptability was very high, although the minority had challenges with the usage of the technology. The study attributed the high acceptability rate to consideration culturally appropriate elements like tailored message elements to TAM. Hence, the studies noted that when designers present culturally relevant health information, it increased the perceived ease of use and perceive the usefulness of the website. Based on the outcome, the study expanded the TAM by adding culturally appropriate elements like socio-cultural factors, cultural pride elements, and trusted information sources as shown by Figure 5.

Finally, in the context of Ghana, Kissi, Dai, Dogbe, Banahene and Ernest (2019) takes a different approach. The study focused on appraising medical officer's perception about usefulness and ease of use of telemedicine in Ghana using the technology acceptance model. Based on a structured questionnaire guided by the construct of the TAM, the study confirmed that intentions to adopt the technology of telemedicine in their workflow are mainly influence by perceived usefulness and perceived ease of use. Additionally, the study also reported an increase in quality of service and workflows leading to the conclusion that physicians' and patients' satisfaction are the core benchmark for accepting telemedicine in the medical workflow.

Concerning meditating factors to the adoption of telemedicine in the Ghanaian health sector, the study discovered that Authorities in the Ghana health Services do have control or influence medical officers' acceptance of technology since most decisions are at the liberty of the medical officers. Service inaccessibility, security and privacy issues, administrative reasons, socio-cultural factors, low incentive, administrative apathy personal security issues and lack telemedicine technical support are a significant reason for the desertion of telemedicine in their workflow. Moreover, Kissi et al., the study concluded that deep belief about the benefits of telemedicine and lack of prior usage would lead to low acceptance. Conversely, when perceptions of the benefits are positive, it translates a high acceptance rate.

Despite the debate over the validity of the perceived usefulness construct, the TAM still serves as a robust theoretical basis for this study because it provides a broad and unrestrictive framework to explore the efficacy of the designed videos in the context of maternal health education (Lah et al., 2020; Walker et al., 2019). Additionally, the model is flexible and supports different contextual application

adoption. Hence, in the context of this study, the TAM will be used during the postproduction testing. The study hopes to use the constructs of the TAM to explore issues surrounding the videos critically.

2.6 Encoding/Decoding Model

The Encoding-Decoding model is a communication model that examines the relationship between the production of media messages, representation, and audience reception. This was developed by Stuart Hall in 1973 as a member of Birmingham's Centre for Contemporary Cultural Studies (CCCS). Influence by semiology neo-Marxists approaches, the model takes a departure from popular traditional linear theories that overly emphasized the role of media institutions and underestimate the role audience play in the meaning-making process (Hodkinson, 2017). The model proposes that in the making and sharing of meaning, both producers and audience are on the same level because both play a role in "the discursive form of the message" and all have a "position in the communicative exchange" (Durham & Kellner, 2006; Hodkinson, 2017 p.84). According to Hall (1973), producers of media messages encode messages by attaching meaning to selected and organized media elements. Audiences, on the other hand, are not passive but are an active audience who determine how the messages should be interpreted using their socio-cultural backgrounds.

Thus, while producers of media messages will rely on their assumptions about their targeted audience, cultural signs, skills, and expertise to encode meaning, the audience also relies on their socio-cultural backgrounds and experiences to interpret media messages (Bødker, 2016; Hodkinson, 2017). Again, Hall stressed that audience response to any media representation can manifest in three ways. A dominant or preferred reading of media message is the moment when the audience receives and

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responds to a media text following the producer's intention. An oppositional reading of the text will occur if the message is completely rejected by the audience, However, when the audience interprets the text in their unique way devoid of the producer's intention then a negotiated reading has occurred (Hall, 1973; Hodkinson, 2017). In the context of this study, this model offers a theoretical approach to this study is useful in the production process of encoding meaning through videos. This model will be used to examine pregnant women receptions and interpretation of the video content during the post-studio research. The study report whether audience reception will be preferred, oppositional and negotiated meaning.

2.7   Visual Literacy

The concept of visual literacy may have had roots from the field of semiotics. It is a concern with our how audience abilities and the processes of interpreting visual signs. Over the years attempt to provide a concise definition to theorise this important have not been easy. The term visual literacy was first coined by John Debes in the 1960s when he worked Eastman Kodak and his academic contemporaries (Elkins, 2007). From its earliest conceptualisation, the term visual literacy is seen as how the ability human to use their senses to observe their physical environment. According to Elkins, John Debes expressed this by stating that visual literacy is:

> A group of vision-competencies a human being can develop by seeing and at the same time having and integrating other sensory experiences. The development of these competencies is fundamental to normal human learning. When developed, they enable a visually literate person to discriminate and interpret the visible actions, objects, symbols, natural or man-made, that he encounters in his environment. Through the creative use of these competencies, he is able to

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communicate with others. Through the appreciative use of these competencies, he can comprehend and enjoy the masterworks of visual communication." (John Debes 1969) as quoted by (Avgerinou & Ericson, 1997 p.281)

John Debes concept of visual literacy focused on the scientific senses that people should develop and the consequences. Since this definition, the subject of visual literacy has attracted many researchers from different field resulting in a plethora of definition which often reflected their interest and backgrounds. Despite the diverse definitions, there are some commonalities among groups of definitions that are available in the literature. One major trend that is obvious in the most definition is that the concept of reading, understanding and interpretation the concepts like skill, competency and ability (Avgerinou, 2003).

These definitions take a departure from the linear model of communication where audiences are treated as passive agents. In contrast to that, the various definitions available agree that audience plays an important role when it comes to the use of visuals from communication. For example, Messaris (1998), posited that visual literacy is the about audience "understanding images" and other "representational conventions" that are used by visual message encoders to share meaning. Stokes (2002) also made reference to Wileman (1993) and defined that visual literacy the process and the capabilities for as "the 'read,' interpret, and understand" visual messages that are exposed to the audience (p.12). Additionally, Stokes (2002) further explained that visual literacy is the conscious effort for sharing information for understanding and recall through the active participation of the audience to make meaning from the organized visual through the use of personal realities.

Avgerinou & Pettersson (2011) explained that visual literacy the ability for the audience to correctly provide an explanation to various forms of visual communications and a larger extent the capabilities for reading visual to enhance understanding create meaningful visual and to cognitively process visual communication artform accurately. Hence, visual literacy encapsulates key concept like the ability to observe images, understand and interprets such visuals and employ them for further learning

Visual literacy a set of cultural language that is culturally specific which require learning and mastering to enable people to use such communication elements to exchange ideas(Stokes, 2002). Avgerinou & Pettersson (2011) expanded this position by stating that

> "Visual Language is holistic Languages differ in their ability to express concepts with precision and flexibility. Only people with the appropriate specialized knowledge may understand languages such as these. Normal prose is often open to multiple interpretations, namely, it is ambiguous. Pictures are often ambiguous too. Visual languages attempt equivalence with reality. Visuals are iconic and they often resemble the thing they represent. Images speak directly to us in the same way experience speaks to us, that is, emotionally and holistically" (p.5)

In the context of this study, the concept of visual literacy is important. The key concepts of visual literacy during the postproduction phase to determine the level of audience ability to observe the visual lanuage and cinematic storytelling conventions that will be used during production. Again, a concept like the ability to understand and interpret the visual in relation to preferred, oppositional or negotiated meaning are

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some very pertinent in understanding one of the focus of this study which south to explore the to which pregnant women respond to the form and content of digital video design.

2.8   Conceptual Framework for This Study and Its Implications for this Study

Based on the theoretical reviews from the previous, a conceptual framework was constructed to serve as an academic engine to drive this study. (Figure 5 for a visual representation of the conceptual framework for this study). The framework brings together relevant concepts and variables from the Persuasive health message framework, the multimedia learning theory and the technology acceptance theory. Together they provide a visual representation of the constructed academic engine which the researcher belief can aid in driving the study to attain the main objectives for this study. The framework illustrates the relationship between all the concepts that are pertinent to the production of effective multimedia content to support maternal health education.

This study takes the view that effective use of video to support maternal health literacy is more than just a presentation of information. Culturally appropriate video depends on a careful analysis of users' needs and contextual issues which becomes the basis for the design of an intervention. The affinity between contextual analysis and effective message design is the basis on which audiovisual communication elements can be organised and manipulated to influence an audience's perceptions.

Hence, at the top level of the diagram is the dependent variable, as shown in figure 5. It is the dependent variable for this study because it is the core phenomenon which this study seeks to understand. The production of a useful, informative video depends on several factors. These have been represented on the second level in the diagram. The first is the contextual issues, and user needs, as shown in the first box in

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Figure 7. This part of the proposed framework will help the researcher to discover problems that surround the current use and challenges regarding the use of videos as an alternative educational strategy. Next is the message content design and previsualization. This stage mainly involves research on what message should be included, how it should be structured and how the message could be previsualized for pretesting to enhance the effectiveness of the message before actual production. The constructs of the Persuasive Health Message Framework and video preproduction techniques will be employed at this stage.
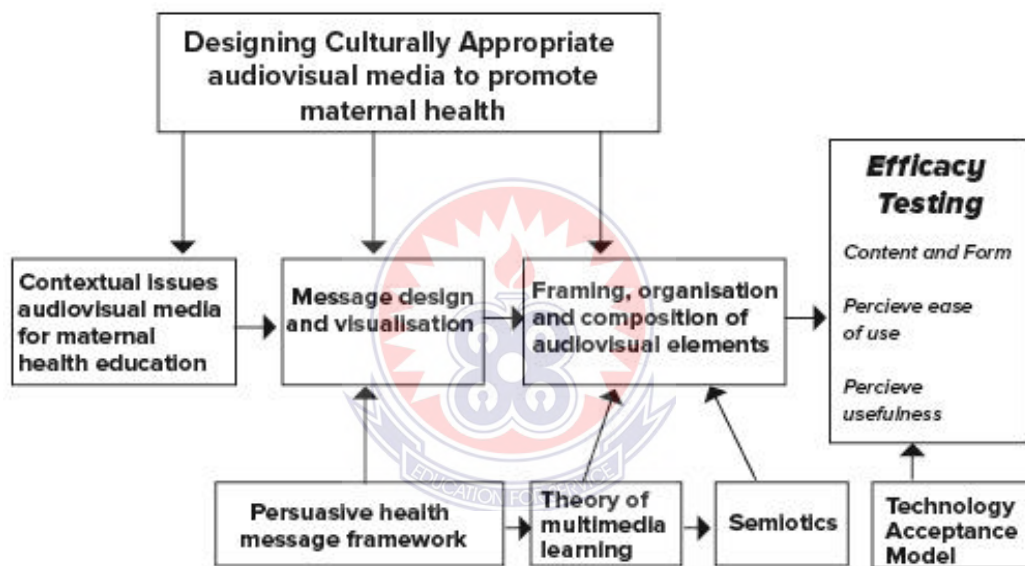
Figure 7: Conceptual Framework for the Study
Persuasive Health Media Production Framework (PHMPF)

Next, the conceptual framework depicts the organisation and audiovisual elements, as indicated in the third box in Figure 5. This mainly involves the generating, organising and composing audiovisual elements through the use of cinematic techniques. The cognitive theory of multimedia learning will be used to guide the production at this stage. Additionally, the cognitive theory of multimedia theory will be used in selecting, organising and composing audiovisual elements to reflect the message design and framing. The focus of the application of the

multimedia theory to cinematic elements is to minimise the extraneous load and optimise germane load to reinforce the effectiveness of the videos. Finally, during the postproduction testing, the technology acceptance theory (TAM) will be used to explore the perceived usefulness and perceive ease of use videos from maternal health officers.

The first section of the literature review focused on theories that situate this study. The persuasive health message framework, the cognitive theory of multimedia learning and the technology acceptance model, have been reviewed. Consequently, a production framework was developed to guide the study. This chapter now directs attention to the review of related works, concepts and practices that underpin the research. It starts with the broader concepts of media production, mass media communication processes. It will then narrow down to visual communication media and production which is pertinent to this study.

2.9 Media Production

Media production is a cultural practice and technical processes. It involves the coordinating of techniques and methods for message construction through the selection, organising and framing of communication elements into media forms. The process involves the assigning of meaning to elements like visuals, text, sound, illustrations, lines, colours structuring them through cultural codes. The term media production has been conceptualised as the product of a well-organised institution with commercial or other self-benefits interest that creates messages and disseminates them to inform, persuasion, advertising, entertainment and education. For example, Baran (2013) explained that media production is the deliberate development and construction of messages by institutions through the use of standard communication elements or "shared meaning" and sharing such messages to an intended to the

audience through the use of media technologies. Media production helps in creating constructing and maintaining the way people live and interact, which defines parameters, provides freedom and binds cultural members.

Other sources also emphasise that media production is the output of multiple industries with specialised roles motivated by commercial interest. Turow (2009) referred to that approach when he stated that media production is the combined effort of well-structured commercial, cultural bodies that create and distribute of constructed messages of news, entertainment and educational content through mediated technologies like television, movies, internet, radio and print media for millions of people to consume. Littlejohn & Foss (2009) also stated that media production is the constructing of messages by organised cultural institutions and distributing such messages through an appropriate technology to undefined and diverse consumers. Similarly, Campbell, Martin, & Fabos (2012) stated that media production is the process whereby organised cultural hubs facilitate cultural products like audio, multimedia content and print media content to a diversified audience.

Some describe media production as a social exchange process of using conventional and shared communication symbols to construct new symbols that can facilitate the process of meaning production from the perspective of consumers. Such conceptual views about media production acknowledge the role that media encoders and decoders play. Hence, they concluded that media production is about both production and consumption. For example, according to Hall (1980), as mentioned by Kropp (2015), media production is an encoding process of attaching meaning to communicating elements. That process is described as semiotisation where meaning and messages are created through the established relationship that is generated among the signs that have used in the construction media messages (Parsa, 2004; Kropp,

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2015; Leeuwen, 2005). Paxson (2010), presented a similar view by positing that media production is a two-way process of producing messages by combing communication elements into messages and sharing them with audiences who also reproduced the messages by interoperating the communication elements and assigning meaning to them.

Media production is also described as more than a cultural exchange. Others describe media production as a conscious effort to manage the process of cultural exchange and the production of meaning. In this approach, media production focuses on skewing the meaning production processes to advance their interest in the process. For example, Carey (1975) as quoted by Baran (2013) describe media production from a cultural perspective by stating that media production is the practice of representing, reinforcing or altering everyday experiences. Baran (2013) commented on this definition by positing that media production process heavily relies on cultural activities to express messages that shape how people think, feel their world "draws persons together in fellowship and commonality" (p.7). This approach to the definition of media production contends that media production is a continues process of indirectly managing people experiences through the use through entertainment, information and education by the use of constructed and created media artforms.

The practice of media production to shape human cultural experience has a long history. Advancements of technologies have shaped the developments of media production techniques and methodologies and through centuries of changes in the way society's needs concerning the consumption of information (Campbell et al., 2012). For example, Meggs & Purvis (2012) explained that the history of media production could be traced to the prehistoric era where prehistoric men used drawings of figures to share their ideas with their community members visually. Meggs & Purvis further

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argued that this earliest form of media production which was simply a representation of animals, simple lines of figures and paintings were a method safeguarding of knowledge, experiences and sharing such essential messages with community members.

Many experts believe that the drawings of the prehistoric man should not be taken as the beginning of art but rather should be perceived as an attempt by man to communicate cultural instructions, thoughts and feelings to fellow cultural members. For instance, Santoro (2014) mentioned that the paintings and drawings were visual communication production because they provided a solution to what cultural problems of what animals to hunt or to avoid. Hence, Santoro concluded that the form and content of the paintings were more than ornamented elements to decorate the space of the prehistoric man but instead were crafted and essential messages to ensure the survival of community members. Meggs & Purvis (2012) similarly takes this view by asserting that this is the beginning of communication because these markings were more than just drawings but somewhat functional and were crafted to ensure the survival of that ancient world. Further, Meggs & Purvis explained that the drawings were embedded with "ideas and concepts" and were structured to enhance understanding of cultural information (p.234).

Media production has been affected by the improvement in technology and changes in human communication needs. The invention of writing is seen as one of the earliest evidences of how media production can affect the way of life of a people. For example, Campbell et al., (2012) and Arntson (2007) noted this fact when they argued that the emergence, development of alphabet and systems of writing changed how messages were encoded and decoded. These new forms of communication

became a powerful tool for opinion leaders and the ruling class to control and share knowledge (Campbell et al., 2012; Arntson, 2007).

Additionally, Meggs & Purvis (2012) also noted that the invention of alphabet and writing helped people to "transmit information" (p.6) message, or communicate with ease. Hence, this new communication technology brought a "lustre of civilisation and made it possible to preserve ideas, public knowledge (Campbell et al., 2012 p.8). Later, the invention of printing technology in China around 1045 which was then improved by Johannes Gutenberg's in the 1400s facilitated the spread of information through books which are seen as replica and became the basis for modern-day mass media production (Meggs & Purvis, 2012; Campbell et al., 2012).

Next, the experiments, discoveries and inventions of the late 1700s and 1800s during the industrial revolution prepared the way for new advancements in the way media was produced and consumed. This paradigm shift from manual production of communication to technologically driven mass communication drastically changed cultural interactions and the exchange of values and norms. Campbell et al. (2012) explained that, because of the invention of mass production machines, information spread fast and helped in creating enlightened societies across Europe and other parts of the world than in previous years. While opinion leaders like monarchies, the clergy, kings and politicians tried to use communication to control and share information to maintain "the social order" to protect the interest (p.8) the improvement in communication technology also worked well to serve the interest of the masses. Hence, the development in sharing information and message instead empowered ordinary people to "resist traditional clerical authority" and project their thoughts and ideas which were contrary to their believes and ideologies of the masses (Campbell et al., 2012; Baran, 2013).

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Additionally, the invention of the telegraph pushed communication from a booked based media production to a new form of media production that is driven by electronic signals. This era is recognised as the beginning of mass media production (Campbell et al., 2012 p.7; Paxson, 2010). This new communication technology had a high impact on media production and consumption in four distinctive ways. First, it reduced the role of physical transportation of media messages from the communication process. It expanded the rapid feature of mass media production where people could have the live experience of consuming messages from a source. Secondly, the advent of the telegraph and the mass circulation of newspapers commenced the commercialisation of information and made access to news a "valuable product" (p.8). Thirdly, due to the rapid feature of communication, it was heavily deployed to serve the public interest, especially in military operations. It was also used to help commercial interest where business and corporations could sell services and product to prospective customers. This also led to the development of the advertising industry. Finally, the impact of the telegraph on communication prepared the ground for many of the mass media technologies like radio, fax machine and mobile telecommunications (Campbell et al., 2012).

By the late 20th century, the boom in film and television technologies and production, personal computers, cable and satellites television also affected how media was produced and consumed. Later, personal assisted devices like smartphones and portable computers have made the receiving and sharing of communication messages much more uncomplicated and challenging to control access to information (Campbell et al., 2012). Perhaps our times have seen the most excellent witness of how the impact of technology on communication can affect culture. In our new era of multimedia communication culture, the encoding and decoding of values and

ideologies to shape the feelings, perceptions and beliefs of societies have become much more straightforward, practical and cheaper. This new era which comes with advance in technologies allow both professionals and non-professionals to combine images, texts easily, and sounds and channels them through digital codes is gradually erasing the lines between traditional media production forms and practices.

Current changes in technology and human communication needs have changed the way media is produced. This has resulted in different media production to serve a different purpose like a commercial, entertainment and educational media production. Economic benefits motivated the use of commercial media production. Such productions may produce contents for advertising products or services. These may be disseminated through vehicles like radio, television, print media and web and mobile applications. While entertainment media productions may use similar vehicles for dissemination, its purpose is the entertainment audience for and may also have strong economic motivations. Educational media production refers to media content that is specially created to provide information or educate the public and or group people on a specific issue. The focus may not be to make economic gains, but improve public knowledge and motivate people to improve their health, acquire skills, and to persuade people to perform actions in the public interest.

The focus of this study focuses on media production for education through the use of video as a vehicle of communication during pregnancy schools sessions. The research seeks to highlight the issues of the experience surrounding media production for promoting maternal health nutrition and study the implications of media production decisions that were made during the production process by testing the efficacy of the produced video. The next session of this review now focuses attention

to concept mass media production and the processes that impact on the production of videos for health education which is the core of this study.

2.10   Mass Media and Communication Processes

Communication means the practice of encoding information through sounds, symbols, and actions to transmit the encoded messages to others to do the decoding or interpretation by assigning meaning to communication symbols (Paxson, 2010; Baran, 2013). The use of mass media has become a core fabric of our modern society. The advents of new technologies like the internet and innovative ways of mass media production have affected the way a group people communicate within the same culture. Cultures now heavily depend on the mass media to survive. Many experts have conceptualised the term mass media as technologies or media art form through which select, and organise messages are shared heterogeneous populations for entertainment, education or to inform. Campbell et al., (2012) gave the root definition of mass media by explaining that word media is translated from the Latin "medium" which connotes the mediating between two entities where elements are transferred from one point to another. Hence, Campbell et al., see mass media as a set of technologies through which specific messages are disseminated to a broad audience.

Similarly, Flora, Maibach, & Maccoby, (2002) and Littlejohn & Foss, (2009) explained that mass media refer to the use of technological channels to communicate information to a broad audience at different locations at the same time. Furthermore, mass media is seen as "outlets" through which organised and crafted messages are broadcast to reach a broad target audience. These outlets are television, radio, music, posters, billboards, films and videos, games, internet, websites, podcast, social media and phone apps (Maryon-Davis, 2012; Flora & Maibach, 1989) According to Campbell, Martin, & Fabos (2012), these outlets are "channels of communication"

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through which cultural producers create and share "cultural products" like news, television shows, games, advertising and other cultural products to cultural members to consume (p.6).

Other emerging definitions have also stressed the difference between mass media and other forms of communication is the distinct feature of the use technologies, For example, Baran & Davis, (2010) mentioned that the use technologies like films, newspaper, cable and satellites television networks, to send a message to a broad audience by communication professionals like filmmakers, videographers, news writers, designers in an organised communication institution makes mass media a powerful communication option. Turow (2009) supported this claim by arguing that mass media is the output of communication experts in an organised institution who marshal together communication messages like entertainment and educational contents and share them with a broad audience instantaneously through multiple technologies like newspaper, films, television and radios.

Mass media communication is seen more than just as means of broadcasting messages to a large population. It is seen as a means of constructing and sharing cultural beliefs and ideologies. According to Oyebamiji (2012) believe that mass media are "tools or instruments" for sharing persuasive messages to a broad audience. Dominick (1990) argued that mass media does not refer only to the mechanical and technological devices like television, cameras, radio, printing machines but also the organised social institutions with strategies, rules and production methodologies who deploy the use of technologies to spread information through television, radio, films, magazines, newspapers and music. Moreover, Hodkinson (2017) asserts that these mass media cultural products are ideological, and they carry messages aimed at

shaping the beliefs and perceptions of consumers. Hence, the purpose of such cultural commodities is more than entertainment. They are a cultural hub for the survival and development of a group of people

Their weakness, however, is that the audiences reached by mass media are diverse and mostly undifferentiated. Audience diversity is problematic in that, to be effective, media messages should be designed specifically for particular target audiences. The second type of media, targeted media, are named for their ability to reach specific target populations. These media include newsletters, booklets, self-help kits, videos, and computerised information systems. Although these media can be delivered to specific target audiences, thus allowing for tailored message design, they have a limited ability to reach large numbers of people (Flora & Maibach, 1989).

The process through which mass media technologies are for communicating goes through different and complex phases. Generally, it is agreed that the process starts with a source or sender which refer to an initiator of a message. This may range from an individual to a well-organised media institution. Next is the encoding stage. This is the process of selecting, organising and visualising the abstract ideas or concepts tangible and perceived communication elements into a message. Messages are an amalgamation of carefully selected communication elements that have been held and also becomes the "outcome of the encoding" process (Lunenburg, 2010 p.2; Turow, 2009).

Next is the transmission stage. This involves the sharing, distributing and exposing the message to an audience through a channel. Channels are the physical conduits through which mass media art forms are presented by messages senders and make it possible for receivers to have access to mass media messages. Example of these channels is radio, television, videos, films, the internet, books etc. Another

critical point in the process of communication is the receiver. The receiver represents the target audience who are expected to have access to a mass media message and act in the interest of the messages to fulfil the goals of the originator of the messages. At the decoding stage, the receiver of a mass media message attempts to make meaning from the received messages. Finally, in the communication process if the moment of feedback. This is when a receiver of a message makes rejoinder about the received messages to express is acceptance or rejection. (Campbell et al., 2012; Turow, 2009).

The process of communication is affected by noise which can happen at any stage of the communication process. Noise in the communication process is generally seen as a hindrance or a barricade between the sender and the receiver that makes it difficult for message delivery and understanding communication messages. (Campbell et al., 2012; Turow, 2009). Similarly, noise in the communication process are all elements, events and situations that can "disrupt" or "anything that distorts the message" and the free flow of intended meaning from a source to a receiver (Littlejohn & Foss, 2009 p.153; Lunenburg, 2010 p.3).

Noise in the communication process can be manifested in several forms. First, environmental noise refers to all blockades in the communication settings of both sender and receiver that makes it difficult for effective sending and receiving of communication message. Secondly, mechanical noise which refers to the hindrance from media technologies and forms that are used to send messages can also affect the communication process. Additionally, mechanical or channel noise may also refer to all alien and meaningless communication elements that make communication difficult due to channel problems like poorly recorded sound, blurred images, poor quality print and representation. Thirdly, semantic noise is communication elements like language, visuals and all visual representation techniques that make it difficult for the

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audience to understand communication messages. Furthermore, semantic noise also describes the situation where the receiver is unable to make meaning from the received message due to inaccuracy in the selection of communication symbols (Campbell et al., 2012; Turow, 2009). The final type of noise is the psychological noise which refers to both sender and receiver preferences that may create barriers to accurate interpretation of the meaning and primarily affect the integrity of a message. (Velentzas & Broni, 2014; Campbell et al., 2012; Turow, 2009) Generally, media scholars and practitioners have described three types of psychological noise. The first is selective exposure and explains when the audience accepts messages that align with their beliefs and views—selective perception when audience consumes media messages that they expect for a source. Finally, selective retention is when the audience choose to remember messages the align with their beliefs and values and disregards those that do not (Campbell et al., 2012; Turow, 2009). The impact of noise on communication is crucial. As noise increases its affect message integrity or the accuracy of the encoded messages compared to how the audience decodes it. Hence, the lesser the noise in the communication process, the higher the integrity which will, therefore, increase the accuracy of interpretation and meaning (Dominick, 1990).

According to Hodkinson (2017), Shannon and Weaver (1949) and Laswell (1948) are seen as the earliest examples of the linear models. Shannon and Weaver (1949) communication model though initially, was not developed to explain mass communication; the models have become influential in mass communication studies. The model represents a one-directional approach where a source initiates a message and sends through a transmitter and decoded by a receiver (as presented in figure 10.) The models also recognise mechanical noise which refers to barriers which might

inhibit the flow of message or distort the message, thereby making the receiver to decode different meanings from the source. Additionally, Shannon and Weaver (1949) technical communication process were further expounded by Lasweell (1948). His model gave a broader application to mass media communication which could be applied to all forms of communication. The models are known as "Who says what in what channel to whom with what effects" (see figure 11) This model describe the separate entities and process of mass media communication (Hodkinson, 2017 p. 74)
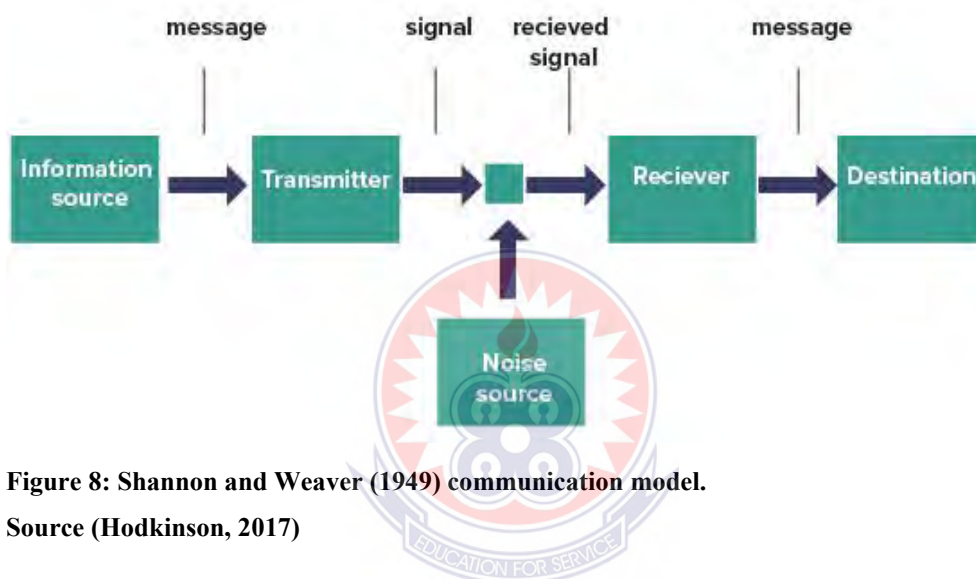
Figure 8: Shannon and Weaver (1949) communication model.
Source (Hodkinson, 2017)

Figure 9: Lasswell (1948) communication model.
Source (Hodkinson, 2017)

Despite the critical role the Shannon and Weaver (1949) and Lasswell (1948) communication models have played in identifying the essential processes of communication, the models have received notable criticism for "oversimplification" (p.) 7 of the communication process. First, some have mentioned that these models are based on the "postal metaphor" (p.7) where communication is seen as "highly

mechanistic and machine-like" (p.9) venture of delivering of a message from on point to another point without reference to the broader social context of communication (Hodkinson, 2017) Additionally, these models create the impression that the receiver is powerless. The sender of the message is more powerful who can just send anything and will have an automatic effect which resonates with the intention of the sender. Such an approach has its roots in hypodermic syringe approach of mass media communication. This approach like the linear model of communication neglect the - fact that audience is not just passive message consumers and the view that communication is seen as "a joint project between senders and receiver and audience negotiate media message to make meaning from which are often done by reference to "their existing identity and surroundings" (Hodkinson, 2017 p. 9). Previous section sections have reviewed the concepts of media production and mass media communication, which form the crag for this study. This chapter now narrows down to audiovisual media – the core subject for this study.

2.11 Audiovisual Media

Much of the available definitions of the term video suggest that video, television and film can mean the same concept. These concepts describe the sharing of audio and video signals through digital platforms. For example, Zittle (2010) defined that video refers to the disseminating of digital motion images through traditional television, digital platforms and other media forms like a documentary and multimedia contents. Musburger (2007) and Musburger & Kindem (2009), describe the same relation between television and video by defining that video is synonymous to the term television, and it represents the technological process of broadcasting and screening digital motion images in a sequence. Furthermore, they posited that video is

the by-product of effective and creative management of video technology and equipment to visualise a written story or programme for mass consumption.

The interchangeable use of the terms video, film and television could be alluded to improvement in production technologies and practice. Rea & Irving (2006) traced this genesis by stating that the technological marriage between audiovisual techniques concerning data storage and editing has resulted in the interchangeable use of the film as video hence, both film and video follows the same cinematic grammar and organizational principles. A summary of these viewpoints about the theorisation of the term video suggests that the term video is an offshoot of the technological changes in the film, television production and the novelty of internet.

While it is generally agreed that video is technologically oriented, much of the existing literature emphasized that video is a communication art form and its effectiveness thrives in the ability to harness audiovisual elements and cinematic principles to communicate messages creatively. For example, Rea & Irving (2006), describe the video as the pinnacle of the 20th-century artform because video borrows from literature, art, theatre, photography, dance, and music, painting, graphic design and even outside the architecture and design field into a unique art form. Rea & Irving further expressed video is more about art and communication rather than technology. Similarly, Zettle (2010) also argued that video is solely a tenet of artistic expression and it is a function of media production which deals with manipulation of communication elements like light and colour, space, time, motion, and sound to communicate a message. Hence, through video, is technologically driven, it is seen as more as artistic and communication form since it is the output of aesthetics composition, lighting, art direction, cinematography, animation and editing.

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Video production is the process of using audio-video visual technology to design and produce video content for mass consumption. While many of the existing definitions may agree with the above description, many of the current definition emphasized that video production is more than the operation audiovisual equipment. According to Rea & Irving (2006) and Millerson & Owens (2008) compared the video to television and explained that both are the same because they follow the same technological processes. However, Millerson & Owens emphasised that video production is a process of designing media content for personal consumption and sharing them through media devices.

Additionally, Musburger & Kindem (2009) posited that video production is a design process rather than the ability to operate media production equipment and tools because it is a process of creative manipulation, creative thinking to solve communication problems by making a sound decision regarding audiovisual elements likes sound and images. Furthermore, video production also is seen as a process of conceiving an idea, developing the plan into a message to meet communication objectives and representing the message through audiovisual practices and technologies and distributing the output to a defined audience (Zettle, 2010). Similarly, Harvey (2008) supported that the ability to operate video equipment is not a guarantee for compelling storytelling through the use of video form. Good video design is a product of well-crafted communication elements. Harvey, again, mentioned that no amount of sophisticated technology could fix the problem of poor aesthetic decision and composition during the three production process. Video production therefore is active creative process of leveraging the functions of audiovisual technologies to capture audio, motion pictures and prepare them for exhibition.

While much of the literature acknowledges the use technology, experts cautioned that communication and aesthetic consideration should direct communication concepts and the visual representation approach rather than over-emphasis on new technologies (Musburger & Kindem, 2009). The production process for video production has become more complicated even though there is advancement in technology. However, the director can harness the available technologies and options that will ensure effective video production (Musburger, 2010).

The communicative, aesthetic and technical approach to video production can be categorised into irrespective of the technological basis of video production. Millerson & Owens (2008) categorised all the functional and aesthetic approach into empirical and planned methods. The empirical method is based on the freestyle approach, where a filmmaker depends on his experience and creativity to create video content. In this approach, there is no definite script. The director films his idea around. During postproduction, a cohesive content is generated from the recorded scenes. In contrast to this style, the planned approach is based in a large organisation and coordinating of all activities from preproduction through to postproduction.

2.11.1 Video production and aesthetic philosophies

Musburger & Kindem (2009) also argued that video production could be described as realism, modernism or postmodernism. The realism philosophy is based on the Hollywood classical cinematic techniques and also rooted in the tradition of Imitationalism. The realism and imitationalism share the view that useful and functional artworks are judged by the realistic representation of social issues. Realism, for example, according to Rodeo (2003) maintains everyday experience in a "lifelike" manner to the audience without any subjective manipulation of the elements and principles of art. Hence, Rodeo further argued that realism or imitationalism must

meet the qualities real-life experiences and maintain the purity of the natural world, space and movement to be classified as a successful art form.

In the context video production, this style highlights the need to create and maintain the illusion of reality on screen by directing audience attention from the cinematic techniques to the elements and essence of the narrative. This is achieved through the use of natural space and time to reflect audience experiences and sense of temporal and spatial elements. The realism approach is motivated by the 'conventional editing of "matching a character's action over a cut from one shot to the next shot" (p.60). This helps in creating reality on screen from audience perspectives. To achieve reality on screen, designers must conform to the use of long shots, natural focus to mimic the natural look in real life. More importantly, the use of the natural angle of the eye-level degree view is conventions that must then be stylised or unaltered (Musburger & Kindem 2009; Wikipedia, 2020).

The concept of modernism takes a different approach from the traditions of realism. Modernism video production approach is described as an insurgency to the representation reality through 'familiar, recognizable, and comprehensible" (60) space, object and time, which are the tenet of the realism approach. It draws from the formalist art traditions. According to Hospers (2020), formalism takes a strong departure from the use of artistic works for social functions. Even though formalist accepts functional art; representation, symbolism and useful content, they believe that such an assumption is trivial and displacement of the purpose of artworks. For formalist, art is an art because it provides pleasure. This is done by emphasising on the selection of visual elements and their organisation according to the principle of design. Hence for the formalist artist, formal elements are essential than content. Unlike the realism style, modernism and formalist video approach thrive on the

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drawing of attention to video forms and techniques of representation to communicate to the audience. In other words, modernism or formalist video production approach directs audience attention to the use of shots, camera movements, subjective lighting, overt editing styles and sound effect that supports pleasure and disconnected from the content (Wikipedia, 2020). Despite these assumptions, the elements of the formalist or modernist approach can still be manipulated to communicate meanings. For example, modernist video production approach may explore the limitation of audiovisual styles and cinematic techniques in a more subjective context to emphasis on critical message elements. In these ways, familiar objects, space, time and events are represented through a subjective lens which is different from the typical experience (Musburger & Kindem, 2009).

The postmodernism form of video approach takes a departure from objective and subjective representation. It creates visual and cinematics forms by integrating multiple styles of artistic styles and techniques from the tradition of design history to communicate ideologies through the video form. The communicator does not control the production of meanings. The approach of the Postmodernism video production approach places the audience at the centre of interpretation where the viewer interacts with the communication elements and "reshape it into another form" to construct uncontrolled meanings (p.61) Video production projects can combine the three approaches and such decision does not follow any rule but rest in artist preferences. Similarly, to this approach is the emotionalism which contends that the quality of an artwork depends on its emotional connection of the viewer. According to Rodeo (2003), emotionalism theory places importance on selecting and organising artistic elements in a style that will evoke emotions from its audiences.

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Despite these production philosophies, many video productions rarely stick or adopts one style. For example, according to Musburger & Kindem (2009) and Rodeo (2003), it is commonplace to see a combination of two or more approach in one production. This suggests that video designers explore the strengths and weakness of each method and complement each other to construct a narrative art form. In the following review, the study will look at the video production process and audiovisual elements.

2.11.2 Video production design process
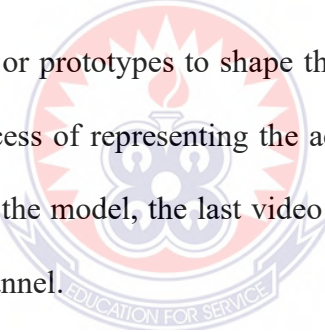
The design process for video production is the main activities that categorised video production as a design. The design process for video production has been developed into an art form due to many years of practices and expressions (Rea & Irving, 2006). Though the design process and approach may have some variation depending on context and available technology, much of the available literature state that efficient design process for video production follows concept and scriptwriting development, capturing scenes with a video camera and putting the captured scenes together to create a believable story (Musburger, 2010).

These three primary stages are an oversimplification of the significant process that produces video content. The process of ideation, scriptwriting, capturing of scenes, and editing involve other activities that can affect the effectiveness of a video as a communication design artform. There is a general agreement that these processes and their auxiliary activities can be grouped into three distinctive and yet dependent process. These are preproduction, production and post-production.

Video production is a multifaceted activity of aesthetically generating message ideas and turning them into persuasive audiovisual form through the use of cinematic techniques. The debate about the differences in the video design processes sits in the

director's preferences and approach. Hence available literature suggests a series of activities. For example, Zettle (2010) suggested the message process model, which is based on four unique events, as shown in figure 12. The first is the formulation of an idea, defining a clear objective and situating the concept within an angle. According to Zittle, this stage involves generating an idea and refining the design into a target which specifies the desired message effect on an audience.

Additionally, because production cannot deal with every aspect of an idea, the model posits that every product must be specific by approaching the production from a perspective rather than a general approach which might not be sufficient. The second stage in the model is the preproduction stage which involves to defining of all communication elements that needed for effective communication, analysed them and provide a previsualisation or prototypes to shape the effectiveness of the final video. The third stage is the process of representing the actual message into an audiovisual form. In the final stage of the model, the last video is made available to the audience through an appropriate channel.
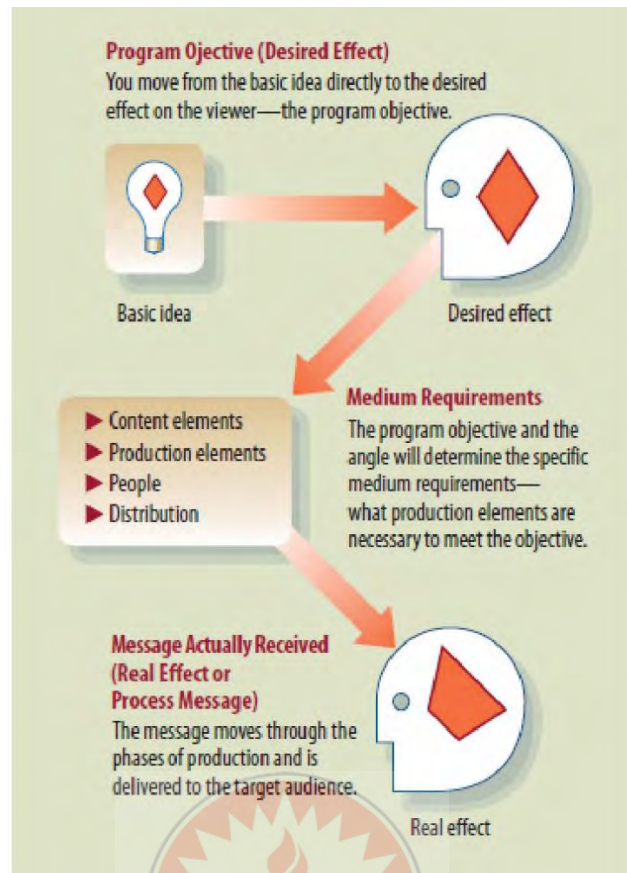
Figure 10 Video production model Source, Zittle (2010)

Despite the differences in the video production approaches and variations in technicalities, there is a consensus in the existing literature that suggests that the production process for video production can generally be categorised into three stages namely; preproduction, production and postproduction. Preproduction involves all activities that are done before the actual manipulation of audiovisual equipment to capture a designed scene. Preproduction activities may include ideation or conceptualisation, defining project objectives, subject research, scriptwriting and administrative duties. More importantly, it involves previsualization activities like storyboarding and animatics (Millerson & Owens, 2008). This stage is considered the most critical step and crucial in the video production process. For example, effective production is dependent on the quality and in-depth of the preproduction activities

which is done before several weeks and months before actual production (Hughes, 2012; Millerson & Owens, 2008)

The production stage is the process of creating a representation of the message objectives through the use of audio and visual communication elements. Much of the work at this stage involves the management of equipment, technical crew, directing of talents and calling for shots from the camera (Zettle, 2010; Millerson & Owens, 2008). According to Hughes (2012), the quality of the pre-production activities will be manifested at this stage. Practical and functional preproduction activities will eliminate much of the problem that is usually associated with production. Conversely, production will have many issues due to poor preproduction decisions.

Postproduction stage is considered as the most critical and demanding stage that can take a lot of time (Hughes, 2012). It involves the collection all recorded footages and organising them for editing. The actual postproduction involves the meticulous process of reviewing all shots and selecting appropriate shots that will communicate the objectives of the production effectively. Next, the shots are aesthetically arranged into a cohesive story. Furthermore, this stage will also include the designing of music and sound to reinforce the visual message. Other activities at this stage may consist of the designing of motion graphics elements and animation to explain ideas and concepts that could be captured with the video camera and making the designed video accessible to an audience (Zettle, 2010; Millerson & Owens, 2008). While the video production process has been divided into three phases, the activities in all the steps revolve around generating the message and using audiovisual communication elements to communicate the message. The next stage of this section now considers the communication elements that can be deployed for effective communication

2.11.3 Elements of audiovisual communication and the production of meaning

Video production is an output of the technological novelty in film production. Hence video production communication elements and practices are rooted in filmmaking. Cinematic forms include all elements that are used to create reality on the screen. These cinematic elements are, lighting camera angle and movements, shot size, framing, focus /depth-of-field and narrative (Crook & Beare 2016; Krasner, 2008).

Narrative/Story. The narrative in the context of the video is how a story is arranged, structured and developed on-screen. It is the most crucial and overt elements of any video form. The narrative is how events and actions unfold through cinematic time and space to time. According to Bordwell, Thompson, & Smith, (2016), story or storyline is the sequence of related events and actions within time and space. It starts with a situation. Then it develops into other issues due to consequences of action and decisions which finally ends in a desirable or undesirable end and often creates a relationship between characters, narrative settings and context (Bordwell et al., 2016). Narrative, therefore, describes the focus a video form and how that focus is developed. It thrives on time settings, the nature and actions of characters. Additionally, the situations in that motivate characters actions is an essential factor in video narrative.

Mise-en-Scene. This film technique describes how visual elements like scenery, props, characters movements and actions are placed and orchestrated within a scene in video production. The word mise-en-scene is a French word which means "putting into the scene," also explains how video designers arranged how visual elements are placed within a video shot (Bordwell et al., 2016). The technique of designing the visual placement of object and characters within a video frame is a

powerful communication technique that is used to influence audience perception and to orient them into a world by indicating of time, setting and mood (Rabiger, 2008; Bordwell et al., 2016). Hence, the relationship between the arrangements of objects, characters and other visual elements all works to create effective communication.

Mise-en-Scene affects every visual element of the video form. Existing literature suggests that mise-en-scene control all visual elements like costumes and makeup, lighting, staging setting of a video form. The setting of video denotes the space in which a narrative is situated and unfolds. This could refer to a town, a city, school, room, office etc. In many commercial productions, these settings are designed and constructed. This is deliberately done by specialised production designers to allow the maximum control over the element in the settings in other to represent the imaginary setting of the narrative visually. Costume and makeup are referred to what dress characters wear concerning the role they play. Makeup, on the other hand, is the physical elements that are used to create and transform characters to fit into their role, such as a nurse, teacher, engineer etc. While most customer and makeup are manually constructed before production, current digital video techniques allow designers to use digital tools to enhance or recreate new costumes and makeup for characters. The synergy between the costume and makeup of a character helps to create a connection between the audience (Rabiger, 2008; Bordwell et al., 2016).

Video lighting is another critical component of the technique of mise-en-scene. Light is a range of "electromagnetic radiation the stimulates" our eyes and makes it possible to perceive colour (Gloman & Letourneau, 2013 p.1) Lighting in film or video is the quality visibility of objects or characters in a film. It refers to all light sources, both artificial and natural, to achieve some aesthetic or practical effect while illuminating a scene. Lighting is more than a visual element that facilitates the

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visibility of items within a scene. It used by video designers to communicate mood, time, feelings and to direct attention to salient areas within a scene or a frame (Bordwell et al., 2016). Lighting is one of the most imperative parts of the visual narrating element in cinematography and sometimes serves as the basis on which a film narrative thrives. Lighting shapes a shot's general arrangement and alters our perception and feelings of objects and characters within a shot (Adenugba, 2007). Again, Lighting can be varied to establish different effects. Krasner (2008) explains the communicative possibilities of lighting in the context misce-en scene by noting that that low key light can be used to dull modes, thereby creating fear, suspense and drama. In contrast, high essential lighting is used to create a clear list of objects by eliminating shadow. Furthermore, Millerson & Owens (2008) the misce- en-scene elements of lightning is a powerfully communicative element because designers can use quality of light to direct attention and forced the audience to pay attention to a particular part in a scene.

Furthermore, the lighting colour, tone and contrast of a film or video are visual aesthetic properties that influence how the audience feels about a shot which eventually can affect how a motion picture is used as a visual communication genre. Tonal refers to the range of values between dark and light. Additionally, it is the level and link between dark and light values of an image or motion picture (Bordwell et al., 2016; Krasner 2008). Contrast, on the other hand, alludes particularly to the proportion of dim to light values of a motion picture. These filmic properties can add meaning to the overall picture and can change how a film is perceived (Nyarko & deGraft 2015).

Additionally, the properties of tone and contrast give form to the various objects of a lighted scene or an image which help in the communicative elements of images (Bordwell et al., 2016)) For instance, according to Krasner (2008), motion graphic designers and filmmakers often take advantage of low-key lighting, texture to create high contrast films to communicate fear which are most popular in horror films. Krasner further noted that this technique was used in health education video to convey the seriousness of safe sex. (See figure) On the other hand, to create naturalistic lighting, which is usually used in drama, comedies, and advertising filmmakers' resort to low contrast to give impetus to the narrative.

Cinematography, camera shot size refers to how many views of an object or a character is shown to the audience on a screen. It framed by the four parts of the screen. The closer the framing of an object or character, the more important that shot is to the narrative. The further away an object is from the four frames of the screen, the less relevant the shot is to the story. Motion graphic design makes use of shot sizes to convey different meanings. These are close shot, medium shot, full shot, long shot, extreme close-up an extreme long shot. Camera angles refer to the orientation of a shot to the viewer. There are low angle shots, and high angle shot and other variations like the bird's eye shots. According to (Bordwell et al., 2016) camera angle and shot size control, how much scene is presented to audiences and how the elements within a shot are perceived. Therefore, altering the camera's angle with shot sizes can affect the appearance and meaning and directs audiences' point of view. For instance, a bird's-eye view shot is shot taken above a city and provides a mid-flight perspective scene objects and characters. These shot, according to (Bordwell et al., 2016) create a psychological feeling of looking over a subject.

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Additionally, high camera angles reduce the importance of objects or characters evoking the feeling of weakness, harmless and vulnerability. Frontal angles tend to flatten three-dimensionality, while three-quarter or profile angles reveal a greater degree of depth. Furthermore, the use of a low angle shot exaggerate a character or subjects and create the impression of height and inspire awe or excitement, making subjects appear more significant, more energetic, or (Krasner, 2008). The shot size determines the view of a scene. Shot sizes such long shots, close shots, medium shots, over-the-shoulder shots and close-up shots are employed in filmmaking to create an interaction between audiences and characters and objects in a film. For instance, (Bordwell et al., 2016)postulates that long shot portrays a subject from a lesser distance to establish its world which also suggests how far the subject is from the world of the viewer. Medium and medium–wide shots are often used to frame two and to present their immediate world to audiences. The range of close-up shot is used to get subjects and object closer to audiences. Camera angle and shot are aesthetic elements that affect the way shots are perceived.

Editing: Film or video is the artistic process of selection and organising shots into a sequence to tell a story. Available literature sees editing as both communication and creative process of arranging shots together. Thompson & Bowen (2009) explained that video or film edition is a postproduction process and it involves four primary stages which are "selecting, organizing, reviewing, and assembling" together captured motion picture with sound to communicate a message. Thompson & Bowen further posit that the result of these processes is not just for artistic expression, but more importantly, it must support the goals of visual communication. Similarly, (Bordwell et al., 2016) expressed the renowned filmmaker Dziga Vertov to argued that video or film editing is the process of accurate shots to script a communication

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message, or a story through the process of synchronization varieties shots or linking shots, scenes or sequences utilizing editing techniques. Hence film editing is an essential part of the postproduction process that determines how visuals are constructed to reflect the goals on an audiovisual communication genre

The purpose film editing is to construct meaning through the organisation Millerson & Owens (2008) mentioned the purpose and its roles by stating that the focus of editing is assembly together different shots in a specified order to enhance communication. Again, it is also the focus of editing making adjustments to shots to remove or limit all elements in the shots. These sequences might not support effective visual and audio communication. More importantly, during the editing stage, it required that editors bring other elements that can facilitate the process of communication. These elements might include other visual and audio elements that were not shot on location but are essential to reinforce communication. According to (Bordwell et al., 2016) these elements and the basis for their integration is determined by cultural factors like goals and key messages of communication, audience factors and characteristics and finally the style and technique of presentation. Editing as a film is seen as a visual language that has its own set of language, grammar and rules that must be used to write a valid communication message. The way these visual grammar are used affects how an audiovisual message is perceived and received by the audience (Thompson & Bowen 2009; Kranser, 2008). Four visual languages affect communication. These are cut, dissolve, wipe, and fade.

A cut is the most common technique for joining shots together to communicate a message. It is the sudden change from one shot to another shot with different characteristics or elements. Additionally, it describes the changes in time, location images, space, form and actions between two-shot that is adjacent to each

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other, which create can create both psychological and emotional impact an audience. Different types of cut are used to support visual communication. Crosscutting allows visual communicators to create the feel of an event happening at the same time by cutting between several related shots and actions at the same or different location or that occur at the same time to keep viewers informed of two or more events. Parallel editing involves crosscutting between two various shots of activities to communicate the idea of unlimited space and time in the mind of the viewer. Also, this visual language is used to draw the audience into the visual world of the character. Other types of cut are the cutaway and jump cut. Cutaway allows the viewer to see different things that are happening around them in the visual world of screen characters. Similarly, to cutaways, jump cut can be used to create suffering, discomfort, feeling of anxiety through the sudden and unusual change of shot with same contextual elements (Thompson & Bowen 2009; Kranser, 2008).

Dissolve is the gradual changes that occurred between the end of a real shot and the beginning of an incoming shot through the superimposition. This change is done through the softening of the edges of the two-overlapping shot. This is used to communicate the audience changes and passage of time and helps in continuity and directing audience attention through screen time. Different levels of dissolves can give different meanings. For instance, slow dissolves are used to show the passage of a long time, and a quick dissolve may give the impression a brief time. Fades are used to cue the audience on the beginning and end of a story. Finally, wipe is a change from one shot to another by a visible line that drags a shot from screen to make away for another shot (Thompson & Bowen 2009; Kranser, 2008). While these four techniques have remained the basic visual grammar for editing, other forms of methods have emerged as a result of changes in technology and visual experiments.

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Hence, apart from these visual languages, many other techniques are used by video editors to communicate a message through video or film (Kindem & Musburger, 2001).

Compositing: Compositing has become an important film for and practices for facilitating visual communication. It is the process of creating a reality in various visual elements that have been combined into a scene for communication. Kranser (2008) explained this further by stating that compositing the communicative technique and process of creating visual cohesion between different visual elements into a uniform, and flawlessly whole. This helps visual communicators to create a world that cannot be done with the video camera

Sound: Sound for video or animation is an important communication element. It describes all the distinct elements that are used by communicators to convey a clear message to an audience. It is the organised and assembled "aural experience" that gives direction to a story of motion graphic videos, animation, documentary, television commercial or television show Sound is used to support the narrative, tell a story directly or indirect, it can also be used to direct the audience where to concentrate on a film or video (Holman, 2002 p.237).

There are three types of sound that are used in video communication that can reinforce a message. These are music, sound effects, narration and dialogue. Music is used as a tool to attract audience attention and to direct their mood to reinforce the meaning of the pictures on the screen. A sound effect is an incidental sound that is important to make a scene or an action more believable. This type of sound help in defining personalities of character, object and action Voice over is sound that is used as an expert, authoritative source or sometimes as an aid to explain activities, process

and concept that might be happening on screen or the to give direction to the audience (Santoro, 2014).

Sound as an element in video design is an essential element in film media production. Somenschen (2001) explained the general role of sound as a powerful communication element by arguing that, sound induces strength, myth, suspense, reality, feeling and emotion into a motion picture which helps in reinforcing the message of the narrative. Sound gives audience clues of happening, about happen within the screen, thereby providing impetus to the storyline. Sound can be crafted to create different meanings and impact using the same motion picture. A sound is a tool for absorbing the audience into the world of characters, making them believable. Sound support in maintaining continuity of story which key to film media (Somenschen, 2001). Additionally, the sound is also seen as having semiotic values that can be used to express specific meanings to the audience. Santoro (2014) supports that sound in film, animation or web design is a flexible tool that allows designers to attached meanings to emphasise cultural elements in a story or a design work.

The video form has been developed into different genres which make it difficult to classify them. There are different types of video, and each type can be classified based on the content, technique and style of production and the purpose. The most popular ones are music video, film and TV production, commercials video, web commercials, corporate videos, product videos, demonstrative video testimonial videos, marketing videos, event videos, wedding videos etc. (Musburger & Kindem, 2009; Wikipedia, 2020). Despite these classifications, there is a general agreement that video can be categorised into four genres. These are commercial, news or informational videos, entertainment and educational videos. The commercial video refers to video that is designed and produced to promote a product or services. Its

focus is to persuade the audience through cinematic elements for the audience to purchase a product. News videos are short news stories that are created to give a visual narrative to television news and report (Musburger, 2007). Entertainment videos are designed to provide some level of entertainment to the audience. Educational video is a broad term that describes all videos designed with specific objectives of transferring knowledge to specified learners. In most instances, an educational video may take the form of many other video genres (Cartwright & Cartwright, 1999; Millerson & Owens, 2008; Musburger, 2007; Musburger & Kindem, 2009).

2.12   Importance of Media Artforms and Health Education

The mass media has always been seen as "are awareness-creating tools and can increase awareness quickly and effectively" (Catalan-Matamoros, 2012, p.1). This belief has had a long history, and various mass media artforms have used exploited in an attempt to support health education. Fox, (2009) stated that in 1928 the Moscow Institute for Health Education in the Soviet Union extensively used posters as a social" advertising strategy to attract interest and to motivate behaviour change" using both logos and ethos appeals (as shown through figure 6 -9)

Figure 11: A Soviet Union Poster on smallpox. Source: Fox (2009)

Figure 12: A Soviet Union Posters on persuading mothers on the importance of breastfeeding.

Source: Fox (2009)

Figure 13 A Soviet Union Posters on feeding baby effectively.

Source: Fox (2009)

Fox again, explained that posters were used to promote public health issues like cleanliness, new-borns and child health care, smoking, and drunkenness throughout the Soviet Union.

Figure 14 A Soviet Union Poster on educating
The public on the dangers of alcohol Source: Fox (2009)

Fox's claims were also supported by Maryon-Davis (2012). The latter asserted that as early as the Victorian Advertising era in the late 17th century, there was evidence of health promotion in newspapers on various public health issues personal hygiene. After World War I, posters were used in warning the public about the venereal disease. By the mid-20th century, the use of radio and television programmes has become a popular means of public health education in many countries. For instance, radio programmes from the British Broadcasting Corporation were used to echo the need for families to do vegetable farming to support their feed themselves.

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Additionally, television news and radio were used to appeal to policymakers to laws to reduce smoking among the British people. In Africa, the famous 'Makgabaneng' radio drama in Botswana become the preferred way of educating people on HIV/AIDS prevention education (Maryon-Davis, 2012).

The use of visual communication for health education media can be grouped into three main categories—print media, outdoor and digital media. Print media refer to all non-dynamic media art forms that are defined by width and height and can be perceived not only by sight but also through touch (Berry 2017; Glanz, Rimer, & K. Viswanath 2008). Examples are posters, leaflets, flyers, brochures, flip charts. These set of media are considered as the oldest forms of mass media as a long history in the shaping of culture. Digital media refer to dynamic media content that is encoded and decoded through electronic and digital signals. They are television, film, videos, radio and internet and mobile communication apps. The third category is outdoor media which refer massive forms of print and digital media that a display mostly on billboards, display van, signboards etc. (Campbell et al., 2012; Orbe, 2010 Meulemann & Hagenah, 2009). In health education print media like posters, leaflets, flyers, brochures, flip charts and audiovisual forms like films, animation, video documentaries the most popular types of mass media that are used to share messages to a larger population (Catalan-Matamoros, 2012; Campbell et al., 2012; Orbe, 2010 Kumar & Anderson, 2015; Kumar et al., 2015).

The form, content and their purpose make them different from commercial mass media artforms. According to Elliott's (1987) as quoted by Catalan-Matamoros (2012), health educational media are mixed from commercials mass media both in their objective and production process. According to Elliott, the focus of commercial media is not to encourage the audience to reject bad behaviours and adopt a healthy

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one. Again, commercial media are seen as an elaborated and artificially crafted message that fuels materialism making them more appealing to people.

In recent times, socio-cultural activities and social disparities have deepened the importance of health education and promotion. In response to this public health burden, the use of mass media artform for health promotion has become familiar and critical public health education strategy that attracts substantial federal funds. Several reasons have been given to explain the surge in the use of mass media artforms for health promotion. According to de Jesus, (2013) there is a new paradigm shift where the emphasis is placed on a more active patient rather than a passive patient, hence the use of mass media for health promotion and education is an essential tool through which health care experts can make active emphasis patients who are empowered to prevent illness. Further, de Jesus also pointed out that problems relating to health disparities, vulnerable members of the society, low health literacy can be managed with mass media health education and promotion (Jesus, 2013).

Similarly, Flora & Maibach (1989), explained one of the significant public health problems why mass media health messages are essential. Flora & Maibach stated that the reason for the surge in the use of visual communication artforms by public health institutions could be attributed to the need to alter behaviour and lifestyles of patients because "health behaviour is a primary concern" (p.14) due to its immense impact on heart diseases, cancer, AIDS, alcohol abuse, and deaths. Given this, de Jesus, again argued that mass media for health education and promotion don't only help in generating high health awareness. Still, it also has the potential of changing passive audience to an active audience who enthusiastically consume health information to improve the health of their families and their community.

In addition to socio-cultural disparities and behavioural problems, improvements in mass media channels and art forms have made communication cost-effective and efficient compared to other educational strategies. For example, Quattrin, Filiputti & Brusaferro (2015), asserted that the combination of text, images, video, animation and media artforms through mass media channels had become the most promising way of disseminating health education to create an impact on knowledge, attitudes, and behaviour. Similarly, Maryon-Davis (2012), argued that internet technology, data-streaming, social media, and digital device and personal gadgets had simplified the way health messages can be broadcast to the general public at a reasonable cost. Thus, the paradigm shift from passive patient to an active patient, socio-cultural problems and disparities are some reasons for the use of mass media for health education. Again, novelties in mass media channels technologies also explain why public health stakeholders have keenly turned to mass media to exploit its influencing power to deal with public health issues that are beyond conventional medical practices.

The use of visual communication artforms for health promotion and education is categorised based on how they are used. According to Flora & Maibach (1989), the use of media for health education and promotion can be classified into two. First, the traditional mass media were health information is disseminated to a large population through main brochures, videos, booklets, posters television, news, radio, etc. Additionally, further classification can be done based on the target audience, which affects how such media artforms are constructed to appeal to the ultimate audience. For instance, Catalan-Matamoros (2012) expressed this trend by stating that mass media can be directed to the general public or specific audience within a larger with

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the ultimate goal of increasing people knowledge and creating consciousness about threatening public health issues.

The second is called targeted media because media content is crafted and presented to a narrowed audience hence "allowing for tailored message design". Flora & Maibach further explained that these two are almost the same depending on the context in which they are applied because both can be used to "narrowcast" reach a specific audience (p.9) Secondly, mass media can be targeted at policymakers and other stakeholders who deal with the target audience to improve health promotion policies and interventions.

Further classification of mass media in health promotion can also be seen based on their functions. Flora & Maibach, (1989) and Maryon-Davis, (2012) stated that mass media functions as an instrument for direct education when mass media is used as a sole source of education or when it is combined with interpersonal communication to promote public health goals. Secondly, mass media can function as a supporter. This function occurs when media contents are crafted to reinforce positive health behaviour, strengthen current health campaigns, and encourage the target audience to maintain their positive attitudes and to keep the public informed on specific public health. Thirdly, when mass media is in the form of Public service announcements (PSAs) and are used to support changes that have occurred among the target audience and stakeholders this mass media in this context becomes supplementary media artform according to Flora & Maibach.

Generally, mass media artforms are deployed in health promotion through conspicuous and inconspicuous way to achieve specific goals depending on the target audience. For example, Wakefield et al., (2010) suggested that many message designers used the conspicuous approach when they craft health messages to change

the behaviour of targeted populations by directly and overtly appealing to "cognitive or emotional responses" (p. 3). The focus of such approach reduces barriers and strengthen motivations of the target audience to deal with socio-cultural practices and to "affect decision-making processes at the individual level", to people to adopt healthy lifestyles (p. 23). Secondly, the inconspicuous approach is when the form and content of mass media art forms are used to set an agenda on specific public health issues for the audience to talk and debate about the subject. Similarly, Wakefield, Loken, & Hornik, (2010), also mentioned that attitudes and behaviours of the broad national audience could positively be altered through mass media campaigns in a subtle or blatant approach depending on the kind of audience, the health issue and the available channel.

According to Flora & Maibach (1989), to achieve the goals of using visual communication artforms to promote health education, audiences must go through three stages. First, the audience must be exposed to the message. Secondly, the audience must attend to the message by reading and finally, the audience must be able to recall the messages. Flora & Maibach further explained that knowledge gains are seen as a prerequisite to changing attitudes, and the beginning of behavioural change depends on knowledge gain because it can affect understanding and the application of recommended behaviour. Hence, when" messages are not constructed to capture attention and present information clearly" for the audience to go through the three stages, educational efforts may fail to yield the desired results (Flora & Maibach (1989 p.23).

Despite the advantages of using mass media and visual communication artforms to support health education, some available literature has raised issues regarding the efficacy and in some cases has even pointed to some drawbacks. For

instance, there are some concerns that due to its ability to reach a broader audience usually the focus remains of the larger audience and as such less attention is given to tailoring messages to minorities who are mostly the disadvantage (Maryon-Davis, 2012). This concern is also confirmed by Flora & Maibach (1989, p. 46). They mention that the heterogeneous nature of mass media can sometimes be a weakness because "audiences reached by mass media are diverse and largely undifferentiated" and as such, others like low literate, illiterate, children and aged population are left in the lurch. Additionally, their study has argued that praise about the efficacy of visual communication design artforms and other mass media vehicles have been too general and less specific artforms.

Other drawbacks of using mass media artforms to support health education and promotion stem from competitive media channels, message exposure limitations and design factors. Maryon-Davis, (2012), explained this further by stating that there are too many media channels like newspapers, magazines, radio and television programmes, websites and blogs, newsfeeds and podcasts, phone apps, texts and tweets that distract audience attention to other issues like fashion, celebrities and others. Given this, Marion-Davis further argued that this craving for attention makes it difficult to "harnessing the power of this kaleidoscope to promote health" among the broader population. (p.7). Similarly, Wakefield et al., (2010) and Catalan-Matamoros, 2012) state that success of mass media campaigns can be limited by Social apathy and customs, strong commercial marketing and advertising of products pervasive product marketing that do not support health promotion.

Besides the challenge of competitive media channels, social norm and pervasive marketing, other factors like the production and consumption factors may limit the effectiveness of mass media health promotion. First, commercial advertising

has become more attractive in both form and content, and it promotes unhealthy lifestyles that are easy to imitate than mass media health messages which are already unpopular with the target audience. Secondly, low reception due to inappropriate communication elements, confusing codes, and culturally inappropriate to the target audience could also affect the effectiveness of messages (Jansen, 2017 p.9).

2.13   Mass Media Artforms and Women's Health Promotion

Available literature indicates the different media artforms like videos and animated video, television shows, posters, leaflets, brochures charts etc., are used in the effort to improve women health, and this has produced several positive results. For example, Alcalay, Ghee, & Scrimshaw, (1993) found that in Mexica a poster, a calendar, brochure, and two radio songs were very useful in educating pregnant women on essentials maternal health messages. Another study conducted in Tanzania by Jato et al., (2006) on the impact of artform like posters, leaflets, radio show and drama on the intention to use family planning services. The study reported that there is a strong relationship between the amount of exposure and the intention to use family planning services in Tanzania. Based on these results, Jato et al. suggested that multiple uses of media art forms on the same health topic are productive because they support each other and help in strengthening intentions and motivations to perform recommended behaviours on family planning

Other studies like Oyebode & Unuabonah, (2013) concluded from his studies on the communicative impact posters in of HIV/AIDS messages that the posters were useful in instructing, beckoning, advising, encouraging, warning and informing the target audience. Bajoga, Atagame, & Okigbo, (2015) found that radio; television and mobile apps were effective in disseminating health messages to the audience in urban Nigeria. Imohe et al. (2016) also claimed that locally branded packaging and effective

logo design were effective in encouraging the use of vitamins and minerals for food young children. Again, Vieth, Woodrow, Murphy-Goodridge, O'Neil, & Roebothan (2016) concluded from their studies that the use posters were instrumental in promoting awareness on the advantages of breastfeeding in rural communities of Newfoundland and Labrador in Canada.

Moreover, In Malawi, Zamawe, Banda, & Dube (2016) for example, concluded from a study which sought discover the impact of mass media artforms like prints and audiovisual on the use maternal of health care services in rural Malawi that, when pregnant women are exposed to indigenous mass media health messages it can motivate them to seek maternal health care and also help in reducing maternal morbidity and mortality. Zamawe, Banda, & Dube (2016), therefore suggested that public health education strategies should pay attention to culturally appropriate mass media artforms for maternal health education.

While some available studies have mentioned that mass media is effective in health education, some few studies have discounted or doubted its impact on motivating and changing behaviour. For example, Agha & van Rossem (2006) study about the influence of media artforms on chances of women to use female condom in Tanzania is in contrast to widespread evidence. The premise of the study was that available information on the effectiveness of specific mass media artforms on the intentions to use family planning services is scanty and need more studies to understand how particular media artforms can facilitate health education. Other studies have reported that the use of audiovisual messages needs more research attention to confirm its effectiveness. Ifeoluwa & Olusegun (2015) examined the relationship between health television programs in the form of dramas and soap operas and their impact on the health of pregnant and newly new mothers in Badagry

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and Ikenne in Lagos and Ogun States in Nigeria. The study revealed that television media did not have an impressive impact on the study population due to inadequate exposure of the television programs that aired the health messages. Though the study reported that there was increased in maternal health knowledge due to television programs, Ifeoluwa & Olusegun recommended further study on the edutainment approach to maternal health education to establish more fully its impact on health education.

Mass media channels have become a pivotal approach to sharing health information in Ghana. Over the years, Ghanaians have been exposed to many health educations messages through various mass media artforms. Poster, leaflets, flip charts, brochures and billboards are the popular print media. Additionally, audiovisual art forms like videos and television drama and shows have been a key communication strategy for public health stakeholders. In recent times, the novelty of internet and mobile applications and technology like Motech have given options to the channels of disseminating health messages in Ghana (USAID 2016; Sokey, 2016)

Reports on the use and impact of mass media health promotion in Ghana have not been a one-way trend. A combination of mass media with interpersonal communication has proven to be a good option than mass media artforms alone in some reports. For instance, (Prilutski, 2010), studied the effectiveness of health communication strategies and focused the Stop TB, Integrated Child's Health and Life Choices health campaigns in Ghana. The study reported that through mass media had an impact on the life choice campaign in Ghana, the combination of interpersonal and mass media communications achieved better results than mass media alone campaign. Prilutsk cited the Integrated Health Campaign in Ghana as the most successful due to the approach of using interpersonal and mass media artforms.

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Further, Prilutsk mentioned that poor exposure as the reason why television, radio, posters and billboards were not too impressive compared to the community and interpersonal approach in the Stop TB campaign, Integrated Child's Health campaign and Life Choices health campaigns. The study there concluded that interpersonal and community health education is the best option in health communication in Ghana.

In contrast to these reports, some studies contend that the use of mass media artforms in Ghana have been an effective way of altering behaviours towards healthy living due to its impact on the audience. Olaleye & Bankole (1994), for example, noted that mass media is useful for promoting changes. The study focused on the impact of using mass media artforms to encourage family planning on contraceptive lifestyles of married Ghanaian women. The study reported that women who have access to broadcast media and those who were exposed to the messages through television and other media channels showed interest and the intention of adopting the recommended message of the media messages to use contraceptives. Again, Olaleye & Bankole mentioned that in reinforcing changes in behaviour through the use of mass media art forms, the content of the designed messages should be well structured during the production stage and there must be continuousness to ensure the desired outcome. Finally, Olaleye & Bankole recommended that more study on content production and exposure of such media artforms in Ghana.

For example, Scott, Schmidt, Aunger, Garbrah-Aidoo, & Animashaun (2008) studied the impact of the "Hohoro Wonsa" campaign in Ghana. The study concluded that audiovisual media, in addition to print materials such as posters, billboards, and stickers in the context of hygiene promotion, were much successful than community events. Another campaign that used audiovisual media artforms to promote maternal

health and other public health issues is the "GoodLife Live it Well" campaign which was first launched in 2010 and relaunched in 2016 (Compass, 2016).

Another empirical study that confirmed Olaleye & Bankole (1994) is the "Good Life, Live It Well" integrated media campaign that used several media channels like television, radio, social media and print materials to promote healthy behaviours among Ghanaians (USAID, 2016). The campaign took a positive approach to communicate good public health messages to Ghanaians. A key feature of the campaign was the taught provoking questions "What is Your Good Life?" This rhetorical question sparked national interest in health and happy living among Ghanaians. The campaign took a persuasive approach to engage the audience through new mass media art forms like television, posters, videos, television game shows and print media like posters and magazines and flipcharts. The campaign focused on themes like family planning, malaria, maternal and child health, nutrition, water and sanitation and HIV. In total, more than 129 media artforms were designed mainly in English and eight Ghanaian languages. The objective of the campaign was to integrate the GoodLife concept with popular mass media channel is Ghana to promote healthy living in Ghana. (Compass, 2016; USAID, 2016)

Though there are diverging views about the impact of mass media health education on behaviour and attitudes in Ghana, available literature gives more credence to the belief that mass media can achieve a measure of success if supported by other activities. The following section review focuses specifically on the use of videos and related art forms in promoting maternal health. The analysis first looks at global reports on the use of videos for maternal health. Finally, empirical studies and reports on Ghana are also reviewed.

2.14   The Use of Audiovisual Media for Health Education

The use of video for health education has attracted copious research from different facets of the health discipline. Existing works suggest the use of video in the context of health education is very useful even though much of the current literature has focused on post-production testing based on the linear media effect model. For example, Wang et al., (2015) study of animated videos in the context of cancer education was motivated by the exiting problem of lack clear understanding of prostate cancer issues and medical terminologies among patient, particularly in disadvantaged populations. The study, therefore, developed animated videos and other multimedia contents to explore their application in education can improve patients understanding of prostate health cancer terminologies. Findings from the study indicated that the deployment of the videos helped in improving the patient's knowledge. The conclusion from the study was that the integration of video as an educational tool is an effective method for the problem lack understanding of prostate health issues and lexicon among the audience who were exposed to the videos.

Similarly, Bello-Bravo, Zakari, Baoua, & Pittendrigh (2019) the study on the use of animated educational video measured the sharing of knowledge using animated video to educate farmers in rural Niger who experience crop losses due to insects. To address the educational gap, the study developed a culturally appropriate animated video on food security and insect management. A comparative study of pre-test and post-test knowledge of the videos in watched alone seeing or watched and discussion with educator showed significant improvement in knowledge about insect management among the farmers.

Other studies on the use of videos for health education have focused on the impact of the combination of different multimedia contents. For instance, Wahyuningsih & Rizky (2019) study focused on the combination of slide shows and videos to improve the audience knowledge level of knowledge about breast care among primary students. The research stems from the problem that there are high cases of breast cancer due to low awareness about cancer. Using pre-experimental and separate three pre-test and post-test selected groups, the study concluded that there was a significant increase in knowledge and change in perceptions about breast cancer. The study, therefore, recommended that a combination of multimedia content for promoting breast cancer education is effective.

Studies that use germane video forms have focused on the impact integration of video education into clinical education and take-home video education. For example, Gadler, Crist, Brandstein, & Schneider (2016) problematised that despite all pre-surgical counselling for a patient undergoing prostate cancer surgery to alleviate patients fears and anxieties, the problem of lack of knowledge about surgical procedures persists among patient causing fear and anxiety. The study, therefore, designed an educational video and shared to the patient for viewing in their own homes. The study confirmed that take-home video style of education was effective because patients who watched the video during the testing period knowledge about the surgical procedures increased, leading to a reduction in pre-surgical anxieties. On the other hand, Correnti, Chen, & Stoff (2017) recruited adult dermatology patient and compared educational video and verbal led education to assess which one increased patient. The oral led group were given training based on a video script. The video led group watched the designed video. Post-production knowledge test revealed that video education enhanced patient knowledge more than verbal led education.

Other video-based educational research has shifted from the traditional video genre stories to an indirect approach of using a journalistic approach to explore the impact of health video news stories on intention, comprehension and attitudes. For instance, McKenzie et al., (2019) study revolved around the measuring of knowledge, attitudes, and behavioural intention on child injury prevention after being exposed to video news stories and print story. Using a total population of 1,081 mothers, the study reported that a large population of mothers who watched narrative news story statistics information. Additionally, the study indicated that video education was rated high than other educational methods. The study concluded that one of the best ways making injury prevention education is through video news stories. The implication of these studies suggests that all the video genres can also be used as an educational strategy rather than an entertainment tool.

While the above studies report findings from different health context that may affect women's health, there other studies that have focused explicitly on deploying video genres to support maternal health education. Studies on the use of video for promoting maternal health have not been different from other health contexts. Though the existing studies are very few, much of these studies have reported that videos are effective in sharing health information with pregnant women, especially in rural settings where literacy skills are limited. For example, Fiore-Silfvast et al. (2013) study also confirmed the efficacy of using videos for maternal health education. The study reported on the impact of incorporating culturally appropriate videos to augment maternal and child health education in rural India and concluded that video could have four main consequences. First, the integration of videos into the health care process worked well and had a positive impact on midwives who used the videos for education. Secondly, the use of the videos improved the educational and

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counselling sessions of pregnant women because of the engaging nature of the videos. Thirdly, the videos helped in breaking language barriers to health education. Finally, the use of videos and mobile technology helped midwives to be more efficient in the work, which also helped in improving the trust of pregnant women has in midwives. Based on the outcome of this study, suggested that further studies should be conducted to discover the role of local audiovisual art forms to understand their effect on maternal health promotion (Fiore-Silfvast et al., 2013).

Other similar works have taken a different approach when it comes to how educational videos are produced and screen. For example, Kumar et al., (2015) used "Community-led Video Education (CVE)" to engage 84 villages, community members and health workers in the Indian state of Uttar Pradesh in the production, distribution, and consumption of maternal health videos. The videos focused on maternal health topics like on birth preparedness, thermal care, breastfeeding, family planning, among others. The storyline was created together with key leaders in the community. The storyboard was created to visualise the narrative by engaging the target audience. The video frequently shows a government health worker visiting women to talk to them about key health messages. The results from this report indicate that the engaging of the target in the video production process helped in increasing the self-efficacy of the target audience. Again, the health videos are valuable and had a more significant impact not only the target audience but also on health workers themselves. Finally, Kumar et al., mention several studies have confirmed that using "motivational content with narrative framing" through multimedia and digital storytelling has proven to be very successful in countries like South India, Kenya, and South Africa.

Other works on the use of videos to support maternal health education have reported the importance of paying attention to culturally appropriate communication elements. For example, Mutanda, Waiswa, & Namutamba, (2016) concluded from their studies that, culturally appropriate videos are very effective in improving knowledge, attitudes, practices and use of maternal and child health messages among pregnant women limited literate rural settings Mutanda, Waiswa, & Namutamba (2016) study of how community-made videos can impact on maternal and child health education in rural Uganda share some similarities with Kumar et al., (2015) findings from India. Mutanda, Waiswa, & Namutamba study stems from the observation that through mass media messages are used in maternal health education, its form and content are culturally inappropriate for effective behavioural change. Thus, Mutanda, Waiswa, & Namutamba study attempted to discover the extent to which locally made videos in local languages can facilitate maternal health knowledge, practices among pregnant women in rural eastern Uganda. To explore the answer, the study developed new videos using the Uganda Ministry of maternal health messages and showed the videos to semi-illiterate pregnant women. Results from the survey showed that locally made and culturally appropriate videos are useful in facilitating health knowledge to the target audience. Mutanda, Waiswa, & Namutamba, therefore, concluded that culturally relevant video is good for improving maternal health knowledge and behaviour among rural semi-illiterate communities.

Recent studies also show that the use of video as educational can not only increase health knowledge but could strengthen mothers and expectant mothers' self-efficacy that is, they believe that they can follow the practice the knowledge they have acquired. According to Joventino, Ximenes, da Penha, Andrade, & de Almeida (2017), the impact of educational videos on maternal self-efficacy for the diarrhoea

among children. The study problematised that lack knowledge among mothers is critical and such making diarrhoea responsible for the cause of death of an infant in the state of Ceará, Brazil. Using two sets of mothers, comparison and intervention group, the study reported that the use of videos increased expectant mothers and nursing mothers' self-efficacy in both groups. Similarly, Canter, Rao, Patrick, Alpan, & Altman (2015) also concluded that mothers who were exposed to an educational video on best infant sleep practices showed response efficacy abilities and were more likely to follow best practices while in health facilities. Additionally, it also emerged from the women who were exposed to the videos are more likely to plan for effective infant sleeping practices at home. The study, therefore, concluded that using brief videos by health workers is an advantageous educational option.

Finally, Coetzee et al., (2018) which aimed at exploring the acceptability and feasibility of using devised -video as an educational tool among community health workers across different working contexts also reported similar findings compared to other conclusions. Using 24 community health workers and expectant and nursing mothers in an urban township in South Africa, the study indicated that the use of the video and devices helped in reducing the workload and improved workflow. Additionally, the video helped in engaging other family members whose action affected women and child health. Generally, the study concluded that the videos are acceptable and feasible means of disseminating health information to improve health literacy among women.

2.15   Video Production for Health Education

The use of the video production process and practice in the context of health education has received a considerable amount of attention from health researchers. However, much of the available studies have revolved a surface description of

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collaborative practices between health workers and health researchers. For example, Kumar et al., (2015) study reported on the production of videos to promote maternal health using the Community-led Video Education (CVE) model, which collaborated with community members to design maternal health videos, distribution and consumption. The study also illustrates the impact of using the CVE approach on the target population. The study trained and used health workers for the production crew. During the preproduction concepts and script were generated through a activate involvements of cultural opinion leaders and health workers. Scripts were developed for topics like birth preparedness, breastfeeding, keeping a baby warm, and caring for the umbilical cord. The other was family planning, emergency transportation, institutional deliveries, and immunisation. Next storyboard was generated for the health workers. Locations and local actors were recruited for the shooting. During post-production, traditional Indian cinema songs were incorporated into the videos. The video was then presented to community members. The study concluded that production increased the trust of the health workers.

Similar studies have also shown that the engagement of community health workers in producing local content videos can have some positive impact on both the health workers and patients. For instance, Mutanda et al. (2016) described the production of videos as an intervention using the health belief model for behaviour change. The production process followed Uganda's Ministry of Health communication strategy for maternal health. The production is a collaboration between Uganda's Ministry of Health, Global Health Media Project, and staffs from the World Health Organisation. The videos were produced and used by health workers during home visits. Topic covered by the production includes danger signs in pregnancy and new-born babies. The final videos were then translated into the local

language of the communities. During post-production, the rough cut of the videos was piloted in other cities to the effectiveness. Changes were then done to the videos. The video was later used by midwives to educate pregnant women during the postnatal clinics.

Other researches have also focused on useful preproduction research to inform message content and design. Hall & Johnson-Turbes, (2015) reported extensively on preproduction research for health message design to motivate African American women to access breast-related health services. The study gathered information on threat and efficacy variables by identifying important beliefs and elements that can facilitate affirmative action and researching message goals. The phase also looked at possible factors that could affect response efficacies of that target audience. Preproduction helped the designers to understand that level of threat and fear regarding breast cancer. The preproduction phase also gathered information about the target audience cultural and environmental factors that should be considered. This stage also identified communication signals that can facilitate the communication process.

Finally, audience media consumption patterns were also investigated to discover the message and source preferences. Preproduction research helps the study to discover that culture and environment are fundamental because though their target audience did discuss the issues of breast cancer, they do not feel comfortable assessing breast health aids. The study also identified that the target audience preferred to information from sources like "health department, hospitals, churches, breast cancer survivors, doctors, and healthcare professionals as trusted organisations and sources". They also preferred people who have gone through breast cancer screen to be the message source. Channels preferences are print media, breast cancer doctors,

and radio, television and health facilities. During the production phase, the information gathered in the preproduction stage were used to promote threat factor message that irrespective of age, race, and gender breast cancer can affect everyone and that African American women are susceptible. The message also supported the efficacy message by stating that the initial taking examination can lead to comfortable and non-costly treatment and may reduce the mortality rate. Finally, the videos were subjected to evaluation to test the efficacy of the content and design factors. The feedbacks were further incorporated into the final production.

Similarly, Plant, Montoya, Snow, Coyle, & Rietmeijer (2018) also illustrated the development process of developing an evidence-based prevention video to promote the avoidance of unwanted pregnancy. Concept and script developments were generated through extensive collaboration with health workers and video production experts through a series of drafts using entertainment-education as a framework. The preproduction elements like characterisation, dialogue design and location settings received many changes that were raised during pre-test evaluation stages. The animation content of the video was also contracted to a company to provide two short promotional videos. The animated video was also subjected to reviews for improvement. The first versions of all video were reviewed by health and communication experts, and several changes were made in relation scenes action and choices which were then used for the final cut. Finally, the scripts were translated from English to Spanish and were used to create subtitles. The study produced 23 –a minute video covering topics like condoms, long-acting reversible contraception, emergency contraception, STI prevention and testing, and patient-provider communication. Sustained priority population involvement, input from stakeholders, and a highly iterative process were vital to developing.

Other studies have also presented general guidelines that can improve effective designing and production of educational videos for health education. According to Moussiades, Kazanidis, & Iliopoulou, (2015), serious consideration should be given to input variables like reasons for the objectives, persuasive approach. Secondly, Specific learning objectives must be generated since that should be the necessary elements for the production of educational video intervention. Thirdly, the video production stage must represent specific learning objectives. Additionally, cues must be provided to enhance the comprehension of the videos. During the fourth stage, the produced videos must subject to evaluation using to determine the efficacy. Reforming is the fifth stage. That requires the analysing the outcome and responses from the testing stage and responding to the content and design queries that were raised.

Similarly, Schober, Sella, Fernandez, Ferrel, & Yaroch, (2016) also argued that in developing health educational videos designers must consult a full and varieties of stakeholders to gain a deeper understanding regarding how content and persuasive elements should be structured. Secondly, the design process should be flexible and adaptable when developing nutritional educational videos for kids. The study indicated that content design approach and production aesthetics should simple. Given that rather than producing a separate video to deal with the subject matter, the pretesting stage requires that the produced one video to handle the communication. Third, because participatory video production is challenging, stakeholders should be managed well. The use of participatory video production approach is a fundamental production methodology for health media production because it aided health workers to learn how to design and structure health information for education.

2.16   Effective Health Education Message Design and Best Practices

According to Kreuter & McClure (2004), the focus of health education media is to alter knowledge, attitudes, and behaviour to improve public health. An emerging trend from the literature suggests that rigorous persuasive variables that must be considered to form the structural message. These variables are the source, message, channel, receiver, and destination. Thompson et al., (2003), explain that the reference is a visual character that presents health messages and demonstrates desired actions behaviours to an audience through any medium can have a significant effect on how the message will be received. Rice et al. (2017) also added that the source elements describe both the funding or sponsoring organisation and the actual person who deliver the message to the audience. In selecting a visual source for a message, Kreuter & McClure, (2004) argued that demographic and attitudinal similarities are key factors. Demographics elements are age, sex, socio-economic status, education level, marital status, family background and geographical location. These factors merit serious consideration because they play a crucial role in how the audience views the message (Rice et al., 2017; Thompson et al., 2003).

The selecting of a visual source for health educational media is very important and has been extensively emphasised. Rice et al., (2017) explain the importance of selecting appropriate source by posting that a good source can attract an audience to pay attention to the message, speed up the assimilation of the message, and help audience to think about the consequences of not performing a recommended health action.

Moreover, a good source reflects and share similarity with audience social, cultural and demographic backgrounds can help in arousing the interest of viewers, and this will increase the level of preservation of the health message among the target

audience. Thompson et al. (2003), further recommends key persuasion elements to serve as a benchmark for good message source. These are credibility which refers to the level of audience view about truthfulness and lawfulness of the content. The style of presenting a recommended health message to the audience should be engaging. Engaging can be achieved by using attractive and entertaining, stimulating, emotionally arresting and refreshing communication elements. For effective message design, the style and techniques of conveying message must be relevant to the audience. Finally, the overall content and style and methods of the presentation should be easy to comprehend and easy to process. Health education messages are more effective when message content is structured to reflect the relationship between recommended health actions and the outcomes of not performing such actions. When a two-sided message is presented on particular health behaviour and supported with evidence, it makes the message more persuasive than just telling the audience what they should do. This required that excuses for not performing a recommended behaviour are raised and then the audience are persuaded with evidence to melt negative beliefs held by the target audience.

Message variable refers to the information to deliver is packaged. According to Rice et al., (2017), a message is the of "content dimensions" like "themes, appeals, claims, evidence, and recommendations" (p.55). Furthermore, the message content is also determined by the selecting and arrangement of design communication elements. According to Thompson et al., (2003), depending on health educational goals, health message content should have three essential features. These are awareness, instruction, and persuasion features. First, awareness content directs attention to what should be done about a certain health condition and who should perform such actions. The awareness part of the content provides signals to prompt the audience when and

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where such actions should be done. The awareness message should create "recognition" of the health subject matter to the target audience. Again, the awareness message should "trigger activation" or cause the affected population to pay attention to the message.

Furthermore, message content must present incentives to facilitate "compliance" and encourage information seeking among the population about the health topic. Finally, the awareness message must "sensitise" the target audience for a further message (Rice et al., 2017; Thompson et al., 2003). Secondly, the health message should also have instruction features that should suggest to the audience how to perform specific actions to manage or prevent particular health conditions. In target population who are being negatively affected by peer pressure, and the instructional message should have "peer resistance feature, improve media literacy and also have elements to enforce the message (Rice et al., 2017; Thompson et al., 2003).

Finally, the persuasive content provides reasons and incentives why the audience should attend to the message, avoid negative behaviours that lead to adverse health conditions and perform the recommended behaviours. Health education media content should provide more than knowledge but must message on "skills acquisition" through the provision of examples or guideline to performing recommended actions. Generally, Thompson et al. (2003) recommend five persuasive "incentives" to serve as a checklist for the overall message and content stricture. These are "credibility" which refers to the level of audience view about truthfulness and lawfulness of the content. The style of presenting a recommended health message to the audience should be "engaging". These refer to communication elements that can interest the audience. The engaging variable can be achieved by using attractive and amusing, inspiring, emotionally arresting and inspirational communication elements. Thompson

et al., again explain that, for effective message design, the style and techniques of conveying message must be "relevant and involving" to the audience. Finally, the overall content and form, methods and communication elements should be simple clear and appropriate details should be given to make the massage "understandable" to the audience and to facilitate the process of learning (p.455).

In addition to the source and message variables consideration, available literature has also noted that for effective health education media channel, receiver and destination variables must also be decided since they have a direct impact on the reception of the source and message variables. According to Thompson et al., (2003) and Rice et al., (2017) channel factors are the mass media technology that will be used to send a message and the actual media form of that the message will take. The receiver is the target audience that will receive the health message. The destination variable refers to the expected impact of the overall campaign.

While many theories of behaviour are used to explain different factors about health behaviour and education, many of these theories share similar concepts (Thompson et al., 2003; Glanz et al., 2008). An emerging trend in literature recommends some key variables from various health behaviour theories that must be addressed during preproduction and production phases of health media production. These ten essential variables are stimuli, fear/threat, perceived severity, perceived susceptibility, response efficacy, self–efficacy, barriers to self–efficacy, benefits/rewards, social norms and audience beliefs.

Stimuli are communication and persuasive elements that are used in attracting audience attention to attend to health messages (Thompson et al., 2003 p.475). This means making the message relevant to the audience. This is important because health media messages have intense competition from commercial advertising which mostly

glamourous. This can be done by providing message cues elements that help in quickly attracting audience attention to a message and activate the motivation needed by the audience to consider performing the action recommended by the message. According to Thompson et al., (2003 p.475), copy lines like "this is important to your health" is one of the ways of attracting audience attention. Again, it also recommended that designers should focus on internal cues rather than external cues because it is the most lasting way of stimulating the audience to pay attention to media content. Thompson et al. expressed this by stating that:

"Although both internal and external cues exist, health message designers often focus internal cues that occur within an individual, like a particular health state or mood or feeling. For example, a cough can act as an internal cue to a smoker, prompting him or her to cut back or quit smoking." (p.476)

The threat is a physical or psychological danger that exists in the setting of a person. Fear is an emotional reaction of a person when confronted by event, object and actions that create psychological discomfort like "an accelerated heart rate, tense muscles, a change in breathing, perspiration, and feeling cold, verbal responses, inability to speak and activates a practical defensive response (Thompson et al., 2003 p. 476). Too much fear or threat can kill the incentive for message reception. Also, too little fear activates little reaction to message content. Cho, (2012) and Cho & Witte, (2005) also added that the use of fear by stating that too much fear will lead to fear control among the audience which means that people will find a way to stop paying attention to the message because they feel that they cannot do anything about their health problem. Again, the audience may also conclude that the fear variable is

just a tool to impose some restrictions on their liberties (Dillard & Shen, 2005). To avoid this, the literature suggests that

> "Health message designers should carefully analyse their target audience to find out if they are already fearful of the health threat. Fear must be channelled in a lifesaving direction so that individuals can protect themselves and avert a potential threat without prompting denial or defensive avoidance" (Thompson et al., 2003 p.478)

Perceived severity refers to the perception of seriousness and the degree of injury that a threat can cause to a person. Perceived severity is the level of people believes about that seriousness of a warning or dangerous (Cho, 2012). The audience would not react positively to health message if they perceived that a threat is not serious. Appropriate use of perceived severity in health message can persuade the audience to perform recommended action because they feel that danger for failing to comply. Perceived Severity can be achieved through the use of "statistics, graphics, personal testimonials, and intense and descriptive language" (Thompson et al., 2003 p. 479).

Perceived susceptibility is the chance that a person feels about being affected by the harm and injury or negative consequences linked to a threat message. People will usually ignore a message if they perceived that they are not risk. The form and content of health message must persuade the audience to see that by disregard the threat message they are vulnerable and at-risk to the threat. Perceived susceptibility is the extent to which an individual feels at risk for a particular health threat. This can be created by using a personal pronoun like "you" or "your" "this can happen to you" are some easy way of increasing Perceived Susceptibility. Another approach is using a

character with similar audience characteristics to tell them their bad experience for ignoring a threat (Thompson et al., 2003 p. 480).

Message designers need to aim at creating high levels of perceived susceptibility and Perceived severity. Neglecting one component or the other enables the target audience to ignore the message; they will believe either that the harm and its consequences are trivial, or that they are not at risk. On the other hand, if the audience members are convinced of their vulnerability to a severe threat, they will be motivated to take the next step of message processing—appraisal of available resources and the environment (Thompson et al., 2003)

Response efficacy refers to the audience perception and belief about whether the recommended behaviour is useful in overcoming health threat. Designers can help increase self-efficacy by showing that a response to a particular health threat has been tested and it works. Response information should clear, simple and should be ambiguous. Also, response information should be accurate. (Thompson et al., 2003)

Self-efficacy is audience perception that they have the strength and ability to perform a recommended action to protect him or herself from health threat. Three factors can affect self-efficacy. First, there is a link between self-efficacy and perceptions. Hence if a person feels that the previous response did not cause any change in the background of the threat, his self-efficacy will be lower. Secondly, self-efficacy is defined by context. That is people perception of doing some actions vary from threat to threat. Thirdly, lack of skills for performing a specific action and previous failures can cause low self-efficacy. To manage these factors, it recommended that message designer should consider the setting of the threat, the context and the skills that are required to perform a recommended action successfully.

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The message must also convince the audience that they can perform the recommended action by visually demonstrating that acting is not difficult (Thompson et al., 2003).

Barriers to self-efficacy are all "internal and external factors "that can prevent the audience from performing a recommended health action. This also refers to audience perceptions of obstacles to completing a recommended health action. These obstacles can include financial cost, financial costs, physical discomfort, social costs, and environmental limitations (p.483). Message content must provide practical options for acting. Thus, message designers must provide opportunities (Thompson et al., 2003).

Benefits and rewards describe audience perceptions about the benefits or rewards that come with taking action to avoid health threat. Designers must conduct extensive research during the preproduction phase to discover audience perception about the benefits. This is important because some audience tends to gauge the benefits of health action to the perceived threat and its cost. The message must persuade the audience to the belief that the rewards are far better than the risk (Thompson et al., 2003).

A social norm is very critical because it shows audience perception about the social implication of behaviour. A social norm is affected by two factors. First, message designers must ascertain form target audience their perception about what their friends and family members think and feel about a threat and response action. Secondly, messaged designers must also know audience incentives to comply with the norms of their friends and families (Thompson et al., 2003).

2.17 The Importance of Using Theories for Health Media Production

Emerging literature suggests that behaviour theories are useful in message design because the help in explaining reasons for negative and health actions also

provides methodologies for altering the behaviours behind such actions through communication design. Glanz et al., (2008) supported this by stating that behaviour theories education is very critical during all phases of health education campaign including, the planning and production, testing and during the assessment of the efficacy of communication strategies. Glanz et al. further explained that theories guide message designers to answer three critical questions when planning an education campaign. First, it helps in finding reasons why specific health behaviour and conditions exist. It also helps in assessing what do and know before producing any educational material to alter behaviour and beliefs. Finally, theories of health education are useful in making communication and persuasive strategies about health educational media in other to ensure maximum effect. Cho (2012) also contended that the application of behaviour theories during the design and production phase of health message would help reduce mistakes and strengthen the effectiveness of the message. In trying to understand and appreciate salient factors for certain adverse health behaviours, designers should draw from theories of health education because they provide "framework" that can help in designing a valid message that will deal with core behaviours "predictors" (Paek, Hove, Jun Bae & Hyunjae, 2011 p.43)

Best practices trends in the literature strongly recommend that message designer should carefully analyse and apply the outcome audience research before making aesthetics and design construction decisions. For example, according to Jansen (2017), empirical studies have confirmed that when message design and strategies are based on assumptions about the target audience, messages may not be effective in achieving the desired results. Hence, Quattrin et al., (2015) argued that is it imperative to conduct extensive research on the target audience using health education theories in other to understand clearly behaviour variables that need to be

targeted (Catalan-Matamoros, 2012). In the following section, the review will now review best practices during the production phase.

Despite the importance of behaviour theories, experts believe that it must not be used insolation from communication design theories and practices. For example, Fishbein & Cappella (2006) noted that while health educational theories are useful in planning all stages of the health education campaign, effective message elements, how they should be organised and framed are beyond the parameters of health education theories but rather sit within the theories and practices of communication design. Fishbein (2000) also expressed similar thoughts by stating that as health message designers need to have a better understanding of health education theories so that it can be applied effectively.

2.18   Health Media Production Processes

The focus of mass media health promotion is different from traditional mass media. Unlike other media forms, health promotion media has the goals of changing the attitudes and behaviour of the public. Thus, the content strategy, visuals style and production techniques must be harnessed well to present precise information that can attract attention, facilitate knowledge acquisition, improved understanding and ultimately motivate the target audience to act in favour of the message (Maryon-Davis, 2012). To achieve these goals of health education literature, show that much attention should be placed on the research rather than on designer's experience and communication assumptions.

Before production, designers must have a focus which is driven by the outcome of the preproduction research. General practice is to construct a framework to guide the production. Hill et al., (2008) expressed this vital point by stating that based on the formative research, a conceptual framework must be designed to give

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direction to the content and form of the intervention. Further, the same framework can be used in evaluating the effectiveness of the response. Next, a creative brief must be designed to give creative direction content, form, persuasive strategy and production techniques and styles for recommended messages. Once the creative brief is done, designers and illustrators generate visuals based on the focus of the brief (Hill et al., 2008).

The next stage is to generate concepts from creative briefs. Ideas are incompletely designed communications composed of visual, text, sound copy and other communication elements that attempt to communicate the core message of a final media artform. Trends in the literature indicate that concepts start with scriptwriting. This involves the construction of a story to reflect the goals of the health education campaign based on the theoretical framework for the campaign. The scripts can then represent visually mainly in two ways for consideration. For video art forms, concepts can present in storyboards are the visual representation of a storyline in sequential order and then animatics which are essential drawings of selected key visuals and audio messages animated together expressed various concepts. These are recommended at this stage because it helps the designer to see how the storyline will flow. In print media production concept generation involves the creation of a prototype of print outs of the designed message. (Rice et al., 2017; Thompson, Dorsey, Miller, & Parrott, 2003; Hill et al., 2008; (Kumar et al., 2015)

The next stage after concept generation is the pretesting stage. The pretesting stage is crucial because it gives designers an idea of the most effective and promising design concept, its strength and weakness. For example, Rice et al., (2017) emphasised Pretesting allows designers to go "the process of systematically gathering intended audience reactions to preliminary versions of messages before final

production" (p.61). Again, testing multiple concepts at this stage provides direction for improving on the concepts and identifying the most promising concepts which will eventually help in generating effective communication during final production (Thompson et al., 2003; Hill et al., 2008). Furthermore, Mutanda, Waiswa, & Namutamba (2016) also posits that by exposing the health educational videos to an audience who have not seen the content, responses from such pertest can be valuable to health message designer in the final production.

2.19   Culturally Appropriate Health Educational Media

The importance and the roles of cultural relevance to health education message design cannot be underrated. It is the basis through which effective health message intervention could be well communicated. Cultural appropriate communication refers to the careful selection of essential communication element that will help in enforcing the persuasion of the target audience to attend to a health message favourably. Brooks, Manias, & Bloomer (2019) supported this definition by stating the culturally appropriate refer to the effective use of both visual and audio in a way that reflects the values, beliefs, respect and at the same help in health communication goals.   Additionally, it describes the process of combining useful communication elements to present information irrespective cultural differences (Kreuter & McClure, 2004).

Culturally appropriate in the context of health message design is the process and technique of designing a message that serves the needs of the well-defined audience. The process is guided by findings from formative research about the cultural factors that can enhance the acceptability of a message (Rimer & Kreuter, 2006). Even more, a culturally appropriate message could increase motivation to process public health messages. This could be achieved by creating synergy between

message content and audience needs and emphasising the benefits of the messages to audiences. Again, communication elements must attract attention and presenting the right kind of information through the appropriate channels that could easily be accessed by the audience to improve exposure. Such an approach could increase attention, lead to subsequent yielding, and, ultimately, enhance the likelihood of behaviour change. Furthermore, designers must effectively research the cultural factors of the target audience and how the relation to health behaviours to help give direction to the development of effective culturally appropriate educational artforms (Kreuter, Lukwago, Bucholtz, & Clark, 2003).

Strategies for designing culturally relevant material can be categorised. These are peripheral, evidential, linguistic, constituent-involving, and sociocultural; the peripheral procedure takes the approach using visual communication elements to present a communication material in a way that looks appealing. It involves the meticulous use of a specific scheme of colours, fonts, visual styles and persuasive copies to connect to audience cultural values, beliefs and aspirations. The evidential strategy is based on the use of ethos compelling approach. This method of creating culturally appropriate materials employs the use of evidence by presenting facts and figures of how a particular health condition is affecting people of the same target audience. Linguistic methods focus on the use of language to facilitate the process of education. It thrives on the knowledge that language is the key currency to the sharing of knowledge within all cultures. Hence audience must receive health educational messages in a language that they can effectively connect with to enhance compressions (Kreuter & McClure 2004; Kreuter, Lukwago, Bucholtz, & Clark, 2003).

Additionally, Kreuter & McClure emphasised that language is a critical element of culturally appropriate communication in the context of health education. Like many other communication interventions, effective communication depends on language as such health education is more effective when health messages are structured, designed, produced and presented in a language that is readily available to the target audience

The Constituent-involving methods draw on the message source factors. It involves the use of genial well known and experience characters from the target audience to provide essential and sensitive health educational messages. It consists of the use of members of the core target population to present health messages to their friends or community members. The Constituent-involving methods help message designers to create between linguistic elements and peripheral elements to enhance the effectiveness of educational material. The Sociocultural approaches help message designers to situate a health intervention within the cultural context of the target audience. It requires a deep understanding of the structure of a particular culture and formulating a communication strategy that is sensitive to the target audience values and beliefs.

The importance of culturally appropriate communication is well represented in the available literature. For example, Kreuter et al. (2003) explained that effective health education intervention is more than just the deployment of innovative technology or ideas. Most health educational interventions may not work because the intervention element s may not culturally resonate with the target audience Kreuter & McClure, (2004) noted that the benchmark of every kind and useful health education material is directly affected by the characteristics of the cultural element that drives the health message. To Kreuter & McClure, this is a fact because cultural

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communication elements affect how the audience responds to health education messages. Past researchers have indicated that the most effective way of developing useful health educational materials is to actively engage in defining target audiences cultural factors to inform an intervention (Noar et al., 2016).

Furthermore, Airhihenbuwa & Liburd, (2006) also argued that it is essential to factor culturally appropriate communication elements into the production and distribution of health message to patients since it is the basis for successful interventions. Moreover, Bankole, Lawal, & Ibiyemi, (2017) concluded that irrespective of the inherent health problems, health educators should pay attention to culturally appropriate elements since it an effective way of creating interest among the target audience and providing education to dismiss negative health behaviours.

Conclusively, culturally appropriate elements for educational media production refer to all communicational elements that are put together to form a communication. In the context of this project are the audiovisual elements that will aid audience acceptance and emotional connection to the message. According to Kreuter & McClure (2004), McGuire's [1989] communication/persuasion model is a useful framework for dealing with cultural appropriateness when design health messages. The framework stipulates five communication elements that must be considered when to ensure culturally appropriate health communication message. These cultural elements are a source, message, channel, receiver, and destination.

2.20   Culture, Communication and the Concept of Health

Communication and culture have been a cradle to human civilisation. Through culture and communication, individuals are initiated into families' values and beliefs which have been passed on from older generations. For ethnic groups, culture and communication are like superglue that binds them together through beliefs and

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practices. At the national level, culture and communication do not only identify nations. Culture and mode of communications have many influences on social-economic and cultural development (Aziato, Odai, & Omenyo, 2016; Airhihenbuwa & Webster, 2017)

This marriage between communication and culture is evident in the way these terms have been defined. Culture is mostly conceptualised as an embodiment of values and norms that are agreed upon by a group of people who share a common interest. On a global level, culture is seen as societal elements that are passed on to members of society. For instance, it is seen as "that complex whole which includes knowledge, beliefs, arts, morals, laws, customs, and any other capabilities and habits acquired by a human as a member of society" (UNESCO, 2018). Again, culture is the treasured and acceptable elements that allow individuals and groups of a particular origin to make meaning of their everyday life through the sharing of values and norms (Campbell et al., 2012). Campbell et al. further reiterated that culture refers to more than just tangible products. It ultimately describes how people survive and express their thoughts within a specific period. Akpomuvie (2011) also argued that culture is the "complex of distinctive spiritual, material, intellectual and emotional features that characterise a society or social group". It encompasses both verbal and nonverbal cultural forms. It also includes the basic pattern of life, law and human rights and indigenous knowledge. Culture in its essence is the groundwork on which all societies are built and as such and the "foundation of the prevailing social order" (p.23)

For some, culture is an embodiment of values, beliefs that individuals received from the previous generation in the form of arts, law, security and health and wellbeing. For example, Turow (2009) agreed to this by stating that culture is a set of elements that are transferred from generation to generation that people together within

a specified period. Okoroafor & Dike (2010 p.43) also added that culture is those acceptable norms, philosophies and emotions that are expressed through "symbolic forms of communication" and assimilated by group members and are mandatory as member of a group. Hence, culture can describe as all material that includes both perceptible and imperceptible elements that are acquired from earlier generations which bind and direct a group of people together to achieve a common goal.

Communication, on the other hand, is described in the literature as the use of acceptable visual or verbal elements for sharing values, beliefs and cultural knowledge. The root word for communication explains the essence of communication as a way of sharing acceptable elements to make meaning. According to Lunenburg (2010), the root word for communication comes from the Latin word "communis" which means common in the English language. Hence, according to Lunenburg, communication is the progressive method of sending "common" information or signals to a person who shares the same shared information. Again, Lunenburg pointed out that, without the sharing of a "common" signs, there will be no exchange of information from one source to another. Okoroafor & Dike (2010) also emphasised this sharing concept of "common signal" by stating that communication is the interchange of symbols between a group of people who have agreed to use such symbols for a "purpose of transmitting ideas, meanings, thoughts influence "and to foster a common goal (p.77). Communication, therefore, can be summarised as the disseminating of messages using communication elements that have been accepted by both a group of people.

Other trends in available literature also suggest that communication is the process of meaning production. Wilson & Wilson (2001) explained that communication is a process of selecting, organising of signs and codes into messages

and sharing them with a specific audience. This is to stimulate them to construct meaning that is similar to a source of a message. According to Wilson & Wilson, he prefers the use of sharing to the purpose of sending because the latter gives the impression that the receiver is passive. Sharing is also appropriate because it implies that both the sender and the receiver of messages are active and are on the same level of the production of meaning. Again, the term process is significant because the communication is "ongoing and dynamic process interaction between various elements to achieve specific results" (p.12). This acknowledges the role of both the sender and the receiver in the communication process, and it emphasised that meaning from communication messages are constructed at both ends of the communication spectrum.

The above concepts about culture and communication explain why it will be difficult for someone to attempt to separate culture from communication when it comes to maternal health communication and education. While culture is seen as the tangible and the intangible elements that are shared by a group of people to ensure their survival, it is communication systems and a form that captures encapsulate meanings and makes it possible for the sharing maternal health messages with hope shaping beliefs, values and perceptions to improve maternal health.

Okoroafor & Dike (2010) describes this relationship between culture and communication by stating that communication provides the channel for culture to be expressed within society and help to ensure cultural continuity. Campbell et al., (2012), also argues that through culture, people can connect to other members through "shared and contested values" (p.19) and communication artforms give the means through which such shared values and beliefs are distributed. Similarly, Turow (2009), also confirmed that communication art forms allow cultural members to

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express their identity to the other people concerning the broader context of their own cultures.

Culture has been defined as the way a group of people share beliefs, values and totality of life. That way of life also includes how health is conceptualised. Generally, health may be described as the "as a state of complete physical, mental and social well- being" (Sartorius, 2006 p.266). This concept of wellbeing is very difficult to define due to the cultural differences of the meaning of health, and perhaps that explains why many have criticised the "state of complete physical, mental and social well- being" (Brüssow, 2013; Godlee, 2011) In the context of maternal health it can be described as the well-being of pregnant women during before conception, during pregnancy and post-pregnancy (Renkert & Nutbeam, 2001).

Available literature also shows that the link between health and culture is secure and both influence each other. Kreuter & McClure (2004) argued that there is a direct link between a group of people's cultural characteristics and their approach health decisions, efficacy responses and the reception of health education interventions. Airhihenbuwa & Webster (2017) concluded that health and culture could not be separated. Health is a cultural perception, and it defines people's view towards illness, medical care process. Hence, lifestyle and health are intertwined concepts, and both ideas reflect the settings and context in which they interact. Thus culture and health share "a system of interrelated values, active enough to influence and condition perception, judgment, communication, and behaviour" of a particular people towards their wellbeing and their community at large (Mazrui 1986) as quoted by (Airhihenbuwa & Webster, 2017). Culture, therefore, is fundamental to the meaning of health and behaviour. Cultural elements like language and artefacts are the currency through which meanings and concepts about sickness and illness can be

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exchanged, shaped or influenced in a given culture (Mukanangana, Moyo, Zvoushe, & Rusinga, 2014; Airhihenbuwa & Webster, 2017).

The meaning of health, illness and the ways in such concepts of sickness are treated or manages varies depending on the cultural setting. In the African settings where communal living is a highly esteemed, culture and communal opinion are the critical determinants of health behaviours, perception, judgment and the basis for decision making. a process & Webster (2017), therefore, quoted Lupton (1994) to argued that health care should be seen as "cultural production" and should be driven by cultural concepts of health rather than external assumptions of what constitutes health (Airhihenbuwa & Webster, 2017 p. 23).

Hence, a process, (2013) noted that western health education and communication models that are entrenched in foreign ideologies do not work in the African setting because they do not acknowledge the role of culture in such interventions fully. After all, such campaigns focus too much on socioeconomic factors at the expense of cultural beliefs and perceptions. Moreover, such western view of health and illness, which generally places more attention on the individual feels more than the broader cultural members are not useful within the African settings (a process and Obregon, 2000).

The experience of people and societies are the basis for the conceptualisation of what health means, which makes health a cultural concept rather than a socioeconomic factor. Through the frames of culture, we get to understand how both patients and health care providers interpret health and their belief about the nature of diseases. Again, through the lens of culture, people define illness and health. However, it is communication forms that provide codes, symbols and values the

shaping and altering of cultural perception about health (Kreuter, Lukwago, Bucholtz, & Clark, 2003; Airhihenbuwa, 2013).

This strong bond between culture, health and communication mean that they permeate into every aspect of our human life. And in the context of this study, culture defines the reality of women and how they perceive the concept of pregnancy. If culture defines our realities and communication is the means through such realities are constructed and shared, the then the process of encoding media production for communication requires much attention from visual communication designers to improve the sharing of values to improve health.

While the importance of culture and communication has been extensively stressed in literature, its practical application to the specific context of marshalling culturally accepted communication elements to construct meaning and its implications have remained in the lurch. Hence, the use of educational media artforms for promoting maternal health education has been mostly directed by external assumptions of maternal health (Airhihenbuwa & Webster, 2017 p. 23). Based on the nexus between culture, health and communication, this present study is aimed at producing effective and culturally appropriate educational videos by conducting preproduction research to understand the cultural elements that should shape and influence the selection and manipulation of communication elements in the context cultural production for health education. The study will also investigate the reception of the videos from cultural perspectives.

2.21   Pregnancy Beliefs, Nutrition and the Need for Health Promotion

The previous section of this study has established the connection between culture, health, and communication. In the context of maternal health education, this triadic relationship can also apply to the concept of pregnancy. At this section, the

review now turns to literature the maternal health explores concepts, practices, beliefs, and the need for cultural communication to help improve health care for pregnant women.

Beliefs are perceptions that people have acquired from their families, friends, or personal experience about the causes and existence events and other cultural concepts. Beliefs bond every culture and it permeates through every aspect of their tangible and intangible culture. In the context of health, beliefs and cultural practices are critical determinants of wellbeing.

This marriage between beliefs and health practices is extensively represented in the available literature. For example, Wehby (1960) noted. However, pregnancy is purely a biological process universally pregnancy, and childbirth is preferably defined by cultural beliefs hence there process of pregnancy management is influenced and directed by a pregnant woman's beliefs, values, and the norms of her society. Aziato, Odai, & Omenyo, (2016) also agreed by stating that cultural and personal beliefs play a significant role in the health care process of every society and the context of pregnancy, women draw heavily from their cultural expectations when it comes to seeking healthcare. Umar (2015) also contended that in most cases women low or no literacy skills suffer significantly from some of these cultural definitions and norms about pregnancy because they are firmly attached to their beliefs that in almost impossible for health workers to provide appropriate health care.

While not all beliefs and practices regarding pregnancy are dangerous, there is growing evidence that suggests that most beliefs about pregnancy and maternal health have negative consequences of safe pregnancy and the situation is global. For example, Catherin et al., (2015) research on assessing food practices and beliefs in the Bangalore urban district in India indicated that despite there were some good beliefs

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the negative beliefs like the avoidance of highly nutritious food for both mother and baby, drinking of little water due to cultural and fear are some of the few contrary practices that affect safe maternal outcomes in India. The study, therefore, recommended innovative educational interventions to discourage such beliefs to improve maternal health.

In South America studies from several countries suggest that beliefs and cultural practices affect pregnancy and in most cases bring negative consequences. Myers (1994) found that pregnancy is seen as part of female life rather than a condition that needs constant medical attention. Hence Myers reported that this belief has led to several practices that do not support maternal health. For instance, the use of certain herbs is part of everyday life and famous among pregnant women in Costa Rica, El Salvador, Honduras, Guatemala, Bolivia, Peru, Chile, Mexico, and Ecuador. Again, traditional healers and traditional midwives are seen as superior to government health officials and hospitals. Moreover, because South American pregnant women have to conform to the cultural belief that pregnancy is not an abnormal as defined by orthodox medicine, they continue to do excess work and heavy chores that affect their health negatively (Myers, 1994).

The global concepts of pregnancy and its beliefs and practices are not different from the experiences of African. In addition to beliefs, socio-economic factors have also created other personal beliefs and practices, which in many cases negatively affect the safe maternal outcome for many African women. In most African countries, women's choice of maternal health care is affected by their cultural and religious beliefs practices. In some cases where cultural beliefs have little influence, most women do not have control to choose the best medical option due to other socio-cultural obstacles (Fischer, 2002). Coupled with cultural beliefs, practices, and other

self or family norms, the health of most pregnant women may be influenced by culture or family. Otoo, Habib, & Ankomah (2015) expressed this trend by reaffirming that cultural beliefs are critical determinants of quality maternal health care during pregnancy, a postpartum and significant factor to the causes of maternal deaths in Ghana and most African countries. Similarly, Aziato et al., (2016) expanded this problem by adding that pregnancy beliefs are not only rooted from traditions and cultural institutions but also even in urban cities and among literate pregnant women religious beliefs have also shaped the concept of pregnancy care due to religious rituals and remedies which mostly works against women's health during pregnancy. Also, traditional beliefs and practices were food and water restrictions and tribal

Several studies have identified some beliefs and practices in the African context that do not support maternal health, and most cases have no scientific basis for maternal health. Mesele (2018) study form Ethiopia indicated that most women die and suffer during childbirth because they have no access to safe maternal health practices during pregnancy due to their traditional beliefs and practices. Among some of the beliefs that the study identifies are late prenatal care due to beliefs about evil spirit, the over usage herbs during antenatal, delivery and postnatal periods. Other opinions are the avoidance of certain foods which in most cases are very nutritious which are suitable for the mother and baby due to food taboos. Furthermore, religious beliefs and practices like coffee celebrations and late initiating of antenatal care due to superstition are some of the beliefs that hinder maternal health in Ethiopia. Mesele further noted the consequences of these practices by stating that many pregnant women, especially rural women, suffer from unnecessary bleeding, uterine rupture and severe placenta complications and death in many cases. The study there concluded by recommending maternal health education through all innovative means

to persuade pregnant women and cultural leaders on the need for safe maternal practices.

Another study from Sudan, Madagascar and Zambia also reported a variety of beliefs about pregnancy in Africa. For instance, A.kheiri, Kunna, Mustafa, Shaaeldin, & Alsammani (2017), said that many pregnant women are superstitious about certain foods which in most cases are needed for a healthy pregnancy. The study identified that rural women seriously prohibit foods like honey, citrus, eggs with low literacy skills due to cultural beliefs and practices. From Madagascar Morris, Short, Robson, & Andriatsihosena (2014) added that the high maternal mortality is due to traditional beliefs and practices about food, pregnancy management and childbirth during labour is the culprits. The study, therefore, recommended that due to social-cultural factors like reduced health literacy rate among the pregnant women persuasive and behavioural change communication should use as an intervention to educate pregnant women to take charge of their health. Furthermore, M'soka, Mabuza, & Pretorius (2015) study from Zambia is in consistent to with other studies form other African countries because the study found that food taboos, use herbs for enema during pregnancy and after pregnancy due traditional beliefs, behaviours and religious rituals are serious problems for maternal health care. M'soka, Mabuza, & Pretorius recommended that persuasive education will be helpful in educating more pregnant women about to avoid negative practices during pregnancy.

In west Africa, the practices and beliefs about pregnancy are very strong, and they confirmed the report that opinions and childbirth are global due to culture (Wehby, 1960). Reports from two West African countries indicate that have endorsed these global trends. For example from Nigeria, Udoma et al. (2011) study of beliefs and practices during pregnancy among rural women reveal that many pregnant

women view about pregnancy health care is based on their cultural practices due to their lack of knowledge about safe maternal health practices. The study also found beliefs and practice like food restrictions due to traditional beliefs, traditional health care is seen as better than government hospitals, the use of concocted oil to message vulva during labour, unconventional way of managing placenta, avoidance of sex during pregnancy due to several cultural beliefs. Other practices and opinions are the use of herbal medicine for enema use of herbs and avoidance of food due to fasting and prayers. Furthermore, due to the norms and culture, pregnant women are subjected to excessive and challenging physical works because society believes that it is signed laziness women pregnant women reduce such extreme physical tasks during pregnancy. Finally, the study recommended public health education to empower the local people about the dangers of some beliefs and practices to pregnancy and childbirth.

The case of Ghana is not different. The available literature is in consistence with other studies. According to Fischer (2002), Ghanaian women choice of maternal health care is much dictated by their cultural and religious beliefs practices. Otoo, Habib, & Ankomah, (2015) also claimed that cultural beliefs are critical determinants of quality maternal health care during pregnancy, a postpartum and significant factor to the causes of maternal deaths in most rural Ghana. Aziato et al., (2016) Also describe how these beliefs and practices are manifested by stating that that the importance of pregnancy beliefs in Ghana are expressed through, traditional beliefs and practices food and water restrictions and tribal rituals and religious rituals and artefacts like anointing oil, blessed water, sticker, blessed, white handkerchief, blessed sand bible and rosary and pregnancy secrecy.

Several studies in Ghana have confirmed the assertions form other reports in Ghana and across African. According to Aziato et al., (2016), the effect of beliefs on pregnancy outcomes in Ghana is enormous and are mostly controlled by forces like religious practices and leaders, family beliefs and the beliefs in supernatural objects and rituals. de-Graft Aikins, (2014) mention some of the sources of such beliefs as family and friends, educational settings, traditional healers, media and personal experiences beliefs that could negatively affect pregnancy as available literature indicate that their different assumptions that affect pregnancy at various stages. These beliefs can be grouped into food beliefs and practices, the use of concoctions and herbs for enema, beliefs during labour and other practices.

For example, evidence from the literature shows that across Ghana, there are strong food beliefs, practices and taboos that could deprive pregnant women of proper nutrition during pregnancy. Otoo et al. (2015) reported that pregnant women in the Shama District of the Western Region, Ghana are forbidden to eat nutritious food such as snails, ripe-plantain and okra due to the belief that it will call birth complications during pregnancy. Similarly, Arzoaquoi, (2014) discovered that snails, rats, hot food and animal lungs forbidden during pregnancy because culture believes that is the best way safeguarding women and their babies form wicked spirits and effects among Yilo Krobo women in Ghana. Arzoaquoi, (2014). Pregnancy is viewed as a critical period in the life of women. It is usually subjected to several food taboos as a way of safeguarding their lives and that of the unborn baby in Yilo Krobo, district Ghana.

Furthermore, Oppong, (2015) reported that pregnant women in the Sekyere South District of Ashanti Region are not allowed to eat foods such as ripe plantain, roasted plantain, snails, okra due to cultural beliefs. Among the reasons given from

the study are that eating of snails, for example, leads to a baby that drools excessively. For ripe plantain, local women believe it leads to sluggish and weak children. Okra is avoided because it is supposed to make pregnant women sleepy during labour instead of pushing. Moreover, pregnant women also have the wrong perception about foods like Milo, malt, sweet potato, gari and mango.

The use of herbs, concoction and enema, is another pregnancy practice in Ghana. Otoo et al. (2015). The use of enema was also widespread among pregnant women because they belief herbal medicine for traditional birth attendance are potent and can easily facilitate labour and control blood flow during labour. According to Otoo et al., some of the popular conventional medicines, concoctions and herbs in Ghana Living Bitters, Yafo Pioneer Mixture, Pomaa Bitters, Yafo Tonic, and several tree bark-enemas. Others are "Setedua", "TrɔntrƆfo", "AkokƆnyindέm", "AbƆwomba eguw'ekyir", and "Eban" "Aponsoέ", " Awombrέduro" "Nunum", 'the middle of the palm fronts', the bark of cola nut tree. For many pregnant women, these remedies are powerful and can facilitate childbirth and make the baby healthy. They also use these to get rid phlegm because it is believed that the baby will eventually swallow the phlegm if it removed from the body of (Otoo et al., 2015). Similarly, Arzoaquoi (2014) presented that the use of such herbs and other traditional medicines are prevalent among many women and they believe that they will have a natural labour.

Apart from food taboos and concoctions beliefs, there another trend in the existing literature that suggests other practices concerning labour and other practices. (Otoo et al., 2015) mentioned that beliefs practices like the use of herbs, enema, prayers and other rituals to managed to prolong labour and placenta complications because they believed such things are the cause of bad spirit who wants to attack

people. Again, (Otoo et al., 2015 also reported that there is another popular belief that the swelling of hands and feet, stomach pains and excessive vomiting and are a sign of twins, baby boy, or a big baby. Besides, late antenatal initiation is rampant because it is believed that early disclosure of pregnancy to anyone will open the way for evil spirits to destroy the baby in the womb. Though the study mentioned that there were some favourable customs, the research generally concluded that there is a greater need to for innovative education because harmful practices such as food taboos, use of traditional medicines, concoctions and enema other cultural beliefs could be led to complications like pregnancy-induced anaemia, unrecommended baby weight and post-delivery blood flow. In the next section, the review now discusses the relationship between maternal health education and health literacy in the face some practices that may work against maternal health.

2.22   Antenatal Health Education and Health Literacy

Maternal health education and health literacy are two important interrelated concepts and as such, are very pertinent to this study. Maternal health education is focused on the provision of health information to pregnant women to motivate them to prevent elements of poor health within communities and families. Health education is "any combination of learning experiences designed to facilitate voluntary adaptations of behaviour conducive to health among pregnant women" (Glanz, Rimer, & K. Viswanath 2008 p.153). It can also describe an organised "intentional activity" to bring specific results about a particular public health issue through learning (Berry 2017 p. 19). This is achieved by creating a bridge between lifestyles and knowledge about healthy living. It requires careful planning of events that seriously consider people's knowledge, perceptions, and cultural structures that affect the way of life of a people. Glanz, Rimer, & K. Viswanath (2008) believed that health promotion is an

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action or strategy that is taken to improve health literacy and to support "a full range of contemporary public health interventions" (Nutbeam 2000 p. 262)

Health literacy is as the expected outcomes of health education. Emerging definitions suggested three trends in an attempt to theorise health literacy. First, early definitions describe health literacy as the capability to do essential reading and numeracy task concerning health. For instance consider these definitions According to Parker, Baker, Willia, & Nurses, 1995) Health literacy refers primary elementary task like reading, writing, and performing a simple mathematical task in the health care process. Further, Parker et al., explained that health in the context means that patients must be able to read and understand simple health information relating to medical prescriptions, appointments, directions on medicine packages and process of using prescribes medications.

Others have argued that health literacy as more than just the performing essential reading and numeracy task but more importantly, the ability to acquire health knowledge and mentally process it for accurate comprehension. For example, Don Nutbeam (2008 p 2074) adopted the United State Institute of Medicine concept by stating that health literacy is the "The degree to which individuals can obtain, process and understand basic health information and services needed to make appropriate health decisions." Again, (Nutbeam, 2000) presented the World Health organisation concept of health literacy and argue that health literacy should be seen as the mental and cultural motivation that drives people to have access to health information, process it for comprehension for personal health sustenance. Berkman, Sheridan, Donahue, Halpern, & Crotty (2011), also added that the term health literacy has come to describe dangerous of abilities and tasks that can help play their role effectively the process of patient health care management. (Berkman et al., health

literacy involves three core tasks. (1) The ability to read and understand printed health communication. (2) The ability to perform simple additions, multiplications and subtractions to when it comes to the usage of medicines. (3) The ability to discuss health-related information.

While previous definitions have looked health literacy about individuals, other concepts have expanded the previous definition to include public and groups ability to interpret various forms of communication elements. For example, Freedman, Bess, Tucker, et al. (2009) as quoted by (Berkman, Davis, & McCormack, 2010) provided an inclined public concept of health literacy by asserting that health is the level at which health information is accessed, processed, comprehend and appraised in the context of health decisions by individuals and groups in their broader social context. Other definitions have expanded the earlier concept to incorporate current developments in human needs, communication and technology. These late concepts include in the definition health literacy, the ability access and cognitively processed health information form communication resources like websites, video/animations and mobile application and technologies in share such information in other social settings (Berkman et al., 2010).

Hence the concept of maternal health literacy is more than just performing of primary series of skills in connection with pregnancy. The concept of maternal health literacy is the ability of pregnant women either as individuals or groups to find health information through interpersonal communications and mass media technologies and mentally make meaning from the information and effectively communicate such knowledge in social context to ensure good health during the pregnancy period, during labour and post-pregnancy care (Berkman et al., 2010).

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The settings for providing such health knowledge to improve maternal health may vary. These strategies may include patient counselling education, student and groups education, the use of mass media artforms like posters, brochures, videos and films media print (Nutbeam 2000). These strategies can be used in different settings to promote health through health education. Glanz et al. (2008) suggested many settings that health education can take place, which is another crucial difference between health promotion and health education. Health education can take place at a school settings Health education in schools settings includes classroom teaching, school environments and teacher training colleges to support the more considerable effort of health promotion. Communities and home settings can also be used to provide health education. These settings are useful because strategies can draw form social bonds, families and friends to improve health knowledge through, home visits, telephone calls, the use of mass media and interpersonal communications. Again, the advent of communication technologies like tablets, smartphone, television and internets web sites have created good health education settings that support health promotion. Finally, health care settings are the most promising settings for health education. Hospitals, clinic and health centres provide considerable opportunities to provide health education on all kinds of public health issues and to help improve health knowledge(Glanz et al., 2008).

The importance of health literacy to health is well documented, and it suggests that health literacy is mostly linked to good health outcomes. There is a connection between poor health outcomes and low health literacy in many developing countries. On the other hand, improve health literacy has also improved health outcomes in many cases (Pignone & DeWalt, 2006; Don Nutbeam, 2008; Berkman et al., 2011). This has been backed by much evidence available in current literature from other

countries. For example, improved health literacy, antiretroviral treatment has helped in managing serious health infections. In India, health literacy through mass media has been effective in educating the public on the dangers of tobacco. In other areas, health education h has helped to reduce cardiovascular diseases through health education on cholesterol. Furthermore, mass media education was effective in improving health literacy in Japan and China. This helped in reducing the high salt intake among local people in Japan and China (ECOSOC, 2009).

Hence in the Light of these concepts, maternal health education is the coordinated effort of planning and executing learning activities to improve health literacy among pregnant women. Maternal health literacy is the goal of health education (D. Nutbeam, 2000). In this context, the benefits of health literacy are enormous and mean more than just the ability to make meaning form health information. In the African setting like Ghana is about empowerment that helps pregnant women to avoid many problems associated with childbirth. Such empowerment can have many social and economic benefits as well (D. Nutbeam, 2000).

2.23   Conclusion

This chapter has reviewed related literature that underpins the production of culturally appropriate educational videos in two phases. Guided by the research objectives, the first phase focused on specific theories phases give foundation to the study. The theories that were reviewed are the Persuasive Health Message framework, Cognitive Theory of Multimedia Learning and the Technology Acceptance Model. The second phase, which is the empirical focused on the use of videos in health education and its importance, the production of health educational media a health educational video. Other thematic areas that were reviewed include the use of visual

communication artforms for health education and promotion, media production and communication, video, production process and techniques. The section ended with the review of the nexus between culture, health and communication and the need for health promotion.

Based on the theoretical review, this study acknowledges that the Persuasive Health Message framework provides a preproduction framework that takes audiences centred approach to examine beliefs and perceptions about specific harmful health practices and recommended practices that are valuable for designing persuasive content for altering contrary practices to support maternal health care. Despite the usefulness of the framework literature that describes its use in the design process is scanty. The study will add to the existing gap by exploring the use of the Persuasive Health Message framework in the preproduction process. The study also found that Cognitive theory of multimedia learning must be considered in the production stage.

According to the cognitive load theory, the output of processed information from both channels can lead to three distinct possibilities which also affected how audiovisual content is organised to design a learning experience on cognitive processes. Due to the implications, the study acknowledges the use of Cognitive Theory of Multimedia Learning during the production stage to minimized possible extraneous load, simplify the intrinsic load by carefully selecting and organising of cinematic elements to eliminate extraneous load in the long-term memory and to foster the germane load processing. Even though the Cognitive Theory of Multimedia Learning provides principles to guide the integration of audiovisual content, the review found that studies that discuss how cinematic elements can be manipulated through cinematic techniques are undeveloped and therefore scanty. The studies hope to bridge this gap by using the Cognitive Theory of Multimedia Learning as a guide to

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drive the aesthetic decisions during the production phase of this study. Finally, the review also found that the Technology Acceptance Model provides a valuable context for accessing people perception about the efficacy of media art forms and technologies. Despite this debate, the TAM still serves as a robust theoretical basis for this study because it provides a broad and unrestrictive framework to explore the efficacy of the designed videos in the context of maternal health education.

The empirical review section has also brought to fore the dominant knowledge and concepts that support the production of effective and culturally appropriate educational video, usage and its impact in health education settings. The study discovered that effective video production for health education is dependent on four factors. First, effective video production should be based on theory-based preproduction research that provides a theoretical basis for the selection and organising of audiovisual elements into a communication art form. Secondly, the researcher found that the content of any health education message should address key persuasive variables based on the outcomes of the theory-based preproduction research. These variables are the source, message, channel, receiver, and destination. Hence the basis of a decision should be based on these variables and not the intuition and subject feelings of designers.

Thirdly, it was also discovered from the review that designing of previsualisation concepts for pretesting is a crucial stage in the media production for health education. This stage requires that initial ideas are tested with selected members of the target audience to measure clarity, comprehension and clarity. Finally, this section also discovered that the production must resolve all issues raised from the pretesting stage before the final production and post-production testing for further improvement that is necessary (Thompson et al., 2003; Glanz et al., 2008;

Cho, 2012; Cho & Witte, 2005; Kreuter & McClure 2004) Despite these findings, the existing literature is silent on how video production techniques can be manipulated to visualise the persuasive variables to enhance to active learning. While this study will incorporate the above findings into the production, this study will also contribute to the existing knowledge how video production techniques and elements can be manipulated to reinforce the core persuasive elements of health educational message content.

In terms of production techniques and process for health education video production, the researcher discovered that much of the critical literature on media production for health have focused on collaborative video production among health workers, its impact on health workers and patients (Mutanda et al., 2016; Kumar et al., 2015; Hall & Johnson-Turbes, 2015; Plant, Montoya, Snow, Coyle, & Rietmeijer, 2018). Others also have focused on strategies and frameworks to guide and improve effective designing and production of educational videos for health education (Moussiades, Kazanidis, & Iliopoulou, 2015; Schober, Sella, Fernandez, Ferrel, & Yaroch, (2016) However, literature from a communication design perspective on the design processes for health education is scanty in the currently available literature. The study provides an opportunity to contribute to knowledge in the area of the role of video production for health education from practice-based research perspectives.

Finally, the researcher also discovered that the use of health educational videos is seen as a useful persuasive tool and in some instance, as a therapy for preparing patients psychologically for medical and surgical procedures. Again, evidence of using videos to improve knowledge about specific health conditions, leveraging the communicative power of videos to solve the problem of low health literacy among patients was also discovered. Other trends that emerged are the use of

videos as a behavioural communication strategy to alter negative perceptions about health conditions and to promote positive intention and comprehension of public health conditions (Wang et al., 2015; Bello-Bravo, Zakari, Baoua, & Pittendrigh 2019; Wahyuningsih & Rizky 2019; Correnti, Chen, & Stoff 2017; Gadler, Crist, Brandstein, & Schneider, 2016; McKenzie et al., 2019). In the context of maternal health education which is the focus of this study, the review discovered that videos are a powerful strategy for increasing self-efficacy skills of pregnant women, improving intention to follow health care direction and altering attitudes among pregnant women with varied backgrounds (Mutanda, Waiswa, & Namutamba, 2016; Kumar et al., 2015; Joventino, Ximenes, da Penha, Andrade, & de Almeida, 2017; Canter, Rao, Patrick, Alpan, & Altman, 2015; Coetzee et al., 2018). Whiles the review show that the use of videos is imperative health education and promotion strategy, literature that discuss the use of videos during pregnancy schools, perceived usefulness and acceptability from midwifes perspectives is scanty and needed more attentions.

The thrust of this study is to produce culturally appropriate educational videos to promote maternal health and to examine the efficacy videos. The next chapter critically discusses the methodology that will be used to achieve the objectives of the study.

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CHAPTER THREE

METHODOLOGY

3.0   Overview

The purpose of this study was to explore issues surrounding the use of educational videos for maternal health education to inform the production of a persuasive video on selected maternal message and to investigate the how the form and content shape health workers and pregnant women perceptions of the videos. This chapter, therefore, discussed the Research Design, Population for the Study, Sample and Sampling Techniques, Data Collection Instruments, Data Collection procedure, ethical and trustworthiness considerations and methods of Data Analysis and Production processes. Before a detailed description of the above, it is very essential this section first discusses the philosophical position for this study.

3.1   Philosophical Assumptions of the Research

This study was situated in the constructionism and interpretivism paradigms since the core of the study is to examine the subjective responses about the use of audiovisual communication design materials and the interpretations of audiovisual media as a health educational strategy. These views of research suggest that knowledge is subjectively constructed and it exists in multiplicity. Thus, this study acknowledges the multiplicity nature of knowledge and can be examined from subjective and multiple responses (Creswell & Poth, 2017) Furthermore, the research sought to investigate motives, meanings, reasons, and other subjective experiences of individuals as they interact within their cultural space (Anderson, Ozanne, & Hudson, 2014). Moreover, as an interpretivist researcher, the focused is on the cultural construction of truth and reality and how human experiences affect the interpretation of meanings in their natural settings. This paradigm is appropriate because the study is

about examining opinions, perception and experiences about the use of audiovisual communication design as a sign for antenatal education (Creswell, 2013). By adopting this paradigm, it helped the researcher to acquire insight into the beliefs, perceptions and values about the use of visual communication artforms and the functions of the audiovisual content and form to antenatal education and how such mediated communication design can affect such human experiences. Such social phenomena can be best explored by getting closer and interacting with the subjects involved. Thus, the objectivism and positivism traditions which are tangent to the natural sciences will not be appropriate to study a deeply social phenomenon which is interested in describing into depth the meanings, perceptions, and believes (Creswell, 2013). Moreover, the researcher believes that the existence of reality or knowledge regarding the design and use of videos in antenatal education is devoid of objectivism but rather a product of constructionism and interpretivism which emanate from multiple sources by which the researcher played an active role.

3.2   Research Design

This study used the qualitative research approach and employed the artistic research design with case study methods. This allowed the researcher to focus on the specific case of using audiovisual media design forms by maternal health care officers for providing antenatal nutrition education to pregnant women within the setting of Focus Antenatal Education in the Ga South Municipal Assembly (Sullivan, 2015; Creswell, 2013). This research design helped the researcher to explore opinions and experiences and about the case of audiovisual media design forms and its communicative functions in the context of antenatal health education (Kerrigan & Mcintyre 2018; Sullivan, 2015). The research design supports the focus of the research which south to isolate a specific case and to conduct in-depth study to

understand issues surrounding the use of audiovisual media to support antenatal education in Ghana. Additionally, the research design option was motivated by the ontological and epistemological positions of the study which argues that knowledge regarding the use of audiovisual media in the context of antenatal education is subjective, exists in multiplicity and a product of created experiences of people in which the researcher plays a role (Creswell & Poth, 2017).

The research design was structured around three phases: pre-studio research, studio research and post-studio research. The pre-studio research phase conducted research on current issues about the use of visual media artforms for antenatal nutrition education. The focus was to acquire an in-depth understanding about the use of audiovisual media artforms for antenatal education, the nature of the available visual forms and the associated antecedents to justify the need and to guide the production of persuasive audiovisual media to support antenatal nutrition education.

During the studio research phase, the researcher combined field study and studio practices and design methods to collect additional data to design content, generate, concepts, production scripts, storyboards and animatics. Next, the researcher used the animatics, which is a draft version of the final video to conduct pre-test research with selected members of the target population to refine the content and form of the video. The use of the animatics for pretesting helped the researcher to subject the content, concept, narrative, and other communication elements to review and to incorporate the responses into the actual production (See chapter 4 for an extensive discussion of production processes and techniques).

The post-studio research involved fieldwork which examined how the content and design strategies shaped the experiences of maternal health officers during antenatal health education sessions and how the communication and persuasive

elements in the video shaped pregnant women's responses and interpretations. Through this approached, the researcher was able to explore the present case in a holistic manner to make an academic conclusion about the use of audiovisual media for antenatal education in Ghana.

The artistic research is recognised extensively within and beyond the scope of art and communication design as a valid qualitative approach through which practitioners and researchers can advance knowledge about design practices and impact of design products within social contexts (Batty & Kerrigan, 2018). For instance, according to Biggs (2009) as cited by Kara (2015) explained that artistic research enables designers and artist to create new or improve on existing knowledge through the design processes to produce a research output which becomes an embodiment of academic knowledge. Similarly, Sullivan (2015) and Kara (2015) further added that artistic research is a systematic and meticulous creative research process that generates data through perceptions and feelings, and other unquantifiable rich qualitative data sources. In this context, the qualitative data becomes a reflection of interpretive and constructivism views of participants (Sullivan, 2015).

The adoption of the artistic research design is appropriate for the study. It helped the researcher to investigate the experiences and opinions about the use of visual communication materials and their communicative value in the context of antenatal education settings. Through this approach, the study integrated traditional research techniques with the video production method of inquiry to "represent human action" and to evaluate its efficacy (Kara, 2015 p.22). This form of research is recognised extensively as a valid qualitative approach through which practitioners and researchers can advance knowledge about art and design practices and the impact of such design products on their consumers (Batty & Kerrigan, 2018).

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3.3   Study Location

The research was situated in the Ga South Municipal Assembly (GSMA) in the Western part of the Greater Accra Region. GSMA was created with 2007 with Legislative Instrument 2134 in July 2012. It can be located at latitude 5o 48 North, 5o 29 north and latitude 0o8' west and 0o30'. West The municipality covers a total land area of approximately 517.2 sq. km and dotted with 362 communities. During the 2010 population census, it was estimated that over 210,155 are females and 201,222 are males making a total population of 411,377(GSMA).
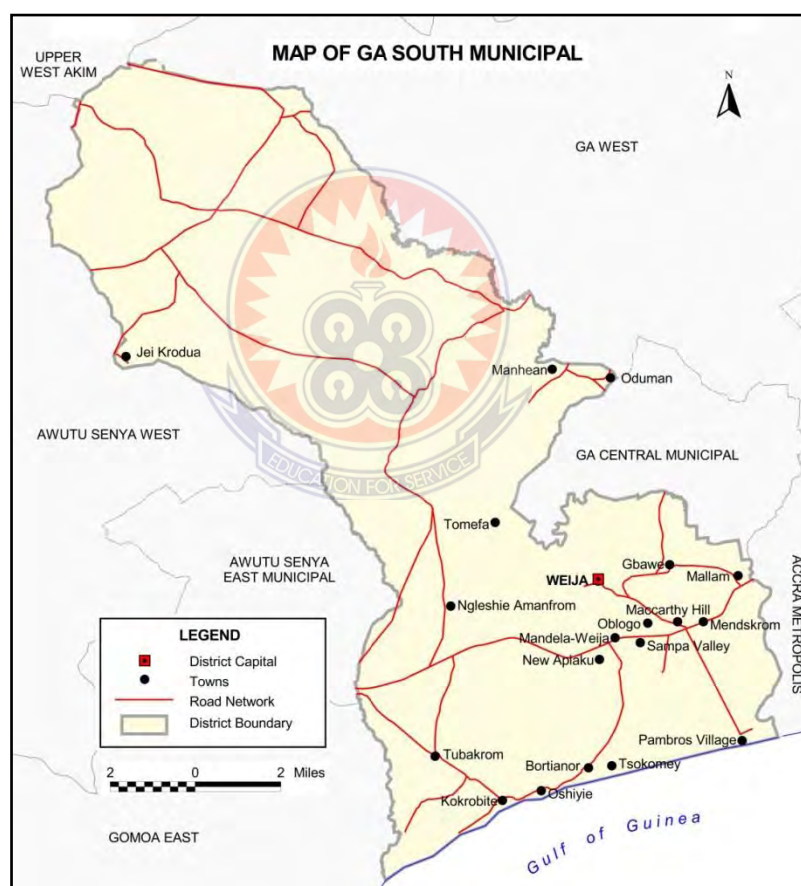
Figure 15: Map Ga South Municipal Assembly (2018). Source: fieldwork

The municipality is boarded by other municipal and district assemblies, as shown in figure 13.   For instance, GSMA shares her eastern boundaries with the Accra Metropolitan Assembly and Ga Central Municipal at the south-eastern part of

the municipality. The northern part of the municipality is bordered by Akwapim South District, West Akim Municipal assembly Ga West Municipal assembly and Awutu-Senya East Municipal Assembly. At the south-west part of the district is Awutu-Senya District and Gomoa East Districts assembly. In late 2018, the area was divided into two to allow for effective local governance. The new district that was couched is Weija-Gbawe Municipal Assembly; its territory extends from the eastern part of the Ga South Municipal Assembly. However, during the time of this study, the GSMA health directorate continues to manage the affairs of the new district. Hence, in this study, the use of GSMA refers to both assemblies.

GSMA health directorate oversees ten government health facilities. These are Oblogo health centre, Mallam demonstration, Amanfro polyclinic, Obom, Obor and Ga south municipal hospital. The rest are Kokrobitey, Bortianor health, Aplaku health centres. The district has different facets of health facilities. Most of the facilities are health centres and CHPS compound. The district has one general hospital and one polyclinic. Being the only general hospital, the Ga South Municipal Hospital receives referrals from all the facilities in the district. In line with the regional health directorate, pregnancy schools are organised in all the GHS facilities in the district. The Ghana health service annual report for 2018 reported a projected population of 501,872 with one year expected pregnancy of 20,075 (Ghana Health Service, 2017). Interaction with the district health promotion officers, nutrition officer and senior midwife indicate that anaemia in pregnancy has been lingering problems for many years and one of the leading causes of pregnancy complications in the district during the last five years. Even though there has been an effort to control its effects, the rate of reduction has been fluctuating. Hence, education and other interventions are being intensified to help manage the situation.

Table 1: Number of Hospitals Contacted for the Study

Name of Health Facility	Facility Status
Ga South Municipal Hospital	General Hospital
Aplaku Health Centre	Health Centre
Mallam Health Demonstration	Health Teaching
Oblogo Health Centre	Health Centre
Mallam demonstration	Health Centre
Obor CHPS Compound	Health Centre
Amanfro Polyclinic	Polyclinic
Bortianor Health Centre	Health Centre
Kokrobitey Health Centre	Health Centre
Total Number of Health facilities	9

3.3.1 Basis for selection

The choice to situate the study in GSMA was motivated by two core factors. First, this site has a mixture of urban, peri-urban and rural health facilities. This helped the researcher to collect varied opinions from all levels of health facilities regarding the use of audiovisual media for maternal health education. Secondly, the municipality has one of the high expected pregnancy projection in the Greater Accra region and in Ghana which suggests that the district may need more maternal health services including education to empower pregnant women to play an active role in ensuring safe maternal outcomes (Ghana Statistical Service, 2017). Table 1 gives a breakdown of the selected health facilities.

3.4 Population

The population for this study was drawn from two groups. The first population included maternal health officials of government health facilities within the Ga South Municipal Assembly. The second consisted of all pregnant women who attended

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government health facilities for antenatal services and education in the Ga South Municipal Assembly (GSMA). These groups formed the core population of which this study sought to examine and draw conclusions to fulfil the objectives for this study (Creswell, 2013).

3.5   Sample and Sampling Technique

The study relied on purposively sampling technique to sampled a total of 30 respondents to capture perception, feelings, thoughts and interpretation concerning the use of audiovisual material for antenatal education during the study (Table 2 describes the groups of respondents). The purposive sampling strategy allowed the researcher to select participants who met specific "criterion" and were "predetermined" due to their relevancy in answering the research questions of the study, the philosophical underpinning of the study and the review literature for this study (Given 2009 p.562). Specifically, the study employed the stakeholder, criterion, and purposive random sampling strategies (Given 2009).

The stakeholder sampling strategy was used to select major stakeholders who directly promote antennal health messages to pregnant women during antenatal education sessions This has been described in this study as maternal health officers which include both midwives and nutrition officers and other related workers. The study sampled (11) health officials: two (2) officials from the National Health Promotion Division in charge of maternal health, three (3) principal midwifery officers, two (6) midwifery officers, one (1) district nutrition officer for Ga South Municipal Assembly, one (1) nutrition officer for Ga South Municipal Hospital and one (1) district health promotion officer for the Ga South Municipal Assembly. These samples were used during the pre-studio and research objective one which sought to examine how maternal health officers communicate antenatal health messages to

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pregnant women and the dominant visual communication materials available for communication during antenatal health education and to design persuasive video content on antenatal nutrition.

During post-studio research, the study selected six (6) maternal health officers (midwives and nutrition officers) to deal with research objective three. Additionally, the criterion and random purposive sampling was combined to recruit eight (8) pregnant women to respond to research objective four which aim to examine pregnant women responses and interpretation of the video. Two pregnant women were drawn from Ga South Municipal Hospital, Aplaku Health Centre, Bortianor Polyclinic and Obor CHPS Compound. The researcher gained access to selected pregnant women through midwives and nutrition officers. Because they have a record of all pregnant women with anaemia and nutritional problems and were organised into groups for education, the researcher used the random purposive technique to select the pregnant women to respond to the questions under study. Table 2 is a description of pregnant women who participated in the study. The criterion and random purposive sampling strategy guided the study to "search for cases or individuals who meet a certain criterion" (Given, 2009 p.563).

In the context of this study, it was imperative to search for pregnant women with a nutritional problem with a blood level below 11.1, the normal level required for healthy pregnant (WHO, 2020). Pregnant women with poor blood level are the core target of antenatal messages. The aim is to educate and persuade them to adopt the recommended messages on maternal nutrition to improve their nutritional status before delivery date to avoid serious complications that may lead to maternal death. Hence, the use of the criterion and random sampling as a recruiting strategy helped the study to find specific pregnant women with characteristics that will make them

pay attention to messages of the designed videos. Again, the approach helped the study to collect rich and in-depth data about the pregnant women perception and thoughts about the communication elements and persuasive strategy of the designed video to ascertain the efficacy of the videos.

Table 2: Participants for the study

Category of population	Sampled
Pre-studio Research	
Senior Communication officer at National Health Promotion Division of GHS	2
District Health Promotion Officer	1
Principal Midwifery Officers	3
Midwifery Officers	6
Senior Nutrition Officers	1
District Nutrition Officers	1
Studio Research	
Audiovisual experts	2
Post-studio Research	
1. Midwives	4
2. Nutrition Officers	2
3. Pregnant women	8
Total participants	**30**

3.5.1 Demographics of pregnant women

Table 3 is a description of background information about pregnant women contacted for the study. Ages of pregnant women respondents showed that they are between the ages of 16 to 39 years of age. The gestation period ranged from 12 weeks to 25 2weeks. Majority of the pregnant women are traders. Others are also dressmakers and hairdressers. All the selected pregnant women are newcomers to

antenatal education groups. The above data suggest that the majority of the pregnant are within the fertility rate. Table 2 is a description of the pregnant women.

Table 3: Demographic information about pregnant women for the study

Pregnant women	Educational background	Gestational age (In weeks)	Actual Age	Current Hb level
Pregnant woman 1	Primary 6	16	34	9.9
Pregnant woman 2	Primary	12	30	9.8
Pregnant woman 3	Primary	18	28	10.0
Pregnant woman 4	Vocational	25	19	8.9
Pregnant woman 5	None	16	39	9.2
Pregnant woman 6	None	22	38	9.0
Pregnant woman 7	JHS	16	27	10.1
Pregnant woman 8	Primary 6	17	22	9.6

3.6   Data Collection Instruments

The study relied on interviews and group discussions, observation, and artistic methods. The application of such multiple data collection tools helped the researcher to collect rich data which is typical of qualitative research (Creswell, 2013).

3.6.1   Individual and group interviews

This study adopted interviews, as data collection instruments. The study used both single and group interviews. The study used both structured and semi-structured styles of meetings. The structured interviews allowed respondents to answer the same questions. The questions were predetermined to reflect the conceptual frameworks for this study. Apart from eliciting productive responses, the semi-structured helped the researcher to probe further to gain insight and understanding about the position or views of the participants. Also, the semi-structured interview allowed for clarification of answers and for further the explanation of complex ideas. This approach helped the

researcher to collect data through the use of cues, follow up questions. Specifically, the interview method was used both at preproduction investigations and postproduction testing

The combination of both structured and semi-structured interviews was useful in contextualising the variables under discussions and concurrently created a conducive atmosphere for both interviewer and interviewee to discuss variables of the research questions in more detail (Hancock, 1998). It allowed the study to explore the views, experiences and values and more in-depth understanding of factors affecting the health educational videos and issues that emerged from its utilisation among midwives at pregnancy school settings. The researcher administered the instruments in the form of conversation in a natural environment; however, the researcher ensured that all collected data were reliable, valid and met the objectives of the study (Patton & Cochran, 2002).

3.6.2 Observations

Observation method was employed at the pre-studio research and post-studio research stages of the study. During the pre-studio investigations, it gave the researcher first-hand information and experience on the actual educational materials that are used, the nature of such materials, level of utilisation of videos and opportunities and challenges associated with their usage. This method was also useful because it helped the study to record information as it unfolds and not miss "unanticipated phenomena" that could not be captured by other means (Given, 2009 p. 573). Through this method of data collection, the researcher was able to have direct exposure to the research phenomena, pregnant women and midwives who conduct the school. Data was collected through a systematic and unobstructed approach using the conceptual framework for this study.

3.6.3 Visual research

Visual research was employed to identify and collect communication material or artefacts used by health workers during educational sessions (Creswell & Poth, 2017; Given 2009). Visual research, therefore, is an unobstructed method of data collection which helped the study to examine existing visual communication materials on antenatal nutrition education and to gather data-rich in "portraying the values, beliefs and perceptions" about health officers who used visual materials to support antenatal education. (Creswell & Poth, 2017; Given 2009)

3.7 Data Collection Procedure

To answer research objective one, three and four which sought to examine how maternal health officers communicate antenatal health messages on nutrition to pregnant women and the dominant visual communication materials available for communication during antenatal health education, health workers and pregnant women perception about the designed videos, the researcher made several visits to the selected health facilities and established a relationship with nutrition officers, midwife and pregnant women attending educational sessions after the researcher had secured an approval from the Regional Health and Municipal Health Directorates. The researcher explained and emphasised the aims of the study to all participants. The researcher then booked an appointment with all respondents that were selected. The data collection procedure was done face-to-face at the selected health centres and offices. The questions for the interview were semi-structured guided by the conceptual framework of the study and themes from the reviewed literature. The researcher conducted the discussion in a relaxed mood with follow up questions to clarify the main points. Each interview sessions lasted between one to two hours. During these sessions, the researcher also retrieved copies of visual materials that are

used for antenatal education. During the post-studio research with health workers, the designed videos were made available to health workers through YouTube channel and flash drive for pregnancy schools within the study location. During the school sessions the researcher academically observed settings, how health workers used the video, audience reception and reactions to the videos. Next, after each school, the researcher conducted interviews with the instructors using the interview guide that was designed for the study. In relation to the pregnant women, the researcher used his 8 by 10 inches' tablet which was connected to a Bluetooth speaker to present the video to the selected pregnant women. The videos were presented in three sections: (1) threat and severity (2) susceptibility (3) efficacy and motivation. During each sections, the researcher showed the video for several times for 4 to 5 times depending on the satisfaction of the participants before interview.

In each field observation, the researcher was introduced by the head of the antenatal unit. The researcher made a personal visit to all the nine government health facilities in the municipality. The researcher employed the non-participant observation method. The researcher explained the purpose of the study. Guided by the research objectives and literature review the researcher developed a checklist and made careful observations of proceeding during antenatal health education. The set of lists are place and settings of education, the message and source characteristic, the use of visual communication material, the dominant visual material used, the use and availability of audiovisual devices and audience reaction and responses. Additionally, the research made a systematic record of behaviour, communication and interactions. With the consent of all, the researcher used his phone camera to record the educational sessions in order not to miss any event.

3.8 Pretesting

The study conducted two different pre-tests. The first was done during the pre-studio and studio stages to test the communicative value of video scripts, previsualisation concepts and animatics. This approach allowed video experts and health professionals to examine the content and the communicative value of the videos.

3.9 Validation of Instruments/Piloting

Based on the research objectives, checklists were developed to reflect the constructs of theories and available literature for this study. The researcher made copies of the instruments available to colleagues for peer-reviewing. Senior midwives, nutrition officers and staff at the NHPD were also consulted for their contributions. The researcher also sought the input of other experienced researchers from other universities, both local and international on the instruments. The final instruments were submitted to the researcher's supervisor for input and final validation. The researcher conducted a piloted instrument with selected members of the population. This helped the researcher to refine the instruments to establish reliability and adequacy for the interview. Some of the questions were dropped since it showed a repetition of the responses. The final instrument was used for the actual administration

3.10 Ethics and Trustworthiness of the Study

To ensure ethical issues and trustworthiness of this study, the researcher followed rigorous processes and methods (Creswell 2013). To ensure adherence to ethical standards, the researcher first presented the proposal for this study which outlines the overall strategy, detailed description of data collection instruments, target population and strategy for ensuring the safety of participants to the Music

Department of the University of Education Winneba for approval. Next, the researcher presented a recommendation letter from the Music Department of the University of Education, to the Ghana Health Service (GHS). Besides this letter is a detailed document that outlines the purpose and significance of the study and the overall strategy of the study to Ghana Health Service for permission to conduct the study and measures to protect participants.

Upon receiving an approval letter from GHS national headquarters, the letter in addition to approval note was sent to the Accra Regional Health Directorate of the GHS for regional approval. The researcher then sent the regional approval letter to the Ga South Municipal Health Directorate for district permission. Finally, the research approvals from the national, regional and district were forwarded to the heads of the selected facilities in the Ga South Municipal Assembly to gain access to the study sites. At the research sites, the researcher explained the purpose of the study with the head facility and units' heads. Informed consents were obtained from respondents who agreed to be engaged in the research. Apart from individual consents from the selected pregnant women, the researcher confirmed with their midwives if they could be involved in an interaction or interviews. Next, the researcher reassured all participants that they were at liberty to withdraw from the study without any limitations. They are allowed to do so at any time if they wanted. Again, the researcher guaranteed all respondents that their responses are purely for research purposes, and as such, their identity will not be exposed as some have strongly indicated.

Concerning the trustworthiness of the study which describes the accuracy of the research approach, strategy, data collection and more importantly the findings of the study, the researcher adopted Guba's framework for ensuing research

trustworthiness: credibility, transferability, dependability and confirmability (Shenton, 2004). To ensure credibility, transferability, dependability the researcher used different methods like in-depth interviews, observations and visual study with instruments that were formulated based on key themes from reviewed literature and variables of the conceptual framework for this study. This approach allowed for the triangulation of data to help compensate for participants differences personal differences and the researcher's extreme biases. This helped to confirm the authenticity, consistency and correctness of the data. Additionally, the data collection was done by consulting relevant participants, appropriate visual materials and based on several visits and interaction with relevant organisations. Also, the researcher employed the "iterative questioning" (p. 67) through probing and reframing of earlier questions to confirm previous responses. Furthermore, the researcher made use of "peer scrutiny" (p.67) to examine the research throughout the study which allowed other perspectives and prevented pitfalls that may show up due to the researcher's attachment to the study.

Also, the analysis of the findings was compared to the previous body of literature studies. To ensure the quality of responses, the researcher frequently briefed the researcher's supervisor, experts, experienced researchers who had done related studies, practitioners and colleagues. This helped the researcher to acquire the views and perspectives on the research which helped shaped the study. Finally, the researcher's background, qualifications and knowledge as a visual communication designer and researcher helped in collecting quality data.

3.11   Method of Data Analysis

The study adopted thematic analysis and textual analysis as methods of data analysis.

3.11.1 Thematic Analysis

The study deployed thematic to analyse data from respondents during pre-studio research and post-studio investigations. Because this study takes the qualitative approach, data from this study was rich that describes meanings, perceptions, and experiences. The following are the steps followed by the researcher to analysed data from the field study.

1. **Data Preparation and Familiarisation:** The researcher prepared the data through three main stages. First, the researcher collated all recorded data from interviews and field notes from observation studies and produced a verbatim transcription. In some instances, the researcher translated data from Twi and Ga to English**.** Then, the researcher backup up all data to ensure the safety of the data in the event of damage. Next, the researcher masked all the names of respondents to maintain the anonymity of the respondents. Moreover, the researcher ensured that the data was securely kept to protect confidentiality. Finally, the researcher read through the data several times. This helped them get familiarised with the nature of the content.

2. **Development of Codes and Coding:** This stage mainly involved finding issues, views and opinions that emerged throughout the transcribed data that were collected from respondents. Both the deductive and inductive coding technique was used at this stage. The researcher developed a code to guide the search for themes and patterns. These codes were developed based on the conceptual framework and reviewed literature concerning the objectives of the study. Hence

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the deductive coding helped the researcher to capture salient issues raised emerging from the data through the lens of literature, research objectives and conceptual framework. This also helped the researcher to appreciate the meanings that emanate from them. Again, it helped the research to create signpost within the data which helped in locating specific themes easily. Additionally, in order not to miss any important and unexpected opinions, thoughts and expressions, the inductive approach was used to capture valuable issues, perceptions and thoughts that may be lost through the deductive approach. This was done through a careful reading of data several times to detect both conspicuous and latent themes and concepts that keep emerging from responses even though the interview questions directly did not set to address them.

3. **Generating of themes and refinements:** The researcher generated themes based on patterns the emerged from the coding. Some of the codes were reviewed and refined in line with the objectives of the study. The researcher described and codified the data into sub-themes as they emerged by reading thoroughly through the text again and note-making. Next, the data were categorised into major thematic subjects by aligning them to vital statements, units of meanings and new knowledge. Also, to provide an interpretation of the data, the researcher synthesised the data to explore implications from the realities and interpretations of the respondents by describing the importance of their responses concerning the objectives of the study and existing literature Finally, the researcher reviewed all the themes and codes to ascertain the accuracy and clear representation of the data.

4. **Presentation:** Finally, the researcher presented the findings following the themes that were created and emerged in relation to the objectives of the study. The

presentation was done in a clear logical manner that still maintained the integrity of the findings.

3.11.2 Textual analysis

The textual analysis was used to analyse the video as a constructed text for communication. This helped the researcher to study the content of the video and the underlying meanings that could shape the production of meanings from audience perspectives. The study adopted the semiotic approach and combined it with responses from in-depth interviews from pregnant women, health officers and communication experts This approached helped the study to go beyond the study of text but also to understand the text from the perspectives of cultural consumers, context and values (Given 2008). The following steps were followed

1.   The study described the communication context of the video.

   The researcher adopted the following framework from Given (2009)

   a.   Who created the text? What are the authors' intentions?

   b.   Who is the intended audience? and the specific textual characteristics

   c.   What topic or issue is being addressed?

   d.   How is the audience addressed?

   e.   What is the central theme or claim made?

   f.   Is there evidence or explanation to support the theme or claim?

   g.   What is the nature of this evidence or explanation? and the wider context of the text

   h.   How does the text relate to other texts in the same genre or format?

2.   Description of denotative and connotative meanings and how they contribute to preferred meaning

3. The researcher discussed the findings of the semiotic study, interpretations with responses from pregnant women, communication experts and health workers and the reviewed literature.

Textual analysis is recognised as valid data analysis for media text research. This is qualitative data analysis examines the meaning, design structure and discourse of media text like films, video, television shows, newspaper and adverts. The focus is too "deconstructed" to expose the latent meaning and how texts function as a cultural product for communication (Given 2008 p. 865). In the context of this study, it helped the researcher to demonstrate how the form and content of the video act as an outcome of a research. Additionally, the textual analysis shows how the aesthetic and design structure of the video contributes to knowledge and act as an embodiment of knowledge on media production for health and its role in facilitating the workflow of midwives and nutrition officers during antenatal health promotion (Sullivan 2015).

3.12   Production Equipment and Devices

In answering research question number three for this study, several pieces of equipment, software applications other devices were employed throughout the three phases of the production.

3.12.1 Computer

The computer was a significant device throughout the production process. The computer is made up of both input and output devices that allow users to input creative element together to create an output which is rendered through the output devices. The computer was used in the creation of script, storyboard, animatics. Again, it was used in previewing the footages and aided in the editing process. The editing process included the use of the computer to preview the shots, selecting the

best and organising the shot in narratives through the use of specialised software. Also, the computer helped in the trimming, adjusting of shots, colour grading and rendering out the video for playback.

3.12.2 Wacom tablet

The study used the Cintiq Wacom 2010 tablet for production. The Wacom is both an input and output device which facilitates the process of drawing, painting, modelling and designing.

Figure 16: Cintiq Wacom 2010 tablet

3.12.3 Canon Mark II DSLR Camera

The Canon Mark II DSLR camera was used in recording the demonstrations and tasks for the production. The camera is a digital image creation equipment that allows the generation of sequential images that creates the illusion of movements. The Canon Mark II camera aided that researcher to manually combined different exposure settings to produce high-quality pictures.

Figure 17: Canon Mark II DSLR Camera

3.12.4 Tripods

Tripods are camera support equipment that allows cameras to be kept in a strong position to avoid unwanted camera shakes and to create specific camera movements. In this study, the researcher used three tripods during the production studio. This helped the researcher to record good forages devoid of camera shakings.

Figure 18: Tripod

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3.12.5 Microphones

Microphones are audio and sound recording devices that make it possible for audible sound to be digitally recorded for playback. In this study, the Omnidirectional lavaliere microphone was used. This allowed the presenter to freely move around the set as she talks, explains and demonstrates.

Figure 19: Lavaliere microphone

3.12.6 Sets, Props, Costumes and Makeup

Sets are physical structures that constructed and arranged to depict an imaginary space for film or video production. Props or properties are objects and materials that are employed to characterise an area, add interest, or create an ambience. Makeup is a process of preparing and enhancing the appearance of characters for screen due to demands and aesthetics of story and a scene. Costume design refers to the actual clothes and related items that are necessary for depicting a particular character. In video production, all these elements marshal together to help create believable scenes on the screen to support the settings and time of a story or an event. In the context of this production, a three-four by six panels were arranged, and a riser to provide support for the set.

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3.12.7 Video Production Studio

The production studio is the indoor location for shooting videos, movies and television drama etc. I addition to space, a studio also includes installed lights for illuminating scenes or sets. In this study, the NAFTI television studio was used. It installed lights which gave the researcher the total control to manipulate the lighting to achieve the goals of the production. This could have been difficult to do if the production has been done on an actual location.

Figure 20: NAFTI television studio

3.12.8 Software applications

A software application is a group of organised digital instructions that allow users to make inputs into the computer to accomplish a specific task. In the context of this study, the researcher used the Adobe creative suites. These are Photoshop for drawing, Illustrator to arranging and creating a storyboard. Others are After effects for the creation of animatics and motion graphics. Finally, Premier Pro was used for the actual editing of the video and Audition was used to refine and edit the audio. The use of the Adobe suite was helpful because it allowed one file to be moved across the different platforms without the need for compressions which would delay the production process.

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CHAPTER FOUR

PRODUCTION TECHNIQUES AND PROCESSES

4.0   Overview

This chapter focuses on preproduction and production techniques and procedures that the study deployed to produce the video using the theoretical constructs the production framework that was developed to ground the study. The study demonstrates how the researcher used cinematic techniques and processes to design content and manipulate communication elements to construct video art form on maternal health. Again, this chapter reports the findings from the postproduction research. This chapter is organised into two broad phases: preproduction and production. The preproduction discusses how content was designed and structured into a persuasive message. Again, the pre-production phase shows how concepts were created and represented in previsualisation forms to help shape the content before actual production. The production phase illustrates how the final video was produced. Figure 21 below is a general overview of the production process.

Before reporting the preproduction and production processes, the chapter now turns attention to the specific techniques and production approaches that were engaged for the entire production.

PREPRODUCTION

- Designing Content
- Message Development
- Persuasive Belief Chart
- Concep/Story development
- Narrative Structure
- Story Treatment
- Shooting script/ Storyboarding
- Animatics
- **Pretest & Refinement**

PRODUCTION

- Script Breaks Down
- Casting
- Set Design
- Lighting
- Camera and Sound Set Up
- Rehearsal, Directing Recording
- Editing/Sound Design
- Design/Animation/ Compositing
- **Fine Cut & Rendering**

Figure 21: Over of the production process

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4.1　Production Approach

This study is not just the use of cinematic processes and techniques to produce a video. It is an academic practice that combines cinematic aesthetic with appropriate health education theories to provide communication solutions. To achieve this goal, the researcher relied extensively on the realism film approach. This helped the researcher to create and maintain the interest of the audience without directing attention to the video production techniques (Kindem & Musburger, 2001). The study retains realism in terms of space, time and action. This was achieved through the use of Hollywood classical styles like matching shots and action, maintaining continuity in action, movement, direction and space. This style of screen storytelling helps in hiding the cinematic techniques and allows the audience to be immersed in the story world of the characters and their actions. This approach was appropriate for the production of educational videos because the researcher wanted the audience to focus on the events in the video and not be distracted by the production techniques.

4.2　Cinematic Techniques and Communication Variables

Cinematic technique refers to the specific ways through the researcher combines communication elements to produce the video (Bordwell et al., 2016; Hughes, 2012; Rabiger, 2008). The specific techniques that were used are lighting, mise-en-scene, costume and makeup, cinematography, directing, sound and editing. Furthermore, animation techniques were used to generate visual data that could not be achieved through the use of the video camera.

Narrative techniques were used to create a story and design its sequential order. The Lighting technique in this study describes more than just the giving of visibility to mise-en-scene elements. It helped the research to the setting, create mood and time to reinforce the core narratives. Additionally, the lighting technique was

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used to direct attention to key mise-en-scene elements to aid communication Mise-en-scene techniques helped the researcher to organised, composed, and direct visual elements into the scene to create a setting and mood. Costume and makeup were used to transform characters that resonate with cultural codes that are familiar to the target audience. Cinematography techniques helped the study to compose and frame scenes and shots that should drive the narrative. Sound and editing techniques were employed to select and organise individual shots a story sequence to communicate core messages. Sound elements helped the researcher to create mood and connect the relationship between each shot (Bordwell et al., 2016; Rabiger, 2008). These techniques were used to manipulate communication elements like source, message, receiver and persuasive variables like threat, severity, susceptibility and efficacy factors. This chapter now turns to the first phase of the production of to demonstrate how preproduction techniques were used to design content and previsualisation forms.

4.3   Preproduction: Designing Content

To produce a useful video, there is a need to generate valid message content for the video. This stage was very critical because the production is more of a design than an artistic expression of subjective feelings. The video is aimed at solving a communication problem that is directly linked to maternal health which is outside the researcher's field of practice. Moreover, to persuade an audience through the use of educational videos, there is a need for a thorough understanding of audience reception factors regarding the recommended message and action. The content designing phase spanned five stages:

1. Stage one: Creative strategy and message development

2. Stage two: Persuasive belief chart

3. Stage three: Concept and message development

4. Stage four: Development of narrative Structure

5. Stage five: Development of story treatment

4.3.1 Stage one: Creative strategy and message development

In generating content for the video, the researcher used the constructs of the Persuasive Health Message Framework (PHMF) to design a creative brief (Please see the theoretical framework in Chapter two for more details about PHMF). The creative brief was used to collect information about the target audience. (See appendix A for a copy of the creative brief). The use of the creative brief to generate content was done in three phases.

The first phase involved interaction with health workers. The focus was to outline the recommended message they want to share with pregnant women. Through the discussions, the researcher collated valuable information from them which was used for the next step of the study. Table 4 is a summary of responses from the creative brief

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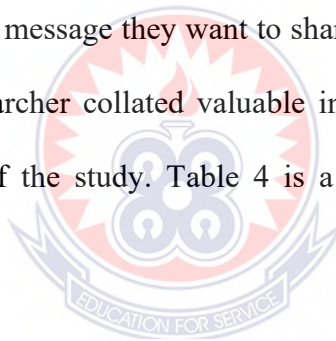
Table 4: Findings from the creative brief that was used for data collection from the health workers

Core messages regarding pregnancy nutrition?

1. The message should explain the four-star diet and each food group function.
2. Video content must state and explain the need for taking supplements like folic acid and iron tablets. (Food alone is not enough to ensure that pregnant women have the required iron and folic acid nutrients. Hence pregnant women need supplements to prevent anaemia and childbirth defects)

3. The video content must stress the need to avoid iron inhibitors drinks like energy drinks, coffee or caffeinated drinks, non-nutritive objects like "ayilo or shere", and also the need to sleep under mosquito nets for protection from malaria.

What should be the main objectives of the message?

1. To promote the four-star diet and health behaviours about nutrition regarding pregnant women. What are the threats and severity factors regarding poor nutrition in pregnancy and who susceptible?
2. Poor nutrition Could lead to anaemia, Premature delivery, abnormal baby, underweight baby
3. Could even lead to the death of both mother and child.

4. A child could cause serious health problems like diabetes during adult life.
5. Lack of folic acid and iron could lead to childbirth defects lead to anaemia

What are the recommended behaviours to avoid the dangers?

1. Pregnant women should eat a four-star diet all the times and more vitamin C based fruits, take their folic acid and iron tablets,
2. Avoid iron absorption inhibitor like caffeinated and energy drinks and sleep under a mosquito net

Possible barriers to the recommended action

1. Economic factors
2. Lack of knowledge about the importance of good nutrition in pregnancy

Desired Feeling

1. Pregnant women should feel the seriousness of poor nutrition.
2. They should also feel that they can follow the recommended actions

Message source factors

1. The Twi language was mentioned as the preferred means of communication since most people speak Twi.

During the second phase, the researcher interacted with selected pregnant women to ascertain their feelings, perceptions and other communication factors regarding the recommended behaviours as presented by health workers Again, using

the creative brief, the researcher obtained valuable responses from pregnant women. Table 5 is a summary the pregnant women's perception and beliefs about the recommended behaviour and other communication factors.

Table 5: Findings from the creative brief that was used for data collection from pregnant women

Threat, severity and susceptibility factors

2. Pregnant women generally agreed that poor nutrition in pregnancy is dangerous because it can affect the health and growth of the child and the mother.
3. But could not indicate or mention specific dangers that a pregnant woman and her child could suffer due to poor nutrition in pregnancy.
4. Pregnant women could not convincingly agree to the idea that they could be affected by the dangers and threat of poor nutrition

Efficacy believes

1. Pregnant women generally agreed that pregnant women need to eat well and attend antenatal clinics all the time.
2. In terms of self-efficacy, the majority believed that they could perform the recommended action suggested to them by their midwives or nutrition officers because they trust them
3. On response efficacy, the majority expressed that pregnant women need to eat well because that will help them. But could not mention the specific action to take to avert the threats.
4. Concerning barriers to efficacy, lack of money to buy food, vomiting, and nausea when taking folic acid and pregnant women mentioned iron tablets as factors that make it challenging to comply with some of the directions regarding nutrition.
5. Others also indicated that they find it difficult to eat when they are pregnant. Moreover, pregnant women mentioned that.

Cultural, environmental and salient referent factors

1. Concerning message source factors, pregnant women expressed that they trust midwives, nutrition officers, nurses and doctors than friends, family members, church.
2. However, the majority mentioned that they had been influenced at least once by friends, family, husband and religious beliefs.
3. Health workers and mothers, grandmothers and aunties are salient referents who can influence

Channel, message, language and source preferences

1. Mass media sources of maternal health information for pregnant women: UTV, GTV and Adom and YouTube. Prefer to receive health from information from midwife Television, video and radio more audiovisual than print materials.
2. The most preferred language is Twi. Others also mentioned Ga and Ewe
3. Characteristics of message source: preferred to receive health messages from like midwives, doctors, and nurses

4.3.2 Stage two: Persuasive belief chart

At this stage, the researcher assembled the responses from both health education experts and pregnant women into a chart to help see areas that need more communication attention. Table 6 shows the chart that was developed. Based on the table, the researcher decided to reinforce threat beliefs and clearly state the severity of the dangers associated with poor nutrition in pregnancy. Next, because the susceptibility beliefs were low among the target audience the researcher decided also to highlight the issue of susceptibility. To help increase self-efficacy and response efficacy beliefs that video content was also structured to provide high efficacy skills and knowledge on specific actions that can be taken by pregnant women to avoid the situation.

Table 6: Message developments

Recommended behaviour and action	Pregnant women beliefs and perception	Message focus
Threat and severity Poor nutrition could lead to anaemia, premature delivery, abnormal baby or childbirth defects, underweight baby, death and diabetes during adult life	1. Pregnant women agreed that poor nutrition in pregnancy is dangerous. But could not indicate or mention specific dangers	High/Video content must reinforce the threat belief. Low/ provide more information on the severity of the dangers associated with poor nutrition
Susceptibility factors All pregnant women are at risk irrespective of age or given birth before	Pregnant women do not convincingly agree that they could be affected	Low/Video message must also emphasise the susceptibility of all pregnant women irrespective of status
Efficacy factors Pregnant women should: eat a four-star diet and more vitamin C based fruits, take their folic acid and iron tablets, Avoid iron absorption inhibitors	Many believed that they could perform the recommended action Pregnant believed that they need to eat well to vert the dangers. But could not mention the specific action Barriers to efficacy include lack of money to buy food, vomiting, and nausea	High/Need Reinforcement Low/Video message must provide specific skills to apply Video message must address the barriers and provide skills to persuade pregnant women
Salient referent factors	midwives, nutrition officers, nurses, and doctors are more likely to influence pregnant women than friends and family	High/Video must reinforce

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4.3.3   Stage three: Concept and story development

Based on the creative brief and chat belief, the researcher developed several concepts to capture the message. This stage mainly involved visual thinking in conceptualising and representing message goals through visual narratives. Through various visual thinking, writing, reflection, and reviews with health workers and several writing experiments, the researcher developed two concepts for production. The first concept was to incorporate the message goals and audience communication factors to tell a story using a pregnant woman as the lead character to present the message.

Concept1

Adjoa, 32- year old pregnant women looks into camera with a smile. She speaks to camera and explains that now she is very happy because she does not have problem with aneamia. She continuous by saying that when her midwife told that she anaemic she was worried because aneamia can lead to premature baby, low weight bay which can affect the health of the baby. What made worry more is that I heard pregnant women have died because of poor diet in pregnancy. She again explains that when she started following the advice of his health care givers to eat four star diets and take her folic acid and iron tablets she realised her blood levels started improving. She states again the now her last check reveals that she fine and ready for a bouncy baby.

Figure 22: Story concept 1

The second concept was to use a health officer source to present a message using the common educational approach that is known to pregnant women who attend educational sessions.

Concept 2

This video takes the instructional-health expert style. The video tarts with pregnant woman who is in pain. A voice over ask serious of questions on what is happening to the woman. The narrator continues by saying explain the dangers that comes with poor eating and when pregnant women do not take their folic acid ad iron tablets. Next a pregnant a midwife walks into shot and explains that there are easy steps to follow to avoid these problems. Midwife shows various foods from the four start diet that pregnant women can eat. She also explains with pictures and real examples the benefits of water and fruits. She explains why pregnant women should avoid certain drinks and non-nutritive objects.

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Figure 23 Story concept 2

The generation of the two concepts was crucial. Video production is usual experimentation and exploration; hence the focus of the researcher at this stage is to explore which creative direction can best communicate the message on nutrition information to pregnant women during maternal education sessions. Next, the researcher went back to the field. This was to explore the best direction path for the next phase of the production. The two concepts were showed nutrition officers and midwives in the various hospitals in the Ga South Municipal Assembly.

After reading the two synopses, the majority of the health workers suggested that option 2 be further developed as the central concept. Reasons for choice two were based on the point that the presence of the health worker as the source of the

message will strengthen the credibility of the message and will be useful in health facilities with limited staff. In that setting, respondents believe that the video alone can be used to present the educational messages. Secondly, the depicting of the dangers, severity, and solutions to avoid the dangers was seen as a better approach.

4.3.4 Stage four: Development of narrative structure

Based on the outcome of the synopsis testing, the researcher developed a narrative structure. This helped the researcher to visually plot the message goals and audience factors in a narrative form using the basic three arch story structures. Figure 4 shows the chronological development of the chosen concept. The narrative structure for this concept was divided into three: beginning, middle and an end. During the beginning, the presenter is introduced. She then builds trust with the audience and establishes her goal. Next, she mentioned and described the threat of the severity of poor nutrition in pregnancy. During the middle part of the story, the presenter now starts to resolve the conflict by providing solutions to avert the dangers. Finally, in the end, the section of the narrative structure, the presenter strengthens the audience's motivation and self-efficacy by providing reasons why the recommended action can be applied.
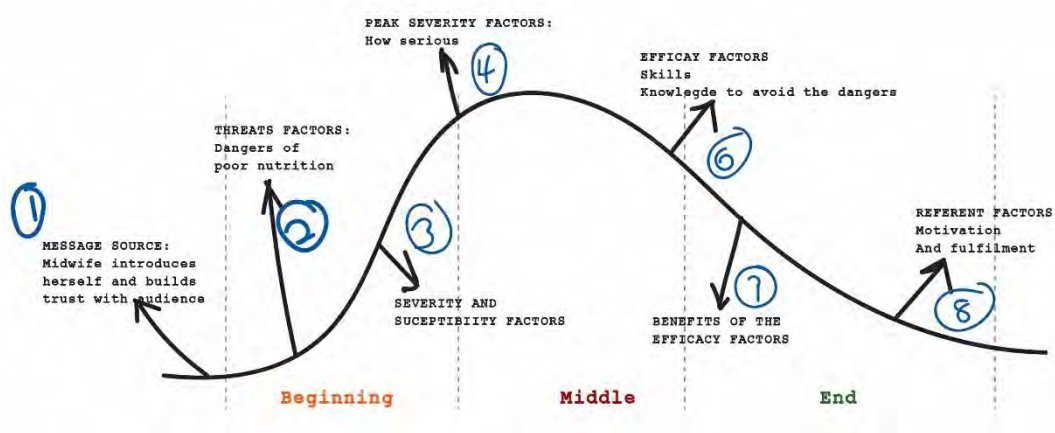
Figure 24: Developed narrative structure

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4.3.5   Stage five: Development of Story Treatment

During this stage, the researcher described the developments of actions in sequential order as it will unfold on screen. The researcher describes significant action, dialogues and other images that will appear on the screen. The treatment was done with the narrative structure in mind. The development of the treatment was significant to the production. The treatment allowed the researcher to articulate how the event on the screen will develop over time through the narrative structure. See appendix C for the treatment script.

4.3.6   Previsualisations Forms

Previsualisation is initial video scripts and other visual elements that are used to refine concepts and story before final production. The phase spanned the following stages:

1. Stage one: Shooting script
2. Stage two: Storyboarding
3. Stage three: Production of animatics (Draft video concepts)
4. Stage four: Testing animatics and review of the final script

4.3.7   Stage five: Shooting script

After the initial stages of the script were finalised, a two-column script was developed. This stage mainly involved the breakdown of the script into units of shot to present the sequences of events and actions of the story. There are different video scripts formats like full page, master scene script and the two columns or split-page script format. The researcher, however, adopted the semi-scripted formats because of its suitability for educational videos and it allowed the researcher to compare the shot with the sound at the same time. It also helped the researcher to communicate the

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visual narrative with other crew members who helped during the production (Figure 23 is page 1 of the shooting script). The two-column script has two columns. One of the first columns describes the picture of event and action. The second column takes all sound elements. Figure 2 to 27 shows the two-column script that was developed for production.

DESIGNING FOR MATERNAL HEALTH
SHOOTING SCRIPT

Shot No	PICTURE	AUDIO
1	**INT. STUDIO** FS. MIDWIFE (Presenter) FS Midwife Camera DOLLIES in slowly into an MS.	Poor nutrition during pregnancy is very dangerous. Currently many pregnant have anaemia related problems due to poor nutrition. Some have even given birth to premature babies and abnormal babies. Poor nutrition during pregnancy can affect a child's learning abilities and may even cause weight problems in the future. Some died together with their babies leaving them behind. Sadly, these complications and deaths should not have happened It could have been avoided easily if they had followed directions on pregnancy nutrition
2	CU. Midwife Midwife EXITS frame	This can happen to you and your baby too. You could even be at risk now? What do you think? Well, you may not believe that. Maybe you may say it can happen to others and not you. But the fact is that many pregnant women who die or have pregnancy anemia related complications are like you. Some did not believe it can happen until it happened to them You see if you don't plan to eat well that can happen to you and your baby. So what can you do? Come I will tell you?

Figure 25: Shooting script page 1

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3	**INT. STUDIO** Midwife ENTERS frame (right) FS. Midwife	Many successful pregnant women are avoiding these problems. One way they do this is by eating A 4-star diet.
4	MS. Midwife Picture insert (Foodstuffs) MS. Midwife Insert (Animation of 4 Star diet) MS Midwife walks towards the right of the frame. The camera pans with her slowly to reveal Food items CS of each item as midwife mentions them.	So what is a 4-four star diet? A 4-star diet means that throughout the day what you eat should include 　1. Animal source protein 　2. Legumes and nuts 　3. Vegetables and Fruits 　4. Starchy foods Remember you and your baby's health will be affected by what you eat. A four-star diet can help you and your baby to be strong and healthy. So why do you need a 4-star diet? First, let us talk about Vegetables and fruits. Some common vegetables and fruits are that should be part of your food are 　• Kontomire 　• Abedru 　• Tomatoes 　• Cabbage 　• Gboma and Carrots etc. Example Fruits like 　• mangoes 　• banana 　• orange 　• pineapple 　• Watermelon and coconut etc. They are good for you.

Figure 26: Shooting script page 2

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5	MS. Midwife FS Midwife walks towards the right of the frame. The camera pans with her slowly to reveal Food items (Protein)	But why do need them? You need them because they contain essential nutrients like vitamin C, potassium, fibre and folic acid. Vegetables are good for the growth of your baby and your health. Fruits contain Vitamin C which helps increase your blood levels. What about Animal source protein? Examples of animal source Proteins are
6	MS Midwife	Your developing baby needs plenty of protein, throughout your pregnancy to grow well. So eat them. They are good for your baby. Just makes sure your animal-sourced proteins are well cooked.
7	FS Midwife walks towards the right of the frame. The camera pans with her slowly to reveal Food items (legumes and nuts)	Now let us talk about legumes and nuts. These groups of food are also good for you and your baby.
8	CS of each item as midwife mentions them.	Examples are beans, agushie, werewere, groundnuts. Others are lentils, peas, beans, chickpeas, soybeans and peanuts.
9	MS Midwife	So why do you need them in your food? You see when you are pregnant, your baby and you need more fibre and nutrients like iron, folate (B9) calcium etc. Legumes are excellent plant-based sources of fibre and nutrients like iron, folate (B9) calcium which your baby needs for growth during pregnancy.

Figure 27: Shooting script page 3

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10	FS Midwife walks towards the right of the frame. The camera pans with her slowly to reveal Food items (carbohydrates)	The fourth food that should be part of your food is carbohydrate. The body's main source of energy for pregnancy comes from the essential carbohydrates found in
11	CS of each item as midwife mentions them.	Bread and grains, Rice, Banku, Fufu, konkonte, Plantain, yams, cocoyam, potatoes, akple, gari and many more
12	MS. Midwife	So how should you eat? There are no rules about this. Just make sure that whenever you eat,
13	Video Insert (Animation of a plate with the four-star diet. Animation Animation Animation Animation	Your plate should be a 4-star diet. That is it should a portion of protein, more vegetable, legumes and reasonable carbohydrates. Or make sure during the day you eat a variety of foods from the 4-star diet. It is suggested that you eat one extra meal in addition to breakfast, lunch and supper if you are hungry What about fruits. Fruits are very important. Eat them 30 mins before your main dish. Drink lots of water during the day your body needs it to function well

Figure 28: Shooting script page 4

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14	Insert- Energy and caffeinated drinks	Still, there is one more thing I have to tell you about food. What is that? Is about soft drinks. Generally, fluids like natural fruit juice good for you. But Soft drinks like energy drinks and caffeinated drinks are not good for you and your baby. They are iron absorption inhibitors. The point is that Even if you eat well and still take in these drinks energy and caffeinated drinks, they will reduce your good blood levels. This may lead you anaemia
15	MCU midwife	My dear friend, having a strong and healthy baby is in your hands. Is a choice you can make? There many rumours about the food you should not eat. In most cases, they're not true. For example, some say that egg, meat, snail, fish are not good for you. Research shows these are food is good for you because they help your baby to grow well. It helps prevents you from becoming anaemia. Talking to your midwife is better. They are well trained than anyone you know. Your midwife and doctor love to help you. Remember, You can safe pregnancy and a healthy baby. It starts with eating a 4-star diet.

Figure 29: Shooting script page 5

4.3.8 Stage six: Storyboarding

These stages of the preproduction have involved the development of storyboards. The development of the storyboard allowed the researcher to represent the script in sequential using drawings visually. Each shot was drawn to visualise actions and events that will be presented. Moreover, the storyboarding stage helped the researcher to describe each shot's size, angle, camera movements visually. Figure 28 to 31 show samples of significant shots in the storyboarding stage
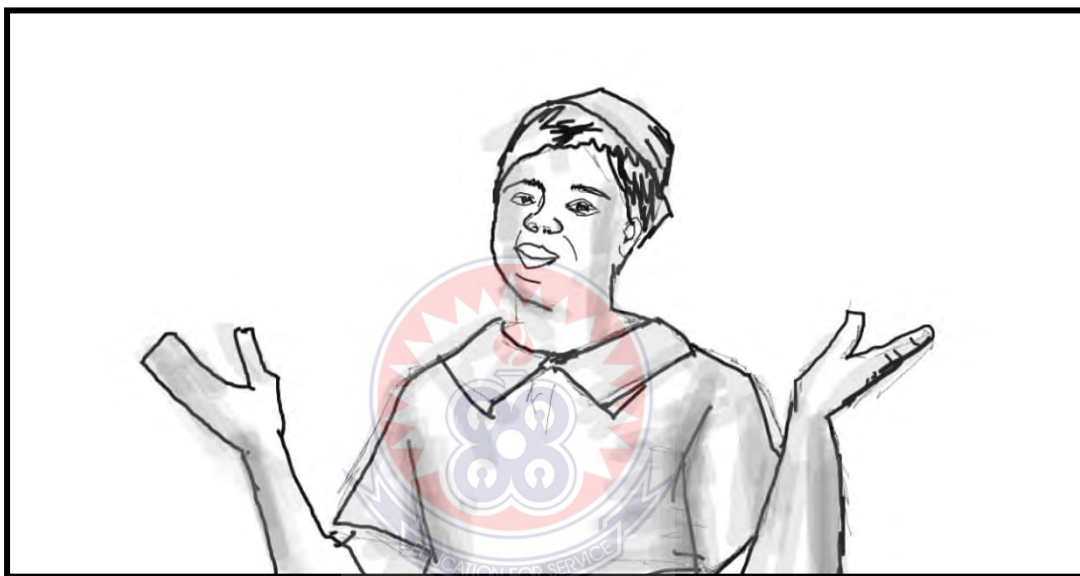
Figure 30: Shot 1 Close up of midwife

Figure 31: Shot four medium worried pregnant woman

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Figure 32: Shot 8, full shot of a sick, pregnant woman

Figure 33: Shot 12, medium shot of midwife

4.3.9   Stage seven: Production of Animatics

The multimedia theory and the PHMF were used as a guide in the production of the animatics (See the theoretical framework in chapter 2 for more information about the multimedia theory and the PHMF). Animatics are a draft version of the actual video to be produced. It combines drawn shots, music, and voiceover of the

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script to communicate the message of the video. To develop the animatics, the researcher imported all the sequential drawings of the storyboard into Adobe Premiere Pro CC. Next, all the drawn shots arranged according to the script. Then, the researcher recorded a voiceover of the script using a portable studio recorder. In Adobe Premiere Pro CC, the researcher layered the drawings and the sound together.

Further adjustments were made to the video shots duration and action time. The final sequence was exported as a compressed playback file. The process for animatics production is shown in figure 32 and 35.
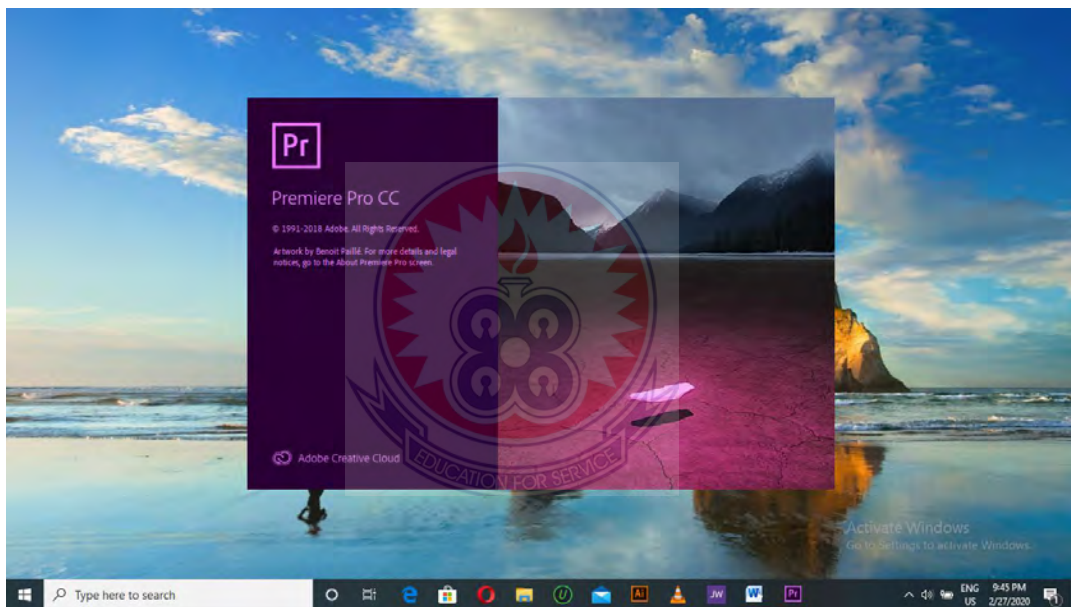
Figure 34: Lunching of Premiere Pro CC to create the animatics
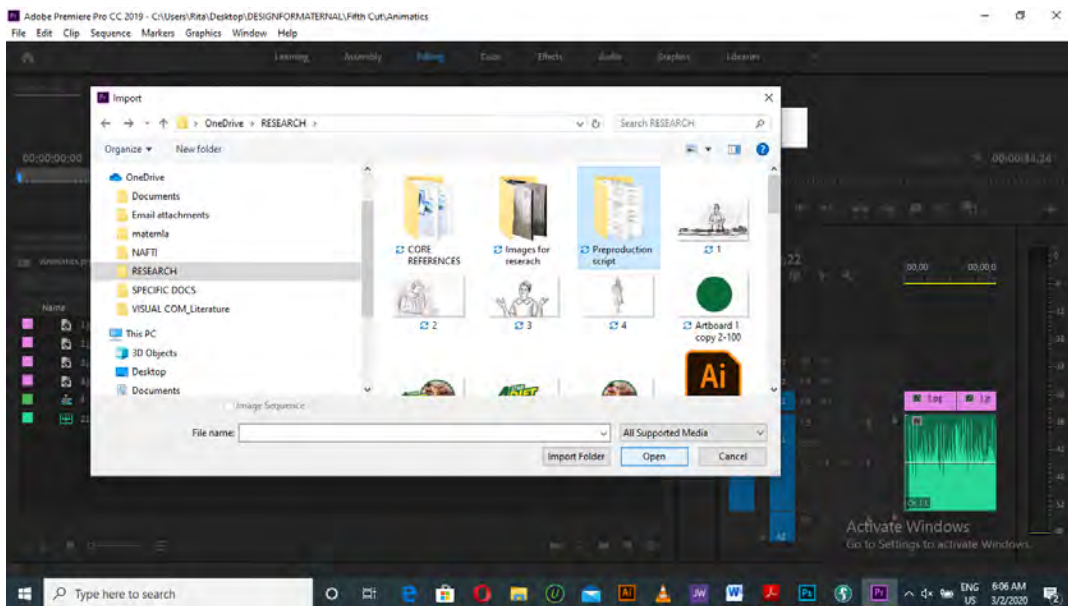
Figure 35: Importing the drawn images into Premiere Pro CC
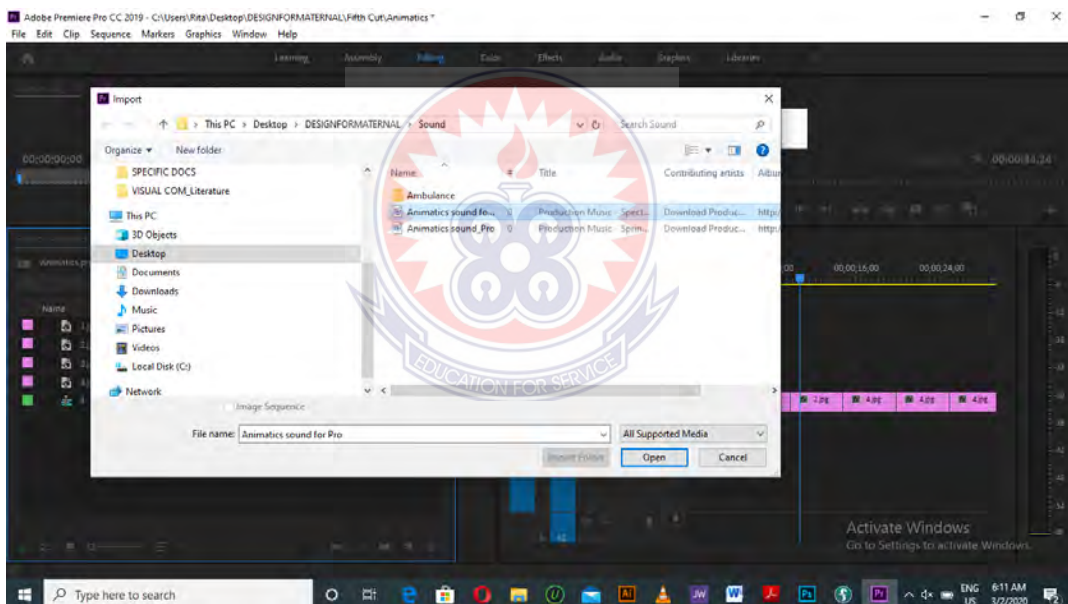
Figure 36: Importing of sound

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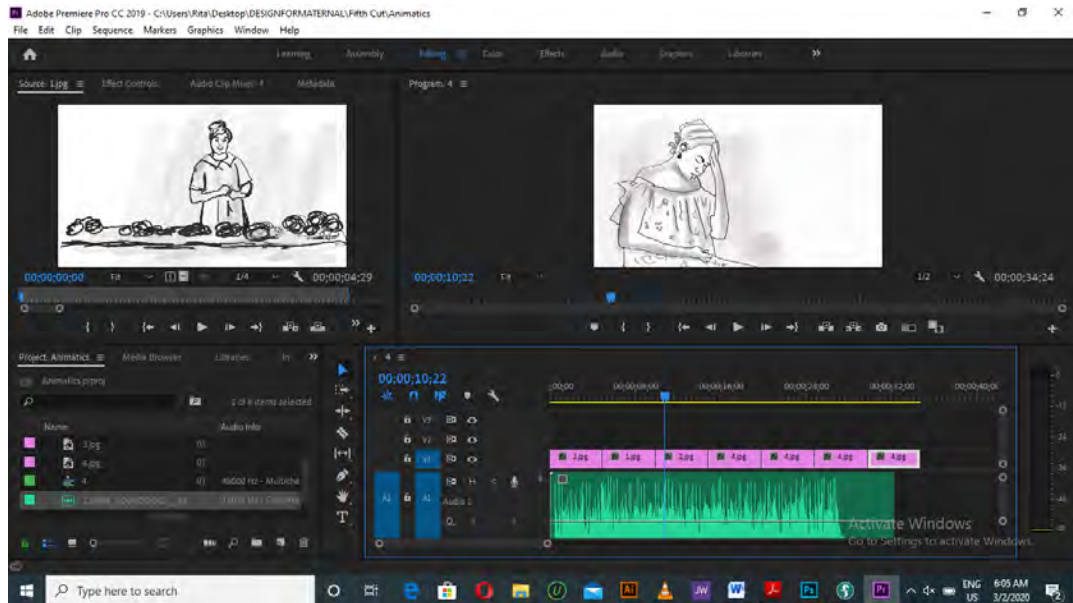
Figure 37 integrating sound and the drawn images together to create the animatics

4.3.10 Stage Eight: Pretesting of the draft video and review of a script for final production

Based on the responses from the fieldwork, the researcher revised the script and incorporated the answers into the final script. The following are were changes that were done to the script as a result of the pre-test of the draft video.

Message/content: Though the video was segmented with pauses and questions, responses from the pre-test indicated the message should be segmented into units rather than in all into one. This will prevent overwhelming information. The scripts were therefore segmented into three separate scripts. The first scripts addressed the threat, severity and efficacy factors. The second and the third script focused on the efficacy skills, barriers to efficacy responses and other persuasive factors.

Additionally, it was recommended that the actual be made more interactive by using questions to make viewers active rather than passive. In terms of editing, the pacing of the edit must be slowed down to allow enough time for assimilation because

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many of the pregnant women also mentioned that the video was too fast. Another change that occurred was concerning the introduction of the presenter.

4.4   Production

This study focuses on the production of educational videos to promote maternal health nutrition and to investigate the reception of the video. This section focuses on the third objective for this study which sought to describe how audiovisual communication elements can be manipulated to represent a valid nutritional message to pregnant women through educational videos. The process will be discussed into two sections, namely production and postproduction. The production section describes the actual process, techniques and the audiovisual manipulation elements to represent the message. The postproduction section describes further additional communication elements that were manipulated to enhance communication of the core messages through video editing. The presentation of this chapter will follow the following structure.

1. Stage one: Script breakdown

2. Stage two: Casting

3. Stage three: Set Design

4. Stage four: Lighting

5. Stage five: Camera and sound set up

6. Stage six: Studio Rehearsals

7. Stage seven: Directing

8. Stage eight: Recording

9. Stage one: Acquiring and organisation

10. Stage two: Review and selection

11. Stage three: Rough cut

12. Stage four: Fine cuts

13. Stage five: Picture lock

14. Stage six: Designing of branding elements and animation

15. Stage seven: Refinements and rendering

4.4.1   Stage one: Script Breaks Down

It is a process of identifying and lists all elements that appear or implied in the script and will be needed to support the visual story of video production. The script breakdown was fundamental to the design process. This helped the researcher to study, analyse the final script and identify all visual and sound elements that are essential during the production and postproduction. These elements include characters, costume and makeup, props, location, sound and dialogue elements. The researcher must make sure that all these communication elements are ready for the shoot. The following were the steps followed by the researcher to breakdown the script.

The researcher first read through the final script several times and using different colours to code all communication elements that appeared in the scripts as shown by figure 36. Red was used to identify the midwife and her costume. Blue was used to determine the pregnant woman and her costume. Green was used to mark food items that will be needed. Yellow was used for all animations needed for the production, and lastly, orange was used to identify sound effects. Once all elements have been coded, the researcher then categorised the elements that will be needed into a list and when they will be required for the production.
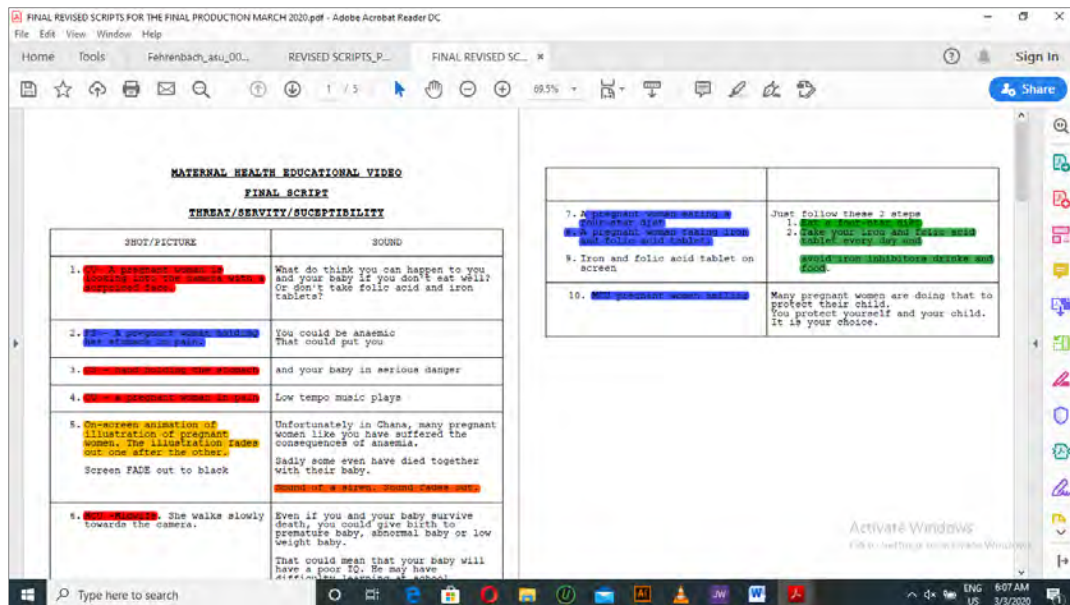
Figure 38: The breaking down of script to identify elements that are needed for the production

4.4.2 Stage two: Casting

Casting is a process of creatively selecting a character to play a specific role in film production. Due to the participatory nature of the production, the researcher informed the health workers the demands of this stage. Two midwives and two nutrition officers were recommended. Out of these talents, the researcher selected one midwife. The criteria selection was based on the data that was collected during the preproduction stage on message source characteristics which suggest that the source speak Twi very well.

Additionally, the researcher looked at how she looks on screen and general appearance. The choice of midwife was based on the notion that they mostly engage with pregnant women than any other health workers during the pregnancy period. After the talented was selected the researcher gave her a copy of the final script. Several days before the production, the researcher rehearses with the midwife. This was done to ensure that she delivers the lines very well and present the information in a manner that will attract attention. In relation to the pregnant women, the researcher

purposively selected a student from the national film and television institute. The researcher chose her because she acted in several students' production as pregnant women and those acts were well done. Hence, the researcher contacted her, and she agreed.

4.4.3 Stage three: Set Design

This stage of the production involves the researcher to create the set for the production and organise all the props that will be needed to shoot the video. The approach here is to apply the principles of Due to the nature of the video; the researcher wanted the audience to focus on the presenter and other images that will be shown. To achieve this, the researcher manipulated the set design by using only flat boards with any other thing. Additionally, the production was shot with a green screen which was later keyed for compositing during post-production editing. This was deliberately done to force the audience to only look at the presenter and her actions. In terms of multimedia principles, it will also help the audience not to be distracted by other elements. This approach was effective for production because the researcher wants to have complete control over the background. The set up was done in the studio, specifically at the national film and television institute. Four large boards were put together as the support for the green screen. Next, the researcher made sure that the background was well-positioned.

Figure 39: Set design based on the multimedia principle of

Figure 40: Set design based on the multimedia principle

4.4.4   Stage four: Lighting

The high key light was used approach as used for the production. This was strictly due to the production approach of the educational nature of the production. High key light floods the whole scene with an equal amount of light; thereby, every object or character onset is seen without any dramatic shadows. To achieve this

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researcher used the three-point lighting technique and two additional lights to create the high key light feel as shown by figure 39.   One light was used as the key light and served as the main source of light for the scene. This light was positioned at an angle of 45 degrees above the subject. Next, the fill light was placed adjacent to the key light. Diffusers were then used on the fill light to cut down the hard shadows created by the key light. This helped to remove any dramatic shadows on the surfaces of the subjects. Next, the backlight was positioned to illuminate the green background and also to separate the character from the background. To achieve the high key light, two additional lights were added with diffusers to flood the scene. This is to make everything visible without to avoid an extraneous scene.

Figure 41: Lighting the scene to reflect the coherence principle

4.4.5   Stage five: Camera and Sound Set Up

The researcher used the Canon Mark II 5D DSRL camera for the production. Two cameras were used for production. One was used as the master camera and a second camera as support, as shown in figure 40. The 55mm to 185 mm zoom lens was used for the main shoot of the video in the studio. A prime lens was used for the second camera. The primary camera recorded the main action in a medium close

upshot. The second supporting camera was used to record close shots, actions and demonstrations and the food items.

Figure 42: Setting up the two cameras

To prepare the cameras for the shoot, the researcher fixed the camera parts together and inserted the lenses. Next, the camera was mounted onto a tripod to avoid unstable footage. At this stage, the researcher experimented with different options and styles with the lighting setup. The purpose is to achieve the best picture. Samples of the scene were recorded with the video camera and analysed. Based on the outcome, several changes were done until the best light for the scene was achieved.

Figure 43: setting up the camera for the shoot

Next, the researcher inserted the sound recording equipment. Though there are several techniques for recording sound, the livelier microphone with the external recorder was used for the sound recorder. This was preferred because it allowed the character to move and gesture while shoe delivers her lines freely. The recorder was connected directly to the primary camera. This helped the researcher to avoid syncing the audio to the picture during editing.

4.4.6 Stage six: Rehearsal, Directing and Recording

This stage is the actual recording of the pictures and sound. Once the set up was done and the camera and sound were ready, the researcher called for a final rehearsal. The rehearsal was vital especially for the midwife character since this was her first time under some much light and in front of a camera as an actress, though she has been rehearsing her lines for several weeks. In other to achieve the best and in the view that she was not a professional actor, the lines were divided into sections. Each section was recorded differently. Hence each section proceeded with a rehearsal and then the actual shoot. The same approach was followed for all other parts. In the case

of the pregnant woman, the shots were taken out of sequence. The researcher encouraged her to express her feeling through her actions to reflect the script. Retakes were done on shots that the researcher felt did not come out well. Figure 42 to 44 shows the stages of directing and recording the actual of shots

Figure 44: Directing a pregnant woman's actions and emotions

Figure 45: Recording the pregnant woman's actions

Figure 46: Recording the scenes after several studio rehearsal sessions

4.5   Editing

This stage of the post-production stage is mainly the editing of the video and the creation of additional visual elements to enhance communication. It also involved the arranging of all footages into a cohesive sequence. This includes the designing dialogue and music to reinforce the message and emotions of the story. The following are the steps through which the recorded footages were edited into a cohesive video.

1. Stage one: acquiring

2. Stage two: organization of footage:

3. Stage two: review

4. Stage four: selection

5. Stage five: assembly editing and rough cut

6. Stage six: fine cut

7. Stage seven: Picture lock

8. Stage: eight: The designing animation of additional video elements

9. Stage nine: final compositing and rendering of the first cut

10. Stage ten: postproduction

11. Stage eleven: Refinements

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4.5.1 Stage one: Acquiring of the footage

During this stage, the researcher downloaded all footage from all cameras that were used. First, the footage was transferred onto the editing computer. Next, to protect the footage, two additional backups were created on two different external hard disks. This stage of the editing was critical because the researcher needed to preserve the footage against any event of a crash of hard drive or corruption of files. Figure 45 shows the hard disks and memory stick reader that was used for the acquiring of the footage.

Figure 47: Acquiring of footages from the memory cards that were They were used in the cameras during the production.

4.5.2 Stage two: Organisation of footage

The footage was also organised according to shots, scenes and then according to cameras. All shots were then organised into two major groups. Next, the researcher launched the Adobe Premiere Pro Editing Software and created fodders according to

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footage organisation. Other folders were also created for music, animations, images and graphics, Figures 46 and 47 show the lunching of software, acquiring and organising of the footage. This step was very critical because it helped the researcher to organise the editing stage effectively.
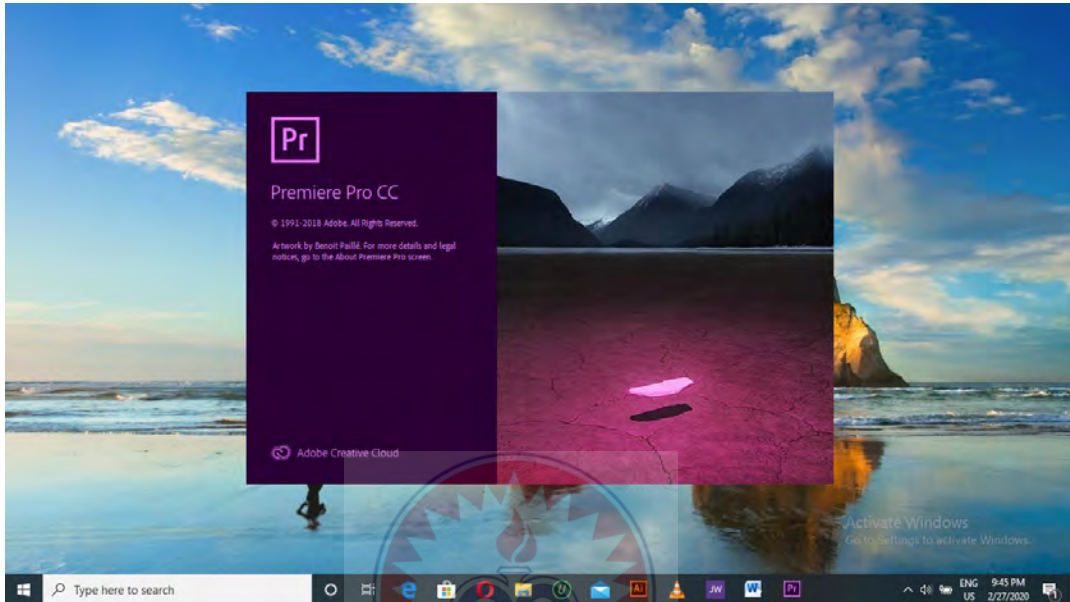
Figure 48: Lunching of the Adobe Premiere Pro CC for footage organisation
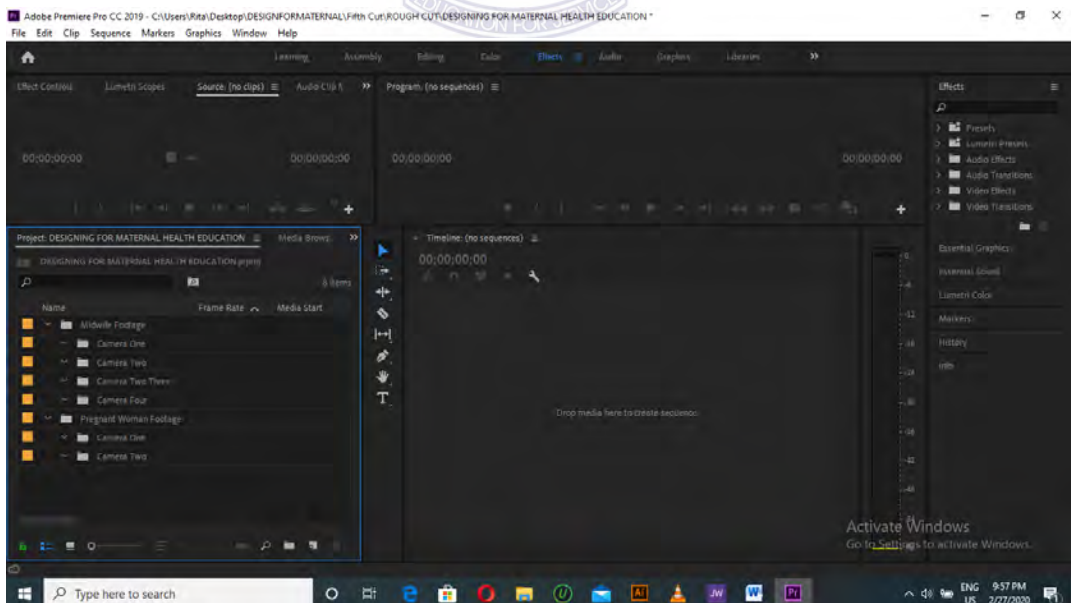
Figure 49: Organization of footages into folders

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4.5.3 Stage three: Review and selection

At this stage, the researcher reviewed each shot and selected the best shots. The selection was made based on the following. First, the shot size and angles should be right. Secondly, characters line of delivery should flow. Thirdly, the shot exposure must also be useful. The unselected one was removed from the folders. However, bucks up all footages were kept on a separate storage device. Figure 48 shows how the review was done.
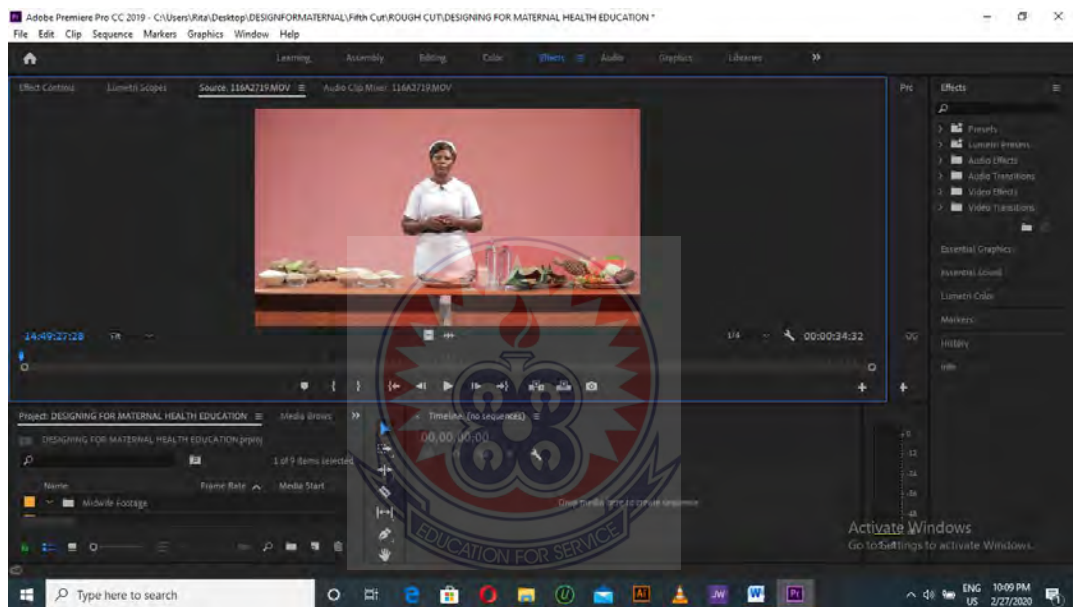
Figure 50: Review and selection of footages

4.5.4 Stage Four: Assembly Editing and Rough Cut

Using the developed script, the researcher arranged selected shots onto the timeline to present a coherent arrangement of picture and sound elements that reflect the structure of the story idea. Next, all other unwanted actions and sound were removed. The focus of rough-cut stage has not fine-tuned the edits, but rather to produce a basic edit that shows the core of the script of the video by arranging shots and trimming unwanted part of each shot and audio to the basic story idea following

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the script. Figure 49depicts how the shots were arranged and trimmed to the basic story structure
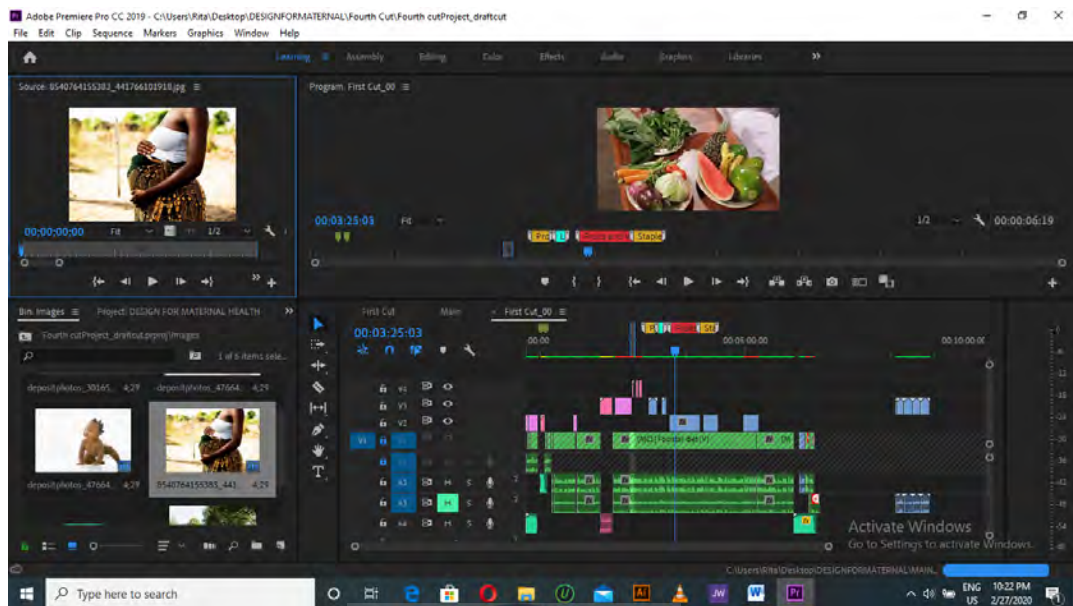
Figure 51: Assembly and rough-cut editing to building a basic structure

4.5.5   Stage five: Fine cut

At this stage, the researcher precisely and meticulously cuts each shot and sound to march action and other sound elements. The process involved the fine-tuning of the rough cut to a final video form. At this stage, the researcher did several versions of the fine cuts. Next, the researcher observed the total sequences to assess pacing, rhythm, time of demonstrations, match cuts and pausing. Additionally, the fine cuts were also shown to professional video editors from the national film and television institute. All responses were noted, and corrections were made especially to the pacing of the edit.

4.5.6 Stage six: Designing Identity Elements

To design the identity elements, the researcher first made several thumbnails to generate a concept for a logo. See figure 50 – 52 for the thumbnail development of logo ideas. Figure 19 was chosen and was further developed. The design was done with Adobe illustrator.
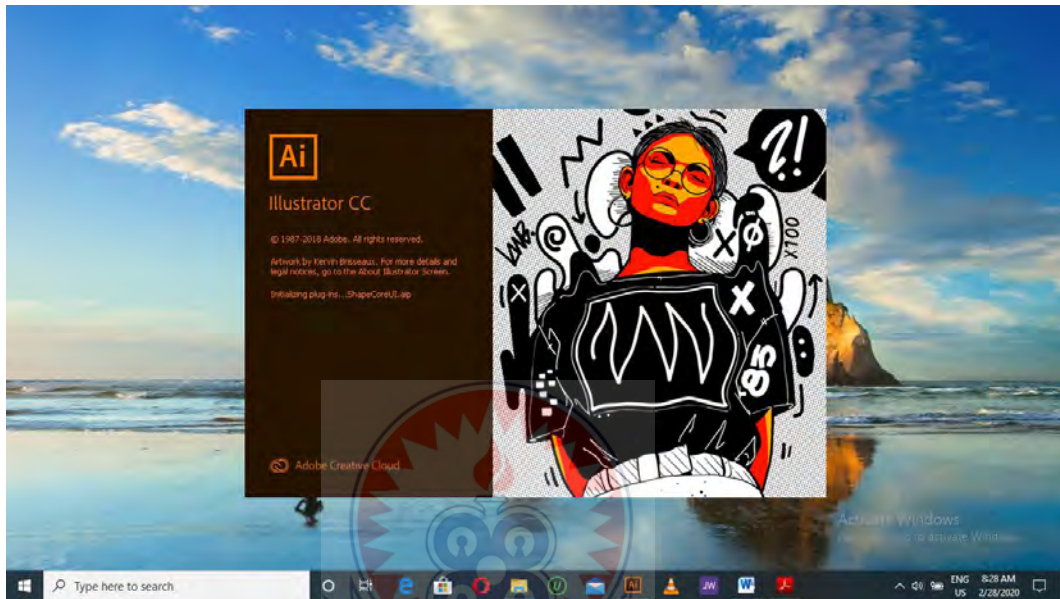
Figure 52: Launching of Adobe Illustrator to design identity elements for the video
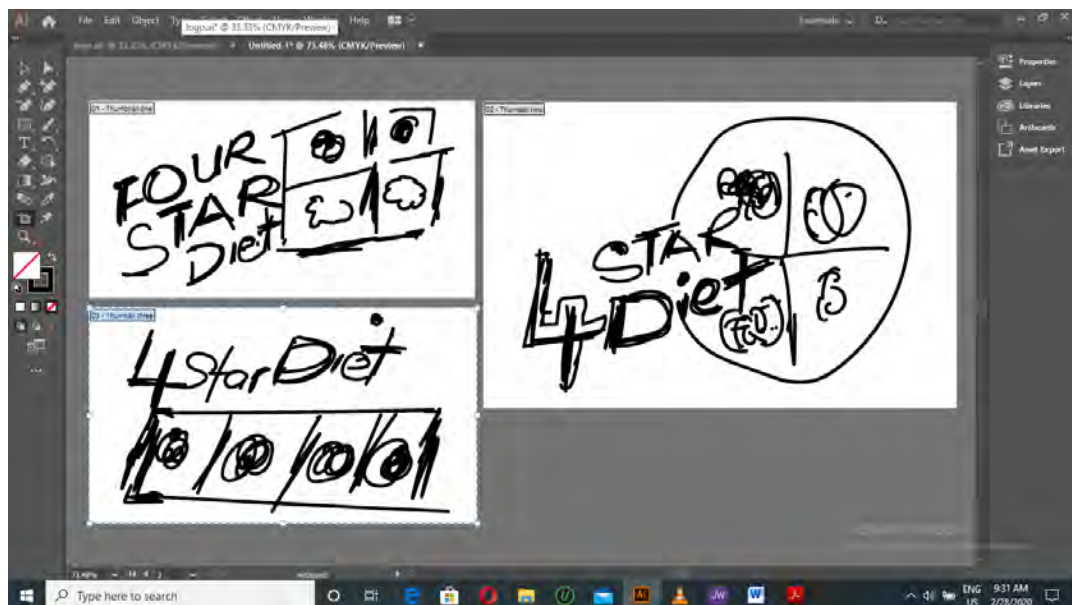
Figure 53: Thumbnails of logo ideas for the video.

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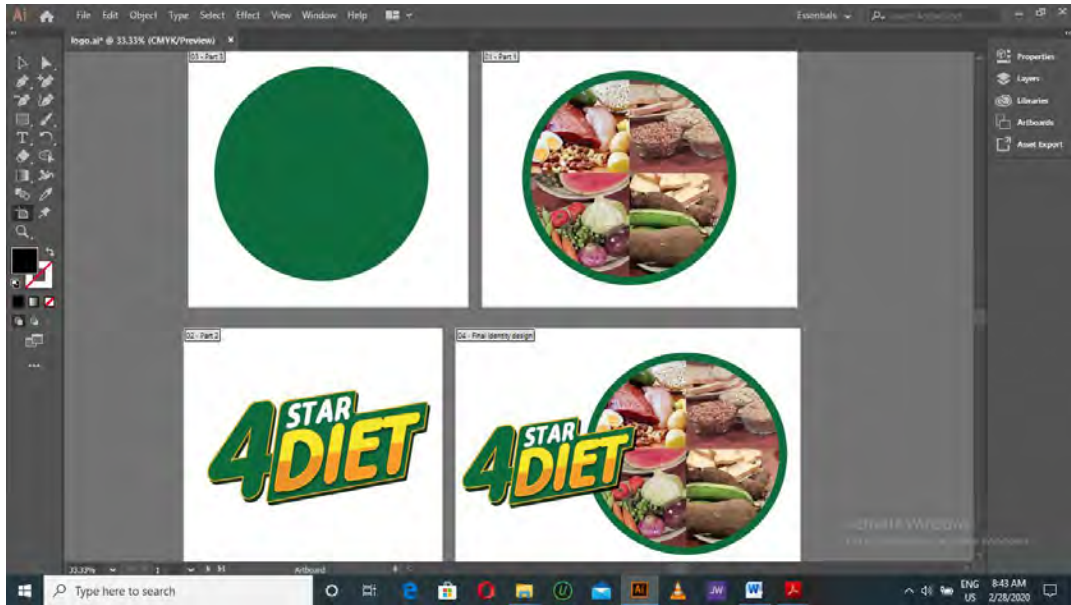
Figure 54: Stages of identity development and the final design

4.5.7   Stage seven: Motion design of logo and compositing

The designed logo was then animated together with other images in Adobe After Effects. The Keyframe animation technique was used to animate the logo sequences. Figure 53 - 57 shows the steps involved in the animation. Figure 37 shows the final integration of the animated logo into the video
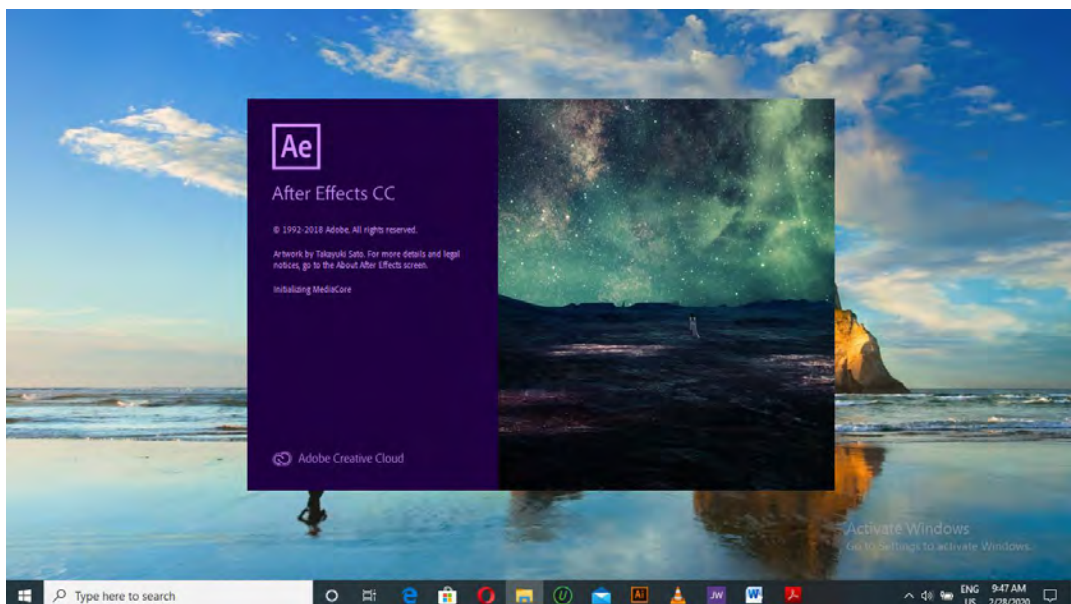
Figure 55: Launching of adobe after effects CC to animate the logo and visual elements

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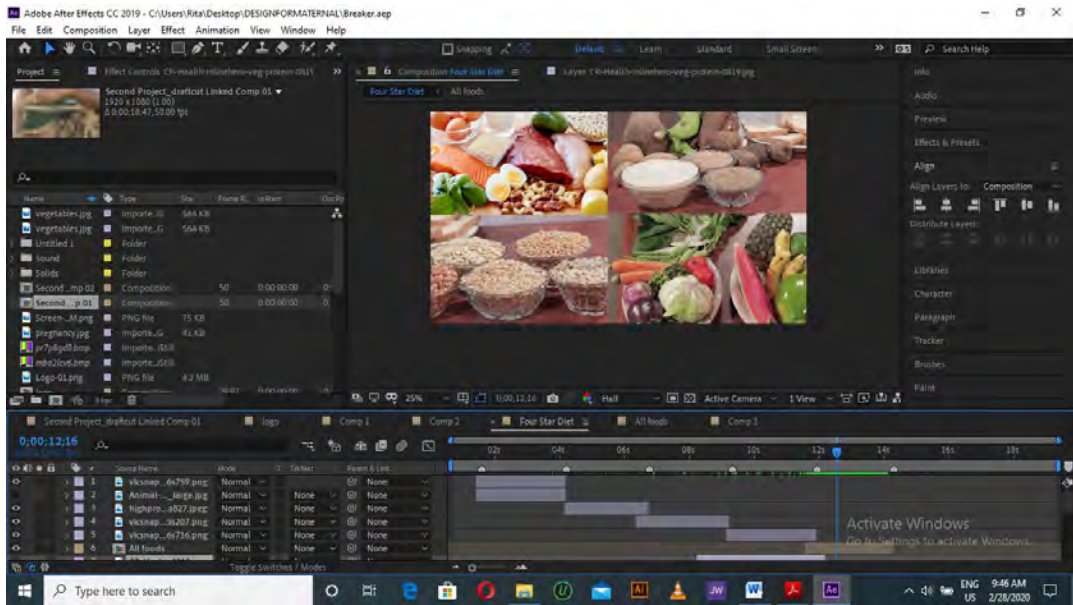
Figure 56: Animating images of the Four Star Diet
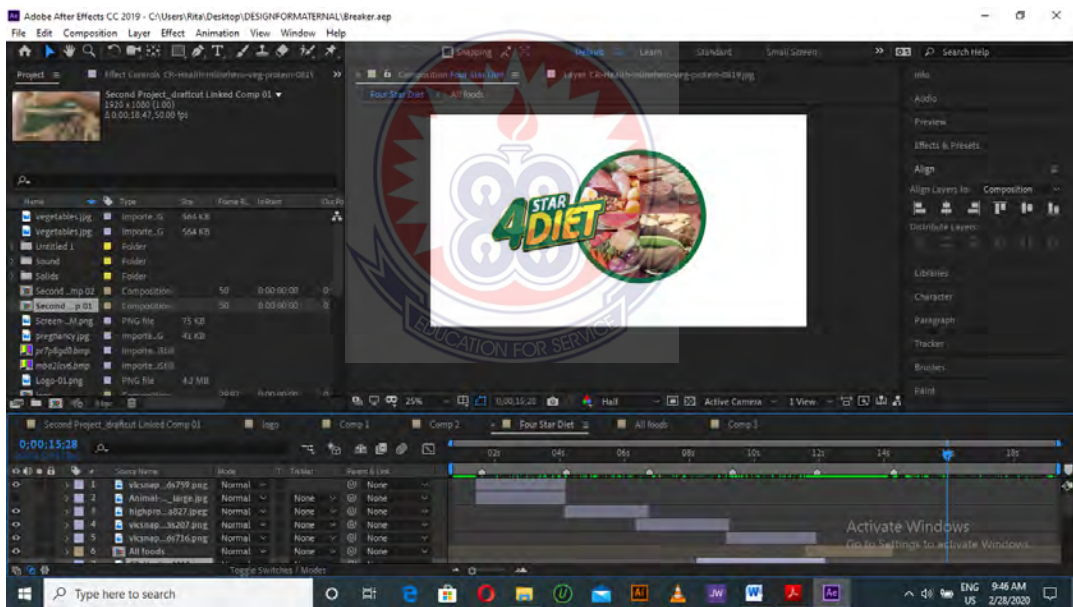
Figure 57: Animating the Four Star identity logo

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Figure 58: The animated logo and other elements were done open in Premiere and was composited

4.5.8 Stage eight: Picture lock and sound design

During this step, the researcher locked the video timeline because no further changes were needed. This allowed the researcher to focus on sound design. This required the researcher to edit sound elements, add sound effects and soundtrack to reinforce the feelings and emotions of the video.
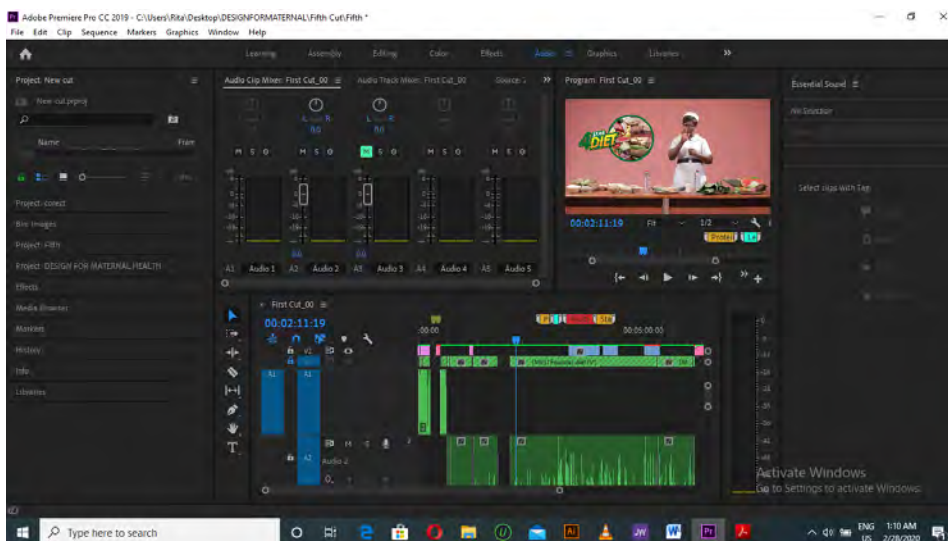
Figure 59: The designing of the dialogue, music and other sound effects

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4.5.9   Stage nine: Rendering of the first cut

This step mainly involved the converting of the designed video into a video playback. The researcher at this step rendered the video using the Adobe Media Encoder. The H.26 Coded preset was used. This preset is compatible with many playback devices.
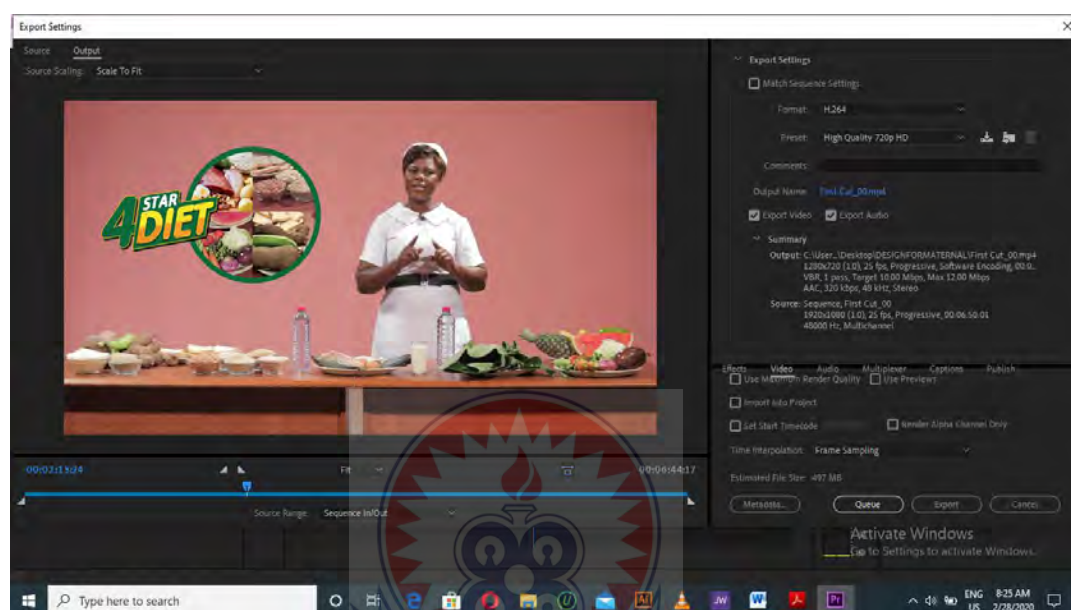
Figure 60 rendering of the timeline for playback in adobe encoder snapshots of first cut video

4.5.10   Production test

Findings from the respondents indicate that the communication elements, aesthetic decisions and representations are appropriate for the heterogeneous nature of the targeted audience. The characters were described as suitable and vital to the driving of the story. The midwife, the primary message source, was described as attractive, credible and trustworthy in her characterisation. Reason for these responses was based on her custom and makeup. Others also alluded to her fluency and ability to deliver the information cordially. Still, others mentioned that her enthusiastic delivery arrests a lot of attention. The narrative of the video was described as linear, which made it appropriate for educational purposes. The structure was described as

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not confusing because it will be understood by the majority of the target audience irrespective of educational background.

Mise-en-scene elements like lighting and camera shots and sizes were also pronounced as useful to the message, the context and the nature of the target audience. Reasons the emerged to buttress these assertions were that educational video is non-dramatic and as such do not need extreme lighting style that dwells on the creation of dramatic shadows to create additional meanings. The high key lighting makes it possible clear visibility of characters and props. Others also express that the lighting and compositing effects as professional. Shot angles and sizes were described as appropriate because it gets viewers much closer to the actions and content of the video. Concerning music, it was described as excellent and suitable for the content. The choice of language was described as economically appropriate because though Ghana is a multilingual country, many people can express themselves in Twi and looking at the difficulty in producing educational videos.

However, it was suggested that video be subtitled into English and translated into other local languages to expand its audience. Responding to the efficacy of the editing style, respondents expressed that the use of simple cuts without the use of complex transitions makes it appropriate. Others also indicated the approach hides the film techniques, which is the focus of the formalist and minimalist film approach. In terms of sound design, it emerged that use the uncomplicated soundtrack without vocal is best for educational videos since it reduces cognitive load. Additionally, the use of sound to implied fear was termed as very effective since it unambiguously presents the meaning of that scene clearly to the audience. Despite the positive responses, responded also indicated the editing is relatively fast considering the context, audience and amount of information being given to the audience.

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4.6   Content and Message Factors

Generally, the video was described by the health workers as a tool that can promote nutrition education among pregnant women irrespective of educational status. Concerning the content and educational objectives, respondents convincingly indicated that the content is accurate and visually addresses all the issues they want to share with pregnant women. It was also mentioned that the four-star diet and each food group function had been well explained. Health officers also said that the use of real foods to explain the message is something they appreciate because this will make their work very easy. Others also described the video as colourful and attracted a lot of attention. In assessing the threats, severity and susceptible factors variables of the video, evaluators indicated the messages are no misinformation because the representation is actually what they should be showing to pregnant women during the pregnancy school. It further mentioned that the inclusion of these variables is significant because many at times, midwives and nutrition officers do not stress on such factors due to superstitions and other reasons.

Regarding the efficacy factors, responses discussions showed that the video content and representation are insightful and will very helpful to pregnant women during educational sessions. Hence, they all affirmed that the content is exactly what they wanted. In commenting on the strategy of the video to deal with the barriers to self-efficacy and response to the approach of the video that they agree with the approach of encouraging the audience to take action by stating that many pregnant women are now taking such action and so they too can do it." Others also said that they like the fact that to eat well as a pregnant woman does not require a lot of money as some people think.

Lastly, in reviewing message source factors, the midwife presenter was described as a good idea. Her expression in the Twi language was also approved because all agreed that that is the primary language that is used mostly during nutritional education sessions. Additionally, it also emerged from the jury that the use of the Twi language is will be very helpful because many pregnant women understand Twi to some extent.

4.7   Conclusion

This chapter has described the process and techniques that were used to generate content for the production of the video. It relied on the persuasive health message framework to design a creative brief. This was then used by the researcher to collect information that should inform the core message of the video. The researcher then used the developed message to produce animatics which were then tested with midwives, nutrition officers, and video production experts. Responses from the pre-test were used to refine the final script for the actual production

The production phase involved two phases. During phase one, audiovisual communication elements like costumes, set design, lighting, props, camera framing, and sound were manipulated to represent the core message of the scrip that was generated and refines during the preproduction phase. The production phase was guided by the coherence principle of the multimedia theory. This principle states that in designing educational multimedia content, designers must avoid all unnecessary elements that may cause distraction from the main content. Hence the principles become the guide in the visualisation process.

During the editing stage, all the shots were acquired and organised according to scenes and shot sizes. This helped the researcher to stay held through the editing process. The review and selecting step saw the researcher reviewing which of the shot

will be best for the editing. After the rough cut and the first fine cut, the video was subjected to a postproduction jury. During the editing, the researcher used two royalty-free and free licensed stock footages. This was used because they could not get such a shot due to ethical reasons. The music track was also downloaded from https://www.bensound.com/royalty-free-music. Due credit was given to all sources. Finally, the researcher reshot some of the scenes and recorded voiceovers and inserted them into the appropriate places on the timeline. The final video was distributed.

CHAPTER FIVE

PRESENTATION OF FINDINGS AND DISCUSSIONS

5.0   Overview

The thrust of this study is to examine issues about the use of audiovisual media for antenatal health education to inform the design of persuasive educational videos on antenatal nutritional message and to explore health workers experiences of the designed video and how pregnant women with limited reading skills interpret the videos during antenatal education setting. This chapter focuses on the presentation and discussion of data obtained during pre-studio and post-studio researches. To manage the voluminous nature of the transcribed data from the field study, the researcher paraphrased most of the responses and quoted significant responses verbatim to show the voices of the respondents. Furthermore, relevant images and snapshots of visual data collected from the field were also inserted. The presentation of findings and discussions are done under themes and sub-themes based on the research objectives. The following are the major themes for the presentation of findings:

1. Visual communication media for antenatal nutrition education

2. Experiences and perceptions of health officers about the use of the designed audiovisual media during antenatal education.

3. Pregnant women reception and interpretation of the audiovisual media.

5.1   Visual Communication Media for Antenatal Nutrition Education

These findings respond to research question one. This was conducted during the pre-studio stage of the study. The objective was to examine current issues that exist with the use of visual media to communicate antenatal messages to pregnant women on nutrition. This data was collected through interviews, observation and visual study of available visual media used by health workers during antenatal education.

In responding to how antenatal messages are communicated to pregnant women during antenatal health education sessions, participants mentioned that they combine various strategies to promote maternal nutrition to pregnant women through oral education and the use of visual communication artforms like posters, brochure, flyers and videos. Participant mention three core strategies to explain how they use visual communication design forms into antenatal education. The strategies are facility-health talk education and promotion, community health education campaign and personal counselling.

5.1.1   Facility health promotion

This is considered as the overarching educational strategy for promoting nutrition education. Antenatal health promotion comprises of pregnancy school. Pregnancy school is a special day set aside every week or month to provide essential health information other messages to pregnant women within a health facility. Under the direction of the former Greater Accra Director of health services, Dr Linda Van-Otoo, pregnancy school became an essential intervention for every health facility after successful piloting of the pregnancy school in Dodowa in the Greater Accra Region of Ghana. According to midwives and nutrition officers, this is to empower pregnant women with knowledge so that they help in reducing maternal and infant death. It is

expected the pregnancy school concept will be combined with other innovative health promotion strategies through the use of visual media to provide quality health to all pregnant women including nutrition.

Participants expressed that during the pregnancy school sessions, expectant mothers and women are given in-depth education on various topics through the use of oral education and educational media like posters, flyers, flip charts, videos etc. The pregnancy school treats various issues on maternal health and address concerns, misconceptions, and questions of pregnant women. Example of antenatal topics are importance nutrition, 4-star diet, iron enhancers and inhibitors, iron and folic acid and beliefs and misconceptions of food in pregnancy. Other related messages are the importance of nutrition in pregnancy and after pregnancy, danger signs, breastfeeding, changes in the body and medication, and many others. Participants mention that these topics are scheduled every week. A senior staff midwife is assigned to do the education.

The pregnancy school is organised on two levels. The first group is level 100, which focuses on newly pregnant women between weeks 1 to week 27 from first to second trimesters. The second group is level 200, which focuses on pregnant women between 28 weeks to 40 weeks (third trimester). According to senior midwives and nutrition officers, pregnant women in the district facilities are expected to attend all the scheduled classes. The focus of the educational sessions is to provide nutritional information to all pregnant women and to persuade those with nutrition problems to adopt recommended actions to help improve the nutritional status and their babies. Participants indicated that mostly the school is held at various health facilities in the district and sometimes at the community centres, churches, community centres within the municipality.

Figure 61: Pregnancy school sessions. Source: by the researcher (field study)

5.1.2 Community health campaigns

This educational strategy was described as when health workers move to the community to provide community education or visit particular pregnant women to provide education and counselling. According to participants, community health promotions are organised by the districts. Locations like churches, markets, public squares, CHPS compounds etc. Together with other health professionals, they move to provide health education to women. During these sessions, visual aids like posters, flip charts, and videos are used to support communication and all other innovative methods are combined with oral education. According to midwives and nutritional officers, these combined strategies allow health workers to focus on pregnant women who need special attention due to health problems. Participants, however, mentioned that the community approach is not consistent and sometimes they are unable to go because of lack of staff.

Counselling: Participants mentioned that this is a form of education is given to pregnant women who need more attention due to their critical conditions. During antenatal clinics, pregnant women with low blood levels who have nutritional questions or have specific health problems related to nutrition are referred to particular nutrition officers and midwives to provide further education in addition to other medical procedures. Participants mentioned that during these sessions, they combined both oral and the use of mass media artforms posters, brochures, flipchart videos to provide the education.

When the researcher posed a question to probe how pregnant women with hearing and visual challenge are cared for during health promotion, the majority of the respondent expressed that as one of their biggest challenge. Some indicated that hearing-impaired clients are their major problem due to communication. It emerged that even though some come with their interpreters, it often happens that the interpreters are not professional and as such are unable to provide accurate information. For those who can read, health officers mentioned that they try to use available literature and the pregnancy book to explain recommended messages. For a client who is visually challenged, health officers indicated that they usually describe the picture and explained recommended messages on nutrition to them.

Participants mentioned that education and promotion are essential when it comes to dealing with maternal health in general. Some reveal that many socio-cultural factors affect the maternal health care process. Factors like cultural beliefs, gender, low health literacy skills, poverty, behaviour, and lack of education were some themes that emerged. Participants stressed that every pregnant woman needs accurate knowledge. In the absence of that, some pregnant women adopt lifestyles and beliefs that are dangerous to them and their babies. Some also mentioned that the rate

of teenage pregnancy also calls for more and innovative educational approaches. According to participants, due to the Ghanaian cultural values, many such girls may not access antenatal care or shy away, preventing them from having access to quality health information.

Concerning nutrition, health officers indicated that nutrition education is a critical component of the focused maternal health care because a poor diet in pregnancy is severe and can have a generational effect. In responding to a question about the core of their education, participants mentioned that their focus is to persuade pregnant women to adopt healthy lifestyles and behaviours to maternal health. Participants hope to achieve this through the provision of quality health information to encourage women and pregnant women to eat well due to the severe implications of poor nutrition on both baby and expectant mothers. Health officers also indicated that safe maternal delivery is not only limited to medical care. Health officers mentioned that there are influential factors that impinge the provision of quality health care. Many health officials expressed that before effective health care delivery can be given, there should be some mutual understanding, and that can be achieved through effective persuasive education. One respondent expressed this belief by stating that

> You can give all the best care and medication if a pregnant woman
> lacks knowledge or unwilling to follow the direction of midwives and
> doctors, nothing will work we will come back to square one.

Anaemia in pregnancy also emerged as one of the core reasons for intensifying education in all facilities in the district. Anaemia has been one of their difficult challenges with many pregnant women. It was reported that a large number of pregnant women who report late to antenatal are below the required level of 11.5g/dl. According to health officers, the rising in the number of pregnant women with low

blood levels had been a significant worry for the past two years. This, they believe calls for an integrated educational intervention besides the effective medical care to manage the situation. One nutrition officer emphasised the need to provide this education to pregnant women in the municipality by expressing that

> Anaemia in pregnancy is on the rise and is the number one threat to safe pregnancy in Ghana, data from our last quarter for the years indicates that many pregnant women have reported to our facility with low blood levels. This is very worrisome. It is dangerous when the trend starts going this way because low blood levels could have a severe problem with pregnant women and the child. Nutrition plays a vital role when it comes to anaemia. When a pregnant woman is not eating well, it can lead to serious complications, including anaemia. When it comes to pregnancy, it does matter whether you can read or not. We have many pregnant women with difficulty who are graduates. However, lack of information and pressures from "the home doctors" [in laws and friends] some have anaemia related complications.

5.1.3 Dominant Visual communication media

In relation to the dominant visual media available for promoting antenatal messages on nutrition, it was revealed that there are two sets of dominant visual aids available for supporting educational activities. These are Print media and audiovisual media.

5.1.3.1 Print media

The use of visual aids like posters, booklets, flip charts, and brochures are seen as very important and are used together with educational strategies like oral education Respondent mention that these visual aids help them to communicate well with their

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clients, especially those who cannot read and those with language barriers. Participants showed and presented samples of the prints materials they use. The following are the major print media available for nutrition education:

1. These are Maternal and Child Record Book:

Figure 62: The Maternal and Child Record (Booklet)

General Description: This is a 64-page booklet was designed to be used as a health record book for pregnant women and also to monitor the growth of their babies during pregnancy and after delivery. The booklet also contains educational messages on maternal health. The booklet is red and it's complemented by green. The front cover has the bold impact font title "Maternal and Child Record Booklet" The mid-page of the cover has an illustration depicting a woman holding a baby with a man behind her. At the bottom of the cover page are logos of Ghana Health Service and the Ministry of health. The back-cover design as two circles. The top circle has 7 little illustrations depicting various dangers signs in pregnancy. The second circle at the bottom of the back-cover page has little illustration denoting signs of serious baby sickness that

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needs immediate attention. The following table is a description of the nature of print media:

Communication Elements: Nutritional messages can only be found on page 16. It gives messages on how pregnant women can eat well using the four-star approach. The message is structured into four boxes and it represents the four-star diet components. Each box has small illustrations of the four-star component (Vegetables and Fruits, animal-sourced protein, legumes and nuts and starchy foods). Additionally, each box contains bulleted paragraph text which gives information on each of the four-star components. Comparatively, the text used on the pages is more than the illustrations. The illustrations are small. The Maternal and Child Health Booklet has strong and attractive colours. This makes it easy to be seen. It contains illustrations to support the paragraphs that provide information on the nutritional messages.

Persuasive elements

Efficacy skills: The content gives provides step by step description of how to eat. This is mainly described in the text. The four boxes visually show an illustration of the four-star food. A fifth box outlines with text additional information on oils and fats. At the bottom of the page is an illustration of a pregnant woman drinking a glass of water. Behind her are bottles of drink.

Threat, Susceptibility and Severity: Message and illustrations do not contain a message in threat, susceptibility
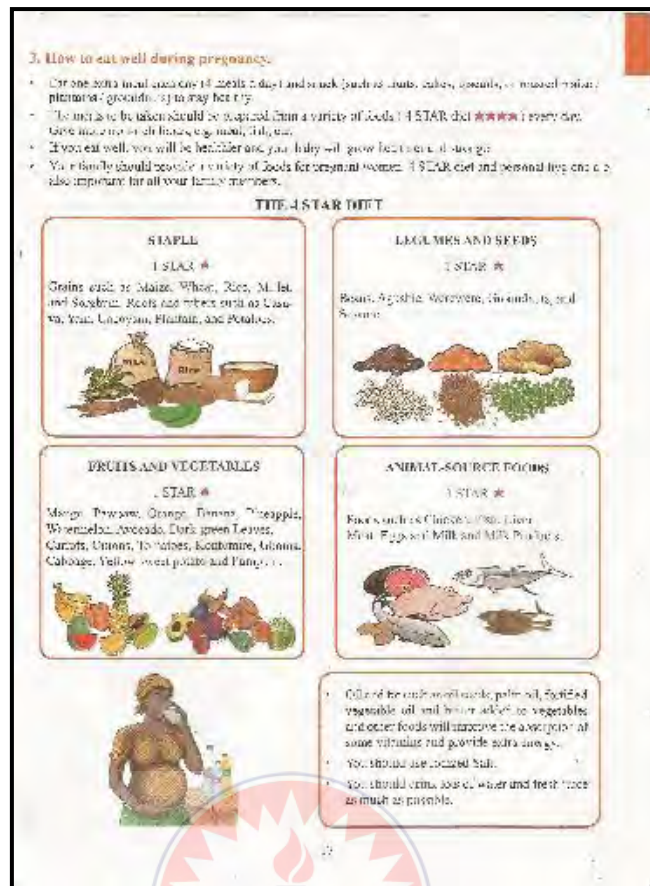
Figure 63: Maternal and Child Record (Booklet), sample page on nutrition and personal hygiene Source: researcher

Audience Reception: On the audience receptions level audience were able to the staple food, fruit and vegetables and the animal source foods. Many however could identify the legumes and seeds. Reasons given were that the picture looks small and as such could not different the form the background. For others, it took much time before they could identify the content. When the researcher asks a question on the illustration of the woman drinking water, all pregnant women described the illustrations as a pregnant woman drinking water. However, many could not tell how many litters or glass is required for a day. Additionally, participants could tell whether the small illustrations behind pregnant women are drinks or water.

2. What Every Pregnant Woman Should Know?
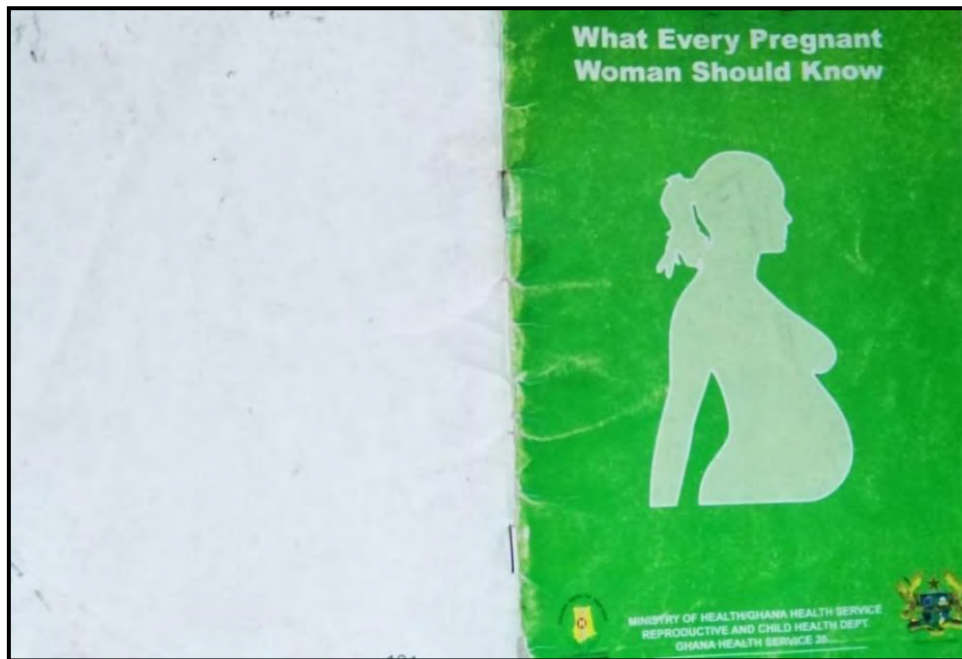
Figure 64: What Every Pregnant woman should know?
Booklet cover design. Source: researcher

General Description: This is a 24-page booklet designed to give specific information on how to stay healthy during pregnancy. The book was designed to provide consistent maternal health information to pregnant women other family members. Additionally, it was designed to support the Maternal Health Record (antenatal book). Though respondents mentioned that this book has no longer in use, it was observed that it was given to pregnant women to read.

Communication Elements: The cover design is white and green. The cover has a clip art illustration of pregnant women. Also, the cover design contains the logos of Ghana Health Service and the Ministry of health. The booklet covers various topics in pregnancy including nutrition on pages 5 through 6. The content on nutrition is mostly presented in the text in about five different paragraphs with ten small pictures to support the text.

Persuasive elements

Efficacy skills: The content gives provides step by step description of how to eat. This is mainly described in the text. The small ten images on various foods visually show the kind of food to be eaten.

Threat, Susceptibility and Severity: Message and illustrations do not contain a message in threat, susceptibility.

Audience reception: Some of the participants were able to identify the first group of food is depicting protein food family. These are legumes (beans, groundnuts, soya beans), fish, snails, dried fish, meat and eggs. The message provides information on the benefits of eating healthy food during pregnancy. Additionally, many of the pregnant women could identify the third group of food. However, some could not identify the fourth group. Also, responses from an interview from midwives and nutrition officers indicate that they hardly give them out because most of the pregnant women who comes to their facilities do not read and even those who read are reluctant to read. One midwife expressed that: "many do not know the value of the book. It is because they cannot read. For some as soon as you give them, they live in on the table and go away"

Figure 65: What Every Pregnant woman should know?

– Booklet, sample pages on nutrition. Source: researcher

3. During Pregnancy and Breastfeeding

Figure 66: Nutrition during pregnancy and breastfeeding brochure.

Back cover design. Source: Researcher

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General description: This educational material is a three-page folded brochure. Unlike other visual aids, this brochure is specifically designed to provide information in nutrition. Every page contains a colorful and bold illustration. The cover page has two pregnant women. One is pregnant and she eating. The other is breastfeeding whiles eating. The top page cover has a bold inscription which states: Nutrition During Pregnancy and Breastfeeding. At the bottom of the page are logos ministry of health and the Ghana Health Service. The inner pages contain three images and text. The first page has the inscription "Practice good nutrition, what do you need to know.

Communication Elements: This is supported by an image of a nursing mother breastfeeding and eating at the same time. This is followed by five bulleted points of specific information about what to do during pregnancy. This is followed by five sets of images of foods which have been positioned at the left side of the page. Page three has two pregnant women: one on top and the other is below. These pictures have been juxtaposed with bulleted paragraph text to explain the main heading: "Protect Your Health." Pages 4 and five also contain additional information on how pregnant women can protect themselves. Text and images have been used to explain how to have safe food, nutrition and HIV care. Generally, this brochure has more text than images. However, the colorful nature of the images which make them stand out and attract attention though some of the images are pixilated due to their low resolution

Figure 67: Nutrition during pregnancy and breastfeeding brochure.
Inside page design. Source: Researcher

Persuasive elements

Threat, Susceptibility and Severity: Message and illustrations do not contain threat, severity and susceptibility messages

Efficacy skills: There are four pregnant women, performing various recommended actions (Figures 89 to 91). The first on the cover depicts a pregnant woman eating even though the food is not too clear. There is another one that depicts a pregnant woman smiling while holding her stomach. The third picture shows a woman holding a glass of water. Her right hand is close to her mouth.

Figure 68: Pregnant woman smiling
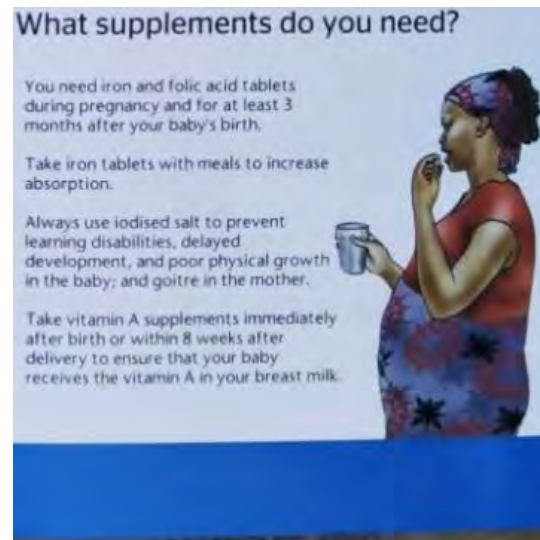
Figure 69: Pregnant woman holding a glass of water with her hand close to her mouth

Figure 70: Pregnant woman eating

Audience reception: Pregnant women were able to interpret figure 89 as a happy pregnant woman. In figure 90, participants mentioned the pregnant women are eating. However, many could not identify food. In relations to the last figure 91, some described the picture as a woman drinking water. Others also mentioned that she is to

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swallow her medicine. When the probe to find out the type of medicine many could not identify the medicine.

5.1.3.2 Videos

According to health officers, unlike the print materials, there are no audiovisual materials from the Ghana Health Service on the messages that are promoted during antenatal education on nutrition. These responses were also confirmed by participants at the National Health Promotion Division NHPD and Family Health Division (FHD) of the Ghana Health Service. It was mentioned that the approved educational materials are mostly print materials. Examples of such media art forms that were mention were posters, flyers, Booklets, Maternal Health Record Book, and illustrated flipped chart (See figure 82 through 92 for samples of print materials). According to the HPD and FHD participants, the Ghana Health Service has not produced specific educational videos on nutrition that should be used during pregnancy schools. However, they are aware that a collection of some videos from the internet are available to help midwives and nutrition officers. Explaining further on the videos, one senior officer at the FHD emphasised that:

> Currently, the videos we have are from the internet or YouTube but our technical team has gone through all them and those that are appropriate for use in Ghana we give them out for usage. So, we don't just take anything from the internet. We allow our staff to use internet materials because not all are bad. We have instructed them to compare whatever they pick to the Ghana Health Service standards, and if the content meets the qualifications, they can use them. Those that are not good they don't use them.

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In responding to a question of why there are no designed videos to support antenatal education, participants mentioned that funding is a major problem because producing videos for multi-language is very expensive. When the researcher requested for copies of the available videos, one popular video that emerged during the field study is the 1 minute 46 seconds video entitled "Pregnancy food guide. What to eat and what not eat" According to health workers, they downloaded the videos from the internet. The video gives information on what kind of food to eat and what to avoid during pregnancy. The source of the message is captured in a medium shot of a coloured skin (white woman) woman in the setting of an office environment. See figures 96 through to 98. All characters in the video are coloured skin, pregnant women. The message is given in the English language. The video takes the style of a master shot techniques with intercut and insertion of pictures, text, and videos to explain or enhance the spoken text. The shot and editing styles are slow. Lighting is flat, devoid of any dramatic lightning style. The footage provides informational material and it's silent on the threat, susceptibility, severity, and efficacy factors. Figures 96 through 98 are snapshots of some of the first video. Snapshots of the second video are figures 8 through 14

Figure 71: Snapshot 1 of Pregnancy Food Guide. Source:

https://www.youtube.com/watch?v=UTg8kevyDfo&t=6s

Figure 72: Snapshot 3 of Pregnancy Food Guide.

Source: https://www.youtube.com/watch?v=UTg8kevyDfo&t=6s
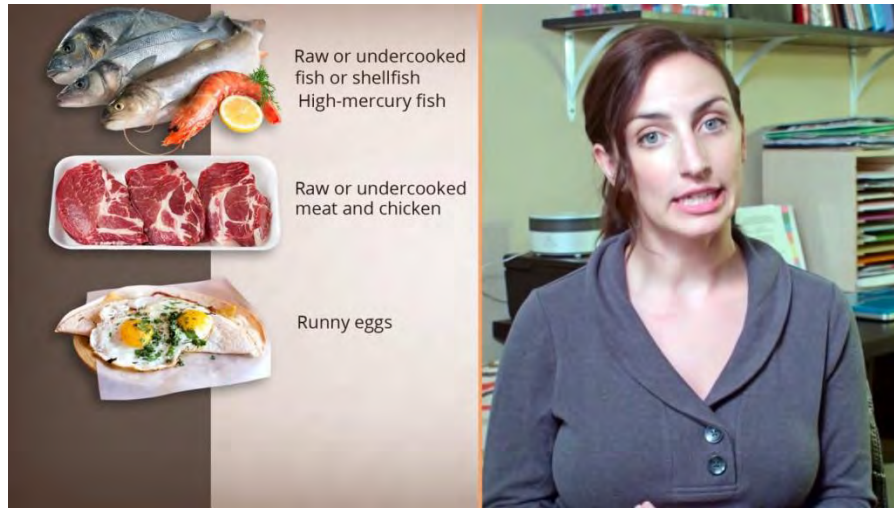
Figure 73: Snapshot 4 of Pregnancy Food Guide
Source: https://www.youtube.com/watch?v=UTg8kevyDfo&t=6s

The researcher also observed the installation of video display technologies. The use of television and satellite dish, projectors, and mobile technologies was described as efforts to incorporate audiovisual content into maternal health education. The use of such video technologies is seen as necessary and innovative means of improving access to quality maternal health messages. Participants indicated that the applications of mass media technologies are significant. Hence, many of the facilities in the municipal have a television set in all units. The researcher observed that many of the facilities in the districts had installed audiovisual technologies to disseminate audiovisual content. Figure 103 and 104 are examples of projectors and television set for maternal health education. Despite these installations, the researcher observed that no maternal health educational content was shown through the study period. Television shows like Indian and Mexican soaps opera, music video shows and news were mostly shown.

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Figure 74: Projector for education. Source: researcher

Figure 75: Television set for education. Source: Researcher

5.1.4   Issues about the available visual media for antenatal education

The combination of brochures, booklets and videos in supporting education was perceived as very important. Health officers mentioned that in dealing with a client who has reading challenges, the use of visuals becomes the best approach. In relation to print materials, they mentioned it is very difficult to use them during large

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educational sessions due to their sizes. Additionally, many clients are not able to read and required an explanation for all the pictures. One health officers mentioned that

> The explanation of the picture is very important. Sometimes you might
>
> think they can see the picture but when you ask them, their responses
>
> are not the same. Hence, we try to explain so that they understand."

About the available videos, health workers indicated that even though it not from Ghana, it is very helpful. It makes the educational sessions excited even though is sometimes difficult to use them. In explaining the challenges, a participant mentioned language, the sources of the message and the food items in the video as some reasons to support why the perceived the current as difficult to use sometimes.

Language: The problem of the language barrier was mentioned as the biggest challenge that makes it difficult when using the available videos. The videos are in English. Hence, participants expressed many pregnant women do not understand the message. It was mentioned that even pregnant women who can understand the English language find it difficult to get the news because of the accent of the voice-over and the message source. Many expressed that they wish the video could be translated into Twi, Ga, Ewe for them since this could ease their burden.

Again, participants mentioned that the language barrier problem put more pressure on them because they have to spend more time on education doing translation at the same time explaining to ensure understanding. Thus, the actual antenatal clinic sessions are delayed and some instances it affects the other clinical procedures

Communication elements: In responding to challenges regarding the content, it was stated that though the videos are helpful, they still have some limitations because the

characters are not Ghanaians. Again, it was expressed that some food in the video is not Ghanaian, and that makes it difficult for viewers to connect with the videos, especially for clients who cannot speak the English language. Others also stated that cultural inappropriateness makes the audience feel that the food are expensive and meant for high-class people. During educational sessions, the researcher observed that midwives and nutrition officers paused and explained similar foods that are available in Ghana. This disrupts the free flow of education in many instances. Despite these challenges, participants mentioned that they try to go around it to use the available video for learning. One midwife explains this by saying that:

> You see, this video was made for "Abrofo" [White people] not for us. But because the information is useful and some of the pictures make the explanation more comfortable, we use them even though it is not ideal. It is better than none. Some of the food in the videos are not what we may not available or what the majority will eat. So, we encourage pregnant women to them to find similar foods that are common in Ghana.

When the researcher explored communication and educational needs that needed attention concerning the support of maternal health education, participants mentioned that they wish they could have videos that were made in Ghana with their local people. Additionally, the local foodstuffs that are available in the locality of the district also kept coming up during the interview of participants. Generally, health officers mentioned that they would prefer audiovisual material to print visual aids. One respondent emphasised the effectiveness of audiovisual content over print material as:

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Seeing is different from hearing. Right now, there are things that I remember from some films and a television show that I watched even more than 15 years ago. But if you ask me to tell you what my teacher said about some topics, I cannot tell you much. So, though we give talks and education in the form of interaction, the use of the videos is will be better because you see and hear at the same time. It can also make pregnancy school more attractive. It will even attract the town folks to come to the school.

Specific maternal health message that exists and needs attention are danger signs in pregnancy, birth preparedness, folic acid, and iron tablets, and four-star diet. The promotion of four-star food was identified as one of the core message strategies that is given much attention during educational sessions. According to participants, they want to emphasise that the four-star diet groups of food should be the component of the daily meal of every pregnant woman. This, they believe, can help solve the many problems that many nutrition-related complications in the district

Moreover, the four-star diet messages were described as very crucial because anaemia is a significant challenge to safe pregnancy, and the majority of the pregnant women who come to the facility are below the average blood level of 11.2.

Education is crucial. Some of the pregnant don't know what to eat and how to eat. Some also think that you have to have plenty of money to eat well. These are real issues, and they need education and persuasion than just medicine. The medicines are for emergencies and critical times. But teaching them how to eat well will help them to build their blood level to the required range. That is why now, every week, we do the educational sessions. Even after all the talks, we still have

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challenges with them. But we can see that education can work, we just have to continue and having videos that will show our local foods will be very helpful.

Again, on the issue of language for a nutritional video, participants mentioned that they prefer Twi and Ga. According to participants, Twi is a popular language here though the district is supposed to be a Ga-speaking population. They further suggested that the Twi language works for them because that is what they used for all their education, and "at least many pregnant women who come to the facility speak Twi." Additionally, it was also indicated that many health workers also speak Twi, making it easier for all to share ideas its complexities and utilisation antecedents. The following session now focuses on the discussion of the findings concerning the reviewed literature

5.2   Discussion of Findings

This section of the study discusses the findings from the pre-studio research. Data was collected through interviews, observation and visual study.

5.2.1   Visual communication media for antenatal nutrition education

Findings from this study suggest that nutrition education is considered as an essential part of the maternal health care process. It is considered as an alternative solution to the enormous problem facing maternal health delivery. Health education has emerged as one of the critical components of the concept of focus antenatal care, which sought to give useful and quality care to all pregnant women. In the context of nutrition education, it is seen as a strategy not just for providing information on what to eat. Health workers viewed it as a persuasive strategy that can motivate pregnant women to play an active role in the maternal health care process. Findings from this

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study also suggest that it is seen as the beginning of the maternal health care process, which is based on the belief that the health caregivers and pregnant women must operate on a commonly shared knowledge regarding the provision of health care.

This approach of priming for maternal health care through the use of educational and promotional activities is well documented in the available literature. As such, the finding is not different, but only a confirmation that health promotion and education is inseparable from maternal health care. For example, previous studies have reported that the essence of health education is to improve health literacy which is an outcome of health promotion and is vital because it supports all public health interventions and it is needed to facilitate voluntary adaptations of behaviour conducive to health maternal health care delivery; Nutbeam 2000). The implication of the assenting relationship between the findings from this study and previous studies revealed that nutrition education is not an optional or extra curriculum activity for health workers to engage their pregnant women during antenatal care. In the context of maternal health, it can be described as an imperative and arguably the foremost among the several maternal health protocols due to the impact of culture on maternal health (Airhihenbuwa & Webster, 2017).

Other emerging trends from the findings of this study support the perception that effective health care delivery is beyond the parameters of conventional medical practices. There is a direct link between a group of people's cultural characteristics and their approach to health decisions, efficacy responses, and even to the reception of health education interventions (Kreuter & McClure 2004). There is a considerable connection between poor health outcomes and low health literacy. On the other hand, improve health literacy has also improved health outcomes in many cases (Pignone & DeWalt, 2006) Don Nutbeam, 2008; Berkman et al., 2011). Hence, many positive and

negative cultural factors may affect Health care delivery. Like many African countries, many Ghanaian women's choice of maternal health care is much dictated by their cultural and religious beliefs practices and are critical determinants of quality maternal health care during pregnancy (Fischer 2002; Otoo, Habib, & Ankomah 2015).

In the context of maternal nutrition education, promotional activities can be leveraged to alter negative cultural factors and facilitate health care delivery. For instance, one notable finding from this study suggests that there are negative cultural beliefs and opinions about food and nutrition that health workers believe can work against the well-being of women during pregnancy; hence they resort to nutrition education and promotion to persuade pregnant women to adopt healthy lifestyles through education. This finding provides convincing evidence in favour of previous studies. Studies from other countries have concluded that many pregnant women are superstitious about certain foods, which, in most cases, are needed for a healthy pregnancy. The study identified that rural women severely prohibit foods like honey, citrus, eggs with low literacy skills due to cultural beliefs and practices (kheiri, Kunna, Mustafa, Shaaeldin, & Alsammani 2017). Mesele (2018) study form Ethiopia indicated that most women die and suffer during childbirth because they have no access to safe maternal health practices during pregnancy due to their traditional beliefs and practices. Among some of the views that the study identifies are late prenatal care due to ideas about evil spirit, the over usage of herbs during prenatal, delivery, and postnatal periods.

The case of Ghana is no different because many women are forbidden to eat nutritious food such as snails, ripe-plantain, hot food and animal lungs and okra due to the belief that it will lead to birth complications during pregnancy (Otoo et al. 2015;

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Oppong, 2015; Arzoaquoi, 2014). The apparent connection between the findings from this study and the reviewed literature justified the various strategies that are being used in the Ga South Municipal Assembly to improve maternal health outcomes. This also exposes the need to provide alternative and innovative educational approaches that can support current cultural dynamics to empower pregnant women to make better decisions regarding their health and their baby during pregnancy.

Concerning how nutritional communicate messages are to pregnant women, it emerged from the study that health workers combine both oral education, print materials and videos. The oral strategies are pregnancy school, private counselling, and community outrage. In all strategies, the use of mass media art forms and technologies are integrated. It emerged from the study that mass media artforms like posters, brochures, flip charts, flyers are the dominant media art forms. Additionally, mass media technologies like a television set and image projectors have also been installed in many of the facilities. These findings are in line with existing literature. For example, according to Glanz et al. (2008) that health education can take place at a school, hospital settings, community settings, and even on a personal level and may combine several techniques. Additionally, available literature also supports that health education in these settings is more useful when combined with the power of visual communication artforms (Nutbeam, 2000; (Glanz et al., 2008). Visual media are a core genre of mass media that has emerged not just as a way of spreading health information but as an effective way of persuasion and causing changes in knowledge, beliefs, and attitudes about severe public health issues to create a lasting impression (Gupta & Sharma 2017; Corcoran 2013) These findings indicate the strategies for health education is a multifaceted approach. Effective health education intervention

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harnesses the power of visual communication media artforms to support education irrespective of the session.

Despite the above, part of the findings from this study is inconsistent with the current trend in the reviewed literature. Previous studies indicate that the use of videos is described as the most popular and effective educational strategy in both literate and non-literate populations. Additionally, the use of tablets, smartphone, and television to disseminate video content to patients has proven to be a beneficial educational option (Fiore-Silfvast et al., 2013; Gupta & Sharma, 2017; Mutanda, Waiswa & Namutamba 2016). The absence of officially designed videos to support maternal health, which emerged from this study, is not new in Ghana. For example, Nti (2007) and Sokey, (2016) concluded that print media and oral are the leading educational strategies used during by Ghana Health Service for health education.

This finding is not what is expected. It is expected that the availability of appropriate educational video will help facilitate education during pregnancy school sessions. This is also supported by the perception among health workers regarding the efficacy of videos. In the context of limited health literacy skills and negative cultural variables, it only in the right direction, such culturally appropriate videos are made available to support effective education, especially among clients with limited reading ability. Findings from this study revealed that there are no related videos officially from the Ghana Health Service to support maternal health education during pregnancy school.

It appears that this vacuum in the use of videos to support health education has been a long-time problem, and several studies in Ghana even confirm it. For example, three related studies have all reported that the use of visual communication media artforms to support healthy communication is predominantly print media

artforms like flipcharts, posters, brochures, etc. Additionally, the use of culturally appropriate video that deals with the needs of pregnant women in the Ghanaian context have always been in the lurch (Nti, 2007; Prilutski, 2010; Sokey 2016). This gap indicates that there is a need to design and produce videos to support maternal health education since there are no officially created educational videos to promote health education during pregnancy school and other educational interventions Perhaps, the need to have a compelling video is evident due to the use of videos from YouTube even though such videos do not adequately meet the cultural needs of the pregnant women in Ghana.

Concerning the nature of the available material, findings from this study suggest that the available audiovisual materials are not culturally appropriate. For example, it emerged the available video is in English with an accent that is difficult to understand. Hence, it negatively affected comprehension and acquiring of knowledge. It also appeared that the food and other communication elements do not reflect the food items in Ghana. This discovery is not in-line with the reviewed literature. For example, culturally appropriate elements are seen as very important (Airhihenbuwa & Liburd, 2006; Kreuter, Lukwago, Bucholtz, & Clark, 2003; Kreuter & McClure, 2004). In the context of education for an audience with low literacy skills, the use of multimedia content is seen as a vital strategy.

A study of the content of the dominant visual media also reveals that the brochures and videos provide just information to audiences. This finding is not consistent with the available literature on effective educational media content design. For example, much of the reviewed literature to strongly advocate that effective educational content must have core persuasive variables like threat, severity, susceptibility and efficacy skills (Rice et al., 2017; Thompson et al., 2003).

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Concerning the use of videos for antenatal education, findings from this study indicate that maternal health educators viewed videos as an effective means of teaching, and the availability of videos will enhance their work. For example, maternal health educators strongly recognised that the availability of culturally appropriate video would help them to save time since they will not have to do an extensive health talk. This finding confirms the work of Fiore-Silfvast et al. (2013) from India. Their results suggested that maternal health educators believed that the integration of video into their education workflow reduced their burden of time they spent in speaking to pregnant women on maternal health issues during antennal care settings. Similar findings from Nigeria also supported that the use of video as an educational strategy is beneficial. (Bankole, Lawal, & Ibiyemi, 2017). The relation between literature and the findings from this study regarding the perception of video, reducing the workload justifies the conclusions that those maternal health caregivers have been overloaded. Hence, it negatively affects their ability to provide effective health education. It is also noteworthy to acknowledge that the perception that video can reduce the workload is well documented in video production literature (Cartwright & Cartwright, 1999). The implication of this finding, which is confirmed by existing research, suggested that the integration of culturally appropriate and effective health educational video into the antenatal care process by Ghana health service could help health caregivers to attend to more patients and reduced the current workload.

Additional findings from this study also indicate midwives and nutrition officers strongly believe that useful educational videos can break the problem of language barriers, which are a significant problem in health care. This result builds on previous studies from both India and Uganda. According to Mutanda, Waiswa, &

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Namutamba (2016), study midwives agreed that the deployments of culturally appropriate videos proved to effective in helping health workers to disseminate maternal and new-born health messages despite language blocks. In India, similar studies also revealed that the use of videos in education rural pregnant women helped health workers to overcome that challenge of language Fiore-Silfvast et al., (2013). Hence, this evidence brings to light one of the critical problems facing health care delivery. On the other hand, it also reveals the role that language, which is a tenet of cultural play in health care. While health caregivers are ready to offer health services, the issue of language could thwart the health care process.

One interesting revelation from this study is the perception that the use of videos aided midwives to be more efficient in the work and also helped in maintaining credibility and trust. This finding fits well with available literature. For instance, similar research from South Africa, India, Kenya, have presented the same findings (Kumar et al., 2015). More notably is the conclusion of Fiore-Silfvast et al. (2013) in India. According to Fiore-Silfvast et al., when health workers used well locally designed videos in education patents, the results is that it improves patients' level of accepting the health message rather than interpersonal communication in some specific instance where health workers are perceived to young and inexperienced when it comes to childbearing. These findings provide more insight into the effect of mass communication, which stipulates that communication elements can shape audience understanding and can even affect decision making (Campbell, Martin, & Fabos, 2012; Baran, 2013; Paxson, 2010). These findings also give credence to the importance of message source and credibility factors when developing health education material in targeted communities.

Again, maternal health educators also believed that the engaging nature of videos, which combines sound, images animations to explain maternal health topics could attract pregnant women, engage them and facilitate the process of knowledge acquisition. These outcomes suggest that videos are beneficial in educational settings. It is important to note such a conclusion might not be an over-exaggeration because several studies have reported similar findings. For instance, Mutanda et al. (2016) and Kumar et al. (2015) established that videos used in the health educational settings have proven to facilitate the transfer of knowledge and recommended practices due to the nature of videos. Results from India and Uganda showed that locally made and culturally appropriate videos are useful in facilitating health knowledge to a targeted audience. Still, Fiore-Silfvast et al. (2013) concluded that videos helped health workers improved counselling sessions because it improved the learning experience of patients and helped them to engage their clients.

The finding that audiovisual content can help maintain consistency in health message delivery, especially in facilities where there is a lack of educators, was unexpected. It is also interesting to note that that perception has not emerged in previous works. However, that finding confirms that mass media artforms have the potentials of maintaining consistency in message delivery (Cartwright & Cartwright, 1999; Musburger & Kindem, 2009). The implication of these findings also indicates that facilities with limited staff or lack quality staff could benefit from educational videos to help augment the deficiency in health care staff.

5.3   Post-Studio Research

This section reports the findings and discussion from the post-studio research. This field study research was conducted to explore health workers experiences and perception in using the designed video for pregnancy school and counselling sessions

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on nutrition. Additionally, the study examined how pregnant women interpreted the communicative and persuasive elements of the videos. The findings are presented and discussed under two main themes and sub-themes:

1. Experience of health workers about the use of the videos for antenatal education and counselling.

   a. Channel

   b. Message Content and Source Factors

2. Pregnant women's reception and interpretation of the videos

5.3.1 Experiences of health workers about the use of the videos for antenatal education and counselling

This findings responses to research objective three and research question three which sought to examine health workers experiences and perception in using the designed video for pregnancy school and counselling sessions on nutrition. The data was collected through interviews and observations using the TAM as a framework.

5.3.2 Perceived usefulness

Concerning the perceived usefulness of the video, three key themes were dominant. The first describes the perception that the use of the videos helped in making education more effective because it engaged the audience. In explaining what accounted for this perception, many mentioned that the video is complete and explains salient topics they want to communicate with pregnant women. The organisation of the content according to threat, severity and susceptibility and efficacy factors also emerged as very effective and its usefulness. Many described the threat elements as very important even though many acknowledged that in most of their

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communications, they are reluctant due to superstitions. One midwife explains the importance of the threat and danger element in the video as:

> Normally, we hardly tell pregnant women the dangers like deaths, complications, abnormal baby. This is mainly due to religious beliefs. However, I liked it when the midwife in the video mentioned them. You see when pregnant women are well informed about issues like this, they will take the message more seriously. And that is what happens this morning, hearing this fact one pregnant woman mentioned that this has nothing to do with Church. If you do your part God will also help.

About efficacy factors, responses showed that the use of a pregnant woman and local food is very useful. Health workers expressed that the presence of the pregnant woman in the video helped the audience to relate easily with the message. For example:

> The part where the pregnant women eat drinks water and she looks happy after performing those actions were very useful. To me when I asked my client why the lady looks happy, the majority could relate her happiness to the eating well, taking her folic and iron tablets and drinking much water. This is very good. This makes it easy for use during pregnancy school. You talk less.

In responding to a question on the usefulness or the impact of the video on the general workflow of education and work during antenatal, data collected showed four themes. First, it emerged that the use of the video helped in reducing the workload and saved time. Many explained that usually, this will require two hours talk with

many interruptions which sometimes makes the school boring. One senior nutrition officer stressed:

> It is amazing how the video could explain core issues with pictures of pregnant women less than fifteen minutes. I used the rest of the time to explain and answer questions mostly to people who did not see the commencement of the video. This is not a normal experience. I guess the use of the local language is key.

Secondly, health workers also reported that the users of the videos attracted much attention to the school. Many who were not part of the school were attracted to watch the video. Some also explained that there was high attendance at their school due to the video which is not the usually the style for education. Thirdly, respondents also indicate that the video will motivate the adherence to the recommended messages in the video as results it made the health talk easy. Others also indicated this boosted their confidence. Fourthly, the use of the videos increased efficiency of education and counselling.

> One nutrition officer describes this impact as:

> The videos made the health talk easily. Everything you need to talk about is there, Especially the various food elements. This option is better because, even though once in a while we try to buy the foodstuffs and bring them during the pregnancy schools, it comes with various challenges which affect the effectiveness of the school. With this everybody can sit comfortably and watch. The language is also made it easy for pregnant women to listen So as a nutrition officer, you spend much time to reinforce understanding rather than providing information.

These findings from relate well with Fiore-Silfvast et al. (2013) and Kissi, Dai, Dogbe, Banahene, & Ernest (2019) which confirmed that effective technology could increase perceived usefulness and have a positive impact on health workers workflow, their relationship with clients and help save time and reduce working load. Additionally, the finding that the videos helped them to deal with language barriers to communication and improved the effectiveness of their educational and counselling sessions have also been confirmed in other studies (Fiore-Silfvast et al. 2013; Lah et al., 2020). This outcome suggests that the use of effective video as a means of communication in the setting of antenatal health promotion is effective and have much potential for improving maternal health literacy and education.

5.3.3 Perceived ease of Use

Concerning the perceived ease of use, which describes user's perception that the use of a product or technology will be easy. Findings suggest that health workers viewed the produced videos as easy to use. This assertion was generally alluded to the form and content of the videos. The mode of education, the use of local language and the multiple translations was described as very useful since many of their clients do not speak English which is the major language for the existing print materials.

> One midwife expressed that; they print material are good. At least they have good and attractive images to explain some of the things we teach. But my experience has shown me that many of the pregnant women are not able to fully understand the recommended message. This is largely due to their inability to read. So even though there may be pictures, because they cannot read, they need someone to talk more or explain the text. This challenge makes it difficult to use print

materials. However, the video is easy to use, the local language is good. The food is the local food everybody can identify them.

Additionally, the presence of the midwife and manner of presentation also emerged as a contributing factor. Health workers indicated that many of the pregnant women could connect with the midwife and watched her with keen interest. This was also confirmed by the researcher's observations. This according to health workers made it easy to use the video for counselling and education because many of their clients believed and trusted the source of the message in the video. Again, the characterisation and manner of delivery of her dialogue also emerged as very effective and should be the approach to the pregnant school. One midwife narrated that "The midwife looks exactly like a professional midwife. She is very knowledgeable and presents very well." Others also expressed that the nature of the midwife and her presentation makes the video useful and easy to use a visual aid. One nutrition officer narrated:

> To me, if our people up there [Ghana Health Service] can look at videos like it will help a lot. This is because many facilities do have nutrition officers. In most cases, midwives or nurses perform these functions in the facilities with occasional support from the districts. Hence, when we have videos like this, it be can be shown in facilities with less staff. This can help maintain consistency and also make sure the pregnant women have access to quality nutritional information.

Another factor the emerged to support the ease of use of the video is the use ease of local food items and the colourful nature of shot representations. Many described that this approached made it easy to use the video one-one basis and as such, they don't need to have the physical food around to explain issues to pregnant

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women especially to a client with low literacy skills. For instance, one midwife expressed that:

> The local food items in the video make it easy to use education. They see the pictures of the various food group thy need to eat to boost their blood level to help them have a healthy pregnancy and healthy children. The food is attractive and colourful. All are available on our market; they are familiar with them. With this, I did not talk plenty. And I did little explanation because they got most of the words right. They love the video because they saw it as Ghanaian.

These findings showed that the visual elements used in the video are effective and culturally appropriate. The responses from this study correspondents with the conclusions of Fiore-Silfvast et al. (2013), and Guttman et al., (2018) studies which suggest that the use of culturally appropriate communication elements can affect the perceived usefulness of technology among health workers. In the context of this study, the selection of props in terms of food, the use of local language and the characterisation were design factors that contributed to the perceived ease of use. Additionally, the findings also confirm the use of effective message source share health messages. For example, Rice et al., (2017) explained the importance of selecting appropriate source by posting that a good source can attract an audience to pay attention to the message, speed up the assimilation of the message, similarly, Thompson et al., (2003), recommends that are source credibility which refers to the level of audience view about truthfulness and lawfulness of the content is very essential the effectiveness of health educational media content. This relation specifies that the choice of communication elements, characterisation and the use of local food

items proved to be the main factors that shaped health workers perception of an effective video content for antenatal education on nutrition.

Another factor that contributed to the perceived ease of use of the videos is the mode dissemination. Many of health workers, narrated that the use of multiple channels of distribution like flash pen drives, YouTube and WhatsApp pages made access to the videos comfortable and less stressful since they could use their smartphone and tablets to get the videos and show it their clients during counselling sessions. The majority believed that making the video available through social media platforms make the videos easy to use because it can easily be accessed. This was manifested through how the video was used.

Contrary to the researcher's view, respondents download the videos and explain them to during some of the pregnancy schools. Others also said they used their smartphones and tablet to show the videos. Some also indicated sharing the videos helped their client to watch over and over again. This showed that using the video was difficult for the health workers due to the dissemination of the videos through multiple channels. These findings support the dominant views in the literature which posits that the likelihood that people will adopt and use technology to enhance their workflow or learning is dependent the perception that the use of adoption of the technology will be easy and will require fewer efforts (Walker, Kho, Tan, & Lim, 2019; Dishaw & Strong, 1998; Venkatesh & Davis, 2000; Lah, Lewis, & Šumak, 2020). In this study, one exciting finding is the willingness to incur additional costs to adopt a technology. This suggested that when users perceived technology as easy to utilise in their workflow, they may adopt it even at a cost.

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5.4 **Pregnant women's Reception and Interpretation of the Videos and**

Influencing Factors

These findings respond to research objective four and research question four. The focus was to examine pregnant women's reception and interpretation of the videos. Data was collected through in-depth interviews with first time pregnant women who go through education and counselling due to low blood level.

5.4.1 **Threat and severity elements**

In responding to the threat element of the video, all pregnant women were able to identify the threat scenes. They described the woman in the video as suffering. Participants indicated that these were things that will happen if a pregnancy does not eat well (See Figure 97). Others also expressed that when pregnant women refuse to take their folic acid and iron tablets they will also suffer as shown in the video. However, according to some, the sound effect and the darkness in the scene made them felt that something bad was about to happen to the pregnant woman. Concerning severity factors, many that the pregnant woman may become pale, sick. Concerning the video, it expressed that she may give birth to a baby with a health problem as shown in the video (See Figure 98). Others also mentioned that a pregnant may die as results of poor nutrition. Many pregnant women supported this answer by describing the black screen (See Figure 99) coupled with the sound effects and the dialogue from the midwife indicated that a pregnant woman could die.

However, when the researcher probed to confirm if the threat element produced to much fear, participants expressed that they are not afraid even though they agreed that the consequences of poor nutrition are dangerous. The majority provided the reasons that what the midwife said is true because they have heard some pregnant women dying because of low blood [Aneamia] issues. Yet, they expressed

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that they are not too much afraid because if they follow the help of the health workers, they will be fine. Others also remarked that a combination of good nutrition and the help of God will help them through their pregnancy successfully.

In the light of the encoding/decoding model, participants interpretations of the persuasive and communication elements produced dominant or preferred readings rather than an oppositional reading. This means that pregnant women received the encoded text in accordance with the encoder's intention (Hall, 1973; Hodkinson, 2017). This also suggests that their interpretations agreed with the recommended messages from health workers. Even though these responses reveal that there is a nexus between the encoder's choice of visual, sound elements, the framing approach and decoders reality of danger regarding poor nutrition, it also highlights that the pregnant women were active in the communication process.

Figure 76: Description of threat element by pregnant women

Figure 77: Description of threat element by pregnant women.

Figure 78: Description of severity element by pregnant women

5.4.2   Responses on susceptibility elements

In responding to susceptibility factors, many of the pregnant women indicated that they agree that this can happen to all pregnant women. However, when the researcher personalised the question, none of the pregnant women emphatically admitted that could happen to them even though they mentioned that it is possible. The table (6) below describes the major responses.

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In the context of the encoding/decoding model of audience reception, these findings produced a negotiated meaning rather than preferred or an oppositional reading (Hall, 1973; Hodkinson, 2017). This means that even though the pregnant women accepted the video message on susceptibility, they did not completely agree with the message since their responses indicate that they cannot be affected. This analysis is supported by the various responses as presented by the table below. Whiles these findings bring to light how active and the powerful audience can be when it comes to the audiovisual communication process and interpretations, the various responses from the pregnant women on the susceptibility elements showed that the cultural elements of beliefs and religion were a core factor that shaped their interpretations.

These assertions are well supported in the reviewed literature. For example, Kreuter & McClure (2004) and Airhihenbuwa & Webster (2017) have all argued that there is a direct link between audiences cultural and their approach health decisions, efficacy responses and the reception of health education interventions and a such the concepts of health and culture could not be separated because they define people's view and they decode messages. Hence, as the outcome of this study showed, pregnant women did not want to accept any negative things happening to them even though their medical record indicated that they were vulnerable. Furthermore, these findings also explain, health worker's reluctant to mention efficacy and susceptibility elements during their talk educations.

Table 7: Pregnant women responses about personal susceptibility

1. Yes, it true that if you don't eat well is dangerous. But with God all things are possible. My God is will help.

2. When you are pregnant anything can happen, that is why prayer is very important

3. God forbids! I don't deny it, but I have strong faith. I will go through this one. My God is able.

4. I am not afraid. It is true, but God is my side. I am doing my part. He won't fail me

5. I have heard some die due to pregnancy problems like this. But I still believe in God. Everything will be fine

6. I believe that with prayer and following the midwife's direction, all will be fine me

7. Never, God will help me.

8. I don't have to relax in my prayers. I know he [God] will help me

5.4.3   Efficacy elements / Cues

Concerning efficacy elements, participants indicated that eating well is very important. It also emerged that the recommended messages are not difficult to follow since it does not take much to eat well. For example, one pregnant woman mentioned:

To me the I have seen that it is our lifestyle and actions that matter.
This because even though one may eat well, eating ayilo and drinking
coke and five-star drinks and such drinks or coffee do not help. They
rather reduce our blood. So, to me, that is my challenge, I did not know
much about that.

In terms of knowledge, many expressed that according to the video the midwife said that every time they eat their food should have some fish or meat and vegetables. Others also mention they must eat the four-star food as shown. Many

described the four-star diet as four different kinds of food that pregnant woman must eat from. Pregnant women recalled examples as meat, egg, and fish. Some also mentioned beans, agushie, groundnut. Vegetables like tomatoes, kontomire, okra, ademe, cassava leaves, and Boko dame. Cassava, yam, plantain and rice were the most common one mentioned. In relation to fruits, the most frequent ones mentioned were mangoes, banana, orange and pineapple. However, many said that they did not know that they have to fruit before the main food. In responding to the need for iron and folic acid tablets, participants appreciate why they have to take in those tablets every day even though it is difficult.

Responding to question on efficacy barriers, pregnant women expressed that vomiting is one major problem especially when it comes the iron and folic acid tablets. Some also mentioned that when they cook, they can eat. Others also said money is another factor. But generally, they agree with the midwife that you don't need much money to eat well. Pregnant described that based on the video they have to eat from the different kinds of food so that they can stay healthy. When researcher inquired of things to avoid participants recalled the ayilo, energy drink, coffee and tea should not be eaten. However, many confused teas with milo or cocoa drink. Many also indicated that they know water is very important but indicated that they did not know that water they have to take between 6 to 8 glasses of water a day.

The findings on efficacy elements suggest that the interpretations produced preferred or dominant readings. This means that the pregnant women agreed with the message and therefore did no reject or negotiated for some other interpretations (Hall, 1973; Hodkinson, 2017). Two main factors may account for these responses. First, many of the pregnant women responses showed that they trusted and believed that the midwife: a source of the message. For example, many kept repeating "the midwife

said" in their responses to indicate their level of trust. Secondly, responses from the pregnant women also showed the pregnant women viewed the message source as very credible. The nexus between trust, credibility and efficacy factors is well supported in the literature. For example, Rice et al., (2017) explained the importance of selecting an appropriate source by posting that a good source can attract an audience to pay attention and can strengthen both self and response efficacies. Additionally, Thompson et al., (2003), also supports that message source credibility and the value of the given information could strengthen efficacy factors.

On the general level, pregnant women expressed they like the video very much. Many said they enjoyed the pregnancy school. All were able to identify the source as a midwife. Some said they like the way she talks slowly. Other also said she young like them that she is friendly. Additionally, some also described pregnant women as younger. In responding to a question on what happened to the pregnant woman, participants mentioned that they initially thought the women died in the video, however, they mentioned that because she changed and followed the advice, she becomes happy. When the researcher probed further to what showed she become happy, participants described the following shot to support their claims.

Figure 79: Shot 1 that depicts happiness according to midwife

Figure 80: Shot 2 that depicts happiness according to midwife

Figure 81: Shot 3 that depicts happiness according to midwife

5.5 Conclusion

This chapter focused on the presentation and discussion of data obtained during pre-studio and post-studio researches. Findings from pre-studio production indicated that health workers combined oral education and visual mass media art forms to communicate nutritional messages to pregnant women through facility education, pregnancy schools, community health education and counselling sessions. During educational sessions health workers heavily relied on available visual media as a visual aid to communicate messages to pregnant women. However, the available visual media artforms are mostly print materials with no officially designed videos from the Ghana Health Service to support antenatal health education even though health workers narrated that they value the use audiovisual media for education than the dominant available print materials. Hence, health workers resort to the use of exotic videos from the internet to support antenatal education despite the utilisation challenges.

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Moreover, a study of the form and content revealed that the communication elements are not culturally appropriate and lack persuasive elements according to best practices for designing health education content. Whiles, the use of multiple channels and setting for health communication is inconsistent with the available literature, the domination of print material, unavailability of effective videos and the lack of persuasive content design and structure were in variance to the available literature.

During the post-studio research, the study found that the form and content of the video are very useful and easy to use. Concerning perceive usefulness, it emerged that health workers viewed the video useful during education sessions due to the inclusion of threat and efficacy elements. Additionally, the use of the local midwife, local language and use of local foods were factors that emerged and accounted for the effectiveness of the video for education. Again, many described the threat elements as very important even though many acknowledged that in most of their communications, they are reluctant due to superstitions. Overall, the perception of the usefulness and ease of use of the videos was that the use of the video helped in reducing the workload and saved time. Secondly, health workers also reported that the users of the videos attracted much attention to the school. Additionally, the model of education, the use of local language and the multiple translations were described as very useful since many of their clients do not speak English which is the major language for the existing print materials. Furthermore, the presence of the midwife and manner of presentation also emerged as a contributing factor to the usefulness of the videos. Finally, multiple distribution channels like flash pen drives, YouTube and WhatsApp pages made the video easy to accessed and less stressful.

Additionally, it emerged from pregnant women's interpretation of the video produced preferred meaning with threat, severity and efficacy factors. This means that their interpretations were in line with the preferred meaning. The threat element and persuasive strategies did not produce fear control and management. However, there as partial negotiated reading to the susceptibility elements of the video. This means that even though the audience accepted the message they found different ways to create new identities due to their religious beliefs.

This session has discovered both health workers and pregnant women perception of the use of the designed videos in the context of antenatal health education. However, it must be noted that the expressions above are the outcomes of how audiences of the video interacted with the elements and the design structure of the video which functions as a text. In the following chapter, the study presents findings from the textual analysis and how the communication and persuasive elements and design structure may have influenced the lived experiences expressed by health workers and pregnant women in this session.

CHAPTER SIX

TEXTUAL ANALYSIS: COMMUNICATION ELEMENTS, SIGNS AND THE PRODUCTION OF MEANINGS

6.0   Overview

The thrust of this chapter is to present findings on the textual analysis of the video. Audiovisual media is a time-based art form that can shape and influence people feelings and perceptions. Beneath the structure of audiovisual artform are both latent and overt elements powerful enough to stimulate, invoke visual pleasure, amuse and persuade people towards unexpected directions away from long-held beliefs. While it is acknowledged that the meaning is constructed rather than observed, it is the interaction of communication elements with a viewer's cultural background, age, beliefs that generate meanings to alter perceptions about their immediate and distant world (Durham & Kellner, 2006; Bødker, 2016; Hodkinson, 2017). The negotiating of meaning in any communication design is, therefore dependent on how a shared code has been framed and constructed.

In the context of this study, the designed video is a product of organised audiovisual codes that are shared by both the designer and the target audience. This section presents a discussion of the analysis of the audiovisual form that was designed through the process of selecting signs and organising them into a complex code system to facilitate the process of decoding preferred reading. The analysis is also juxtaposed to interpretations during the post-studio research with health workers and pregnant women. This approach helped in the discovery of the communicative functions of the form, content and persuasive elements and how such elements instigated the production of meaning in the communication process. This section will be presented in phases. First, a visual description of the video is presented followed

by a discussion of the communication context of the video. Next, the researcher describes the dominant cinematic, communication elements and persuasive strategies and their role in the production of meaning.

6.1   Description of the Video

The video is 10 minutes 10 second's educational video. The video had two characters; midwife and a pregnant woman. The mise-en-scene of the video is rendered in a flat pinkie coloured background for the midwife and a textured of white coloured background for the pregnant woman devoid of all other elements. Blocking is mainly constructed by stationing the two characters to look into the camera as they perform their action. The blocking of the midwife is achieved through a movement along with the X-axis and within the 180 degrees spatial rule behind a table with arranged foodstuffs. The visual elements and props, stage is all represented in high key light. The high key allows all props and characters in the scene to be visible on the screen. This washed lighting technique erases all dramatic shadows away from the faces of characters and props within the scenes creating a soft shadow on the objects and characters—the white coloured costume set against the minimal pinkie background set to accentuate the midwife and attracts attention.

Picture framing and representation is mainly captured and staged in medium, medium close-up and medium-long shots. Majority of the shot have been rendered in high contrast which creates a gross disparity between darkest and lightest areas within each shot. The frame rate of the recorded images is not too fast and not slow. The rate of the shot suggests that the video was recorded at 25 frames per second. Spatial and focal length qualities have been used to render objects and characters to maintain proportions between object and characters. Two major focal lengths are evident in the video. First, the midwife and the pregnant woman are captured in a wide-angle lens.

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Food and other props are rendered and captured wide-angle and telephoto lenses. The range of distance among the various elements, food props and characters are in sharp focus. However, in some few shot, depth of field has been used to separate the background from the centre of interest. The framing and composition of the characters and objects are devoid of high angles and low angles. Generally, the shots are rendered in normal eye level with the objects and characters designed to always look into the camera. Additionally, the cinematography representations do not make use perspectives.

The arrangement of the shot into sequential order is constructed mainly through the use of cuts. As results, the editing approach is devoid of dissolves, wipes and other transition techniques. The general pacing of the change from one shot to another takes that low paced cutting approach. Screen time is maintained through the video through the use of cuts, match-cut and cut-ins, which makes the video to preserve a strong perception of continuity editing. Throughout the video, the 180-degree spatial continuity is maintained on screen. The use of cut-ins and B-rolls make the footage look illustrative, allowing the video to direct attention and makes references to the concept and objects being explained by the characters.

Sound construction for the video is predominantly based on the use of voice-overs, background sound and sound effects. The voice-overs were used to narrate the message. The message was recorded at a low pace in a highly conventional style with occasional used on rhetorical questions to break the monotony of a lengthy talk. The video has slow-paced background music which is used at the opening montage at the introduction of the video. At the middle of the video, a sirens sound effect is used to imply the presence of an ambulance. Sound perspective is used to depicts the moving away of the siren.

The narrative technique follows the basic linear narrative style. The video opens with a montage of foodstuffs with a low paced sound playing in the background. The montage includes a close shot of vegetables, protein, legumes and nuts, starchy and staple foods. Next, a shot of all four food groups is shown on the screen with each group of food occupying a quarter section of the screen depicting a screen divided into four. Finally, a logo that represents groups of food with the inscription "4-Four Star diet" is animated onto a plain white background on the screen. The low paced sound playing in the background fades out gradually. The next shot opens on a midwife in a medium shot with a plain, flat and pinkie background with the high key light. Her white uniform and cap accentuate her, making her the centre of focus on the screen even though off-centred on the screen. He opens her arms and says "Akwaaba". She continues by saying that her name is auntie midwife, and she takes care of pregnant women for safe delivery. The shot changes from a medium shot to a long medium shot and maintain the same flat-pinkie background setting. In this scene, we see a table. On the table are well-arranged foodstuffs. From the right of the screen are vegetables, fruits, water, protein, starchy and stable foods and legumes and nuts. Still, in a medium-long shot, she says addresses camera by saying that "I want to talk to you about pregnancy nutrition". The shot is intercut with a hand mooching through a plate of banku, fish and sauce.

In the next medium shot, she mentions that if a pregnant woman does not eat well, it could be hazardous as she looks into the camera with a serious face. The shot cuts to a close up of a shot of pregnant women holding her head with a sad face. A voice-over explains that poor eating during pregnancy can bring many problems to both pregnant woman and her baby. The shot of pregnant women is held for a while on screen. Then, shot changes to a full shot of the pregnant woman. A shape of red

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illustration animates over the pregnant women to suggest the loosing of blood as a result of poor eating. The voice-over explains that poor nutrition can lead to anaemia which will cause the birth of a low weighted and abnormal baby. A picture of a discomforting premature baby is shown on screen in a close shot. Camera dollies in slowly as a voice-over explains, "Both baby and mother can die". The screen turns to black abruptly. A sound of an ambulance sirens plays over the black screen and fades out into total silence for 5 seconds. The shot fades in gradually back to the midwife in a medium shot as she explains that even if a pregnant woman survives that she can have a birth complication that could harm the child forever. The scene ends with a worried midwife looking into the camera. A voice-over of the midwife says "so what will you do"?

The middle of the video shows the midwife in a medium close upshot. She looks into the camera with as she smiles. The scene cuts to a medium-long shot with the arranged four-star diet in the foreground. Midwife mentioned that the best way to avoid becoming anaemic during pregnancy is to from the Four-Star Diet. With an intercut between the midwife and close shots of the food on the table, the midwife explains the functions of each food item and why pregnant women should eat from the everyday. In the next scene, a pregnant woman eating is shown. Her food contains the four-star diet. A voice-over explains that fruits should be eaten at least 30 mins before an actual meal. Next, in an extended medium shot, the midwife explains that water is essential—shot cuts to, a pregnant woman drinking water. The voice-over says that at least six to eight glasses of water must be taken each day during pregnancy. In the final scene, a series of shots of the pregnant women is depicted in medium shots as she smiles into the camera. The scene cuts to the midwife. "She mentions that eating four-start diets is the best and it does not require any expensive

food". The scene cuts back to the pregnant woman, and the four-star diet foods animate into the scene to form a circle around her. The video ends with a montage of the four-star diet food with the animated logo depicting the four-star food. The low paced background sound fades out gradually.

6.2   Communication Context of the Video

While the production of this video is part of the research for the award a degree, the actual exigence for the production stems from a real need to provide audiovisual material to support maternal health education on nutrition in the Ga South Municipal Assembly of the Greater Accra Region. Additionally, the motivation for the production is based on the outcome of an initial study, which confirmed that culturally appropriate videos are less incorporated compared to print materials, which in most cases pregnant women are unable to read, especially in the study location. The main rhetor is the designer of the video. He makes his communication argument through the selection and arrangement of audiovisual elements to persuade the audience to adopt recommended practices on maternal nutrition.

The presence of the midwife in the video is described as mediated rhetor rather than as the main rhetor. The use of the midwife is part of persuasive techniques that have been encoded with meaning through design and cinematic treatment. Through the selection and organisation of communication elements, the rhetor makes that argument that effective nutrition education depends on the use of persuasive features rather than just a presentation of information. Hence, the rhetor argues that educational videos can persuasively be constructed to facilitate the process of adopting good health behaviours which is the focus of health education.

Maternal health nutrition is the subject matter of the constructed rhetorical video. This subject matter is both a district and national concern. Midwives and nutrition officers have confirmed that many pregnant women report to their facilities with low blood levels. According to midwives, the leading cause of this poor nutrition practices and knowledge among pregnant women. Hence, they have to intensify their education to help reduce the growing trend. Again, Ghana's attainment of the SDGs goal related to women and children health is primarily hinged on maternal health education. Health knowledge will help pregnant women to play their role in the health care process.   The audience for this video is categorised into two. First is the immediate audience. This refers to pregnant women who will see this video at the various pregnancy schools in the selected study location. The second audience includes all pregnant women in Ghana who may have access to the video content

6.2.1   Communication elements, persuasive strategies and the production of meaning

At the beginning of the video, a teaser was used to create a visual hook to appeal to the emotion's audiences. This includes the use of a montage and shot of food items. The use of close shots of various foodstuffs of the four-star diet and use of high-key lighting approached with soft shadows creates a fresh and nutritious food (See figure 103and 104) Additionally, the use of slow-paced animated shots of the four-star diet and edited to match sound hits in the music track may attract an audience to pay more attention to the visuals. The visual that were used have different semiotic functions. For example, figure 104 is a montage that combines different signs into a complex sign that could also function as a code. This includes both iconic and indexical signs.

The value of this technique was manifested during the post-studio investigation. It produced various meanings. For example, one midwife expressed that:

> The way the video starts is very attractive. During the last pregnancy school, I saw that when I mentioned that today we are going to watch a new video, my clients were excited. This helped me to get their attention. They loved the food and could identify with food because they are available here.

This comment suggests that the teaser as a visual hook, the close-ups of the food and the high key light culminated together to the usefulness and thereby increasing the perceived ease of use.

Figure 82: Video introduction through the use of montage

Figure 83: The use of close shots of food items in high-key lighting to create a hook for the video

The characterisation and presentation of the midwife suggest an attempt to create intimacy with the audience. For example, the close-up shots of the source were used to draw the audience out and to establish an emotional connection between the rhetor and audience. This was intentionally done to attract and hold attention. The argument of this approach is that audience needs to be prepared to receive information. It assumes that many things are craving for the attention of the audience. Hence, the second cinematic technique augments the teaser to forge a strong hook that proved essential. It can be argued that this technique is one of the elements in the video that triggered the high perceived ease of use from the health workers. Interestingly, many indicated that unlike the exotic videos, the character in the video is identified as "auntie midwife" and that increased audience trust. According to some health workers, "it was easy using the video because auntie midwife looks exactly like us these helped the clients to believe the message". These comments support much of the available literature which indicated that characterisation, source message and language are essential culturally appropriate elements that could generate trust from audiences (Rice et al., 2017; Rimer & Kreuter, 2006; Airhihenbuwa & Liburd, 2006).

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The presentation of mise-en-scene elements gives the impression of a pregnancy talk session. This is creatively staged to mimic the interpersonal communication typical during pregnancy school sessions. Additionally, the spatial qualities of the mise-en-scene elements suggested that the video is designed to hold maximum audience attention. This is represented in the video through the visual design of props, colour, makeup, costume and action. However, to reduce the cognitive load and to increase the germane load, the midwife is staged in a flat-pink background. This creates a sharp contrast between the white colour custom of the midwife. While this makes it easy to identify the midwife, the background colour and the custom colour creates visual harmony that is pleasing to the eyes. This is also supported by the use of high-key technique, which allows all props and characters in the scene to be visible on the screen. Hence, all dramatic shadows are washed away from the faces of characters and props within the scenes creating a soft shadow. Though makeup is very important to television and video, this video makes minimal use of makeup. This was intentionally crafted to prevent the audience from focusing too much on the makeup look of the source. Responding to the aesthetic value of this technique and its nexus to the impact on workflow during pregnancy schools, it emerged generally emerged that the characterisation is consistent with their practice. One nutrition officer remarked that:

> The midwife looked professional on-screen and when you look
> professional it attracts respect from the audience. It also increases your
> [health workers] confidence. This is one of the reasons why my clients
> paid much attention and believed the message.

This approach is fundamental in the context of educational video, and it well emphasised in the literature on multimedia content for education. For example, the

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cognitive load principles state that all unnecessary visual element that will not contribute to clear understanding and could detract attention from the audience from focusing on the core message in a multimedia content must be limited or removed if possible (Mohamed Ibrahim, 2011; Brame, 2016). This approach represented in the video, therefore, suggested that it is designed to force the audience to only look at the midwife and not focus on any other visual elements.

Cinematography elements in the video have been orchestrated to draw the audience to the midwife. This has been achieved through the synergy that is created between lighting, contrast, shot sizes, angles and space. For example, the shots sizes in the video predominantly range from medium-to-medium close-ups. Shot angle and eye views of subjects and objects are kept on eye-level, which allows the characters to always look into the camera. The spatial relation between the set design and camera framing creates space along the X-axis rather than Z-space. Spatial and focal length qualities have been used to render objects and characters to maintain proportions between object and characters. The range of distance among the various elements, food props and characters are in sharp focus. Majority of the shot have been rendered in high contrast which creates a conspicuous disparity between darkest and lightest areas within each shot. These cinematics language and grammar have been used to get a close perceptual gap that might exist between the audience and the midwife. The implication of the cinematic elements also suggests that the rhetor want to reveal details and to establish an emotional connection between the midwife and audience (Bordwell et al., 2016).

In the video, the communicative power of sound and editing has been leveraged to reinforce persuasive strategies. The editing style of the video is based on simple cuts, cutaways and inserts. The pace of the editing follows a slow sequence.

The cuts between the shots help to maintain real-time and flow of action screen without any time distortion. This approach has been used to suggest meanings that are intended to support the core message of the video. For example, the nature of the editing style and the maintenance of real-time indicates that the action was spontaneous and unfolding within the same space and time.

On the other hand, it is an attempt to recreate a pregnant school session that is familiar to the core target audience. This rhetorical approach is well represented in the sound design for the video. The video generally makes use of voice-over sound effect and music track as the main sound elements. The voice-overs were used to narrate the message at a low pace and conversational style with occasional used of rhetorical questions to break the monotony of a lengthy talk. The sound perspective used in the siren sound effect was used to imply the presence of an ambulance, which also indicates danger.

As early as possible the video attempted to established source credibility. Rhetorically, it thrives on the ethos approach to persuasion, which is based on the philosophy that the reception of a message is primarily affected by the persona of the one who delivers the message. Source credibility is a string variable in the context of persuasive media. In the context of health education, it describes a visible character who presents a health message. This representation of source credibility factors was constructed through the manipulation of cinematic elements like set design, costume, narration and action.

The white uniform and belt with the simple hairstyle which carries the nursing hat make overt that the presenter is a health worker. To enhance the credibility and to direct audience attention to the source to ensure full concentration, the set design adopted the minimalist approach to support the creation of source credibility. This

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was achieved through the use of flat pinkie-coloured background devoid of all other elements that might detract attention from the midwife as shown by Figure 106. While the pinkie-background aesthetically works well with the light style and looks pleasing on-screen, its usage is more symbolic. Generally, one may expect the use of green since it symbolises health. However, the designer wants to draw much attention to the subject matter of maternal health. By using the colour pink, the designer symbolically detached the issue of maternal health from all other health issues and gave attention.

The first line of narration and the mannerism of presentation are techniques that were rhetorically employed in the video to established source credibility factors. For examples within an embracing mood, the midwife states: hello, "I am called Auntie Midwife. I take care of pregnant women to have a safe delivery". This line in the narration is a persuasive technique, and it is imperative to the whole video. While it verbally helps to identify the character as a midwife, it also suggests that she is very experienced and credible when it comes to maternal health. Rhetorically, she builds audience trust and gives firm reasons to audience pay attention.

Figure 84: The use set design colour, action to support source credibility factors in the video

The video dwelled on visual forms, camera framing, movements, narration and sound to emphasise the elements of threat, susceptibility and severity of poor nutrition. This was also achieved through the use of shots size and the careful use of selected images. In the video, the midwife started her education by stating that. "If a pregnant woman does not eat well, it is perilous and could contribute to anaemia which will cause the birth of low weighted and abnormal baby and both can die." In the video, the picture of a premature baby was used as a persuasive technique to visually communicate the implication of poor maternal nutrition, as shown in figure 105. The use of close up shot and slow camera dolly was used to subtly pull audience and allow maximum focus on image and assimilate the information. To further emphasis the threat of poor nutrition, the video cuts to a black screen with the sound of a siren (See figure 106). The use of a black screen and the sound effects connote danger and death.

Through this visual and sound technique, the video suggests that poor nutrition in pregnancy could not just lead to anaemia but could also lead to a severe complication that can put both mother and baby into harsh health conditions. The representation of these persuasive elements is well recommended in the available literature on health education. It is regarded as an essential element they can move the audience to attend to the message. Furthermore, the video use question, visual pause to move the audience to think about the threat and prepare the audience to a possible solution. This was achieved in the video through the use of the rhetorical question "so what will you do"?

Figure 85: This shot is used in the video to indicate Rhetorically indicated the threat and severity of poor nutrition
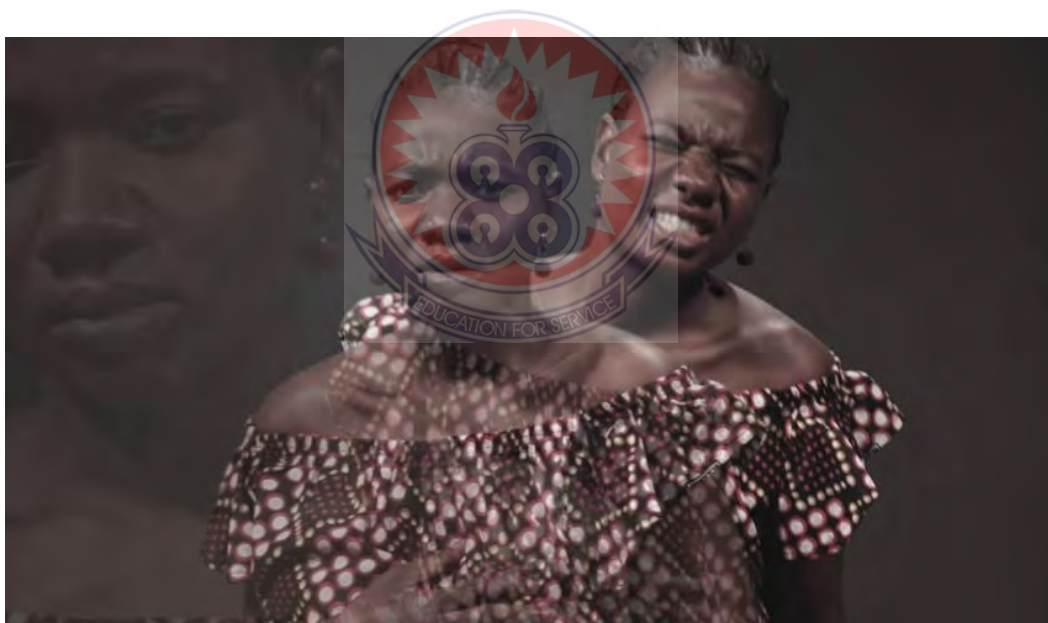
Figure 86: A montage of suffering pregnant woman as a threat and severity techniques

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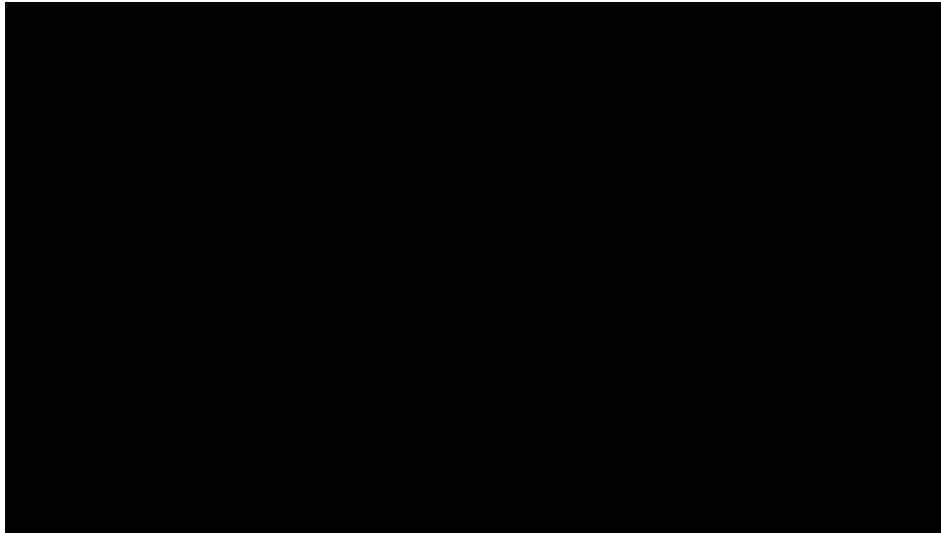
Figure 87: The threat and severity were further heightened with use black screen and sound effects to indicate the threat and severity

Health educational literature suggests that threat, susceptibility and severity information alone will not move the audience to action. In some instance, the audience may resort to fear control which means that people will find a way to stop paying attention to the message because they feel that they cannot do anything about their health problem. (Cho 2012; Cho & Witte 2005) To avoid this, it is best practice to provide a solution through efficacy believes in preventing the audience from developing denial or defensive avoidance" (Thompson et al., 2003 p.478). This has been represented in the video through the use of camera shots, angles and narrative. For example, the midwife mentioned that "to avoid this problem you must eat from the four-star diet" Furthermore she stated that "four-start diets are a group of food that helps pregnant women to build their blood levels and help to stay healthy together with their babies". This was over layered with a montage on the screen showing the various four-star diet.

Next, the video presented a rhetorical presentation of series of shot through cuts and inserts to demonstrate each group of food. In the video, various local foods that are common in the target audience locality were shown. The meaning that

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emanates from these selected and treated shot suggest that four-star foods is common and is not any expensive food. Again, the narrative approach coupled with camera framing shot sizes and the use of simple slow-paced cut from shot to shot suggest a simple persuasive message that audience should know about the various four-star foods that can improve their health. A close shot of hand and the food is showing a sizable fish, banku and tomatoes – pepper sauce as shown in the video to demonstrate the food is well balanced visually. Next, a series of similar Ghanaian four-star foods were shown in a slow animated shot sequence to strengthen efficacy believes.

In the final scenes of the video, a serious of cuts from shot to shot coupled with animation was also used to persuade the audience on the role of fruit, water, folic acid and iron tablets. To drive how the point the fruits are essential and should be eaten before meals, the video employed the use of animation. The motion choreography between the shot of the fruits and the pregnant woman suggests that the fruit should be eaten before the main meal, as shown in figure 29. Similarly, the shots of the pregnant woman drinking water with animated glasses of water provide strong visual support for the midwife rhetorical statement that water is "perfect for you and your precious baby" The use of the shot of the pregnant women in various activities like taking folic acid and iron tablets are strong persuasive visual argument that draws from the social learning theory which articulates that audience can be motivated as they see people who similar to them perform actions they perceived to be complicated.

The last scene of the video is very motivational. The video presented a series of persuasive visuals and narratives to indicate the benefits of responding to the message. For example, in the final scene, a series of shots of the pregnant woman is depicted in medium shots as she smiles into the camera. The shot cuts back the

midwife She mentions that "eating four-start diets is the best and it does not require any expensive food". The scene cuts back to the pregnant woman, and the four-star diet foods animate into the scene to form a circle around her.

Figure 88: Shot visualising efficacy factors on meal

The video ends with a montage of the four-star diet food with the animated logo depicting the four-star food. The low paced background sound fades out gradually. The interaction between the visuals and the intercuts evokes a meaning of fulfilments. Furthermore, it emphasised the rhetorical point that women who follow this health message will be happy. This is the video intentionally presented in at the last shot. Also, the fact that shot was help on screen in a slow-motion for an unusual shot duration indicated that the rhetor of the video wants the audience to take that away as the core message.

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Figure 89: Shot visualising efficacy factors on water

Figure 90: Persuasive shot depicting happy pregnant women

Conclusively, the video is a representation of a rhetorical form. It combines and manipulates the aesthetics of audiovisual elements to provide communication solutions in the context of maternal health education. This is achieved by creatively leveraging the communicative power of lighting, mise-en-scene, cinematography, editing and sound design. The organisation of set design, custom and which takes the minimalist filmmaking approach forces audience to focus on the midwife. The

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aesthetics of high-key lighting style supports the minimalist approach and create a simple scene that is devoid of extreme dramatic shadow. The cinematography was used to create an emotional connection between the audience and the midwife through the simple close shots of characters and objects in the video. The editing style was slow-paced with simple cuts that facilitate learning. This is further complemented by the soundtrack and sound effects to engage the senses and appeal the emotions. The treatments of these elements support the multimedia theory, which stipulated how educational content can be designed through the selection and organisation of audiovisual elements.

These communication elements have been used to construct a persuasive educational message that reflects theoretical constructs like pathos, logos and ethos. Furthermore, the organisation of audiovisual elements in the video addresses health educational elements like threats, susceptibility, severity, efficacy factors and other motivational elements that can facilitate the process of maternal health education. The content of the video depicts foodstuffs that are common and can quickly assess by the target audience. Additionally, this video is an embodiment of persuasive elements that represent an alternative and innovative communication solution to help provide effective and culturally appropriate maternal health education through a multimedia approach.

6.3   Conclusion

This chapter focused on the textual analysis of the video that was designed for this study. It has argued that audiovisual media is a time-based art form that can shape and influence people feelings and perceptions. Even though the production of meaning which is the first stage in the process of sharing information is largely constructed and affected by audience's backgrounds and experiences, it is also the selected visual codes, design structure, and the interactions that produce meanings that can stimulate and invoke visual pleasure, amuse and persuade an audience to accept and act. (Durham & Kellner, 2006; Bødker, 2016; Hodkinson, 2017). Because of the outcome of this chapter, this study argues that effective health educational media in the form of visual communication depends on how the audience interprets the visual and content design.

CHAPTER SEVEN

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

7.0   Overview

This study focused on exploring issues surrounding the use of videos for antenatal health education to inform the production of persuasive audiovisual media on selected maternal messages and to investigate how the form and content of the designed video shape the health workers and pregnant women perception. This last chapter deals with the summary of findings and general conclusions reached in the study. The section also includes recommendations and directions for future research.

7.1   Summary

The use of audiovisual media as an educational strategy has become germane to antenatal health education due to its perceived effectiveness and the need to augment maternal health care delivery with education to improve birth outcomes. Stakeholders believe that the use of a visual aid can propel pregnant women to take charge of their health and to play an active role in ensuring safe delivery and healthy babies and help drive Ghana's effort towards the realisation of the SDG goal on women health by 2030.

Despite the shown interest, anecdotal evidence suggests that there is a lack of audiovisual media to support antenatal education in the Ghanaian context. More importantly, studies on the use of audiovisual media for antenatal education and how pregnant women or audience receive and interpret cinematic techniques and persuasive strategies are relatively scanty in Ghana. More seriously, the nexus between the aesthetic functions of audiovisual art forms and their perceived usefulness and ease of use, as an intervention has not been widely explored artistically in an academic setting. Even some researchers have attempted to study this area, the

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available studies largely dwell on the of the importance of mass media, mass media communication, oral communication and health education, the use of mass media channels for health promotion and evaluation of general mass media channels for health communication (Prilutski 2010; Asmah, Twerefou, & Smith 2013, Cofie et al., 2014; Lori, Ofosu-Darkwah, Boyd, Banerjee, & Adanu, 2017). On a global level, the few existing works have focused on the use of audiovisual media for postnatal education, the use of community approach to the projection of videos on maternal health and the impact of mobile video technology on the workflow of Nurses and Midwife during Postnatal care (Mutanda, Waiswa, & Namutamba 2016; Kumar et al., 2015; Dest an et al., 2014). Even though there are some related, there are still huge gaps that need qualitative research approach to fill such lacunas. For example, little is known about the current issues surrounding the use of audiovisual media to support antenatal education in Ghana, the impact of such videos on antenatal educational settings. Also, how an audience receives and interprets such video elements has been in the lurch and have always been based on anecdotal evidence. Hence, this study problematised that, these unresolved issues may hinder efforts to improve maternal health education through the provision of quality health information available to all pregnant women especially when Ghana is expected to attain the goals of SDG 3 which request Ghana to reduce maternal mortality ratio to less than 70 per 1000 live birth by 2030 (Daily Graphic, 2018).

Given the situation, this study aimed at exploring issues about the use of videos by maternal health givers to aid the production of persuasive audiovisual media to support maternal health education and to investigate the aesthetic value of the video as an intervention. To achieve this aim, the study was grounded on five main objectives. First, to examine how nutritional messages are communicated to

pregnant women and the state of audiovisual forms in the effort to make health information accessible to all. Second, to develop content, previsualisation concepts, and draft videos to improve content and form effectiveness before actual production and design videos on antenatal nutritional messages. The third objective focused on how the form and content of the videos shape health workers perception. The fourth examined how pregnant women who are the core target interprets the video. The fifth objective was to conduct a textual analysis of the video as an audiovisual communication text.

Preliminary investigations were conducted extensively to help ground and situate the research within the academic canvas. First, salient theories like the Persuasive Health Message framework, Cognitive Theory of Multimedia Learning, and the Technology Acceptance Model and Encoding/Decoding model were reviewed. Based on these, the researcher developed a conceptual framework to guide and hold the study. Next, previous related research works were also studied. Specific areas like the use of videos in health education and its importance, the production of health educational media health educational videos was covered. Other thematic areas that were reviewed include the use of audiovisual artforms for health education and promotion, media production and communication, video, production process, and techniques. Moreover, the connection between culture, health, and communication was also reviewed.

The qualitative research approach was adopted for the study. Hence the study used the artistic research design to explore issues that impinge on the use of audiovisual educational media for antenatal health education. The research design supports the focus of the research which south to isolate a specific case and to conduct in-depth study to understand issues surrounding the use of audiovisual media to

support antenatal education in Ghana. Additionally, the research design option was motivated by the ontological and epistemological positions of the study which argues that knowledge regarding the use of audiovisual media in the context of antenatal education is subjective, exists in multiplicity and a product of created experiences of people in which the researcher plays a role (Creswell & Poth, 2017). The study was situated at the Ga South Municipal Assembly in the Greater Accra Region mainly because of the skyrocketing of maternal nutritional problems and the need for nutrition education Moreover, the study location was suitable because it has all the levels of health facilities in Ghana. This the researcher believed will help in gaining a deeper understanding of issues regarding the use of videos audiovisual media as an alternative educational strategy, the complexities, and its antecedents.

Hence, the study was structured along the three stages: pre-studio research, studio research and post-studio research. Using the purposive technique, the study sampled a total of thirty (30) participants for the study. During the pre-studio research, sixteen (11) health officers, including midwives, nutrition officers, health promotion officers in the GSMA, and officers from the Ghana Health Service headquarters in charge of maternal health issues and communication were sampled. Two (2) audiovisual experts were sampled during the studio research phase. During post-studio research, the study sampled fourteen (14) participants from Ga South Municipal Hospital, Aplaku Health Centre, Bortianor Polyclinic and Obor CHPS Compound. This comprises of six (6) health officers and eight (8) pregnant women. The study adopted interviews, observations and visual study as collection tools. The thematic and textual analysis was used to analyse data from field and studio, respectively.

7.2   Major Findings

Objective one focused examining how maternal health officers communicate antenatal health messages on nutrition to pregnant women and the dominant visual communication materials available for communication during antenatal health education. Findings from the pre-studio investigations suggest that maternal health education on nutrition is mainly done through pregnancy schools, community campaigns and personal counselling sessions. Health workers mainly combine oral and visual aids like posters, brochures and videos. Print materials are the dominant visual media for education. Even though there are no officially designed videos to support antenatal education, health workers resort to exotic videos from the internet to help explain nutritional and related messages to pregnant women even though the communication element and nature of the videos present many challenges during education. A visual study of the available videos and print material showed that the message design structure is informational and devoid of efficacy, severity and threat elements which are the recommended practices for health educational media (Kreuter & McClure 2004; Thompson et al., 2003; Rice et al. 2017).

Objective two was focused on designing and producing persuasive videos on antenatal nutrition. This section combines field study and studio practices. The field study collaborated with midwives and nutrition officers to design content and recommended messages. It emerged from the study that the video should focus on the topics that are treated during maternal health education sessions. Maternal nutrition and 4-star diet are some key thematic areas that needed attention due to the high anaemia and nutritional related cases in the district. The researcher also interacted with pregnant women to examine their views about threats, severity and efficacy skills concerning poor nutrition, four start diet, the importance of folic acid and iron

tablets, and food to avoid during pregnancy. Using the Persuasive Health Framework, the study collected information on the recommended messages on maternal nutrition. Findings from the preproduction investigation suggested three core recommended messages that should be the content of the videos: messages should explain the four-star diet and each food group function, its related messages. Additionally, video content must stress the need to avoid iron inhibitors. Based on this the researcher developed previsualisation forms like storyboards and animatics. These were again used to pre-test the video with health workers and pregnant women. The findings were incorporated into the final production.

Next, audiovisual and communication elements were framed and designed to produce an audiovisual form. Using the cognitive theory of multimedia principles and studio techniques, the researcher selected, organised, and framed communication elements like narrative, mise-en-scene, lighting, characters, shots elements, editing and sound to reflect the designed content (Bordwell, Thompson, & Smith, 2016; Bordwell et al., 2016; Rabige; 2008; Millerson & Owens 2008; Crook & Beare 2016; Krasner 2008). To achieve the maximum effect, the researcher minimises extraneous processing by employing coherence principle signalling, principle, redundancy principle, segmenting, principle, temporal, contiguity principle. This was done to enhance effective communication and decoding. This was achieved by creatively leveraging the communicative power of lighting, mise-en-scene, cinematography, editing and sound design. The organisation of set design, custom and makes which takes the minimalist filmmaking approach forces audience to focus on the midwife. The aesthetics of high-key lighting style supports the minimalist approach and create a simple scene that is devoid of extreme dramatic shadow. The cinematography was used to create an emotional connection between the audience and the midwife through

the simple close shots of characters and objects in the video. The editing style was slow-paced with simple cuts that facilitate learning. These aesthetic decisions were made to reflect the persuasive variable of the recommended health messages and other some time to reflect the principles of the multimedia theory of learning.

The third objective of the study was to examine health officers' perceptions and experiences about the use of the video during antenatal education. Major findings from the post-studio revealed that health workers perception. The video was perceived as easy to use and very useful. Reasons given are largely due to the organisation of the content according to threat, severity and susceptibility and efficacy factors which helped the pregnant to understand the message. Many described the threat elements as very important even though in most of their talk they don't talk much it due to superstitions. Again, message content, source and the use of local languages factors made the video very helpful to their workflow as educators to which helped understanding of the message. The use of local midwife as the source helped the audience to connect with the message and improved their trust in the message. Furthermore, it also emerged that the nature of the video helped saved time and allowed many of the educators to respond to questions which improved relationship among the health workers and pregnant women. Finally, the use of the video attracted many pregnant women and other patients to the school.

The fourth objective aimed at examining how pregnant women interpreted the communication, cinematic and persuasive elements of the videos. Major findings from the study showed that the video produced preferred readings concerning threat, severity, susceptibility factors. However, negotiated meaning occurred with the susceptibility factors of the video due to religious beliefs. This finding confirmed the strong role that religion plays when it comes to health education.

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The fifth objective focused on examining the nature of the designed audiovisual media as a text for audiovisual communication in the context of antenatal communication. Findings indicate that the video is a representation of a persuasive audiovisual form and an intervention that can instigate both cognitive and emotional response to support learning on maternal health among the targeted population. It combines and manipulates the aesthetics of audiovisual elements to provide communication solutions in the context of maternal health education. This is achieved by creatively leveraging the communicative power of lighting, mise-en-scene, cinematography, editing and sound design. The treatments of these elements reflect the principles of multimedia.

7.3   Conclusions

Based on the outcomes of this study for research objective one, the study concluded that are no persuasive audiovisual media to support antenatal nutrition communication and make quality health information assessable to all sorts of pregnant women. Additionally, the study concludes that the available print materials are devoid of essential persuasive elements for communication. Moreover, health workers prefer to use exotic videos to communicate nutritional messages despite the communication limitation and observation that the design structure do not serve the needs of the Ghanaian audience. Again, even though their many print materials during on antenatal nutrition, many health workers prefer to use audiovisual media to print materials.

Again, concerning research objective two, this study concludes the use of the Persuasive Health Message Framework, the collaborative approach and the pre-test was very useful for designing and structuring of effective content. Among all the previsualisation forms, the animatics proved to very useful technique. It generated a

lot of discussions among health workers and instigated them to make a significant contribution to the message and visual elements. The use of Cognitive Theory of Multimedia Learning and semiotic theory helped to select and to frame audiovisual elements to support effective communication devoid of elements that could distract the audience from the core message.

Concerning research objective three, the study concludes that the integration of effective and persuasively design audiovisual material designed into antenatal education and counselling sessions can positively impact on the work of health workers and help them to provided effective and consistent antenatal health messages to pregnant women. This conclusion is supported by the findings that health workers perceived the video as useful and effective to their educational activities due to the inclusion of threat, severity, susceptibility, efficacy factors message and visual elements that describe essential information that can enhance effective communication of antenatal nutrition. Again, the perception that the video was useful and easy to use due to the design structure, characterisation, style of delivery and the use of local language and local foods that are common to the targeted audience also confirm the conclusion of this study. Finally, the finding that the video helped health workers to save time, reduce their workload during education and counselling sessions establishes that the use of effective audiovisual media can impact positively on the work health workers during antenatal health education.

Concerning research objective four, this study concludes the use of effective audiovisual media for communicating antenatal can be very useful in disseminating essential messages to pregnant women despite the negotiated readings on the susceptibility elements of the designed video. In the context of this study, the use representation approach and nature of the design facilitated audience reception of the

video content, Additionally, the study concludes that the negotiated readings from this study showed that audiovisual audience in the context of this study may not accept all visual messages presented to them even though the message may be factual and appropriate. Their interpretation of the susceptibility factors is strongly shaped by their religious beliefs and identity and can affect how the audience even receives essential health messages designed to improve their health.

On the fifth objective, this study concludes that the video that a representation of an audiovisual text that can elicit emotional responses to shape audience reception of antenatal nutritional messages motion picture and sound. Hence, the form and content of the designed video can support effective communication antenatal nutrition and maternal health in general among the targeted population. This conclusion is confirmed by the textual analysis which suggests that the designed media has been structured to appeal emotionally to an audience through the use of visuals that represents the threat and severity of poor nutrition and anaemia. Also, the above conclusion is based on the representation of susceptibility and efficacy elements through the use of characterisation, cinematography, editing, props and sound elements to maximise effective audiovisual communication.

7.4   Recommendations

Given the above conclusions, this study advocates these recommendations:

1. There is a need to provide appropriate and persuasive audiovisual aids to support antenatal education on nutrition to support midwives, nutrition officers as they work towards the achievement of the SDG goals on health for women. Audiovisual designers, Ghana health services and other stakeholders should collaborate to produce more audiovisual aids to support the work of health workers especially in facilities large population with limited reading abilities.

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2. Audiovisual communication designers, producers and health officers who are tasks to produce health educational content should consider using the health media production framework adopted for this study which is based on the conceptual framework for this study (see page 30). This approach will ensure that content design and framing of audiovisual elements are driven by evidence rather than subjective views of communication designers. Again, the use animatics at the pre-test stage should not be overlooked since it encourages collaboration between health experts, target audience and designers in content design. Also, this study recommends the use of the cognitive theory of multimedia learning principles as a guide during production. This approach will enable designers to maximise the power of visual and sound to produce effective audiovisual media

3. Health workers, educators and health promotion officers should integrate the designed audiovisual media into the antenatal educational workflows. The Ghana Health Services should provide technical support and policy direction to ensure effective integration of the audiovisual media to antenatal health education and promotion sessions to facilitate effective communication of nutrition.

4. More audiovisual media should be used when communicating with pregnant women. Health workers should use the designed audiovisual media during antenatal nutrition education. Additionally, there's is a need to provide explore other message content and audiovisual strategies on susceptibility that deals with religion. This will help deal with the religious beliefs and identities that emerged from this study.

5. Finally, because the video represents a persuasive audiovisual text capable of eliciting both cognitive and emotional responses from the targeted audience, this study recommends that video should be broadcast within hospital facilities, national television, internet and health social platforms. The study also recommends the integration of the video into the educational campaigns of health workers in the form of community screenings to rural women who may not have access to the digital media channel. Furthermore, the Ghana Health Service should incorporate the video into their e-health message sharing service and take advantage of social media platforms to disseminate the video to an online audience.

6. Moreover, further research should look at mixed-method audience research to examine the impact of the videos on pregnant women's intentions since the present study did not attempt to do that. Another study may focus on the production of a fictional narrative of the same script and conduct comparative research of the current non-fictional video and the fictional story to examine the impact of both persuasion routes on the audience.

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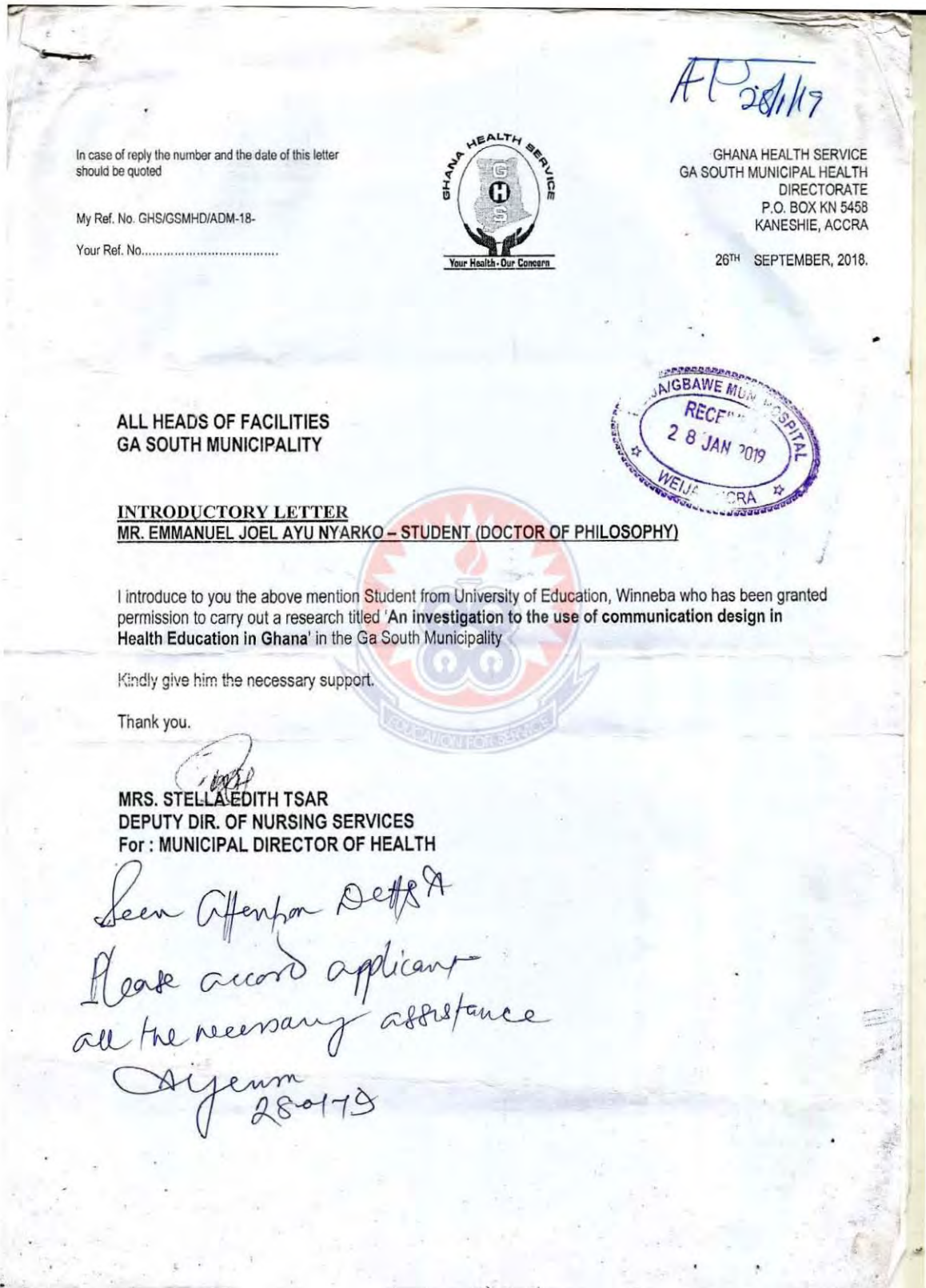
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APPENDICES

APPENDIX A

In case of reply the number and the date of this letter should be quoted

My Ref. No. GHS/GSMHD/ADM-18-

Your Ref. No....................................

GHANA HEALTH SERVICE
GA SOUTH MUNICIPAL HEALTH
DIRECTORATE
P.O. BOX KN 5458
KANESHIE, ACCRA

26TH SEPTEMBER, 2018.

ALL HEADS OF FACILITIES
GA SOUTH MUNICIPALITY

INTRODUCTORY LETTER
MR. EMMANUEL JOEL AYU NYARKO – STUDENT (DOCTOR OF PHILOSOPHY)

I introduce to you the above mention Student from University of Education, Winneba who has been granted permission to carry out a research titled 'An investigation to the use of communication design in Health Education in Ghana' in the Ga South Municipality

Kindly give him the necessary support.

Thank you.

MRS. STELLA EDITH TSAR
DEPUTY DIR. OF NURSING SERVICES
For : MUNICIPAL DIRECTOR OF HEALTH

Seen Offenpon Detter
Please accord applicant
all the necessary assistance
Ayenm
280179

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APPENDIX B

In case of reply the
number and date of this
letter should be quoted.

My Ref. No: GHS/GARHD/001/18
Your Ref. No.

GHANA HEALTH SERVICE
REGIONAL HEALTH DIRECTORATE
GREATER ACCRA
P. O. BOX 184
ACCRA

Tel: +233-0302-234225/226203
Mobile: 0208140751
E-mail: c_brako@yahoo.com

11th September, 2018

THE MUNICIPAL DIRECTOR OF HEALTH SERVICES
GA SOUTH MUNICIPAL HEALTH DIRECTORATE
WEIJA

14—9—18

RE: PERMISSION TO CONDUCT A RESEARCH IN THE GA SOUTH MUNICIPAL HEALTH DIRECTORATE.

This is to introduce to you Mr. Emmanuel Joel Ayu Nyarko, a student of University of Education, Winneba pursuing Doctor of Philosophy (Arts & Culture).

He has approval from the Regional Health Directorate to carry out a research titled: "An investigation to the use of communication design in Health Education in Ghana" as per attached.

Kindly provide the needed assistance to ensure a successful exercise.

Thank you.

DR. (MRS) CHARITY SARPONG
REGIONAL DIRECTOR OF HEALTH SERVICES
GREATER ACCRA.

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APPENDIX C

National Film and Television Institute
Private Mail Bag, General Post Office
Accra

Date: 11 September 2018

The District Director of Health
Ga South Municipal

Thro,

The Accra Regional
Health Director,
Ghana Health Service

Dear Sir,

PERMISSION TO CONDUCT A RESEARCH IN IN GA SOUTH MUNICIPAL

I write to humbly request for permission to conduct a research in Ga South Municipal. Specifically, I want situate my study within the remote health centers in your jurisdiction

I am student from University of Education, Winneba and writing a thesis on the topic *"An investigation to the use of communication design in health education in Ghana"*. Attached is an official letter of introduction from my school.

The ultimate goal of the research is to produce and test health educational videos through the community health promotion concept. The outcome of this study will augment the effort of health promotion and education especially on maternal and child health

I will be grateful if you could grant me this support to conduct this research

Yours faithfully,

Emmanuel Joel Ayu Nyarko
Student, University of Education, Winneba

Min (2) Admin Mgr (OES)
Pls Forward to BMC
concerned.
Thank you.
11/09/18

024 6748100
050 1185303

APPENDIX D

MEDIA PRODUCTION: DESIGNING FOR MATERNAL HEALTH EDUCATION

GRADUATE RESEARCH

RESEARCHER: EMMANUEL JOEL AYU NYARKO

Dear Mrs Rita Asante

I am a graduate student in the school of creative arts at the University of Education Winneba. The focus of my research is to produce audiovisual content to support maternal health during antenatal education sessions and to explore the efficacy of the video. I humbly request that you play the role of **"AUNTIE MIDWIFE"** in my video production research. Please kindly read the consent form below and indicate your approval if you agree to play in my production

TALENTS CONSENT/RELEASE FORM

I, the undersigned, enter into this Agreement with

EMMANUEL JOEL AYU NYARKO

herein referred to as REASEACHER (From University of Edudaction Winneba)

I have been informed and understand that the researcher is producing a video program and that my name likeness, image, voice, appearance and/or performance is being recorded and made a part of that video production research and a final product which will be used for public health education by the RESEARCHER, University of Education Winneba, Ghana health service and its health facilities (herein referred to as DESIGNEES)

1. I grant RESEARCHER and its designees the right to use my name, likeness, image, voice, appearance, and performance as embodied in the Product whether recorded on or transferred to videotape, video files, film, slides, photographs, or other media, now known or later developed. This grant includes without limitation the right to edit, mix or duplicate and to use or re-use the Product In whole or part as RESEARCHER may elect. RESEARCHER or its designee shall have complete ownership of the RESEARCHER in which I appear, including copyright interests, and I acknowledge that I have no interest or ownership in the Product or its copyright.

2. I also grant Producer and its designees the right to broadcast on television, internets and all other public exhibition settings either in whole or in parts, and either alone or with other products, non-commercial television or theatre, closed-circuit exhibition, home video distribution or any other purpose that RESEARCHER or its designees in

their sole discretion may determine. This grant includes the right to use the Product for promoting or publicising any of the uses.

3. I confirm that I have the right to enter into this Agreement, that any commitments do not restrict me to their parties. That RESEARCHER has no financial commitment or obligations to me as a result of this Agreement. I hereby give all clearances, copyright and otherwise, for the use of my name likeness, image, voice, appearance and performance embodied in the Product. I expressly release and indemnify RESEARCHER and its officers, employees, agents and designees from any claims known and unknown arising out of or in any way connected with the above-granted uses and representations. The rights granted RESEARCHER herein are perpetual and worldwide.

4. In consideration of all the above, I hereby acknowledge receipt of reasonable and fair compensation from the RESEARCHER.

I have read the foregoing and understand its terms and stipulations and agree to all of them:

Talent Name (Please Print)

RITA ASANTE

Signature

Date 19th August, 2020

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APPENDIX E

MEDIA PRODUCTION: DESIGNING FOR MATERNAL HEALTH EDUCATION

GRADUATE RESEARCH

RESEARCHER: EMMANUEL JOEL AYU NYARKO

Dear AUGUSTINA YVONNE GBEDEMAH

I am a graduate student in the school of creative arts at the University of Education Winneba. The focus of my research is to produce audiovisual content to support maternal health during antenatal education sessions and to explore the efficacy of the video. I humbly request that you play the role of **"PREGNANT WOMAN"** in my video production research. Please kindly read the consent form below and indicate your approval if you agree to play in my production

TALENTS CONSENT/RELEASE FORM

I, the undersigned, enter into this Agreement with

EMMANUEL JOEL AYU NYARKO

Herein referred to as RESEARCHER (From the University of Education Winneba).

I have been informed and understand that the researcher is producing a video program and that my name likeness, image, voice, appearance and performance is being recorded and made a part of that video production research and a final product which will be used for public health education by the researcher, University of Education Winneba, Ghana health service and its health facilities (herein referred to as DESIGNEES)

1. I grant RESEARCHER and its designees the right to use my name, likeness, image, voice, appearance, and performance as embodied in the Product whether recorded on or transferred to videotape, video files, film, slides, photographs, or other media, now known or later developed. This grant includes without limitation the right to edit, mix or duplicate and to use or re-use the Product In whole or part as RESEARCHER may elect. RESEARCHER or its designee shall have complete ownership of the RESEARCHER in which I appear, including copyright interests, and I acknowledge that I have no interest or ownership in the Product or its copyright.

2. I also grant Producer and its designees the right to broadcast on television, internets and all other public exhibition settings either in whole or in parts, and either alone or with other products, non-commercial television or theatre, closed-circuit exhibition, home video distribution or any other purpose that RESEARCHER or its designees in

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their sole discretion may determine. This grant includes the right to use the Product for promoting or publicising any of the uses.

3. I confirm that I have the right to enter into this Agreement, that any commitments do not restrict me to their parties. That RESEARCHER has no financial commitment or obligations to me as a result of this Agreement. I hereby give all clearances, copyright and otherwise, for the use of my name likeness, image, voice, appearance and performance embodied in the Product. I expressly release and indemnify RESEARCHER and its officers, employees, agents and designees from any claims known and unknown arising out of or in any way connected with the above-granted uses and representations. The rights granted RESEARCHER herein are perpetual and worldwide.

4. In consideration of all the above, I hereby acknowledge receipt of reasonable and fair compensation from the RESEARCHER.
I have read the foregoing and understand its terms and stipulations and agree to all of them:

Talent Name (Please Print)

Yvonne Augustina Gbedemah

Signature _____

Date _07/08/21_

APPENDIX F

<u>Pre-Studio Research</u>

Interview Guide for Health Officers

a) Please kindly explain the role of your department.

b) Please describe how maternal health messages are promoted and communicated to pregnant women during pregnancy education sessions

c) How important is the use of visual communication design material (Videos, posters, brochure, leaflets, charts, etc.)? to the efforts to reduce maternal health education in Ghana

d) Could you please mention the visual communication design material (Videos, posters, brochure, leaflets, charts, etc.?) At your disposal to support maternal health education during antenatal and pregnancy school educational sessions and which ones are mostly used and why?

e) What critical maternal health messages need to be communicated or promoted to pregnant women during educational sessions and why these messages are important?

f) Please, how do you educate pregnant women on these important health messages and what VCDA are available to support your efforts?

g) Please, what areas of maternal health educational messages need more visual communication design materials to support maternal health educational efforts?

h) How do you deal with the issue of language barriers when it comes to maternal health education and the production and usage of visual communication design material (Videos, posters, brochure, leaflets, charts, etc.?)

i) What challenges exist when it comes to the production and usage of visual communication design artforms for supporting maternal health education*.

j) What is the nature of the available materials?

APPENDIX G

Preproduction Research

Part 1: Health Officers

a) What core messages regarding pregnancy nutrition need to be promoted and why?

b) What should be the main objectives of the message and why?

c) What are the recommended behaviours to avoid the dangers?

d) What are possible barriers to the recommended action

e) How do you want your clients to feel after watching the video?

f) What message source factors need to be considered

g) What is the target language, and why?

Part 2: Pregnant women

1. Apart from your midwife and medical doctors, where do you get information when it comes to food for pregnant women?

2. Please, how important is proper nutrition for your pregnancy? Why?

3. What kinds of foods would you say are suitable for pregnant women?

4. Please, what are the effects of poor nutrition during pregnancy?

5. Do you believe you can be affected by the effect of poor nutrition?

6. What can happen to you and your baby?

7. How severe and dangerous are these conditions to you/pregnant women?

8. What food do you eat?

9. Do you have a specific food that you eat? Why?

10. In your view, do you agree with the recommended actions? Why

11. What factors can make it difficult for you to follow the recommended health messages on maternal nutrition/? Why

12. What benefits will you get if you follow the recommended messages?

Part 2: Preproduction Pretesting of animatics

h) What is the message of this video?

i) How do you feel about the video?

j) What visuals do you remember? Why

k) What do they mean? Why

l) What message do you get from this material? Why do you answer that?

APPENDIX H

STUDIO RESEARCH GUIDE

1. How can set design and props be designed and arranged to support effective educational video content?

2. How can the message sources (actors) be framed and constructed to attract attention and appeal to the audience?

3. How can lighting and other misc-en-scene elements be constructed to drive the educational narrative of core messages?

4. What camera framing, angles and shots can be deployed to visualise message persuasively and to appeal to audiences?

5. How can sound design be used to support visual content, and what editing methodology will ensure effective communication and learning?

Interview Guide for Educational video experts

a) How appropriate are the visual forms, communication elements, compositional styles and persuasive strategies?

b) How appropriate are the persuasive elements of the designed material?

c) What else could be done to improve the communicative value of the designed materials?

APPENDIX I

POST-STUDIO RESEARCH

Interview Guide for Health Officers

PART A

1. How accurate is the message content?
2. Does the content reflect the recommended health message on maternal nutrition?
3. Is the message clear and understandable?
4. Is any of the information misleading or missing?
5. What do you think about the fear/threat mentioned at the beginning of the video? Why?
6. How do you feel about the efficacy elements?

PART B

1. How easy or difficult will it be to access this video and use it when providing education? Why
2. How easy it was using this video to teach
3. How effective is the video? In terms of content, languages, images and others
4. How will use of this video improve your teaching skills
5. Is there anything that can make it challenging to use these videos
6. YouTube, WhatsApp, Website and TV which one(s) will you prefer to access the video from when you need. Why
7. How did the video improve your sessions with your clients?
8. What are your general impressions about the video?

PART C

1. How did the video help you to accomplish more tasks quickly?
2. Which areas. Can you please give examples and Why?
3. How did the video increase your productivity as a midwife?
4. How did the video help your teaching to be more effective?
5. How did the video help improve the pregnancy school and counselling sessions?
6. How did your clients receive the video?

APPENDIX J

POST-STUDIO RESEARCH

Interview Guide for Pregnant women

a. Please what is this video about

b. What do you like about the video?

c. Have seen a video like this before

d. Please did you see the scenes in the video?

e. What do they mean or represent?

f. How do you feel about what the midwife said during these scenes?

g. Do you believe them? Why?

h. Does this video remind you of any experiences?

i. How do you feel about the video in general?