

**INFLUENCE OF PSYCHOSOCIAL FACTORS IN IMPROVING BREASTFEEDING  
BEHAVIOR OF MOTHERS IN KAKAMEGA CENTRAL DISTRICT, KENYA**

**BY**

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## ABSTRACT

Health professionals currently use fact-based approach to promote breastfeeding behavior in Kenya. This practice imposes messages to breastfeeding mothers without considering their opinions and beliefs thus posing a challenge to the Ministry of Health. In Kakamega Central district 30.7% of mothers initiate breastfeeding within the 1<sup>st</sup> hour of birth, 21.7% exclusively breastfeed for six months and 27.5% continue breastfeeding to the 1<sup>st</sup> year; where these prevalence fall short of the national goal and desired target of achieving the fourth Millennium Development Goal aimed at reducing the under five mortality rates by 2015. This study was conducted to determine the predictive power of maternal attitude, subjective norm and perceived behavioral control on breastfeeding intention of mothers in Kakamega Central District using a modified Theory of Planned Behavior. A sequential exploratory mixed methods design was employed to execute the study. In this design qualitative study was initially conducted then followed by a quantitative study. Purposive sampling was used to select three postnatal clinics and one home based clinic from a total of 10 clinics in Kakamega Central District. Proportionate stratified sampling was used to select 230 respondents out of 3,873 breastfeeding mothers aged between 18-40 years. Qualitative data was collected using a Focus Group Discussion guide and analyzed using Constant Comparative Approach in grounded theory analysis. A structured questionnaire was used to collect Quantitative data where Exploratory Factor Analysis was applied to test for the dimensionality of the questions. Confirmatory Factor Analysis was used to assess whether proposed constructs influenced measured variables. Skewness and kurtosis tests were used to assess the normality of data obtained. Structural Equation Modeling was used to show and determine the relationships between Latent and Observed variables. Findings indicated that the model fitted the data acceptably well within breastfeeding behavior. The predictive power indicated maternal attitude to a better predictor of breastfeeding intention ( $\beta=0.38$ ,  $p<0.01$ ,  $n=230$ ); followed by perceived behavioural control ( $\beta=0.35$ ,  $p<0.01$ ,  $n=230$ ); then subjective norm ( $\beta=0.25$ ,  $p<0.05$ ,  $n=230$ ). Intention in turn strongly predicted breastfeeding behaviour ( $\beta=0.95$ ,  $p<0.001$ ,  $n=230$ ) and its predictors accounted for 68% of the variance on breastfeeding intention. Findings of this research has provided information on the best approach to be employed by health professionals in promoting optimal breastfeeding through model based educational sessions that will in the long run increase initiation, exclusivity and breastfeeding continuation rates in Kakamega Central District.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

The decision to optimally breastfeed is very important for lifelong health implications of both infant and mother (Gross, 2008). Research studies show that the practice of this behavior provides numerous benefits over other methods of infant feeding (Morrow *et al.*, 1999; Arifeen, *et al.*, 2001; Black *et al.*, 2008). Despite evidence of its cost effective strategy for improving infant survival, and reducing the burden of childhood diseases, particularly in developing countries, most mothers' breastfeed sub optimally (Sikorski *et al.*, 2001; Jones *et al.*, 2003; WHO, 2007; Naanyu, 2008). In Kenya approximately 52 percent of all mothers initiate breastfeeding within the first hour of birth, 13 percent exclusively breastfeed for 4-6 months and 57 percent continue breastfeeding through the first year (Lakati *et al.*, 2002; KNBS & ICF Macro, 2010).

Factors such as environmental, socio-demographic, behavioural and psychosocial determine the decision to breastfeed (Scott *et al.*, 2001). However, there is limited information on psychosocial factors which include attitude, subjective norm and perceived behavioural control (Gijsbers *et al.*, 2007). Attitude is defined as the overall evaluation, either positive or negative, of performing behaviour of interest; subjective norm is characterized by individuals' perception of social normative beliefs of significant social referents about practising behaviour of interest; while perceived behavioural control, is described as an individuals' perceived ease or difficulty of performing a particular behaviour (Ajzen, 1991).

Breastfeeding promotion has been viewed as a strategy for improvement of children's health (Dyson *et al.*, 2010). In the recent past, information based approaches have been utilized to

support rates of initiation, exclusivity and continuation (Elliott *et al.*, 2002). However, they lack the theoretical basis to understand mother's cognitive and experiential aspects that manipulate her intention to optimally breastfeed (Donath *et al.*, 2003; Naanyu, 2008).

This study utilized the Theory of Planned Behavior (TPB) which emphasizes that human behavior is governed not only by personal attitudes, but also by social pressures and a sense of control. The TPB approach has the ability to identify the underlying cognitive and experiential beliefs of the behavior under investigation (Johnson & White, 2004). The TPB has been applied to predict the likelihood that individuals will engage in various behaviors', such as exercise and breastfeeding duration (Janke, 1994; Wambach, 1997; Duckett *et al.*, 1998; Avery *et al.*, 1998; Dick *et al.*, 2002; Dodgson *et al.*, 2003; Budden & Sagarin, 2008).

By utilizing the framework of the TPB, one can gain understanding of the behavior by tracing its determinants back to the underlying beliefs, and possibly further influence the behavior by changing a sufficient number of these beliefs (Ajzen & Fishbein, 1980). Testing of theoretically proposed associations can enhance knowledge and eventually lead to a better approach of promoting optimal breastfeeding behavior. However there has been limited assessment of psychosocial theory on breastfeeding behavior in Kakamega Central district and Kenya at large.

## 1.2 Statement of the Problem

Breastfeeding behavior still remains sub-optimal in Kakamega Central district (Waithaka, 2009). This setback is associated with the factual information delivered by leaflets/educational session usually grounded in professional expertise which has no input from mothers but simply imposes foreign ideas that leaves the mother with mixed perceptions regarding optimal breastfeeding (Naanyu, 2008). Basically, the routine support offered and fact-based approaches currently employed have inadequately met mothers' breastfeeding needs. Given that, health professionals devise and transmit information without considering mothers' cognitive and experiential aspects such as maternal attitude, self efficacy, breastfeeding knowledge, social perceptions and control beliefs.

These psychosocial attributes are significant in explaining how a mother makes the decision or arrives at intention to optimally breastfeed. For instance, mother's subjective likelihood about the likely outcomes of the optimal breastfeeding determines her attitude towards it. Moreover, mothers attempting to optimally breastfeed often fail as they comply with social expectations and encounter obstacles that may facilitate or impede optimal breastfeeding (Gijsbers *et al.*, 2007).

However, health professionals may have ignored or may not be aware of these psychosocial factors when designing materials to educate mothers on breastfeeding behavior since breastfeeding policy lack well designed educational approaches. Whereas, a mother's decision to practice optimal breastfeeding is determined by a combination of psychosocial factors that include attitude, subjective norm and perceived behavioral control which need to be identified and assessed (Bai *et al.*, 2010). These aspects have been identified in a number of cognitive theories and in this context; Theory of Planned Behavior. As a theory of competency and

mastery, breastfeeding behavior operates on the premise that initiation, exclusivity and continuation are determined primarily by the mother's cognitive judgments' and expectations concerning her ability to perform the behavior (Elliott *et al.*, 2002).

These theories are limited in scope and have not been developed within environment of application. This study intended to use this Theory of Planned Behaviour as a basis upon which a latest model will be created within breastfeeding behaviour field among breastfeeding mothers that may adequately promote breastfeeding in Kakamega Central district and Kenya at large.

### 1.3 General Objective

The purpose of the study was;

To assess influence of psychosocial factors on breastfeeding behavior of mothers attending postnatal clinics in Kakamega Central District using a nested model adapted from the Theory of Planned Behavior.

### 1.4 Specific Objectives

The specific objectives were;

1. To test goodness of fit of a nested model linking mothers' attitude, subjective norm and perceived behavioral control on breastfeeding behavior.
2. To determine predictive power of mothers' attitude on breastfeeding behavior.
3. To determine predictive power of mothers' subjective norm/social pressure on breastfeeding behavior.
4. To determine predictive power of mothers' perceived behavioral control on breastfeeding behavior.

### 1.5 Research Questions

The study was guided by the following research questions;

1. What is the goodness of fit of a nested model linking mothers' attitude, subjective norm and perceived behavioral control on breastfeeding behavior?
2. What is the predictive power of maternal attitude on breastfeeding behavior?
3. What is the predictive power of mothers' subjective norm/social pressure on breastfeeding behavior?
4. What is the predictive power of mothers' perceived behavioral control on breastfeeding behavior?

## 1.6 Justification of the Study

Behaviour change channels of communication that recognize motivational factors of attitude, subjective norm, perceived behavioral control and intention have been found to be successful in health related behavior adjustment. These communication approaches need to be utilized in breastfeeding promotion to enhance comprehension of intricate balance between main motivational components. An assessment of behavioural decision making process under the framework of the Theory of Planned Behavior was used to understand dynamics of breastfeeding behavior.

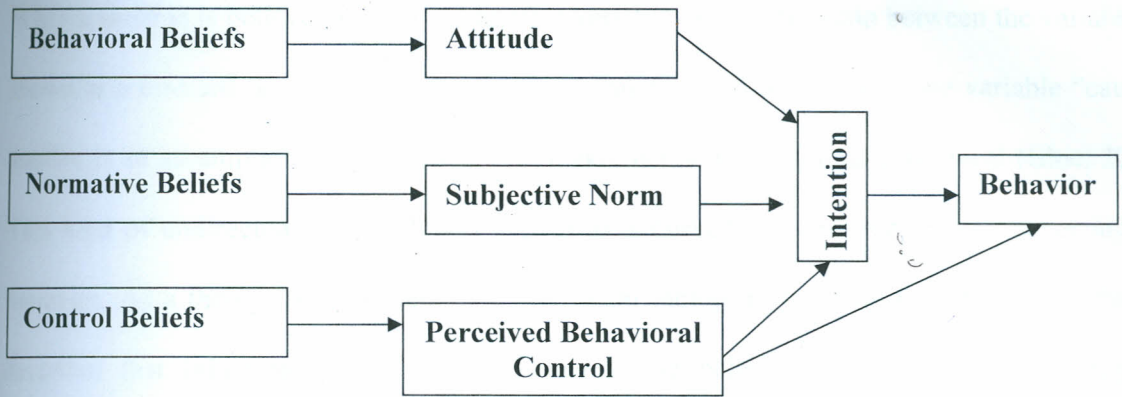
A theoretical model facilitates a clear and deeper understanding of psychosocial factors which can be manipulated to enhance optimal breastfeeding. This enhanced understanding of the predictive power of psychosocial factors influencing mothers' breastfeeding intention to optimally breastfeed. Assessment of the Theory of Planned Behavior and specification of its' constructs will strengthen, and support its' utility as a preference method of breastfeeding promotion. Findings of this research will provide information on a better approach of breastfeeding promotion to breastfeeding educators and promotion specialists. The study findings will be functional within health care delivery structures specifically in maternal and child health clinics.



## 1.7 Theoretical Framework

This study was conducted within Azjen's Theory of Planned Behavior model (Figure 1.1) that formed the basis for developing measurable concepts and variables (Ajzen, 1991). According to the theory, human action was guided by three kinds of considerations. Attitude; certainty about likely outcomes of behavior and evaluation of these outcomes (behavioral beliefs): subjective norm; certainty about the normative expectation of others and motivation of compliance with these expectations (normative beliefs): perceived behavioral control; certainty about the presence of factors that facilitated or impeded performance of behavior and the perceived power of the factors (control beliefs). The intention, in turn, is a function of three determinants. The model (Figure 1.1) illustrates that each of the predictor of intention; attitude, subjective norm and perceived behavioral control are in turn determined by underlying belief structures.

Behavior in this context is a function of attitude, subjective norm, perceived behavioral control and intention. The Theory of Planned Behavior holds that only specific attitudes towards the behavior in question can be expected to predict a behavior. Attitude is considered as beliefs about the outcome of the related behavior multiplied by the value of the outcome. In addition to measuring attitudes towards the behavior, we also need to measure subjective norms, the belief an individual has that key people in his or her life may influence them to behave in a certain way, multiplied by the level of compliance to such influence. Finally, perceived behavioral control refers to the belief an individual has that certain factors may facilitate or impede behavior action multiplied by the perceived control power he or she has on these factors. A general rule is that the more favorable attitude and subjective norm, and the greater perceived control the stronger the intention of the person to perform the behavior in question.



**Figure 1.1:** Theory of Planned Behavior (Ajzen, 1991)

The researcher adapted Ajzen's Theory of Planned Behavior model (Figure 1.2) to fit the motivational factors that affects breastfeeding behavior. In this context attitude was the certainty about likely outcomes of breastfeeding behavior multiplied by evaluation of these outcomes (behavioral beliefs). Subjective norm was the belief the mother had over important people in her life that may or may not have influenced her to perform the breastfeeding behavior and the level of compliance to such influences. Perceived behavioral control was viewed to promote or inhibit the mother to perform the breastfeeding behavior and the control she had over those factors.

Perceived behavioral control was measured both directly and indirectly since breastfeeding is not under completely volitional control. Therefore attitude and subjective norm was posited to have influenced breastfeeding behavior indirectly through breastfeeding intention. While perceived behavioral control both indirectly and directly manipulated breastfeeding behavior. The immediate antecedent of behavior, intention, was described as a behavioral tendency that captured the motivational factors which had an impact on behavior (Ajzen, 1988).

In the path diagram (Figure 1.2) the oval-shaped are latent variables which cannot be directly measured but they have to be inferred from observed variables. The latent variables can also be endogenous (independent variables) since they depend on observed variables to be measured.

When a variable is believed to “cause” another variable, the relationship between the variables is shown as a directed or one-headed arrow, from cause to effect. Whether one variable “causes” another is an assumption that the researcher make, not something data can reveal (Blue, 2007). This kind of undirected relationship is shown as a curved, two-headed arrow connecting the variables. As a theory of competency, psychosocial factors influencing breastfeeding behavior describes that initiation and persistence towards the behavior is determined primarily by mother’s cognitive judgements and expectations concerning her ability to perform the behaviour. Although the Theory of Planned Behavior model provides a multifaceted approach in understanding the motivational impact of routine instruction, there was a need to explore further this theory in breastfeeding behavior amongst mothers attending maternal and child health clinics.

Therefore, the Theory of Planned Behavior model was the theory of focus where a structural model was specified as per the objectives and tested as a good fit for data obtained on breastfeeding behavior. One of the major advantages of the TPB approach is its ability to identify the underlying beliefs that distinguish between those who perform and do not perform the behaviour under investigation (Johnson & White, 2004). Therefore, by utilising the framework of the TPB, one can gain an understanding of the behavior by tracing its determinants back to the underlying beliefs and possibly further influence the behavior by changing a sufficient number of these beliefs (Ajzen & Fishbein, 1980). However, limited studies describe the Theory of Planned behaviour in studying health related behaviours particularly in Kenya. Using this theory to understand breastfeeding behavior amongst mothers will be an input made in health behavior research and especially in Kakamega Central district.

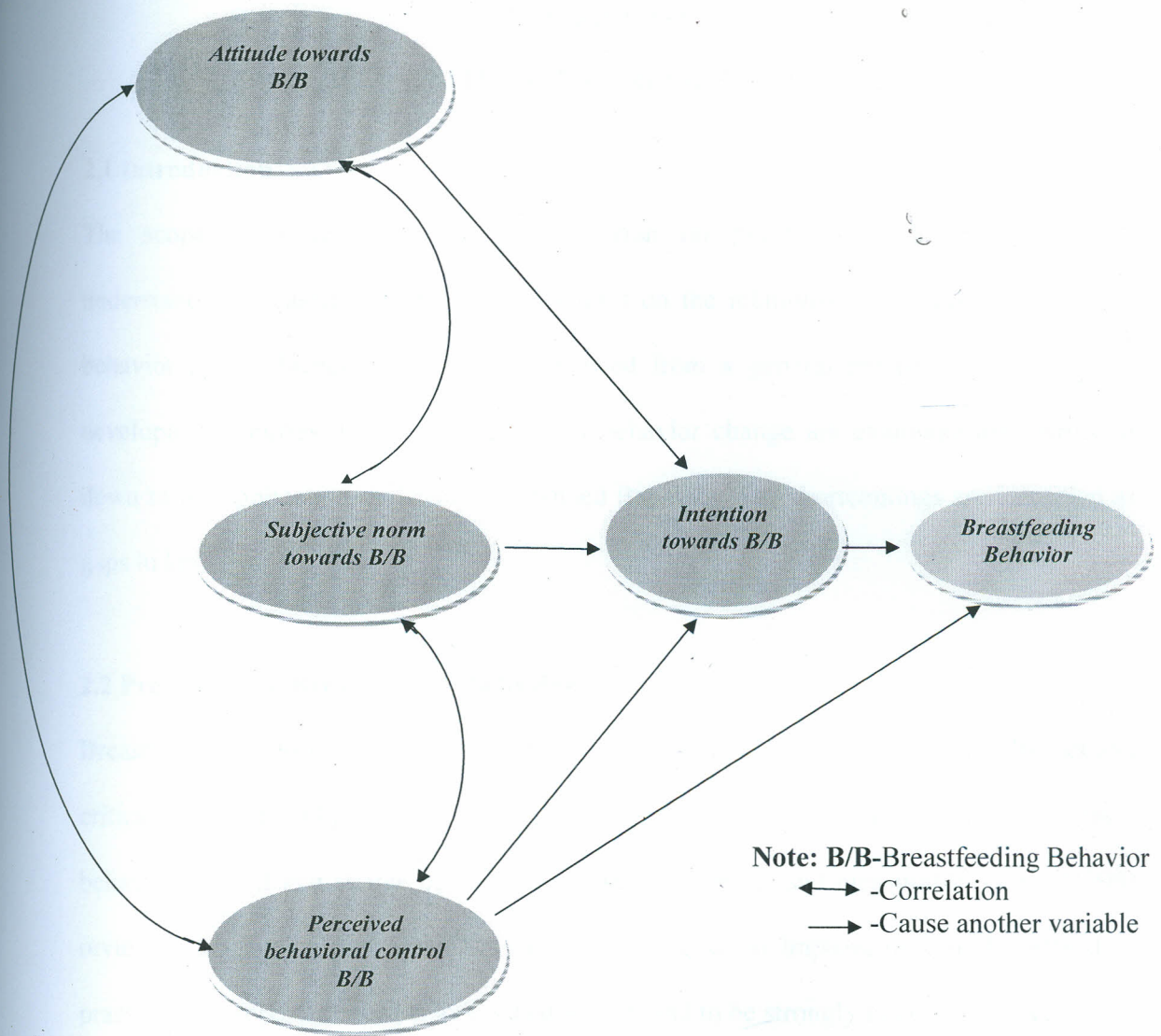


Figure 1.2: A Structural Model of Theory of Planned Behavior

Source: Adapted and modified (Ajzen, 1991)

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

The scope of reviewing relevant information on psychosocial factors focuses on understanding breastfeeding behaviors. Studies on the relationship between breastfeeding behavior and influencing factors are reviewed from a general perspective narrowed to developing countries. Cognitive theories of behavior change are examined and narrowed down to the application of Theory of Planned Behavior. The shortcomings are identified as gaps in knowledge.

#### 2.2 Prevalence of Breastfeeding Behavior

Breastfeeding is an infant and young child feeding practice made up of several distinct and critical behaviors (Gijsbers *et al.*, 2007; Kramer *et al.*, 2001). Breastfeeding becomes a behavior since it is a visible action that is specific, feasible and measurable. Green (1999) reviewed 51 studies that aimed to gather information on improvement of breastfeeding practices and reported four behaviors that were found to be strongly linked to the prevention of infant malnutrition and illness. These were early initiation of breastfeeding within the first hour of birth, feeding of colostrum to the infant, exclusive breastfeeding for six months and continued breastfeeding through the first year. These behaviors establish and maintain optimal breastfeeding amongst mothers.

Prevalence of breastfeeding is defined as the proportion of all babies who are being breastfed at specific ages, even if they are also receiving infant formula or solid food. Breastfeeding prevalence shows marked social inequalities in higher-income countries, where a significant proportion of infants are not receiving the best nutritional start in life and

resultant health benefits (Jones *et al.*, 2003). One of these countries is the United Kingdom, which has one of the lowest breastfeeding rates in Europe, with rates conspicuously below those of Scandinavian countries (Fleischer *et al.*, 2003). Only 22 percent of United Kingdom infants receive any breast milk at age 6 months compared with 72 percent in Sweden (Griffiths *et al.*, 2005).

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The rates of early initiation of breastfeeding are extremely low with 17 percent in Eastern Europe and Central Asian countries, and 33 percent in Asia-Pacific (Edmond *et al.*, 2006). The highest rates approximately more than 50 percent are in Latin America, the Caribbean, East and North Africa (UNICEF, 2007). In South Asia, 24–26 percent of babies born in Bangladesh, India and Pakistan are breastfed within the first hour of birth, whereas the corresponding rate for Sri Lanka is 75 percent (Edmond *et al.*, 2006). In Latin America and the Caribbean, excluding Brazil and Mexico, the percentage of infants exclusively breastfed increased from 30 percent in 1996 to 45 percent in 2006 (UNICEF, 2007). This prevalence was attributed to mothers' recognition on the importance of breastfeeding from immunological and nutritional points of view, and organized campaigns to promote breastfeeding. Breastfeeding mothers are guaranteed a paid maternity leave from work for 12 months after birth (Zetterstrom, 2006).

In many industrialized countries such as Italy, Vietnam, Japan and China the prevalence of breastfeeding behavior is sub-optimal (Qiu *et al.*, 2009; Zetterstrom, 2006; McLachlan *et al.*, 2006). The Ministry of Health Labor (2007) reported that only 42.8 percent of Japanese mothers continue breastfeeding to the second month postpartum. Studies have reported that the low prevalence of breastfeeding in industrialized countries is related to maternal

employment and formula supplementation to the infant (Alikasifoglu *et al.*, 2001; Yilmaz *et al.*, 2002).

UNICEF (2009) reports that in Sub-Saharan Africa approximately 46 percent of mothers initiate breastfeeding within the first hour of birth, 31 percent exclusively breastfeed for less than six months and 51 percent continue breastfeeding to the second year. In Eastern and Southern Africa about 59 percent of mothers initiate breastfeeding within the first hour of birth, 40 percent exclusively breastfeed for less than six months and 56 percent continue to the second year (UNICEF, 2009). It was further reported that in Western and Central Africa 36 percent of mothers initiate breastfeeding within the first hour of birth, 47 percent exclusively breastfeed for less than six months and 23 percent continue breastfeeding to the second year. In the Middle East and North Africa 47 percent of mothers initiate breastfeeding within the first hour of birth, 26 percent exclusively breastfeed for less than six months and 36 percent continue breastfeeding to the second year (UNICEF, 2009).

The prevalence of optimal breastfeeding behavior in urban areas of developing countries has been extremely low although high in rural areas (Zetterstrom, 2006). Approximately 39 percent of mothers initiate breastfeeding within the first hour of birth in developing countries. With 38 percent exclusively breastfeeding for less than six months and 39 percent continue breastfeeding through the second year of birth (UNICEF, 2009). In rural Niger almost all mothers initiated breastfeeding within 24 hours, however only 1 percent of infants are exclusively breastfed for six months (Bellamy, 2004). According to the Tanzanian Bureau of Statistics (1996) breastfeeding initiation is almost universal but during the first month of life about half of the babies are exclusively breastfed. It has been uncovered that in most low income countries, high maternal education, being employed, high

socioeconomic status and urban residence are associated with a shorter duration of breastfeeding (Popkin, 1994; Hinde & Mturi, 2000).

In Kenya 52 percent of mothers initiate breastfeeding within the first hour of birth, 13.3 percent exclusively breastfeed for less than six months and 57 percent breastfeed through the second year (MOH, 2004; UNICEF, 2007). A lower prevalence has been discovered in the women of higher socioeconomic status as compared to those of lower status. Since many of these women from elevated socioeconomic status have to return to work for the economic survival of their families (Naanyu, 2008; Lakati *et al.*, 2002). In Kakamega district of Western province the prevalence of breastfeeding has been reported lower compared to others provinces. Early initiation of breastfeeding within the first hour of birth is at 30.7 percent being the second lowest after Coast province at 22.4 percent. Exclusive breastfeeding for less than four months was reported to be at 21.7 percent and continued breastfeeding through the second year at 27.5 percent (CBS, 2000; CBS, 2004 & Waithaka, 2009). With the relative risk of dying of a child aged less than one year in Western Province being 7-8 times greater than for a child of the same age in Central Province (UNICEF, 2006).

### **2.3 Importance of Breastfeeding Behavior**

Breastfeeding behavior plays an important role in ensuring food security for a large proportion of babies in the world where food security is defined as having enough food to maintain a productive life today and in future (FAO, 2006). There is a widespread of acceptance that breastfeeding behavior provides health benefits to both mothers and infants, and reduces infant mortality and morbidity particularly in developing countries but also in more affluent societies (Gijsbers *et al.*, 2007; Gross, 2008; UNICEF, 2007).



Early initiation of breastfeeding has been documented to be the core factor to successful breastfeeding for the mother. Since mothers who breastfeed their infants shortly after birth have a greater chance of successfully establishing and sustaining breastfeeding throughout infancy (Rassin *et al.*, 1993). Breastfeeding within the first hour is very essential for the infants to ingest maternal colostrum which has been confirmed to confer additional immunological properties thus providing protection against infections such as infantile diarrhea (Mullany *et al.*, 2008). Colostrum has been documented to contain several epithelial growth factors that conceivably accelerate intestinal maturation and epithelial recovery from infections (Holman *et al.*, 2004). This protective effect of early initiation of breastfeeding lasts throughout the first six months of life of the infant. The benefits of early initiation of breastfeeding to the mother begins immediately after birth as increased oxytocin levels from breastfeeding decreases bleeding and speeds up uterine involution (Gross, 2008).

Once the mother has initiated breastfeeding, it is recommended that she should exclusively breastfeed for at least 4-6 months (UNICEF & WHO, 2008). This means that the infant relies on breast milk without any additional fluids or foods (Gijsbers *et al.*, 2007). An analysis of child survival strategies identified exclusive breastfeeding in the first 6 months of life and continued breastfeeding from 6–11 months as the single most effective preventive intervention for reducing child mortality, with the potential of saving 1.3 million lives worldwide each year (Jones *et al.*, 2003).

Studies suggest that the protective effect of breastfeeding is enhanced with a longer duration of exclusive breastfeeding (Duncan *et al.*, 1993). Discontinuing exclusive breastfeeding between 4 to 6 months significantly increased the likelihood of pneumonia compared to continuing breastfeeding for at least 6 months (Chantry *et al.*, 2006). Exclusive

breastfeeding in the first six months of life has been documented to stimulate babies' immune systems, reduce diarrhea, acute respiratory infections and improve the infant's response to vaccination (Shirima *et al.*, 2001). Particularly in unhygienic conditions, breast milk substitutes carry a high risk of infection and can be fatal to infants (Naanyu, 2008). Infants exclusively breastfed receive breast milk on demand thus conferring protection against amoebic infection (Mayer *et al.*, 2008).

Breast milk contains anti-infective factors of bile salts and lactoferrin, and amino acids such as cystine, methionine and taurine that inhibit the growth of intestinal bacteria (Marild *et al.*, 2004). These amino acids; cystine, methionine, taurine facilitates strengthening of maternal bondage and supports development of the central nervous system. Breast milk also contains high levels of polyunsaturated fatty acids such as eicosadienoic, arachidonic and gamma-linolenic acids that reduce viral shedding of Human Immunodeficiency Virus in breast milk (Villamor *et al.*, 2007). Thus making exclusive breastfeeding a better option for mothers infected with Human Immunodeficiency Virus. The American Academy of Pediatrics has reported that mothers who exclusively breastfeed have a higher chance of returning to their previous weight (American Academy of Pediatrics, 2005).

Despite the short term benefit conferred to both the mother and infant, breastfeeding also offers long term benefits. Exclusively breastfed infants are at reduced risk of developing diabetes type 2, obesity and cardiovascular diseases (Mayer *et al.*, 2008). Since sub-optimal breastfeeding increases the risk of poor nutrient intake and illness, resulting into nutrition related complications. Vestergard *et al.*, (1999) confirmed that alongside neurodevelopment, exclusively breastfed infants' score higher performance tests of cognitive maturity at later

ages. Breastfeeding enhances bonding and attachment between the mother and infant (Galtry, 2003).

#### **2.4 Factors Associated with Breastfeeding Behavior**

There are many influences on a mother's decision to breastfeed, including social, cultural, economic and psychological factors. As a health behavior, the decision is therefore guided not only by the mother's own underlying attitudes, skills, abilities and beliefs but also by perception of what other people think (Swanson & Power, 2005).

Breastfeeding initiation varies with many background characteristics. According to the Nigerian National Demographic Health survey (2003) it was reported that women who delivered at a health centre where there were health professionals initiated breastfeeding within the first hour of birth compared to those who delivered elsewhere. For hospital deliveries early initiation of breastfeeding is largely determined by practices of the delivery rooms and maternity ward staff that should ensure the infants are put on the breast to suckle immediately (Al-Akour *et al.*, 2010). Hospital policies and routine procedures can be an obstacle to early initiation of breastfeeding if it dictates that the newborn be taken away from mother and not returned after considerable period. Routine provision of breast milk substitutes to the newborns at hospitals causes early initiation of breastfeeding within the hour unachievable (Agampodi, 2007). An earlier study reported that education level influenced breastfeeding initiation, with mothers of low education more likely to breastfeed than those of higher education level (Khassawneh *et al.*, 2006).

It was further confirmed that higher education was significantly associated with less breastfeeding intention (Al-Akour *et al.*, 2010). In contrast, higher education was positively

associated with breastfeeding intention (Leung *et al.*, 2003; Humphreys *et al.*, 1998). This can be explained by knowing that women with higher education are more likely to be working mothers and their intention to use bottle feeding is higher.

In Kenya, the Ministry of Health instituted breastfeeding promotion programs that included training of health workers in breastfeeding promotion and lactation management (Bradley & Meme, 1992). There was also a directive to health centers to stop routine prelacteal feedings so that colostrum is the baby's first feeding. Attitudes and practices in government hospitals improved, and the duration of breastfeeding in both rural and urban areas increased in 1989. It was reported that after the training, the percentage of putting infants on breast within the first hour rose from 14 percent to 61 percent (Bradley & Meme, 1992).

There are many cultural and practical obstacles to the practice of exclusive breastfeeding (Nwankwo & Brieger, 2002). Some traditional beliefs, practices and rites encourage use of prelacteal feeds, as well as giving extra water, herbs and tea to breastfeeding babies, (Shirima *et al.*, 2001; Nwankwo & Brieger, 2002). In Yoruba communities' exclusive breastfeeding is considered "dangerous" to the infants who are thought to require water to quench thirst and promote normal development (Davis-Adetugbo, 1997). Mothers find it difficult to achieve the goal of exclusive breastfeeding since they have to comply with the cultural and environmental obstacles. In the recent two decades potential transmission of Human Immunodeficiency Virus through breast milk has been an additional problem in Africa (Ngeno *et al.*, 2004). A postnatal transmission of Human Immunodeficiency Virus can be halved from 14 percent to 7 percent by exclusive breastfeeding in the first three months (Iiff *et al.*, 2005). However, the circumstantial evidence of the fear of spreading the virus to the infants through breast milk has scared mothers, some of whom do not know their

serostatus with resultant negative influence on their breastfeeding practices (Thairu *et al.*, 2005; Doherty *et al.*, 2006). On the other hand, in Africa women who are serostatus positive continue to breastfeed to avoid stigmatization by their families and communities (Piwoz *et al.*, 2003; Ngeno *et al.*, 2004; Doherty *et al.*, 2006).

The creation of unsupportive working environment that demands mothers to return to work where there are no provision of lactation rooms and breast pumping breaks has been an obstacle to exclusive breastfeeding (Chen *et al.*, 2006; Lakati *et al.*, 2002). In Kenya, most studies have been conducted to explore socio-demographic factors that influence breastfeeding behavior (Naanyu, 2008; Gray, 2005; Elliot *et al.*, 2002; Nduati *et al.*, 2001; Onyango *et al.*, 1999). However few have explored psychosocial factors though they have not been founded on a theoretical framework (Lakati *et al.*, 2002). Using a framework can be helpful in explaining how factors are related to each other, which is important when attempting to influence breastfeeding behavior (Swanson & Power, 2005).

## **2.5 The Theory of Planned Behaviour (TPB)**

The theory was developed from the Theory of Reasoned Action, which was proposed by Martin Fishbein together with Icek in 1975 which was grounded in various theories of attitude such as Learning Theories, Expectancy-Value Theories, Consistency Theories, and Attribution Theory (Ajzen & Fishbein, 1975). In psychology the Theory of Planned Behavior is a theory about the link between attitudes and behavior. It has been applied to studies of the relations among beliefs, attitudes, behavioral intentions and behaviors in various fields such as advertising, public relations, advertising campaigns and healthcare (Shepherd *et al.*, 1998).

According to the Theory of Reasoned Action, if people evaluated the suggested behavior as positive (attitude), and if they think their significant others wanted them to perform the behavior (subjective norm), this results in a higher intention (motivation) and they are more likely to do so (Maddux, 1983). Attitudes in this case are made up of the beliefs that a person accumulates over his/her lifetime. Some beliefs are formed from direct experience, some are from outside information and others are inferred or self generated. However, only a few of these beliefs work to influence attitude. These beliefs are called salient beliefs and they are said to be the immediate determinants of a person's attitude (Ajzen & Fishbein, 1975; Ajzen & Fishbein, 1980). An attitude is therefore a person's salient belief about whether the outcome of his/her action will be positive or negative. If a person has positive salient beliefs about the outcome of his/her behaviour then he/she is said to have a positive attitude towards the behaviour. On the other hand if a person has negative salient beliefs about the outcome of his/her behaviour he/she is said to have a negative attitude. The beliefs are rated for the probability that engaging in the behaviour will produce the believed outcome. This is called the belief strength.

Subsequently, the perception of whether this outcome is positive or negative is evaluated using a Likert scale. These two factors, belief strength and evaluation, are then multiplied to give the attitude. Attitude can be expressed in the following mathematical function;

$$AB = \sum_{i=1}^N b_i e_i$$

Where: AB= attitude toward the behaviour; b= beliefs the individual has about the idea that practising the behaviour that leads to outcome; e= evaluation of the outcome; i= the specific behavioural belief (Ajzen & Fishbein, 1975). Subjective norms (SN) are beliefs about what others will think about the behaviour. They are perceptions about how close referents will

perceive the outcome of the behaviour i.e. normative belief (NB) and the degree to which this controls the behaviour carried out i.e. motivation to comply (MC). These two factors are multiplied to give the subjective norm. Subjective norms are formed by the views of close referents considered to be essential. Subjective norm can be expressed in the following mathematical function;

$$SN = \sum_{i=1}^M (NB)_i (MC)_i$$

Intention is the probability as rated by the subject, that he will perform the behaviour. This intention is made up of the attitudes and subjective norms previously discussed. Ajzen & Fishbein (1980) proposed that variables not included in the model could affect intention and consequently, behaviour. However, these variables must significantly affect the attitude or normative belief component and their weights. These factors include demographic variables. If an intention influences action then it forms the behaviour. The theory is represented symbolically as follows:

$$B-I = (IA) W_1 + (SN) W_2 + \text{error}$$

Where: **B**= Behaviour; **I**= Intention; **IA**= Individual's Attitude toward the behaviour;

**SN**= Subjective Norms; **W**= Weight.

This Theory of Reasoned Action was found to be more related to voluntary behaviour (Ajzen, 1991). Later on behaviour appeared not to be 100 percent voluntary and was seen to be under control, this resulted in the addition of perceived behavioural control (PBC) construct into the model. With this addition the theory was called the Theory of Planned Behaviour (TPB). Perceived behavioural controls are beliefs about the presence of factors that may facilitate or impede performance of the behaviour and the perceived power of

these factors (control belief power). These two factors are multiplied to give the perceived behavioural control.

$$PBC = \sum_{i=1}^N C_i P_i$$

Where  $N$  = the specific control belief number, from 1 to  $N$ .

The Theory of Planned Behaviour is a theory which predicts deliberate behaviour, since behaviour can be deliberative and planned. In summary, the Theory of Planned Behaviour states that human action is guided by three kinds of considerations: beliefs about the likely outcomes of the behaviour and the evaluations of these outcomes (behavioural beliefs), beliefs about the normative expectations of others and motivation to comply with these expectations (normative beliefs), and beliefs about the presence of factors that may facilitate or impede performance of the behaviour and the perceived power of these factors (control beliefs), (Ajzen, 1991). This theory can then be represented symbolically as:

$$B \sim I = (IA) W_1 + (SN) W_2 + (PBC) W_3 + \text{error}$$

## 2.6 Application of Theory of Planned Behavior in Breastfeeding Behavior

The TPB was designed to understand, predict and explain human behavior specific contexts (Ajzen, 1991). The central factor in this theory as applied in this study is that of intentions that are indications of how hard mothers with children up to one year are willing to try, or how much of an effort they are planning in order to perform the breastfeeding behavior. Ajzen identified three considerations to intentions: attitude, subjective norm and perceived behavioral control. The attitude towards breastfeeding behavior refers to the degree which a mother had a favorable or unfavorable evaluation of the breastfeeding behavior. The expectancy was measured as the likelihood of outcome occurring if breastfeeding behavior was taken and value measured as an evaluation of the outcome



when performed. Subjective norm was the perceived social pressure the mother encountered to perform or not to perform the breastfeeding behavior. Perceived behavioral control referred to the ease or difficulty for the mother in performing the breastfeeding behavior and it's assumed to reflect past experience as well as anticipated impediments and obstacles.

Social cognition models provide a useful framework for studying social norms in relation to infant feeding behaviour, and some studies have applied the Theory of Reasoned Action (e.g. Manstead *et al.*, 1984; Quarles *et al.*, 1994; Humphreys *et al.*, 1998; Kloeben *et al.*, 1999) and the Theory of Planned Behaviour (TPB), (Janke, 1994; Wambach, 1997; Duckett *et al.*, 1998; Kim, 1998) to infant feeding.

Dyson *et al.*, (2010) incorporated the TPB variables that demonstrated to influence infant feeding intention among pregnant teenagers in deprived urban areas. This was a mixed method study with both quantitative and qualitative data that strengthen the survey and aided in the interpretation of both set findings. The recognized methodologies employed for data collection and analysis of focus group data increased confidence on emerging themes as a genuine reflection of the diversity of participants' beliefs.

Wambach (1997) conducted a causal modelling to test the hypotheses of the Theory of Planned Behavior for the prediction of prenatal breastfeeding intentions and postpartum breastfeeding outcomes with childbearing women. In support of the theory, prenatal breastfeeding attitudes and perceived behavioral control predicted breastfeeding intentions ( $R^2=.23$ ); however, the subjective norm variable failed to meet statistical criteria for model entry. Breastfeeding intentions weakly predicted duration of breastfeeding up to 6 weeks

postpartum ( $R^2=.04$ ). This study suggested prenatal and postpartum variables increased the explanatory power of the model in predicting breastfeeding intentions and duration.

Swanson & Power (2005) found mothers' subjective norm to be important determinants of initiation, and continuation of breastfeeding for breast and bottle feeders. Nurses and midwives were found to have a crucial role in communicating positive views on breastfeeding to new mothers at different time points. The study suggested that future interventions to promote breastfeeding should adopt a broad social approach encouraging positive norms for existing and potential mothers, fathers, families and people in general. However the questionnaire methodology used was insufficiently sensitive to differentiate between issues (impact of a new baby on the mother and partner's relationships, barriers to breastfeeding in public, impact of breastfeeding on the mother and partner's relationships, barriers to breastfeeding in public, impact of breastfeeding on social/family life). The survey did not utilize the qualitative interview-based that would identify specific influences on normative beliefs. Moreover the measure of intention was only done retrospectively, so this was not a test of the full Theory of Planned Behavior (TPB) model. Similarly, one of the main features of TPB model perceived behavioral control was not a significant predictor in the study.

Kloeblen-Tarver *et al.*, (2002) supported the Theory of Planned Behavior in breastfeeding promotions. Attitudes were more predictive of breastfeeding intention than were norms regardless of parity or prior behavior. The study applied a non random sampling strategy and the population's distinct socioeconomic and ethnic characteristics limited the generalizability of the results. Moreover data was collected once but not longitudinally and actual breastfeeding was not measured although the literature documents a significant

positive association between prenatal breastfeeding intention and actual breastfeeding (Kessler *et al.*, 1995; Manstead *et al.*, 1984; O'Campo *et al.*, 1992; Caulifield *et al.*, 1998). Finally the main outcome variable, breastfeeding intention was measured on a dichotomous scale rather than the conventional Likert scale which could have impacted the findings of the study.

Dodgson *et al.*, (2003) evaluated cross-cultural application of Theory of Planned Behavior (TPB) based models for breastfeeding duration among new mothers. Three predictive models were proposed: a strict TPB model; a replication of TPB-based model from (Duckett *et al.*, 1998); a model that posited perceived control as a mediating factor linking TPB variables with breastfeeding intentions and behavior. Although overall fit of the strict TPB model was poor (GOFI=.85), the other two fit were equally well (GOFI = .94; .95) and residuals were small (RMSR = 0.07). All hypothesized paths in the perceived control mediated model were significant ( $p < .05$ ); explained variance was 0.40 for perceived control and 0.36 for breastfeeding duration. The study reported that cross-cultural measurements issues and the need for prospective designs as continuing challenges in breastfeeding research.

Bai (2007) employed the Theory of Planned Behavior in a prospective cohort study to explore psychosocial factors underlying the continued exclusive breastfeeding behaviour for six months. Attitude, subjective norm and perceived behavioral control collectively explained 50.2 percent ( $p < 0.01$ ) of the variance in mother's intention to continue exclusively breastfeeding for six months. Attitude and subjective norm were better predictors of intention than perceived behavioral control. Absence of multicollinearity was evident by near 1.0 tolerance values of each variable indicating appropriate use of

regression analysis. Even though convenient sampling technique applied for the study considered accessibility of resources, this technique introduced some degree of biasness. Since the study population was not given an equal chance of choice hence making the study not generalizable but limited to specific mothers.

Consisting of three main components, application of the Theory of Planned Behavior explores the motivational impact of attitudes, subjective norms (influence from others) and mothers' perceived control over breastfeeding. Supporting the overall conceptualisation of the expectancy-value theory balance, the above named researchers reported that the key factors in sustained breastfeeding behaviour are positive breastfeeding attitudes, subjective norms and perceived maternal confidence (Stockdale *et al.*, 2008). Based on the evidence to date, current best practice aims to help mothers create positive attitudes to breastfeeding behavior, have social support and greater confidence in themselves to ensure successful breastfeeding behaviour (Stockdale *et al.*, 2008). Thus creating the optimal balance between value and expectancy for success is critical to mothers' motivation to breastfeed, because when value is high but expectancy for success low, psychological stress occurs.

The theory has been used successfully in other health domains such as in predicting smoking onset among adolescents with and without asthma. It was reported that non-smoking asthmatic adolescents had more negative attitudes towards smoking, perceived behavioral control and lower intention to smoking (Van *et al.*, 2007). The predictive power of the theory was strongest amongst asthmatic adolescent, leading the authors to suggest that smoking initiation is more of a planned behavior in the population. A second study looking at smoking in adolescents found similar results. Smith *et al.*, (2007) examined psychosocial factors that accounts for teenager's smoking intentions. Their findings

supported the role of attitudes, subjective norm and perceived behavioral control as correlates of intentions regarding smoking.

Wise *et al.*, (2006) examined intentions to use condoms among African-American adolescents. Condom use intention in sexually experienced females was predicted by attitudes and subjective norms but not perceived behavioral control. In sexually experienced males however, subjective norms and perceived behavioral control were the strongest predictors. The main predictor was subjective norm, regardless of gender and previous sexual experience. However, the questionnaires used in that study were not designed to test the TPB, so the conclusions drawn cannot be widely applied (Wise *et al.*, 2006). While there is evidence in the literature supporting the TPB in predicting the breastfeeding behavior of breastfeeding mothers the outcomes are varied. This can be explained in Ajzen's statement that the relative importance of each antecedent differs across behaviors and situation. The behavior in smoking, condom use and breastfeeding are vastly different in their impacts on health, therefore it is logical that antecedents to those behaviors would vary.

In this study Theory of Planned Behavior was proposed to understand breastfeeding behavior of mother in Kakamega Central District since to date, little is known in Kenya about whether theoretical frameworks achieves the desired motivational balance between encouraging mothers to value breastfeeding and increasing their expectancies that they will succeed. Relatively limited information in the breastfeeding domain has been founded on the theoretical framework which is significant in explaining how factors are related to each other, and which factor/s are essential when attempting to influence breastfeeding behaviour.

## 2.7 Gaps in Knowledge

Over the past 20 years infant and under-five mortality rates have been on the rise in Kenya, with current poor breastfeeding practices contributing to more than 10,000 deaths each year (MPHS, 2008). Nationally, breastfeeding rate is at 30% with more than 85% initiating it, 13% exclusively breastfeeding and 57% breastfeeding beyond one year (UNICEF, 2007). Regionally initiation of breastfeeding within the first hour was reported to be at 30.7 percent; with 21.7 percent exclusively breastfeeding for less than four months and 27.5 continue breastfeeding through the first year (CBS, 2000; CBS, 2004 & Waithaka, 2009). Psychosocial factors may have an important role towards decision making process amongst breastfeeding mothers. Mother's intention to optimally/sub-optimally breastfeed depend her cognitive and experiential aspects that prompt breastfeeding decision. Intention is explained by a number of social cognitive theories as a significant factor in predicting behavior (Armitage & Conner, 2000; Wallston & Armstrong, 2002; Weinstein, 2003). The concepts in the Theory of Planned Behavior such as attitude, subjective norm and perceived behavioral control are dominant predictors of intention, but the intention was found to be weaker predictor of breastfeeding duration (Dodgson *et al.*, 2003). This implied that intention is not yet well understood and therefore, further research on this is necessary (Blanchard *et al.*, 2001).

The researcher also noted that studies on breastfeeding in Kenya are limited in the behavioral dimension where the cognitive foundation of mothers holding to psychosocial factors that include attitudes, subjective norm and perceived behavioral control has not been fully explored. Hence there was need for a study amongst mothers attending postnatal clinics in different settings of Kakamega Central district to investigate the psychosocial factors affecting their breastfeeding behavior. The Theory of Planned Behavior adequately

dealt with factors of volitional human behaviors but there was still need to validate its effectiveness in breastfeeding behavior especially by comparing mothers attending postnatal clinics in different settings.

## CHAPTER THREE

### METHODOLOGY

#### 3.1 Introduction

This chapter details the procedures that were adopted towards the achievement of the study objectives and includes the following sub-headings; study site, study population, research design, sample size determination, sampling procedures, instruments of data collection, procedures of data collection, measurement of variables, data analysis methods and ethical considerations.

#### 3.2 Study Site

The study was conducted within Kakamega Central District. The district covers an area of 467.4km<sup>2</sup> with a total population of 320,392 disaggregated into 154,172 males and 166,220 females (Kakamega District Development Plan, 2005-2010). The district has three divisions namely Municipality, Lurambi and Navakholo. Lurambi and Municipality divisions formed the study area. The two divisions were chosen because they tend to cover a larger population of breastfeeding mothers and host well established Maternal Child Health clinics (Kakamega District Development Plan, 2005-2010). Lurambi has a population of 120,551 in an area of 194.1 square km with a population density of approximately 442 persons per square km. Municipality has a population of 103,144 in an area of 99.9 square km with approximately 1,485 persons per square km (Central Bureau of Statistics, 2009).

A Provincial General Hospital, 7 Nursing Homes, several Dispensaries, Community and Privately owned clinics, and 2 registered home based clinics are located at the divisions (Kakamega District Development Plan, 2005-2010). The home-based clinics are found in



the outskirts of the Kakamega municipality specifically in the remote areas of a trained traditional birth attendant's home where a formal health center is far from the reach of the local mother who needs maternal and child health services. The average distance to a health facility is 10 kilometers in rural areas and 500 meters in urban area of Kakamega Central. The doctor patient ratio of the two divisions stands at 1:14,246 (Kakamega District Development Plan, 2005-2010). The survey was conducted at Kakamega Provincial General Hospital situated in the Municipality; and Nala Nursing Home, Emusanda Dispensary, Makaburini Home-based clinic sited at Lurambi division. These clinics from which the participants were selected from had been accredited as a Baby Friendly Hospital Initiative (BFHI), a joint World Health Organisation (WHO) and United Nations Children's Fund (UNICEF) global initiative which emphasizes the health benefits of breastfeeding (WHO, 1998).

### **3.3 Study Design**

A sequential exploratory mixed methods plan that involved the collection and analysis of both qualitative and quantitative data was adopted (Creswell *et al.*, 2003). A three-phase approach adopted entailed identifying the salient beliefs based on optimal breastfeeding behavior. In phase 1, qualitative data was collected and analyzed. In phase 2, instrument for quantitative data collection was developed. In phase 3, the instrument was administered to the sample population. Sequential mixed method plan sought causal determination, prediction, generalization of findings and understanding mothers' breastfeeding behavior.

### 3.4 Study Population

The study sample comprised of breastfeeding mothers either attending maternal and child health clinic in a formal health centre or receiving postnatal services from a traditional birth attendant in a home based clinic. Approximately 75,292 of the total population of Kakamega Central District are women within reproductive age (Central Bureau of Statistics, 2009). The recent past has reported approximately 13,873 to be breastfeeding mothers, among 8,545 residing in the rural areas and 5,328 in urban areas (Kakamega District Development Plan, 2005-2010). Breastfeeding mothers of 18-40years with an infant aged from birth to 1yr old attending a maternal child health clinic were selected. Non breastfeeding mothers, breastfeeding mothers with more than one infant, breastfeeding mothers attending different postnatal clinics, and breastfeeding mothers below 18 years and above 40 years were excluded from the study. These were perceived to have diverse attitude, subjective norm and perceived behavioral control on breastfeeding behavior thus were excluded from the study. A total of 1380 formed the study sample from the four clinics.

### 3.5 Sampling Technique and Sample Size Determination

The following formula suggested by (Fishers *et al.*, 1999) was used for calculating the sample size needed.

$$n = \frac{Z^2 pq}{d^2}$$

Where:

$n$  = Desired Sample Size

$Z$  = Sample Size Deviate Normal ( $Z=1.96$  corresponding to 95% confidence level)

$d$  = 0.05 (the worst % that can ever pick a choice)

$p$  = Proportion in the target population with specific characteristics being

investigated (13, 873/75,292).

$$q = 1.0 - p(0.1843)$$

$$q = 0.8157$$

$$n = \frac{(1.96)^2 (0.1843)(0.8157)}{(0.05)^2}$$

$$(0.05)^2$$

$$n = \frac{(3.8416) (0.1503)}{0.0025}$$

$$0.0025$$

$$n = \frac{0.5773}{0.0025}$$

$$0.0025$$

$$n = 230$$

Non-participation rate was calculated at 10% of 230 (Raman *et al.*, 2010)

$$10\% \text{ of } 230 = 23$$

$$N = 230 + 23$$

$$N = 253$$

### 3.6 Sampling Procedures

The sampling technique involved selecting clinics and mothers. The first stage was aimed at sampling clinics to be involved in the study. Purposive sampling technique was used to select four clinics for the study with the target that they offered postnatal services to breastfeeding mothers and they were accredited as a Baby Friendly Hospital Initiative. The second stage of sampling involved identifying participants for focus group discussions. A systematic random sampling technique was employed to select 8 participants for the focus group discussions. A number was assigned to every participant and a criterion of selection was determined where the numbers were randomly picked. A sampling frame of 80

participants and a sampling interval of every 10<sup>th</sup> participant in the study population were identified.

The third phase entailed identification of respondents to offer interview responses. Proportionate stratified sampling was used to get the sample size of respondents from each stratum (hospital, nursing home, dispensary and home-based clinic). Random sampling was then employed on each stratum depending on its size to get the final study sample size. A sample of 167 respondents from Kakamega Provincial General Hospital, 34 from Emusanda Dispensary, 17 from Nala Nursing Home and 12 from Makaburini home based clinic was developed. At Kakamega Provincial General Hospital a sampling frame of 1,002 and sampling interval of every 6<sup>th</sup> breastfeeding mother was identified, implying that 167 breastfeeding mothers were selected. At Emusanda Dispensary a sampling frame of 206 and sampling interval of every 6<sup>th</sup> breastfeeding mother was identified, implying that 34 breastfeeding mothers were selected. At Nala Nursing home a sampling frame of 100 and a sampling interval of every 5<sup>th</sup> breastfeeding mother were categorized, implying that 17 breastfeeding mothers were selected. At Makaburini home-based clinic a sampling frame of 72 and sampling interval of every 6<sup>th</sup> breastfeeding mother was identified, implying that 12 breastfeeding mothers were selected.

### **3.7 Data Collection Instruments**

A focus group discussion guide (Appendix 1) and questionnaire (Appendix 2) were utilized as data collection instruments. The selection of this tool was guided by the nature of data to be collected, time available as well as the objectives of the study.

### **3.7.1 Focus Group Discussion Guide**

The aim of this instrument was to collect qualitative data to be utilized for development of questionnaire items. The development of the instrument was guided by concepts of the Theory of Planned Behaviour (Ajzen, 1991). The concepts drawn from the theory included attitude, subjective norm, perceived behavioural control, and intention. Questions with regard to these concepts were tailored to fit into breastfeeding behaviour. Following the advice of Ajzen (1991), a series of questions were used to structure focus group discussion based on initiation of breastfeeding within the first hour of birth; exclusive breastfeeding for six months; and continued breastfeeding to through the first year (Appendix 1). Three semi-structured focus groups discussions were conducted at Kakamega Provincial General Hospital with 8 participants.

### **3.7.2 Breastfeeding Behavior Questionnaire**

The belief statements identified in the qualitative phase and the extent to which they were endorsed were used to construct questionnaire item (Appendix 2). A seven point Likert scale was constructed along a continuum ranging from 1 to 7. To assess aspects of a mother's attitude toward breastfeeding, including advantages of breastfeeding to baby and mother, convenience/ inconvenience of breastfeeding multiplied by whether optimal breastfeeding is worthwhile despite reported inconvenience. Higher scores indicate more positive attitude toward optimal breastfeeding. The subjective norm variable was measured using Ajzen's guidelines for a normative belief-based measure (Ajzen & Madden, 1986). A 7-point scale, with end points of should optimally breastfeed (7) and should not optimal breastfeed (1), was used to elicit the mother's beliefs about significant referents' on optimal breastfeeding behavior expectations. Another set of 7-point scales evaluated mothers' motivation to comply with significant others' expectations and contained end points (1) not at all and (7)

very much. The subjective norm score was derived by multiplying each expectation by the corresponding compliance item and summing the product; a higher score indicated greater perceived social pressure to breastfeed. Perceived breastfeeding behavioral control also was measured according to Ajzen's guidelines (1988). Three items with 7-point response scales elicited mothers' perceptions of behavioral control over future breastfeeding plans. For example, "if I wanted to, I could easily breastfeed my infant for the intended time period." The anchors were extremely likely (7) to extremely unlikely (1). One additional item measured perceptions of confidence in ability on a 7-point scale, ranging from strongly disagree (1) strongly agree (7). Scores were summed and divided by the number of items for a possible mean score of 1 to 6.5; higher scores reflected greater perceived control. Breastfeeding intentions were measured with one 7-point scale, containing end points of strongly disagree (1) and strongly agree (7). The midpoint of the scale represented unsure of optimal breastfeeding. This breastfeeding behaviour questionnaire was used to find out the predictive power of maternal attitude, subjective norm and perceived behavioural control on breastfeeding behaviour.

### **3.8 Pre-Testing of Instrument for Data Collection**

A pilot study was carried out among 10 percent of the study population in Kakamega Provincial General Hospital. These respondents were not included in the study. The instruments were pretested and modified to improve the validity and reliability.

#### **3.8.1 Qualitative Phase**

The focus group discussion guide was pre-tested for reliability using a test retest reliability measure before being used to collect qualitative data. A question was asked in English and the same question asked in Kiswahili to measure consistency of the test score. Back translation was also done to check for the consistency of the translation.

### **3.8.2 Quantitative Phase**

To establish validity, the breastfeeding behavior questionnaire was given to two experts to evaluate the relevance of each item in the instrument to the objectives. The experts appraised what appeared to be valid for the content the test attempted to measure (content validity). The degree to which a test measured a sufficient sample of total content that was purported to measure was considered (sampling validity). Criterion related validity was also assessed; the degree to which a test is effective in predicting a mother's breastfeeding behavior in specific situations.

### **3.9 Data Collection Procedure**

Data was collected between May to August 2010 using a focus group discussion guide and a questionnaire.

#### **3.9.1 Qualitative Phase**

A total of three focus group discussions were conducted in the months of April and May, 2010. The three focus group discussions were conducted with 8 active participants (two breastfeeding mothers with children up to one year for each of the four clinics) until saturation. The other participants comprised of two nurses, a traditional birth attendant, a facilitator, recorder and note taker. The researcher was the extreme observer of the focus group discussions. Each focus group discussion was audio taped with participation permission and each lasted for a maximum of 1 hour. The information yielded was analyzed and used to develop instrument for the quantitative phase.

#### **3.9.2 Quantitative Phase**

A structured questionnaire was administered to respondents and the responses filled in by the researcher. These generated information on demographic and socio-economic

characteristics of the respondents. Information on maternal attitude, subjective norm and perceived behavioral control was also recognized. Maternal attitude represented mothers' feelings and beliefs towards breastfeeding behavior. This was measured indirectly. It was categorized as maternal attitude towards; initiation of breastfeeding within the first hour of birth, exclusive breastfeeding for six months and continued breastfeeding through the first year. The assessment of indirect attitude required respondents to indicate the likelihood of the outcome evaluated on a continuum scale ranging from 1 to 7 implying unlikely to likely (Appendix, 2). The corresponding strength of behavioral belief on the outcome evaluated was also indicated along a continuum scale 1 to 7 (Appendix, 2). The likelihood of each outcome evaluation and the corresponding strength of behavioral belief was multiplied and summed up to obtain indirect measure of attitude.

Subjective norm was measured as the mother's perception of the emotional, instructional, and informational support that she receives from significant others to practice the breastfeeding behavior in question. Significant people to the breastfeeding mother identified included mother's partner, family members, and members of medical profession/traditional birth attendant. Subjective norm was measured indirectly. The indirect assessment of subjective norm required respondents to indicate the influence of significant referents (normative belief) of practicing the breastfeeding behavior along a continuum scale ranging from 1 to 7 implying unlikely to likely (Appendix, 2). The strength of each normative belief was multiplied by the corresponding motivation to comply with the belief indicated along continuum scale (Appendix, 2). The product of all the items was summed to obtain the indirect measure of subjective norm.



Perceived behavioural control was defined as the presence or absence of requisite resources and opportunities that influenced respondents' perception of the ease or difficulty in performing the breastfeeding behaviour. This was measured both directly and indirectly. The direct measure was obtained from respondent's confidence in her ability to practice breastfeeding behaviour (Appendix, 2). Respondents were required to indicate the extent to which each of the factors would facilitate/inhibit (control belief) breastfeeding behaviour along a continuum scale ranging from 1-7 unlikely to most likely. These beliefs were summed up to obtain the direct measure of perceived behavioural control. For the indirect measure, the strength of each control belief was multiplied by the corresponding power of the factor in respondent's ability to practising the breastfeeding behaviour (Appendix, 2). The product was summed up to obtain the indirect measure of perceived behavioural control.

Mothers were interviewed as they entered the clinic, in some case while waiting for the commencement of maternal clinic and after appointment with the health professional/traditional birth attendant. The interviews were conducted by the researcher through visiting respective clinics from June to August, 2010 and each interview lasted for about an hour.

### **3.10 Ethical Considerations**

Permission was obtained from the School of Graduate Studies Maseno University (Appendix, 3) and research permit from the National Council for Science and Technology (Appendix, 4). The researcher also obtained research authorization from the Ministry of Public Health and Sanitation (Appendix, 5). The clinical officers in the dispensaries were briefed on the objectives of the research. The chief of Makaburini where the home-based clinic is located was informed of the aim of the research. The researcher also sought

informed consent (Appendix, 6) from the mothers attending post-natal and home based care clinics, and they were briefed on the research procedures, and assured of confidentiality. Respondents were not pressurized into giving information but were requested to participate voluntarily.

### **3.11 Data Analysis**

This was organized into qualitative and quantitative phases.

#### **3.11.1 Qualitative Phase**

Constant comparative approach grounded in the Theory Planned Behaviour was used to analyse qualitative data obtained from focus group discussions. This analysis entailed three stages including open, axial and selective coding (Creswell, 2008). In the open coding phase, field notes generated during focus group discussions were examined and updated by listening to tapes to identify outstanding categories of information. In axial coding, the categories were saturated and a set of categories developed where the researcher identified a single category from the open coding list as the central phenomenon of interest that was positioned at the centre of the theory and linked with other categories. In the selective coding phase, the information obtained from this coding phase was then organized into a coding paradigm that presents a theoretical model of the process under investigation. From this theory, statements that interrelate the categories in the coding paradigm were generated.

#### **3.11.2 Quantitative Phase**

Responses from the Likert items were treated as ordinal data since the Likert scale is continuous. In the study a seven-level type was used hence no assumptions were made that the respondents perceived the differences between adjacent levels as equidistant (Likert, 1932). Statistical procedures included descriptive and inferential statistics. Data was entered into SPSS version 15.0 to calculate reliability tests were the initial stage of data analysis

where Cronbach's alpha was used to assess the consistency of the questions. Exploratory factor analysis was applied to test for the dimensionality of the questions measuring the same concepts. Skewness and kurtosis tests were used to assess for the normality of data obtained. Structural Equation Modelling using AMOS version 7 was used to determine the predictive power of maternal attitude, subjective norm and perceived behavioral control on breastfeeding behavior. The overall model fit was evaluated using chi-square (CMIN) and relative chi-square divided by degrees of freedom (CMIN/df), comparative fit index (CFI), the standardized root-mean-square error of approximation (RMSEA), Hoelter's critical N, and Bollestone bootstrap. Comparative fit index (CFI) and Tucker Lewis index (TLI), values greater than 0.90 were considered satisfactory (Garson, 2009). RMSEA less than 0.08 were also being considered satisfactory (Schumacker & Lomax, 2004). CMIN/df was considered fit when it ranged between 3:1 and considered more better when closer but not less than 1 (Kline, 1998). Hoelter's critical N for significance level of .05 and .01 were used where bootstrap samples were set at 200 (Hoelter, 1983).

## **CHAPTER FOUR**

### **RESULTS**

#### **4.1 Introduction**

This chapter presents the findings of the study. The presentation is organized under the following sub-headings: Qualitative findings generated from focus group discussions and utilized for questionnaire development; Quantitative findings that focus on the goodness fit of a nested model and the predictive power of attitude, subjective norm and perceived behavioral control on breastfeeding intention.

#### **4.2 Analysis of Qualitative Results**

In the qualitative phase, data gathering on psychosocial factors influencing breastfeeding behavior was conducted through three focus group discussions and the basic outcomes used to develop a breastfeeding behavior questionnaire. This was aimed at collecting data on psychosocial factors influencing breastfeeding behavior of mothers and was categorized as attitudinal beliefs, normative beliefs and control beliefs targeting the four objectives.

##### **4.2.1 Salient Beliefs Influencing Breastfeeding Behavior**

Participants were aware of some of the benefits of initiating breastfeeding within the first hour of birth. For example, 5(65 percent) reported that 'early breastfeeding stimulates milk production for the baby and makes future breastfeeding a success'. Additionally, 6(76 percent) of the participants reported early breastfeeding to enhance the bonding process between mother and infant. There were also other perceived benefits such as 'boosting baby's immunity' reported by 6(72 percent), 'conferring protection against infantile diarrhoea', reported by 2(20 percent), 'quickenning expulsion of the placenta and reducing postpartum bleeding', described by 2(28 percent) of the participants. Approximately 2(21 percent) focused on the normal, natural and beneficial aspects of breastfeeding reporting that

it was 'a natural thing' for a mother to do. With respect to disadvantages, 'embarrassment' emerged as a key issue reported by 6(80 percent) of the participants. 'Painful nipples' was also an issue reported by 6(78 percent) of the participants. About 1(12 percent) remarked caesarean births made it difficult for a mother to initiate breastfeeding within the first hour (Table 4.1).

Exclusive breastfeeding was defined as feeding the baby restrictively on breastfeed milk with no fluids and water except medicine. Basically, 5(61 percent) reported that exclusive breastfeeding, 'helps to prevent various childhood illnesses', 'strengthen a baby's immune system' and 2(31 percent) reported 'help to develop baby's IQ'. There were also recognized benefits for the mother, such as 'helping to prevent breast cancer' reported by 2(31 percent) and 'regaining one's pre-pregnancy shape more quickly' reported by 5(65 percent) of the participants. Just about, 2(15 percent) of the participants reported exclusive breastfeeding 'to enhance the bondage between the mother and infant'. Approximately 1(7 percent) mentioned exclusive breastfeeding for six months as 'convenient since there was no need to make up or sterilize bottles', and 1(13 percent) recognized that it was 'cheaper as it reduced the need to buy milk'. With regard to disadvantages, 'embarrassment' emerged as key issue reported by 7(81 percent) of participants who also felt uncomfortable breastfeeding in public places. Exactly 5(59 percent) of the participants reported 'culture' to be a hindrance towards exclusive breastfeeding for six months (Table 4.1).

Out of the participants 3(42 percent) reported continued breastfeeding through the first year to 'postpone return of fertility in mothers'. Approximately 2(34 percent) acknowledged that 'it reduces risks of cardiovascular diseases and 3(42 percent) reported it to 'enhance

neurodevelopment in infants'. Nearly 3(38 percent) of the participants described continued breastfeeding to 'facilitate physical and emotional growth in babies'. Of the participants 5(71 percent) remarked that continued breastfeeding was 'time-consuming' and would 'limit their social activities'. Approximately 5(79 percent) reported continued breastfeeding through the first year to be 'an embarrassing situation' (Table 4.1).

**Table 4.1: Salient Beliefs Influencing Breastfeeding Behavior**

Beliefs	Responses (%)	Frequency n= 8
<b>Advantages</b>		
<b>Initiation of breastfeeding within the first hour of birth</b>		
Stimulates milk production	65	5
Makes future breastfeeding a success	51	4
Enhance the bonding process	76	6
Boosts baby's immunity	72	6
Confers protection against infantile diarrhoea	20	1
Quickens expulsion of placenta	28	2
A natural thing for a mother to do	21	1
<b>Exclusive breastfeeding for six months</b>		
Prevent various childhood illnesses	61	5
Strengthen a baby's immune system	61	5
Develop baby's IQ	31	2
Prevent breast cancer	31	2
Quickens regaining of pre-pregnancy shape	65	5
Enhance bondage between the mother and infant	15	1
Convenient no need to make up or sterilize bottles	7	1
Cheaper	13	2
<b>Continued breastfeeding through the 1<sup>st</sup> year</b>		
Postpones return of fertility in mothers	42	3
Reduces risks of cardiovascular diseases	34	2
Enhance neurodevelopment in infants	42	3
Facilitate physical and emotional growth in babies	38	3
Natural and healthy way of feeding their child	20	1
<b>Disadvantages</b>		
<b>Initiation of breastfeeding within the first hour of birth</b>		
Painful nipples	78	6
caesarean births	12	1
Embarrassment	80	7
<b>Exclusive breastfeeding for six months</b>		
Embarrassment	81	7
Culture	59	5
<b>Continued breastfeeding through the 1<sup>st</sup> year</b>		
Time-consuming	71	5
Limit their social activities	71	5
Embarrassment	79	6

**Note**  
The total frequency does not add up to 8 because mothers listed several items for each question addressing beliefs.

#### 4.2.2 Normative Beliefs Influencing Breastfeeding Behavior

Normative beliefs are the social expectations of important people in a mother's life regarding the performance of breastfeeding behavior. Practically 7(82 percent) of the participants reported

'medical professionals/traditional birth attendant' as people whose opinion was influential on mother's decision to initiate breastfeeding within the first hour. Medical professionals/traditional birth attendant would be influential, although participants were almost anonymous in their belief that the final decision would be with the mother (Table 4.2).

The decision to exclusively breastfeed for six months was influenced by 'medical professionals/traditional birth attendant' reported by 3(42 percent). Family members were reported to be disapproving group 7(80 percent). Participants principally described 'medical professionals/traditional birth attendant' as important people who encouraged the practise of exclusive breastfeeding for six months. However it was argued that mothers were subjected to the pressures of feeding the infants other foods such as tea, porridge, soups and water. These pressures were exerted from their partner and family members who perceived breast milk alone as insufficient for the infant's growth and development. Continue breastfeeding through the first year was influenced by 'health professional/traditional birth attendant' reported by 3(42 percent) and 'family members' reported by 1(19 percent) of the participants. However about 1(12 percent) of the participant reported 'mother's partner' to be unsupportive towards continued breastfeeding through the first year (Table 4.2).



**Table 4.2: Normative Beliefs Influencing Breastfeeding Behavior**

Beliefs	Responses (%)	Frequency n= 8
<b>Normative Beliefs</b>		
<b>Initiation of breastfeeding within the first hour of birth</b>		
<b>Approval</b>		
Medical professionals/traditional birth attendant	82	7
Environment (others)	69	5
<b>Disapproval</b>		
Environment (others)	29	2
<b>Exclusive breastfeeding for six months</b>		
<b>Approval</b>		
Medical professionals/traditional birth attendant	42	3
Family Member	10	1
<b>Disapproval</b>		
Mother's partners	68	6
Family members	80	7
Society	64	5
<b>Continued breastfeeding through the 1<sup>st</sup> year</b>		
<b>Approval</b>		
Medical professionals/traditional birth attendant	32	2
Family members	19	1
<b>Disapproval</b>		
Mother's partner	12	1

**Note**  
The total frequency does not add up to 8 because mothers listed several items for each question addressing beliefs.

### 4.2.3 Control Beliefs Influencing Breastfeeding Behavior

Factors that may encourage/discourage initiation of breastfeeding within the first hour of birth included 'mother's health after child birth' reported by 4(59 percent) of the participants and 'mother's knowledge on breastfeeding' reported by 3(40 percent) of participants. Social factors were also mentioned such as 'delivery room procedures and policies' reported by 5(63 percent). Factors reported to inhibit/facilitate exclusive breastfeeding for six months of life included 'mother's and infant's health' reported by 3(42 percent) of the participants. Social factors mentioned included 'having to be away from the baby for long hours' reported by 5(62 percent) of the participants since these mothers also have to return to work for economic survival. Those employed in formal setting are entitled 1 or 2 months of maternity leave depending on the

employer. Approximately 3(38 percent) reported negative reactions such as ‘feeling uncomfortable/ embarrassed’, not being allowed to breastfeed in a public place’ reported by 1(21 percent) and ‘not being fashionable’ reported by 1(10 percent) (Table 4.3).

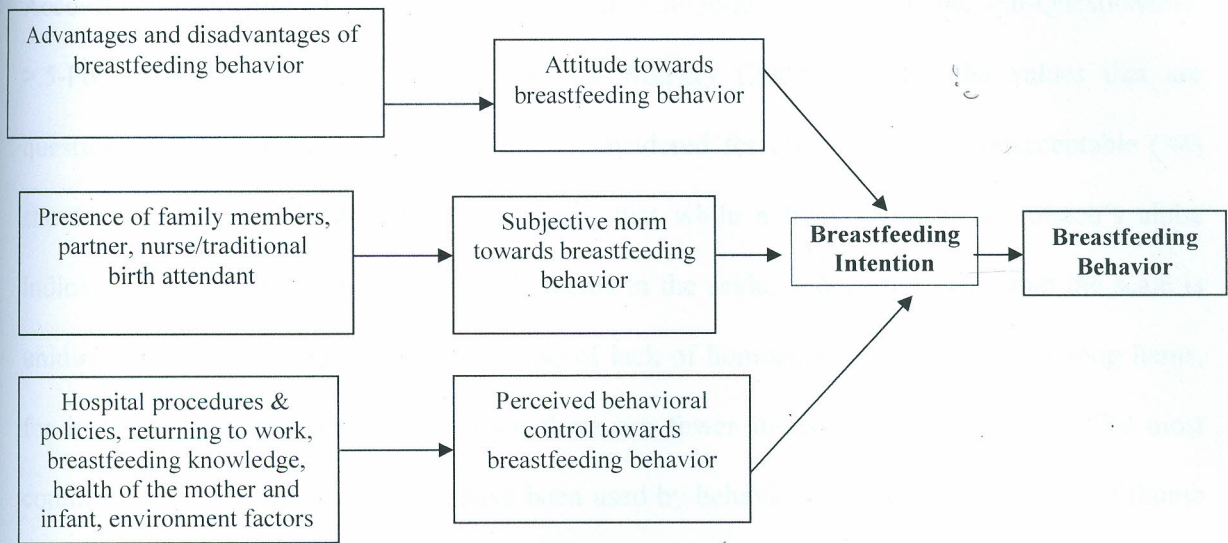
Factors mentioned to facilitate/inhibit continued breastfeeding through the first year included ‘mother’s health’ reported by 3(35 percent) of the participants, ‘perceived advantages from mother’s knowledge on breastfeeding’ reported by 1(12 percent), ‘returning to institution of learning to advance career’ reported by 2(31 percent) and ‘resuming busy schedules of work’ reported by 1(22 percent). The information obtained from this coding phases (Table 4.3) was then organized into a coding paradigm that presents a theoretical model (Figure 4.3) of the process under investigation. In this way an attempt was made to build up a theory.

**Table 4.3: Control Beliefs Influencing Breastfeeding Behavior**

Beliefs	Responses (%)	Frequency n= 8
<b>Control Beliefs</b>		
<b>Initiation of breastfeeding within the first hour of birth</b>		
<b>Facilitators</b>		
Knowledge on breastfeeding	40	3
Mother’s health after birth	59	4
Delivery room procedures and policies	63	5
<b>Barrier</b>		
Confidence	81	6
<b>Exclusive breastfeeding for six months</b>		
<b>Facilitator</b>		
Mother’s and infant’s health	42	3
<b>Barriers</b>		
Being away from the baby for long hours (work)	62	5
Feeling uncomfortable/embarrassed	38	2
Not being allowed to breastfeed in Public	21	2
Unfashionable	10	1
<b>Continued breastfeeding through the first year</b>		
<b>Facilitators</b>		
Mother’s health	35	3
Mother’s breastfeeding knowledge	12	1
<b>Barriers</b>		
Returning to Institution of higher learning	71	6
Resuming to busy schedules	72	6

**Note**

The total frequency does not add up to 8 because mothers listed several items for each question addressing beliefs.



**Figure 4.1:** Measures of Attitude, Subjective Norm and Perceived Behavioral Control in Breastfeeding behavior

### 4.3 Test Results for Questionnaire Reliability and Validity

This phase was built upon the qualitative results obtained which aimed at developing a reliable and valid questionnaire for breastfeeding behavior.

#### 4.3.1 Reliability of Questionnaire

Breastfeeding behavior questionnaire was subjected to reliability tests at two levels to measure its' consistency and precision. The first reliability test was done during pretesting of the instrument whereas the second one was done after data collection. Reliability coefficients shown in (Table 4.4) were grouped factors measuring each concept in the questionnaire. Gliem & Gliem (2003) indicated that Cronbach's alpha reliability coefficient usually ranges between 0 and 1. Nevertheless, there are no lower limits to the coefficient. The closer Cronbach's alpha ( $\alpha$ )

coefficient is to 1.0 the greater internal consistency of items in the scale. George & Mallery (2003) rule of thumb was used to classify the Cronbach's alpha coefficients generated. According to the rule of thumb ">.9-Excellent, >.8-Good, >.7-Acceptable, >.6-Questionable, >.5-Poor and <.4- Unacceptable". George & Mallery (2003) stated alpha values that are questionable (>.6) and poor (>.5) should be considered for consistency but unacceptable (<.4) should be discarded. It should also be noted that while a high value for Cronbach's alpha indicates good internal consistency of the items in the scale, it does not mean that the scale is unidimensional. Alpha may be low because of lack of homogeneity of variances among items, for instance, and it is also lower when there are fewer items in the scale/factor. The most common criteria for fit indices that have been used by behavioral researchers are rules of thumb that lack a detailed mathematical or empirical justification (Marsh *et al.*, 2004). These conventional rules of thumb and guidelines, used by researchers for the selection and interpretation of fit indices are often erroneous. Given complexity of issues the best of a situation is degree of measure of subjectivity involved in determining whether a model fits well.

**Table 4.4: Reliability of Direct Measures of Breastfeeding Behavior**

Concepts Measurement	Number of items	Cronbach's alpha (pretest, n=23)	Cronbach's alpha (main survey, n=230)
<b>Breastfeeding Behavior Measures</b>			
Behavior -1	3	0.51	0.71
Behavior- 2	3	0.54	0.85
Behavior- 3	3	0.65	0.92
<b>Attitude</b>			
Salient Belief measures(Attitude-1)	6	0.57	0.75
Salient Belief measures(Attitude-2)	6	0.56	0.72
Salient Belief measures(Attitude-3)	6	0.57	0.68
<b>Subjective Norm (S.N)</b>			
Normative belief measures(S.N-1)	6	0.56	0.80
Normative belief measures(S.N-2)	6	0.52	0.75
Normative belief measures(S.N-3)	6	0.62	0.78
<b>Perceived Behavioral Control (P.B.C)</b>			
Control belief strength measures(P.B.C-1)	6	0.66	0.79
Control belief strength measures(P.B.C-2)	6	0.63	0.73
Control belief strength measures(P.B.C-3)	6	0.61	0.72
<b>Breastfeeding Intention</b>			
Intention towards behavior-1	3	0.58	0.79
Intention towards behavior-2	3	0.55	0.76
Intention towards behavior-3	3	0.56	0.92

**Note:** 1=initiation of breastfeeding within 1<sup>st</sup> hour of birth; 2=exclusive breastfeeding for six months of life; 3= continued breastfeeding through the 1<sup>st</sup> year of birth

During pre-testing all measures of maternal attitude, subjective norm and perceived behavioral control obtained questionable reliability. Measures of intention presented poor reliability. After data collection measures of maternal attitude and perceived behavioral control presented an acceptable reliability. All the measures of subjective norm presented a good reliability. Intention measures presented good reliability. So, the questionnaire used for this study was considered reliable (Table 4.4).

#### 4.3.2 Validity of Instrument

Factor analysis was performed to establish the construct validity of the scales in the questionnaire before being fitted into the structural equation modeling. The response of respondents for each question was distinctive, and rotated component factors loading for each variable were subjected to principal component analysis (Tables 4.5a, 4.5b, 4.5c).

Three breastfeeding behaviour variables were loaded into a linear component and accounted for 57.67% of the total variance of the breastfeeding behavior variables. The average of the three breastfeeding behavior communalities was 0.76 which was considered good for the measurement. The subsequent group was maternal attitude. This was categorized as attitude-1, attitude-2, and attitude-3 each with a set of three variables to be loaded. Three attitude-1 variables loaded into one linear component accounted for 50.30% of the total variance. This factor was labeled "maternal attitude towards early initiation of breastfeeding within the first hour of birth". The average of three attitude-1 communalities was 0.76 which is acceptable for the measurement. The second was three attitude-2 variables that were loaded into one linear component and accounted for 58.82% for the total variance. The component was labeled 'maternal attitude towards exclusive breastfeeding for six months'. The average of the three attitude-2 communalities was 0.70 which is acceptable for the measurement. Lastly in attitude category was three attitude-3 variables that were loaded into a linear component which accounted for 36.82% of total variance. This component was labeled "maternal attitude towards continued breastfeeding through the first year". The average of the three attitude-3 communalities was 0.77 which was acceptable for the measurement.

The second category of variables focused on subjective norm. This was classified as subjective norm-1, subjective norm-2, and subjective norm-3 each with a set of three variables to be loaded.

Three subjective norm-1 variables were loaded into one linear component accounting for 72.22% of the total variance. The component was labeled “subjective norm towards early initiation of breastfeeding within the first hour of birth”. The average of the three subjective norm-1 communalities was 0.84 which was good for the measurement. Secondly, three subjective norm-2 variables were loaded into linear component accounting for 43.95% of the total variance. The component was labeled “subjective norm towards exclusive breastfeeding for six months of birth”. The average of the three subjective norm-2 communalities was 0.71 which was acceptable for the measurement. Finally, three subjective norm-3 variables were loaded into a linear component accounting for 67.97% of the total variance. The component was labeled “subjective norm towards continue breastfeeding through the first year”. The average of the three subjective norm-3 communalities was 0.82 which was considered good for the measurement.

Perceived behavioral control measure were also categorized as perceived behavioral control-1, perceived behavioral control-2, and perceived behavioral control-3. Factor loading for each variable rotated component explained the total variance on perceived behavioral control towards breastfeeding behaviour. Each had a set of three variables to be loaded. Three perceived behavioral control-1 variables were loaded into one linear component that accounted for 47.01% of the total variance. The component was labeled “perceived behavioral control towards early initiation of breastfeeding within the first hour of birth”. The average of the three perceived behavioral control-1 communalities was 0.64 which was considered questionable for measurement. Secondly, three perceived behavioral control-2 variables were loaded into a linear component accounting for 66.63% of the total variance. The component was labeled “perceived behavioral control towards exclusive breastfeeding for six months “. The average of the three perceived behavioral control-2 communalities was 0.78 which was good for the measurement. In addition, the three perceived behavioral control-3 variables were loaded into a linear component

accounting for 64.51% of the total variance. The component was labeled “perceived behavioral control towards continued breastfeeding through the first year”. The average of the three perceived behavioral control-3 communalities was 0.80 which was considered good for the measurement.

Breastfeeding intention measures category was the last group subjected to factor analysis. Three breastfeeding intention variables were loaded into one linear component accounting for 68.04 % of the total variance. This component was labeled “breastfeeding intention”. The average of the three intention communalities was 0.76 which was considered good for the measurement.



**Table 4.5a: Validity of Direct Measure of Breastfeeding Behavior**

Scales (n=230)	Components (Factors)	
	1	2
<b>Breastfeeding Behavior Measures</b>		
Frequency of initiation of breastfeeding within the first hour of birth (Breastfeeding Behavior-1)	.51	
Frequency of exclusive breastfeeding for six months of life (Breastfeeding Behavior-2)	.88	
Frequency of continued breastfeeding through the first year (Breastfeeding Behavior-3)	.89	
<b>Average communalinity</b>	<b>.76</b>	
<b>% variance explained</b>	<b>57.67%</b>	
<b>Attitude</b>		
<b>Attitude-1 (initiation of breastfeeding within the first hour of birth)</b>		
If i initiated breastfeeding within the 1st hour after birth I will be bonding with my baby	.75	
Breastfeeding within the 1st hour after birth enabled me stimulate milk production	.76	
Early initiation of breastfeeding enabled quicker expulsion of my placenta and reduced postpartum bleeding	.78	
<b>Average communalinity</b>	<b>.76</b>	
<b>% variance explained</b>	<b>50.30%</b>	
<b>Attitude-2 (exclusive breastfeeding for six months of life)</b>		
If i exclusively breastfeed i will be providing health benefits for my baby	.68	
Exclusively breastfeeding my infant is a convenient method of infant feeding	.70	
Exclusive Breastfeeding makes my breasts sag	.73	
<b>Average communalinity</b>	<b>.70</b>	
<b>% variance explained</b>	<b>58.82%</b>	
<b>Attitude-3 (continue breastfeeding through the 1st year)</b>		
If i continue breastfeeding through the second year and beyond i will be old fashioned	.77	.44
If i continue breastfeeding through the 1 <sup>st</sup> year i will be postponing my return of fertility	.75	-.51
Continued breastfeeding through the 1 <sup>st</sup> year will improve the health of my child	.29	.90
<b>Average communalinity</b>	<b>.77</b>	<b>-.10</b>
<b>% variance explained</b>	<b>56.82%</b>	<b>33.57%</b>

**Table 4.5b: Validity of Direct Measure of Breastfeeding Behavior**

Scales (n=230)	Components (Factors)	
	1	2
<b>Subjective Norm</b>		
<b>Subjective norm-1</b> (early initiation of breastfeeding within the first hour of birth)		
My husband think i	.95	
My family members think i	.94	
Members of the medical profession/traditional birth attendant think i	.62	
<b>Average communalinity</b>	<b>.84</b>	
<b>% variance explained</b>	<b>72.22%</b>	
<b>Subjective norm-2</b> (exclusive breastfeeding for six months of life)		
My husband think i	.80	
My family members think i	.53	
Members of the medical profession/traditional birth attendant think i	.63	
<b>Average communalinity</b>	<b>.71</b>	
<b>% variance explained</b>	<b>43.95%</b>	
<b>Subjective norm-3</b> (Continued breastfeeding through the 1 <sup>st</sup> year )		
My husband think i	.80	
My family members think i	.81	
Members of the medical profession/traditional birth attendant think i	.83	
<b>Average communalinity</b>	<b>.82</b>	
<b>% variance explained</b>	<b>67.97%</b>	

**Table 4.5c: Validity of Direct Measure of Breastfeeding Behavior**

Scales (n=230)	Components (Factors)	
	1	2
<b>Perceived Behavioural Control</b>		
<b>Control belief strength -1 (initiation of breastfeeding within the first hour of birth)</b>		
My knowledge makes it possible for me to initiate breastfeeding within the first hour of birth		.68
Environmental factors (hospital practices and policies) makes it possible for me to initiate early breastfeeding within the first hour of birth		.63
My health makes it possible for me to initiate breastfeeding within the first hour of birth		.69
Average communalinity		<b>.64</b>
<b>% variance explained</b>		<b>47.01%</b>
<b>Control belief strength -2 (exclusive breastfeeding for six months)</b>		
My knowledge makes it possible for me exclusive breastfeeding for six months		.95
Environmental factors (hospital practices and policies) makes it possible for me to exclusive breastfeeding for six months		.42
My health makes it possible for me to exclusive breastfeeding for six months		.96
Average communalinity		<b>.78</b>
<b>% variance explained</b>		<b>66.63%</b>
<b>Control belief strength -3 (Continued breastfeeding through the first year)</b>		
My knowledge makes it possible for me to continue breastfeeding through the second year and beyond		.85
Environmental factors (hospital practices and policies) makes it possible continue breastfeeding through 1 <sup>st</sup> year		.81
My health makes it possible for me to continued breastfeeding through the 1 <sup>st</sup> year		.74
Average communalinity		<b>.80</b>
<b>% variance explained</b>		<b>64.51%</b>
<b>Breastfeeding Intention</b>		
I intended to initiate breastfeeding within the first hour of birth		.78
I intend/intended to exclusively for six months of life		.69
I intend continue breastfeeding for one year of life		.81
Average communalinity		<b>.76</b>
<b>% variance explained</b>		<b>68.04%</b>

The indirect measures of attitude, subjective norm and perceived behavioral control were subjected to internal consistency tests (Table 4.6) and they all presented acceptable reliability.

**Table 4.6:** The Reliability of Indirect Measure of Breastfeeding Behavior

Concepts Measurement	Number of Items	Cronbach's Alpha (pretest, n=23)	Cronbach's Alpha survey, n=230
Indirect Attitude	18	.57	.66
Indirect Subjective norm	18	.78	.91
Indirect Perceived Behavioral Control	18	.61	.73

The indirect measures of attitude, subjective norm and perceived behavioral control were also subjected to a dimensionality test performed using factor analysis (Table 4.7). The table shows factor loading for each variable on the rotated components. The initial variable subjected to principal component analysis focused on indirect attitude. The three indirect attitude variables were loaded into one linear component which accounted for 75.15% of the total variance. This factor was labeled “indirect maternal attitude towards breastfeeding behavior”. The average of the three indirect maternal attitude communalities was 0.84 which was considered good for the measurement. Secondly, three indirect measures of subjective norm were loaded into a linear component accounting for 70.79% of the total variance. This factor was labeled “indirect measure of subjective norm towards breastfeeding behavior”. The average of the twelve subjective norm communalities was 0.82 which was good for the measurement. Finally three variables measuring indirect perceived behavioral control were loaded into a linear component accounting for 74.72% of the total variance. This factor was labeled “perceived behavioral control towards breastfeeding behavior”. The average of the twelve indirect attitude communalities was 0.78 which was considered acceptable for the measurement.

**Table 4.7: Validity of Indirect Measures of Breastfeeding Behavior**

Scales (n=230)	Components (factors)	
	1	2
<b>Indirect Attitude</b>		
Attitude-1	.84	.11
Attitude-2	.78	.98
Attitude-3	.88	.04
<b>Average communalinity</b>	<b>.84</b>	<b>.38</b>
<b>Percentage variance explained</b>	<b>75.15%</b>	<b>22.14%</b>
<b>Indirect Subjective Norm</b>		
Subjective norm-1	.95	
Subjective norm-2	.85	
Subjective norm-3	.53	
<b>Average communalinity</b>	<b>.82</b>	
<b>Percentage variance explained</b>	<b>70.79%</b>	
<b>Indirect Perceived Behavioral Control</b>		
Perceived behavioral control-1	.79	
Perceived behavioral control-2	.81	
Perceived behavioral control-3	.74	
<b>Average communalinity</b>	<b>.78</b>	
<b>Percentage variance explained</b>	<b>61.42%</b>	

**Note:** 1=initiation of breastfeeding within 1<sup>st</sup> hour of birth; 2=exclusive breastfeeding for six months of life; 3=continued breastfeeding through the 1<sup>st</sup> year of birth

#### 4.4 Analysis of Quantitative Results

The quantitative findings include demographic characteristics, model fitness and predictive power of concepts influencing breastfeeding behavior.

#### 4.5 Demographic Characteristics

Demographic characteristics of all respondents included age, marital status, occupation, level of education, ethnicity and religion. Respondents' demographic characteristics were summarized in (Table 4.8).

The data from only 230 respondents within the age range of between 18-40 years old was keyed into dataset; the other 23 respondents were used to take care of non-participation rate.

Approximately 102(44.2 percent) were young mothers who were aged between 18-28 years old while 128(55.8 percent) were mature mothers aged between 29-40 years. Among the respondents 197(85.7 percent) were Christian, 30(13 percent) Muslims and 3(1.2 percent) were believers of Traditional African Religion. Over half were married 170(73.9 percent) being in the union, 15(6.5 percent) being widows and a minority of 10(4.4 percent) being divorcees. Some respondents were not in a marriage union being grouped as singles that comprised of 35(15.2 percent). Majority of the respondents had attained secondary education 81(34.9 percent), those who had not completed secondary education were 28(12.5 percent) and approximately 18(7.8 percent) had completed primary education. It was ascertained that 34(15.1 percent) had incomplete primary education although 69(29.9 percent) of the respondents had received either college or university education. According to the study majority of the respondents were Luhya 171(74.3 percent), Luo were 16(6.9 percent) and Kisii were the least group 14(6.0 percent). The remaining 29(12.5 percent) comprised of Swahili, Kikuyu, Kamba, Kalenjin. For occupation status, the highest proportion 86(37.1 percent) were business women, 58(25.0 percent) salaried, 33(14.2 percent) casual laborers, 26(11.3 percent) farmers and housewives who depended solely on their husband were 27(11.7 percent).

**Table 4.8: Demographic Characteristics of Breastfeeding Mothers**

<b>Descriptive Characteristics (N=230)</b>	<b>No (%)</b>
<b>Age</b>	
18-28	102 (44.2%)
29-40	128 (55.8%)
<b>Marital status</b>	
Married	170 (73.9%)
Divorced	10 (4.4%)
Widowed	15 (6.5%)
Singles	35 (15.2%)
<b>Occupation</b>	
Businesswomen	86 (37.1%)
Salaried	58 (25.0%)
Causal laborers	33 (14.2%)
Farmers	26 (11.3%)
Housewives	27 (11.7%)
<b>Level of Education</b>	
University/college	69 (29.7%)
Secondary complete	81 (34.9%)
Secondary incomplete	28 (12.5%)
Primary complete	18 (7.8%)
Primary incomplete	34 (15.1%)
<b>Ethnicity</b>	
Luhya	171 (74.6%)
Luo	16 (6.9%)
Kisii	14 (6.01%)
Others	29 (12.5%)
<b>Religion</b>	
Christianity	197 (85.8%)
Muslims	30 (13%)
Traditional African Religion	3 (1.2%)

#### 4.6 Structural Equation Modeling applied to Breastfeeding Behavior

Structural equation modeling was used to establish whether a model nested based on Theory of Planned Behavior variables applied on breastfeeding behavior fits the data acceptably well. To answer the research questions, it was essential to base the measurement model on the original concepts of this theory. Both item measurement analysis and measurement model analysis were performed using observed and unobserved variables in attempt to assess the extent to which the model fits the data. These variables are presented in (Table 4.9) and displayed in a measurement model (Figure 4.2).

**Table 4.9:** Endogenous and Exogenous variables of the Measurement Model

Endogenous Variables	Exogenous Variables
<b>Observed</b>	Attitude
Attitude-1 (A1)	e4
Attitude-2 (A2)	e3
Attitude-3 (A3)	e2
Subjective-1(SN1)	Subjective Norm
Subjective-2 (SN2)	e8
Subjective-3 (SN3)	e7
Perceived behavioral control-1(PBC1)	e5
Perceived behavioral control-2(PBC2)	Perceived behavioral control
Perceived Behavioral Control-3(PBC3)	e12
Intention-1(I1)	e10
Intention-2(I2)	e9
Intention-3(I3)	e13
Behavior-1	e15
Behavior-2	e16
Behavior-3	e20
<b>Unobserved</b>	e18
Intention	e17
Breastfeeding behavior	Other-1
	Other-2

**Note:** e=error; other= residual; 1=initiation of breastfeeding within 1<sup>st</sup> hour of birth; 2=exclusive breastfeeding for six months of life; 3= continued breastfeeding through the 1<sup>st</sup> year of birth



#### 4.6.1 Measurement Model

A confirmatory factor analysis of the measurement model (Figure 4.2) specifying the posited relations of the observed variables to the underlying constructs with all constructs allowed to be inter-correlated freely was tested.

First it was important to submit the cases to a normality test of multivariate examination before fitting the model to examine the data and check if the necessary distributional assumptions are reasonable (Table 4.10). All the measures were subjected to skewness test based on the recommended range  $\pm 2$  for normal distribution (Mardia *et al.*, 1974). The critical ratio represents skewness (or kurtosis) divided by the standard error of skewness (or kurtosis). It is interpreted as one would interpret a z-score. Values greater than 2, 2.5 or 3 are often used to indicate statistically significant skew or kurtosis. In this study items presented positive skew and all measures of breastfeeding behavior were normally distributed.

**Table 4.10:** Assessment of Multivariate Normality of the Measurement Model

Variable	minimum	maximum	skewness	critical ratio	kurtosis	critical ratio
B3	1.00	7.00	2.42	2.60	2.93	3.19
B2	1.00	7.00	2.00	2.21	2.78	2.88
B1	1.00	7.00	2.62	2.20	2.18	2.77
PC1	2.00	6.00	2.41	2.53	3.48	2.50
PC2	4.00	7.00	2.45	2.71	2.98	3.05
PC3	3.00	6.00	2.55	3.45	3.99	2.08
SN1	2.00	4.00	2.58	2.59	2.96	3.00
SN2	3.00	8.00	2.82	2.10	3.04	3.24
SN3	2.00	9.00	2.96	2.98	3.52	2.61
I1	2.00	7.00	2.80	3.48	2.54	3.79
I2	1.00	7.00	2.40	2.50	2.79	3.45
I3	1.00	7.00	2.89	3.54	2.52	3.62
A1	2.00	8.00	2.59	3.21	2.66	3.19
A2	3.00	6.00	2.85	2.55	2.87	2.77
A3	2.00	5.00	2.65	2.56	2.90	2.32
Multivariate					44.28	39.18

**Note:** 1=initiation of breastfeeding within 1<sup>st</sup> hour of birth; 2=exclusive breastfeeding for six months of life; 3=continued breastfeeding through the 1<sup>st</sup> year of birth; B=breastfeeding behavior; PC=perceived behavioral control; SN=subjective norm; A=Attitude; I=Intention

#### 4.6.2 Model Fitness

The first attempt at model fitting produced unsatisfactory results. The covariance matrix estimated by the model did not adequately reproduce the sample covariance matrix model. To adjust a model, new pathway was added. The parameter changed from fixed to free. The common procedure used for model modification was the Lagrange Multiplier Index. This test reported the change in chi-square value when pathway is adjusted. Model modification involved adjusting the specified and estimated model by either freeing parameters that were fixed or fixing parameters that were free. The Lagrange multiplier test provided information about the amount of chi-square change that resulted in fixed parameters that were freed. After this prediction was included, a satisfactory model fit was achieved, as shown by the fitness indices (Table 4.11). In the study the goodness of fit was statistically non-significant at the .01 level but the model would be rejected at the .05 level ( $\chi^2=156$ ,  $df= 72$ ,  $p=0.12$ ,  $\chi^2/df =2.21$ ). Although the chi-square was under the recommended 3:1 range, acceptable fit was obtained after modification indices were done. Other fit indices (TLI = .93, CFI =.95, RMSEA= 0.090) also demonstrated goodness of fit for the measurement model. Hoelter's critical N values recommend that the model would have been accepted for lower limit at the .05 significance level with 200 cases and the upper limit of N for the .01 significance level is 230 cases. The Bollen-Stine  $p=0.12$  provided further reassurance about the model fit among other global fit indices (Appendix, 8). It was then necessary to advance the Theory of Planned Behaviour using structural models.

### 4.6.3 Structural Equation Models

The overall modelling analysis exhibited three types of outputs namely; saturated, default and independent model (Appendix, 8). The saturated model is insignificant but fully explanatory model in which there are as many parameter estimates as degrees of freedom. Most goodness of fit measures will be 1.0 for a saturated model, but since saturated models are the most unparsimonious models possible, parsimony-based goodness of fit measures will be 0. Some measures, like RMSEA, cannot be computed for the saturated model at all. The independence model is one which assumes all relationships among measured variables are 0. This implies the correlations among the latent variables are also 0. Where the saturated model will have a parsimony ratio of 0, the independence model has a parsimony ratio of 1. Most fit indexes will be 0, whether of the parsimony-adjusted variety or not, but some will have non-zero values (RMSEA, GFI) depending on the data. The default model (Figure 4.3) is the researcher's structural model, always more parsimonious than the saturated model and almost always fitting better than the independence model with which it is compared using goodness of fit measures. That is, the default model (Figure 4.3) will have a goodness of fit between the perfect explanation of the trivial saturated model and terrible explanatory power of the independence model, which assumes no relationships.

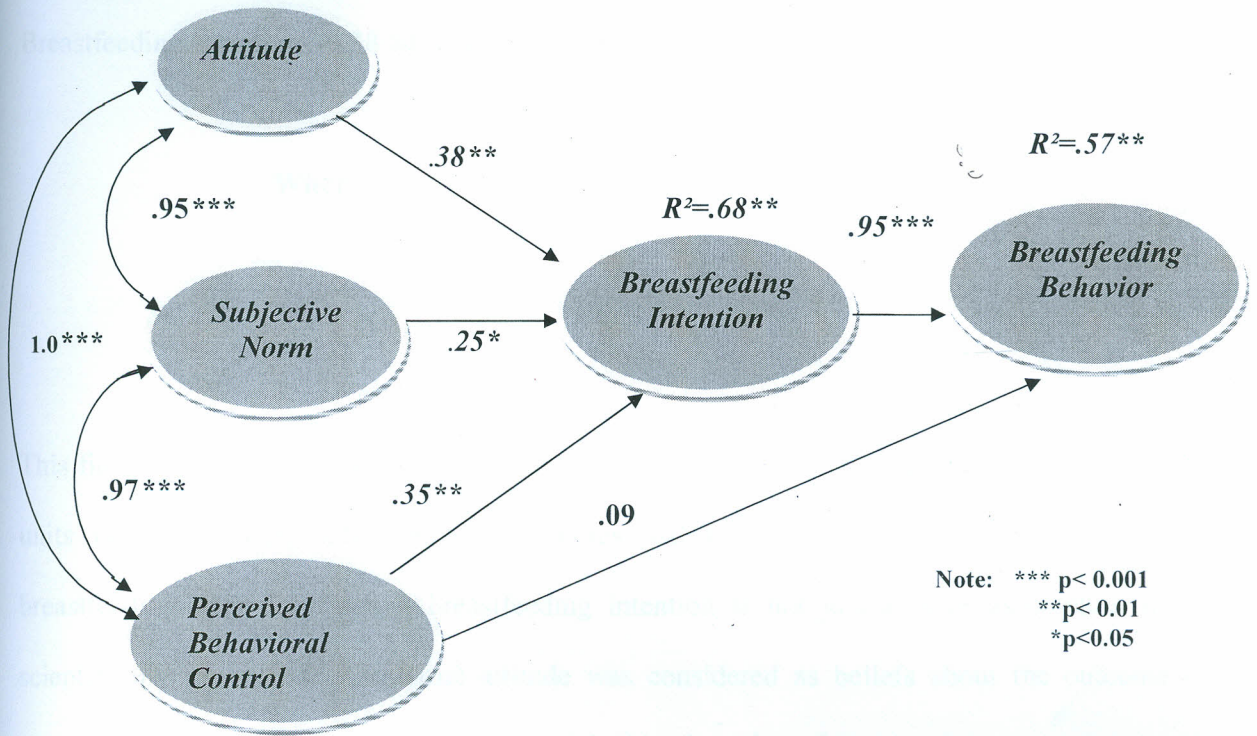


Figure 4.3 Default Model

#### 4.6.3.1 The Predictive Power of Variables in Default Model

Predictive power of a theory refers to its ability to generate testable forecasts. A theory with strong predictive power is highly valued, because the forecasts can often support the validity of the theory. The concept of predictive power involves a known phenomenon that is retrospectively explained by a given theory which allows a prospective test of theoretical understanding. In this study, the predictive power of maternal attitude, subjective norm and perceived behavioral control in extrapolating breastfeeding behavior was tested. The following sections focus on the predictive power of the three variables influencing breastfeeding behavior through breastfeeding intention and explain the total variance of these predictors.

#### 4.6.3.2 Predictive Power of Maternal Attitude on Breastfeeding Intention

The predictive power of maternal attitude for breastfeeding intention is given by:

Breastfeeding Intention= 0.38 attitude + residuals

$$Y = 0.38 X + e$$

**Where:**

Y= Intention

X= Attitude

e= Residual

This finding indicates that a unit change in maternal attitude is associated with a change of 0.38 units in breastfeeding intention. This denotes that the influence of maternal attitude on breastfeeding behavior through breastfeeding intention is not just a mere assumption but a scientifically proved fact. Maternal attitude was considered as beliefs about the outcome of practising optimal breastfeeding behavior weighed by the value of the outcome.

#### 4.6.3.3 Predictive Power of Subjective Norm and Social Behavior on Breastfeeding Intention

The predictive power of subjective for breastfeeding intention is given by:

Breastfeeding Intention= 0.25 subjective norm+ residuals

$$Y = 0.25 X + e$$

**Where:**

Y= Intention

X= Subjective norm

e= residual

This finding indicates that a unit change in subjective norm is associated with a change of 0.25 units in breastfeeding intention. This denotes that the influence of subjective norm on

breastfeeding behavior through breastfeeding intention is not just a mere assumption but a scientifically proved fact. Subjective norm is the belief a mother has that key people may influence her to optimally/sub-optimally breastfeed, weighed by the level of compliance to such an influence.

#### 4.6.3.4 Predictive Power of Perceived Behavioral Control on Breastfeeding Intention

Lastly the predictive power of perceived behavioral control for breastfeeding intention is given by;

Breastfeeding Intention= 0.35 perceived behavioral control + residuals

$$Y = 0.35 X + e$$

Where:

Y= Intention

X= perceived behavioral control

e= residual

This finding indicates that a unit change in perceived behavioral control is associated with a change of 0.35 units in breastfeeding intention. This signifies that the influence of perceived behavioral control on breastfeeding intention is not just a mere postulation but a logically proved detail. Perceived behavioral control is the belief a mother has that certain factors may facilitate or impede optimal breastfeeding weighed by the perceived control power she has on these factors.

Standardized regression weights in (Figure 4.3), indicates that attitude was a better predictor of intention ( $\beta=0.38$ ,  $p<0.01$ ,  $n=230$ ), followed perceived behavioral control ( $\beta=0.35$ ,  $p<0.01$ ,  $n=230$ ) then subjective norm ( $\beta=0.25$ ,  $p<0.05$ ,  $n=230$ ) as perceived behavioral was indirectly and directly predicted. The indirect measure of perceived behavioral control was significant ( $\beta=0.35$ ,  $p<0.01$ ,  $n=230$ ) while direct perceived behavioral control was insignificant ( $\beta=0.09$ ,  $p>0.05$ ,

n=230). Intention in turn strongly predicted breastfeeding behaviour ( $\beta=0.95$   $p<0.001$ ,  $n=230$ ). The correlation between attitude and perceived behavioral control was statistically significant ( $\beta=1.00$   $p<0.001$ ,  $n=230$ ). This was followed by the correlation between subjective norm and perceived behavioral control ( $\beta=.97$   $p<0.001$ ,  $n=230$ ) which was statistically significant. The correlation between attitude and subjective norm was also statistically significant ( $\beta=.95$   $p<0.001$ ,  $n=230$ ). Intention predictors (attitude, subjective norm and perceived behavioral control) put together accounted for 68 percent of the variance on breastfeeding intention. Breastfeeding intention and direct perceived behavioral control put together accounted for 57 percent of variance on breastfeeding behavior.

The default model was estimated with five latent variables and paths. The addition of a new path improved the model fit. As shown in (Table 4.11) the default model's chi-square value was not significant at 0.05 significance level ( $\chi^2=156$ ,  $p=0.12$ ) and all other indices indicated that the default model was acceptable (RMSEA=.090, CFI=0.95, CMIN/DF= 2.21, TLI=0.93) and Hoelter's critical N= 230. The default model explained 68 percent of variance for breastfeeding intention and 57 percent of variance for breastfeeding behavior.

**Table 4.11: Fit Indices of Default Model**

Fit Indices	Recommended fit Measures	Default Measures
RMSEA	0.09 or less is better	0.09
CFI	above 0.9 is good fit	0.95
CMIN/DF	between 2-3	2.21
TLI	>0.8 is good fit	0.93
Hoelter's Critical N	>200 adequate	230
p	> 0.10 good fit	0.12

**Note:** RMSEA=Root mean square residual; CFI=Comparative fit index; CMIN/DF=Chi-square/degree of freedom; TLI= Tucker-Lewis Index;  $\chi^2$ = Chi-square

After assessing the three model outputs, a post hoc test titled sequential chi-square difference tests was conducted to provide successive fit information (Anderson & Gerbing, 1988). Chi-square difference test also called the likelihood ratio test. It is computed as the difference of model chi-square for the larger model (usually the default model) and a nested model (usually the result of model trimming), for one degree of freedom. Like measures the significance of the difference between two SEM models for the same data, in which one model is a nested subset of the other. Specifically, chi-square difference is the standard test statistic for comparing a default model with the original one. If chi-square difference shows no significant difference between the unconstrained original model and the nested constrained default model, then the modification is accepted on parsimony grounds. There was a significant difference in chi-square value between the default model and independent model which has the smallest possible chi-square value for any structural model at the 0.05 significance level (Table 4.12). This indicates that the independent model and saturated model are poorly fitted compared to the default model. There is no significant difference at 0.05 significance level between independent model and default model ( $p>0.05$ ,  $\chi^2=0.95$ ). Therefore the default model is more parsimonious than the independence model.



**Table 4.12:** Fit Indices of Structural Models

Fit	Saturated Model	Independence Model	Default Model
RMSEA (0.09 or less is better)	1.2	1.0	0.09
CFI (above 0.9 is good fit)	0.56	0.45	0.95
CMIN/DF (between 2-3)	3.44	2.33	2.21
TLI (>0.5 is good fit)	4.3	1.2	0.93
Hoelter's Critical N (>200 adequate)	230	230	230
<i>p &gt; 0.10 good fit</i>	0.04	0.65	0.12

**Note:** RMSEA=Root mean square residual; CFI=Comparative fit index; CMIN/DF=Chi-square/degree of freedom; TLI= Tucker-Lewis Index

#### 4.7 Intervening Variables

The association between the main variables specified in the structural equation models could be influenced by other factors not considered during this study. These factors are stated as “residuals” in the measurement model. The influences of these factors were taken care off during model identification. The model was identified and intervening factors group were “residual 1” and “residual 2”. “Residual 1” controlled all supplementary factors that may have influenced breastfeeding intention while “residual 2” controlled extra factors that may have influenced breastfeeding behavior. The p-values <0.01 indicated that critical ratios for the variance estimates of all “residual” factors were not obtained by chance. This meant that for these “residual 1” and “residual 2” factors whose p-values were <0.01, the variance estimates were considerably different from zero indicating prospective influence on the main corresponding dependent variables in the model.

## CHAPTER FIVE

### DISCUSSION

#### 5.1 Introduction

This chapter discusses the results of the study. The discussion is organized by objectives. The chapter also compares the findings obtained with those from previous studies. Finally the limitations of the study are highlighted.

#### 5.2 Qualitative Phase

This qualitative phase was a necessary step for gaining understanding of the specific psychosocial factors influencing breastfeeding behaviour of mothers in Kakamega Central District. Investigation of significant beliefs among the study population was an important strength of the study.

The focus group findings supported the operational definitions of the concepts in the Theory of Planned Behavior; attitude, social norm, and perceived behavioral control as determinants of breastfeeding behavior. These results were more suggestive than affirmative, limiting the opportunity for quantitative comparisons, but significant in development of an instrument for quantitative phase.

##### 5.2.1 Influence of Attitudinal Beliefs on Breastfeeding Behavior

Mothers place a very high value on the emotional and health benefits of breastfeeding behavior. 'Enhancing bondage between the baby and mother' and 'boosting immunity' were the most reported advantages of breastfeeding. Similar findings have been reported in past studies examining reasons associated with breastfeeding (Hill & Aldag, 1996; Arora *et al.*, 2000; Cernadas *et al.*, 2003). The focus group discussion data in Table 4.1 illustrates that

embarrassment of breastfeeding is multifaceted, relating to the need to protect one's modesty and avoiding the act of being seen to behave indecently by the public. This complex issue with respect to 'embarrassment of breastfeeding' is also consistent with other studies including the moral requirement that breastfeeding should be conducted with discretion or without exposure of the breast (Dettwyler, 2001; Sheeshka *et al.*, 2001; Pugliese, 2000; Moran, 1999). The importance of this finding in the context of this study methodology was its identification as the least important of the attitudinal factors influencing mothers' intention of initiation, exclusivity and continuation of breastfeeding.

### **5.2.2 Influence of Normative Beliefs on Breastfeeding Behavior**

Normative influences emerged from mother's partner, family members, health professionals/traditional birth attendants, society and environment. The influences from these significant referents did show to affect the mother's decision on initiation, exclusivity and continuation of breastfeeding. This qualitative analysis interpreted health professionals/traditional birth attendants as being the major source of support regarding mother's breastfeeding intention. This finding is consistent with other studies (Freed *et al.*, 1993; Tarkka *et al.*, 1998; Shepherd *et al.*, 2000) that described nurses to be significant social referents approving breastfeeding. This has essential implications for clinical practice of health professionals/traditional birth attendants, who should capitalize on this finding to encourage mothers to initiate breastfeeding, maintain exclusive breastfeeding for recommended periods and to offer continued support for those who wish to continue. The analysis revealed mother's partner, family members and society to be the disapproving social referents towards optimal breastfeeding. Consequently, breastfeeding educational strategies should therefore be designed to emphasize importance of optimal breastfeeding behavior to inform this disapproving social referent. Since it maybe the mixed perception on breastfeeding they possess that constitutes them

appreciates sub optimal breastfeeding rather than optimal breastfeeding (Naanyu, 2008). Fostering strong combined relationships amongst mother's partner, family members, health professionals/traditional birth attendants, society and environment is fundamental to support a breastfeeding mother.

Creating a supportive environment in society was an important aspect of breastfeeding behavior because a mother's perception of the disapproval of people in society may serve as a hindering circumstance to the practice of optimal breastfeeding behavior. For example a campaign in New York was successful in improving community's perception of breastfeeding in public places (Baggot, 2008). After 3 months of displaying the billboard that read 'babies are born to be breastfed', the proportion of mothers with positive attitudes towards breastfeeding in public increased significantly. Promotion as such may be needed to rebuild breastfeeding as a cultural norm in society.

### **5.2.3 Influence of Control Beliefs on Breastfeeding Behavior**

The qualitative analysis reflects that self confidence was a barrier to initiation of breastfeeding within the first hour of birth. This may reveal that a mother of low self esteem does not consider her self-confidence to achieve her intention to initiate breastfeeding as being important. The timing of the mother's return to work is a significant issue influencing exclusive breastfeeding for six months. Therefore, it is important to scrutinize labour policy to incorporate the improvement and expansion of initiatives for maternity leave. Furthermore to encourage employers to sustain breastfeeding after returning to work and to train mothers on how to store, prepare and feed expressed breast milk (Galtry, 2003).

In summary, this qualitative phase revealed the belief structures of optimal breastfeeding behaviour amongst breastfeeding mothers of Kakamega Central District. The understanding of these significant beliefs provides a foundation for quantitative research on breastfeeding behavior to confirm these belief structures.

### **5.3 Quantitative Phase**

In this quantitative phase goodness of fit of a default model, and the predictive power of attitude, subjective norm, perceived behavioral control on breastfeeding behavior is discussed.

#### **5.3.1 Predictability of the Constructs within the Theory of Planned Behavior (TPB) Model**

The current study confirms applicability of the TPB to breastfeeding behavior among breastfeeding mothers of Kakamega Central District by providing evidence of a statistically significant correlation between breastfeeding intentions. This is further confirmed by having a significant proportion of the variance in intention explained by the 3 theoretical constructs.

This study adapted the Theory of Planned behavior by Ajzen, (1991) that assumes behavior is located along a continuum from complete volitional to no volitional control. Based on current influence literature, a breastfeeding model with four paths was proposed. Using data obtained from the study respondents, the hypothesized paths were tested with a structural equation modeling approach. Structural equation modelling was chosen for this study because of it identifies causal relationships among hypothesized constructs, rather than simple associations. After the measurement model was derived, the hypothetical model specifying the relationships among breastfeeding intention constructs was investigated. The findings of the analysis suggest that the default model is better than the independent model. Therefore, the independent model is rejected and the default model is accepted as the best model.

The goodness of fit of the modified model was tested by comparing its fit indices with the four most acceptable indices and the global indices (Appendix, 8) used to measure the overall model fit. The statistics comparison made with the saturated model and independent model indicated that the default model passed the goodness of fit test by providing a good fit to the data  $\{\chi^2=156, p<0.001, TLI=0.93, CFI=0.95, RMSEA=0.090, \text{Hoelter's Critical N (0.01)=230}\}$ . This indicated the model's predictability on breastfeeding behavior to be in existence. In Figure 4.3 maternal attitude, subjective norm and perceived behavioral control accounted for 95 percent of variance on breastfeeding behavior although demographic characteristics were held constant and this was outstanding. This evidence indicates the model in Figure 4.3 to be more parsimonious besides being a statistically confirmed approach which should be utilized by breastfeeding promoters.

### **5.3.2 Relationship between Maternal Attitude and Breastfeeding Behavior**

Based on the study analysis, maternal attitude was a dominant predictor of breastfeeding intention ( $\beta=0.38, p<0.01, n=230$ ). This implies that respondents believed practicing breastfeeding behavior will be beneficial to them and their infants. Maternal attitude plays a crucial role in determining breastfeeding intention that leads to actual breastfeeding behavior. Mother's appreciation of breastfeeding and perceived benefits of breastfeeding are the details that increase the favourable attitude towards optimal breastfeeding intention. By emphasising the advantages favourable attitude towards optimal breastfeeding could be practised. And thus with favourable attitude the more likely optimal breastfeeding will be practised.

The findings of this study are consistent with those of other studies among different populations. Wambach (1997) reported positive attitude ( $\beta=.30, p<.001$ ) towards prenatal breastfeeding intention for the duration breastfeeding of four weeks postpartum. Among primiparous women, breastfeeding attitudes significantly contributed to predicting breast-feeding intention ( $R^2=0.22$ ,

$\beta=0.11$ ,  $P<.05$ ) (Kloeblen-Tarver *et al.*, 2002). Other studies have also supported maternal attitude to be a significant predictor of breastfeeding behavior (Duckett *et al.*, 1998; Avery *et al.*, 1998; Bai, 2007; Stockdale *et al.*, 2008). Recently Bai *et al.* (2010) reported a statistically significant prediction of maternal attitude ( $\beta=0.46$ ,  $P=.23$ ,  $n=78$ ) on exclusive breastfeeding for six months and explained 50.2% ( $P < .01$ ) of variance in mothers' intention.

The initial analysis of reliability and validity confirmed the rotated component factor loading for maternal attitude-1, attitude-2 and attitude-3 presented a reliability of ( $>0.7$ ). According to the rule of thumb (George & Mallery, 2003) the items did achieve the recommended acceptable reliability and validity coefficient. Thus maternal attitude remains an influential construct for breastfeeding intention across the study sample, which emphasizes the importance of education in promotion efforts particularly for public health implication. Since health professionals/traditional birth attendants and society at large have a role to continue offering support to mothers. This social support is a significant influence towards development of positive attitude on the practice of optimal breastfeeding behavior.

### **5.3.3 Relationship between Subjective Norm and Breastfeeding Behavior**

A mother's decision to optimally breastfeed is influenced by what is socially acceptable, and open to social and cultural influences. A normative influence arises from distant and close sources of social references. This study examined normative influences in relation to significant referents differing in social distance, including mother's partner, family members and health professionals/traditional birth attendants. However of particular interest in this study was the detailed analysis of mother's perception of social pressure from significant sources of referents and change in perception of these views in relation to optimal breastfeeding intention.

The views of respondent's partner, her family members, and health professionals/traditional birth attendant statistically influenced ( $\beta=0.25$ ,  $p<0.05$ ), breastfeeding intention (Figure 4.4). This analysis was dissimilar to Wambach (1997) study that reported subjective norm to have failed to meet statistical criteria for model entry. However in support of the theory prenatal breastfeeding attitudes and perceived behavioral control predicted breastfeeding intentions ( $R^2=.23$ ). Consistent with the current study Bai *et al.*, (2010) reported statistically strong prediction of subjective norm ( $\beta=0.79$ ,  $p<.01$ ,  $n=78$ ) on exclusive breastfeeding for six months and explained 50.2% ( $P < .01$ ) of variance in mothers' intention. Swanson & Power (2005) found mothers' subjective norm to be important determinants of initiation, and continuation of breastfeeding for breast and bottle feeders. Breast feeders rated their partner views as significant (mean=6.0, Standard Deviation=1.3,  $N=194$ ,  $p<0.01$ ) towards their breastfeeding intention. Other studies (Freed *et al.*, 1993; Tarkka *et al.*, 1998, Shepherd *et al.*, 2000) have supported subjective norm as a predictor of breastfeeding intention.

The initial analysis of reliability and validity confirmed the rotated component factor loading for subjective norm-1, subjective norm-2 and subjective norm-3 presented a reliability of ( $>0.7$ ). According to George & Mallery (2003) rule of thumb the items achieved the recommended acceptable reliability and validity coefficient. Thus creating more informally structured relationships amongst health professionals/traditional birth attendants, family members and mother's partner may support a breastfeeding mother to appreciate and assign more importance to intention to optimally breastfeed. Family members and mother's partner should also be involved in educational programmes to promote optimal breastfeeding so that they affirmatively support a breastfeeding mother. Since social norms formed early, structured and informative on breastfeeding education are appropriate to people close to the breastfeeding mother.



This analysis has also important implication for clinical practice of health professional/traditional birth attendants who should capitalize on this finding; to encourage mothers attending both prenatal and post-natal clinics to initiate breastfeeding within the first hour of birth; to offer continued support for those who wish to maintain exclusive breastfeeding for recommended periods and continue breastfeeding through the first year.

### **5.3.4 Relationship between Perceived Behavioral Control and Breastfeeding Behavior**

The indirect prediction of perceived behavioral control on breastfeeding behavior was statistically significant ( $\beta=0.35$ ,  $p<0.01$ ), however the direct prediction of perceived behavioral control on breastfeeding behavior presented a less significant relationship ( $\beta=.09$ ,  $p>0.05$ ). Ajzen's (2001) contended that the direct link may only be apparent when perceived behavioural control closely parallels actual control. This study speculates that perceived behavioural control did not correspond to actual control in this group of mothers, for whom the sense of breastfeeding control only exerted its effect more indirectly through breastfeeding intentions. The indirect measure of perceived behavioral control is promising because it shows that though mothers have other obstacles to breastfeeding intention, they are more confident in their ability to practice this behavior. When a mother has a higher sense of self-efficacy regarding breastfeeding, she will react more positively when problems arise, and persist when confronted with those problems (Blyth *et al.*, 2002). Therefore, a significant indirect perceived behavioral control score on breastfeeding behavior should be associated with lower problem severity perceptions in the practice of optimal breastfeeding (i.e. a positive reaction towards breastfeeding problems). However, such relationship was not supported by the findings of (Gross, 2008). Since in the study there was not enough variance in problem perceptions to allow detection of a relationship between prenatal PBC and problem perceptions.

Previous research has reported positive relationship between indirect perceived behavioral control and prenatal breastfeeding intention for four weeks postpartum (Wambach, 1997). In a baseline study of adolescent a high perceived behavioral control regarding breastfeeding was presented (Gross, 2008). This was promising since it shows that even though the participants were primiparous, they had confidence in their ability to breastfeed. Dodgson *et al.*, (2003) evaluated cross-cultural application of Theory of Planned Behavior and all hypothesized paths in the perceived control mediated model were significant; explained variance was 0.40 for perceived control and 0.36 for breastfeeding duration.

The initial analysis of reliability and validity confirmed the rotated component factor loading for all perceived behavioral control did achieve the recommended acceptable reliability and validity coefficient except for perceived behavioral control-1, validity coefficient that presented questionable measure. Though perceived behavioral control-1 presented a questionable validity it was considered for validity since its scale was unidimensional.

Therefore a higher perceived behavioral control score in the indirect measure should be associated with lower problem severity perceptions in practice of breastfeeding behavior (positive reaction towards breastfeeding problems). The conceptualization and measurement of perceived behavioral control in terms of confidence, and perceived ease or difficulty of performing the behavior may contribute to the difference in findings between indirect and direct perceived behavioral control (Wambach, 1997).

Perceived behavioral control was the belief the mother held over certain factors (work, health status, breastfeeding knowledge, culture, furthering education and career) which may facilitate or impede her practice of optimal breastfeeding. Currently in Kenya, younger mothers have access

to more education opportunities' consequential in higher possibilities for work outside the home resulting to limited time to optimally breastfeed (Naanyu, 2008). An analysis on the mean duration of breastfeeding in Africa, noted that women with seven or more years of education report shorter duration of breastfeeding than those with none (Witwer, 1993). Like other African women, Kenyan women are increasingly joining the labor force and experiencing changing gender relations, thus inadequate focus on practice of optimal breastfeeding (Cubins, 1991).

This challenges breastfeeding promoters particularly health professionals/traditional birth attendants in their role of protecting mother's confidence (expectancy to succeed) in breastfeeding with the objective that mother's confidence presides over control factors. Current breastfeeding instructions provided at maternal child health clinics lack the motivational power associated with balancing control factors and expectancy for success (Bai *et al.*, 2010). To support working mothers' breastfeeding friendly policies and facilities ought to be designed at work places. This incorporates maternity leaves, work shifts, breastfeeding rooms and breastfeeding pumping break. In support of mothers advancing their career, institutions of learning should also initiate baby care centres equipped with breastfeeding rooms and nannies to take care of the infants while the mothers' study. Generally creation of a supportive environment and boosting a breastfeeding mother's confidence is a key for supporting her to overcome breastfeeding barriers.

#### **5.4 Limitations and Challenges**

Respondents' contributions of demographic, cultural and economic factors were not established but controlled during the analysis, although there were inferences that these factors would have considerably varied. Studies have shown that age, economic and education status are powerful predictors of health related behaviour just like psychosocial factors (Johansson & Anderson,

1998; Johansson *et al.*, 1997). The contribution of these factors may have been established by comparing the models fitness indices across age, economic and education categories. Although the analysis of breastfeeding behavior in each of the four postnatal clinic and factors would have been conducted by comparing model fitness indices, conversely sample size could not allow for smaller clustering of participants. Since the minimum requirement for structural equation modeling should be a sample size not less than 200 respondents (Loehlin, 1992).

The study acknowledges that the 'you' part was not included in the study. This study was based on recall of information whereby inaccuracies would have arisen due to the state mind of the respondents during the interview. Due to limited resources of time, money and human labor the study was narrowed to breastfeeding mothers of Kakamega Central district with a child aged one year and less, either attending postnatal or home based clinic. The researcher found limited Kenyan based literature on behavioral theories, thus relying on information from international journals with literature from developed countries.

## CHAPTER SIX

### 6.0 CONCLUSION AND RECOMMENDATIONS

#### 6.1 Introduction

This chapter highlights the key findings of the study. This study concludes and recommends actions relevant to the findings. The conclusions are in line with the objectives within breastfeeding behavior. Recommendations are for the health professionals, policy makers and scholars who may want to conduct further research.

#### 6.2 Conclusion

This study investigated psychosocial factors influencing breastfeeding behavior of mothers attending postnatal clinics and thereafter the Theory of Planned Behavior applied to breastfeeding predicts mother's breastfeeding behavior through breastfeeding intention. Findings indicate that the Theory of Planned Behavior model in breastfeeding fitted data acceptably well ( $\chi^2=156$ ,  $df=72$ ,  $\chi^2/df =2.21$ ,  $p=0.12$ ,  $CFI=0.95$ ,  $TLI= 0.93$ ,  $RMSEA=0.09$ , *Hoelter's Critical N for 0.01=230*) (Figure 4.3) and the model explained an acceptable percentage of variance (57 percent) for breastfeeding behavior. This study has therefore generated a useful behaviour change model to be utilized for promoting breastfeeding behavior.

The model developed presented predictive power of maternal attitude to be the most significant ( $\beta=0.38$ ,  $p<0.01$ ,  $n=230$ ) psychosocial factor that influenced breastfeeding behavior of mother attending four maternal child health clinics at Kakamega Central District, through breastfeeding intention. This is an important public health implication which emphasizes the importance of continuous education in breastfeeding promotion efforts amongst mothers attending maternal child health. Furthermore health professionals/traditional birth attendants and society at large

have a role to continue offering social support which is a significant influence towards development of positive attitude on the practice of optimal breastfeeding behavior.

Perceived behavioral control was the second significant predictor of breastfeeding behavior through breastfeeding intention ( $\beta=0.35$ ,  $p<0.01$ ,  $n=230$ ). Basically creation of a supportive environment and boosting a breastfeeding mother's confidence is key in supporting her to overcome breastfeeding barriers. This study challenges those providing breastfeeding instruction specifically health professional to consider their role in protecting mother's confidence in breastfeeding so that mother's confidence presides over control factors.

The predictive power of subjective norm towards optimal breastfeeding behavior through breastfeeding intention was also significant ( $\beta=0.25$ ,  $p<0.05$ ,  $n=230$ ) in the model. This implies that the influences of significant referents are important to a mother's breastfeeding intention. Thus family members and mother's partner besides health professionals/traditional birth attendants should also be involved in educational programmes of optimal breastfeeding so that they affirmatively support a breastfeeding mother. Given that social norms formed early, structured and informative on breastfeeding education are appropriate to people close to the breastfeeding mother.

This study has recognized attitude, subjective norm and perceived behavioral control as motivational components through breastfeeding intention that should be focused on when designing programs to uphold breastfeeding behavior of mothers. The use of theoretical frameworks that incorporate these psychosocial components might facilitate the increase of rates of initiation, exclusivity and continuation of breastfeeding. It is now essential for health

professionals to modify the approach of promoting breastfeeding behavior in the maternal and child health clinics.

### **6.3 Recommendations**

This study calls upon policy makers, employers, health professionals/traditional birth attendants, family members and society to promote optimal breastfeeding behavior amongst mothers. The recommendations of this study include:

1. Encouraging breastfeeding promoters particularly health professionals and traditional birth attendants to adopt the use of a conceptual framework that encompasses the four assumptions incorporated in the modified model as a convenient guide when designing materials to promote optimal breastfeeding. This modified model presented acceptable fit indices and explained a satisfactory variance in breastfeeding behavior.
2. Emphasizing the need of health professional/traditional birth attendants to continue providing satisfactory breastfeeding awareness to mothers to facilitate development and upholding of positive attitude towards optimal breastfeeding behavior that remains a dominant predictor in this study. This can be attained by the Ministry of Health and Sanitation allocating more resources that can facilitate promotion of breastfeeding behavior through seminars and workshops that incorporate breastfeeding mother not just only the health professionals.
3. Involvement of significant people (mother's partner and family members) to the mother in educational programmes of optimal breastfeeding during prenatal and postnatal clinics to highlight the comprehension of supporting a breastfeeding mother. Since mothers attempting to optimally breastfeed often fail as they have to comply with social expectations. Therefore it is necessary to reduce social pressures/subjective norm of sub-optimal breastfeeding.

4. Policy makers, health professional/traditional birth attendants, employers, family members and society at large should reduce barriers of optimal breastfeeding to increase a mother self-efficacy on optimal breastfeeding. Since a mother with more self-efficacy on breastfeeding behavior will react more positively and persist to overcome confronted breastfeeding barriers.

### **6.3 Suggestions for Further Research**

1. The level of influence of demographic, economic and social characteristics on; maternal attitude, subjective norm and perceived behavioral control for this study population was only reported but not established. Further research is needed to ascertain the magnitude of influence since it could be an essential academic contribution.
2. The study can be replicated for breastfeeding behavior of mothers in a different setting using the same methodology for it to be grounded. Postulating that different settings may have diverse findings on breastfeeding behavior.



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