

## **Risk Factors Associated with Adverse Pregnancy Outcomes Among Women Who Were Attending Postnatal Services at Thika Level Five Hospital Kiambu County, Kenya**

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### **ABSTRACT**

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*Stillbirths, preterm deliveries and neonatal deaths are examples of adverse pregnancy and infant outcomes that continue to be a global public health problem. The World Health Organization (WHO), States, and non-governmental organizations (NGO) have invested a lot of time, money, and resources into promoting the benefits of safe pregnancy and delivery. Despite efforts to promote healthy pregnancy, delivery, and maternal mortality, these numbers continue to be high. Pregnant mothers and their fetus are put in danger due to several risk issues. Despite the limited data from Thika level five hospitals, concern about poor pregnancy outcomes have been growing. The study's goal was to pinpoint the risk factors connected to pregnancy outcomes at Thika level five hospitals. An analytical cross-sectional study was carried out on women between the age of 15 and 49 who were attending postnatal services at Thika level 5. The study used qualitative and quantitative data collection techniques. 80 samples were chosen out of 100 population. A Convenience sampling and purposive sampling were used. structured questionnaires were used at the health care facility. The mean age was 15 to 19. Most of them were married almost both living in urban and rural areas. According to education, most have reached college education but unfortunately, 55% of them are unemployed and 51% of them are living in temporally house, most generating income below 5000. Most of them live 5km away from the nearest health facility. 55% of them attended antenatal and its essential services in public facilities, motivated by self-motives. 47% of the respondents delivered via spontaneous vertex delivery followed by 37% of caesarean sections. Most complications were obstructed labor and most adverse outcomes were preterm labor. The most common pre-existing medical conditions were anemia and HIV/AIDS. The most common adverse pregnancy outcome found in this study included PPH, Obstructed labor, APH, neonatal mortality, preterm babies, and stillbirth and low birth weight babies. Inferential statistics including correlation and bivariate analysis were used. The regression coefficients results portrays that socio-demographics characteristics score 0.983 with standard error of 0.361. Pre-existing medical conditions scored 0.897 with a standard error of 0.323. Intrapartum care scored 0.920 with a standard error of 0.240. Chi-square analysis for all the variables was calculated at 47.633 and the p value less than 0.05 ( $p < 0.05$ ). Correlation study indicates a positive significance between pregnancy risk and socio-demographics, pre-existing medical conditions with a value of 0.934. The researcher concludes that numerous pregnancy problems arise from lack of medical knowledge and financial structure coming from the women who are pregnant. Concluding to the fact that when it comes to risk in pregnancy there are a number of factors that come into play. This ranges from ages of the women to pre-existing medical conditions when it comes to childbirth. Overall it is highly important for women who are prone to have complications in child labor to*

*have medical checkups constantly so that any complications can be dealt within a reasonable timeframe and with little consequences to the women or their unborn babies.*

**Key Words:** *Adverse Pregnancy Outcomes, Risk Factors, Postnatal Services*

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## **1.0 Introduction**

### **1.1. Background of the study**

In the research paper titled "Determinants of Adverse Pregnancy Outcome Among Mothers who Gave Birth from January 1 to December 31, 2015," written by Eyosias Yeshialem, Mulumebet Abera, and Emmanuel Tesfay, the term "pregnancy outcomes" refers to the event that occurs in the life of a neonate from the time of conception until the first week of life (Yeshialem *et al.* As the transition from a fetus submerged from amniotic fluid to existence outside the womb is seldom is not a simple trip as there are in some instances issues towards the mother or the kid (baby), it is important to be prepared for the possibility of these complications. Pregnancy risk refers to the conditions and circumstances that, during pregnancy, put both the mother's and the unborn child's life at hazard. According to the findings of Dr. Hind Abdurrahman Maawiya's research on the comparison between consultation room deliveries and home births in Lamu County, factors connected to unfavorable physiological conditions were found in both settings. (Maawiya & Obsgyn, 2018) He states that pregnant women, their families, and health care providers all seek a normal physiological condition with some little interferences, positive caring, and perinatal outcomes may considerably rise, a healthy new born and mother. This is something that can be achieved with some tiny interferences, positive caring, and perinatal outcomes.

A few of the challenges of physiological condition include, but are not limited to, low birth weight, preterm delivery, craniate growth restriction (FGR), intrauterine craniate death (IUFD), no heritable abnormalities, perinatal mortality, and maternal death (Maawiya&Obsgyn, 2018). In addition, the vast majority of pregnant women would rather give birth in an environment that is beneficial to both the woman's and the newborn's psychological and physiological well-being. Most medical professionals agree that giving birth in a hospital or other specialized facility is the best option for pregnant women who want to improve their chances of having a healthy baby, get treatment quickly, and have few difficulties. According to Maawiya & Obsgyn (2018), many pregnant women and their families choose to have the baby at home since it is less stressful and assistance is more easily accessible. In addition, Dr. Hind Abdurrahman Maawiya indicates that additional risk factors for infertility may include factors such as kid space, poverty, age (35 years), the quality of antepartum care, lack of maternal nutrition, terrible body mass (index>25), constants smoking habit as well as a high alcohol consumption during pregnancy stages (Maawiya &Obsgyn, 2018). These factors can all contribute to an impaired ability to conceive.

According to the results of a research that was carried out by Selemani and colleagues, the age of a woman as well as protracted circumstances may be able to have an impact on the birth rate that is related with rural places. Ifakara Health in Tanzania is a televised health program that shows

that parity, legal status, maternal age, race, smoking, birth weight, labor complications, prenatal care, previous poor birth outcomes (stillbirths, baby deaths, maternal morbidity like H.I.V and protozoal infection infection), pre-existing medical conditions, and socioeconomic factors are all associated to high mortality rate (Selemani *et al.*, 2014). The country of Tanzania served as the location for this investigation. The World Health Organization (WHO) released the findings of a study in 2014 indicating that there is a substantial maternal death rate. According to the findings of the study (WHO, 2014), more than 800 women lose their lives as a result of complications after childbirth. In addition to this, the research goes one step further by pointing out that women who dwell in rural areas have a greater chance of dying from a maternal ailment than women who reside in urban areas do. This is something that is not the case for women who stay in urban areas. According to the findings of the research, about 287,000 women lost their lives in 2010 due to the poor conditions in which they gave birth and the limited resources that were available to them (WHO, 2014).

Following this, many developing nations have begun to improve the environment of home delivery as well as maternity wards in an effort to lower the incidence of maternal mortality (Kebede, 2018). The United Nations' Report on the Millennium Development Goals for 2013 identifies the reduction of child mortality as the fourth aim of the initiative. The nations with the highest rates of child mortality are driving the downward trend in Sub-Saharan Africa and other regions: 45 of the 66 countries with the highest rates of child mortality have increased their reduction rates over the past decade. Nevertheless, there is a significant need for a considerably faster pace of change (WHO, 2018). "In Kenya, the present Maternal Mortality magnitude relation (MMR) of 362 maternal deaths per 100,000 live births, and also the miscarriage rate of 23 deaths per 1000 live births, are way below the target of 147 maternal mortality per 100,000 live births and 12 stillbirths per 1000 live births respectively" (Lang'at *et al.*, 2019). This information may be found in the piece of writing that was produced by Lang'at *et al.*, (2019). In addition, evidence suggests that a disproportionately large number of the physiological conditions that might arise during childbirth are due to factors such as hemorrhage (which can lead to death), abortion methods that are not authorized, protracted labor, mother delivery, etc.

According to an article that was released by the WHO, there are 21 million women between the ages of 15 and 19 years old who get pregnant, and close to 12 million of those women give birth. These women reside in developing areas. As a result, there are around 777,000 births that result from teenage mothers. It has been calculated that there has been a reduction in nasality of 11.6% during the course of the previous 20 years (Adolescent physiological condition, 2020). Even if a mother's own physical health may not be the only factor that determines whether or not her child will have bad physical health outcomes, it is still a truth that a mother's own health has an effect on the long-term well-being of both her and her child. According to the findings of the study conducted by Willunda *et al.*, stillbirths and abortions are two common types of undesirable outcomes of pregnancy that have a major influence on the health of the mother. According to Wilunda *et al.*'s (2015) estimates, 75 million out of the world's projected 210 million pregnancies end in either an abortion or a stillbirth. The vast majority of abortions that are dangerous are carried out in less developed countries that have lax abortion laws. According to Wilunda *et al.* (2015), the rate of unsafe abortion in industrialized nations was 12% in 2008 (per 1000 women aged 15 to 44 years). This figure was derived from data collected in 2008. The incidence of unsafe abortions is estimated to be 54 per 1000 women in Uganda, where the rate is regarded to be the highest in all of East Africa (36 per 1000 women of reproductive age). Unsafe abortions are the cause of up

to twenty percent of all maternal fatalities in East Africa, in addition to a number of other severe issues and impairments that women experience.

It is also obvious on a worldwide scale as it indicates in a research that, about 15 million babies are born prematurely, with the case of it being that between 1 in 10 of newborns died soon after delivery. This is a case that is between 1 in 10 of all baby deaths. According to Yeshialem *et al.* (2017), the fact that there is also a big instance of countless other people experiencing physical, neurological, or mental illness over the course of their life contributes significantly to the burden that this places on the families that are left behind as well as their community. A shocking of only 4 million out of 136 million babies born each year survive their first birthday, while a tragic of 4 million die within the first month of their lives. In Wado *et al.*, study of “Pregnancy and Childbirth in Teen Mothers”, it confirms that teenage pregnancy acts as a universal problem ,as early or unintended teenage pregnancy comes with a host of problems ranging from negative health, educational, social, or economic constraints thus making it a high global health improving agenda. In less developed countries, there are an estimated 21 million pregnancies each year among youthful girls between the ages of 15 to 19, which is sad as more than half of them are unplanned, which results in illegitimate births, planned abortion, unsafe abortion and caesarean section (Mito *et al.*, 2019).

For example, young girls account for about 17% of post-abortion cases in Kenya and 45% of serious abortion difficulties are treated in health facilities (Mito *et al.*, 2019). Childbirth is dangerous for young woman as the research points out that pregnancy-related disease are the second main leading cause of death among pregnant girls in developing countries (Mito *et al.* 2019). In Ruguru study, she points out that initiation of antenatal care was associated with childbirth, as there where a host of women seeking childbirth services over at Kiambu Level 5 Hospital, which saw the inclusion of pregnant women who needed a safe and caring place to stay in order to reduce pregnancy-related problems (Ruguru, 2019). It is often advisable for baseline assessment of all pregnant women be performed at first exposure. As a lack or late of starting prenatal care can lead to poor birth outcomes. In developed nations, less than half of pregnant women visit a prenatal care clinic at least once while in underdeveloped countries, less than half of pregnant women see the WHO recommended unfocussed antenatal visits (Ruguru, 2019).

## **1.2 Statement of the problem**

Compared with the rest of the world, sub-Saharan Africa has disproportionately large maternal and perinatal mortality and morbidity rates. WHO published an article where they state that, a woman's risk of not surviving during childbirth is about 1 in 3700 for many developing countries such as the case of sub-Saharan Africa countries. For almost 98 % population, there is approximately, from 2.7 to 4 million miscarriages and about 3 million infant deaths annually worldwide. While in fact in the year of 2015, there were around 830 women worldwide that died daily from difficulties that occurred during pregnancy and childbirth. With approximately 2.5 million stillbirths were recorded worldwide and about 2.5 million infant deaths, with many of them occurring in less developed countries while almost half of them occurred in the postpartum period. According to a WHO study, bleeding, high blood pressure, including sepsis, are the main causes for more than 50% of all maternal deaths worldwide (Maawiya&Obsgyn, 2018).

Adolescent and teenage pregnancy is another factor that contributes to poor pregnancy outcomes. Every year, around 16 million youths aging between 15 and 19 delivered children around the

world, with 95% of the births taking place in underdeveloped nations. In Kenya's coast province, the prevalence of teenage pregnancies is the third highest, with 20.8 percent of teenagers having started childbearing. As complications of childbirth and pregnancy acting as the major cause of death among teenagers in low and middle-income countries; perinatal fatalities are 50 percent more likely among teenage moms than among mothers aged 20 to 29 years. As a result, there is a rising awareness that teen pregnancies is lead to a variety of negative consequence, such as instant death to both the teen and the child and also to high rate of sickness, and mass of the child is very low. Thus, a cycle of illness and low income is common (Maawiya & Obsgyn, 2018).

The current maternal mortality rate (MMR) in Kenya is around 360 per 100,000 live births. This is a significant decrease from the number in 1990, which was at 530 per 100,000 live births. There won't be much of an improvement from the aim set for the fifth millennium. Especially considering that, as part of Goal 3 of the Sustainable Development Goals, the worldwide MMR is supposed to be lower than 70 cases per 100,000 live births. According to the United Nations Fund for Population Activities (UNFPA), 98.7% of maternal fatalities are attributable to 15 of Kenya's 47 counties. Among these counties, Lamu County ranks seventh with a maternal mortality rate of 676 per 100,000 live births. In these counties, a recurrent problem is a lack of consistency in the provision of medical treatment. Statistics from the Kenya Demographic Health Survey (KDHS) gathered in Lamu County indicate that around 96% of pregnant women typically have at least one trained person to take care of them throughout their pregnancy. At least 62% of patients received treatment from at least four gynecologists; in addition, around 47% of patients benefitted from the help of well-trained nurses; and ultimately, 43.9% of patients gave birth in a medical center. According to the findings of a baseline survey conducted by AMREF, the most important hurdles to accessing healthcare are found to be limited transportation facilities and poor road infrastructure. According to Maawiya & Obsgyn (2018), the closest health facility of any type is around 5 kilometers away, and there are only about 6 kilometers of paved roads that make traveling by car easier when it is raining.

Many pregnant women in Kenya do not receive gynecological care, which is an important part of care (Chorongu *et al.*, 2017). According to the 2014 KDHS report, shows that some counties do not only have high maternal mortality rates but also antenatal care visits as low as 37%. In addition to low antenatal care, pregnant women also begin antenatal care later after certain pregnancy-related complications have developed. Delays in antenatal care lead to pregnancy-related complications that should have been identified earlier and appropriately managed (Ruguru, 2019). According to a study conducted in TharakaNthi County, only 26% of respondents went therefore, the basic observations that should be made during the first trimester of pregnancy are lacking, leading to a higher risk of pregnancy.

According to the study results, women who came to antenatal care late and had a bad pregnancy outcome were recorded at a Kiambu level hospital. Of the 11,003 live births in 2018, tier 5 hospitals in Kiambu recorded 10 maternal deaths. When an audit of difficult births occurred, it was noted that 40% of these deceased girls were late for prenatal appointments for early antenatal care (Chorongu *et al.*, 2017). Few articles has been published on risk factors associated with adverse pregnancy outcome at Thika level five Hospital but Joyce kenyanya in his research declared that low birth weight is an alarming sign of pregnancy outcome at Thika level five Hospital with a prevalence of 86%. This prevalence is significantly higher than the Kenyan, s average of low birth weight. That problem is explained by inefficiency of health care facility to handle the issue of low birth weight at Thika level five Hospital (Joyce Osebe, 2022). In this regard, the objective of this

study is to classify the domains of risk variables associated with poor birth outcomes in Kiambu (Thika Level 5 Hospital, General Kago).

### **1.3 Study Objectives**

#### **1.3.1 Broad Objective**

To identify risk factors related to adverse pregnancy outcome among women attending postnatal services at Thika level five hospital, Thika-Sub-County, Kiambu County, Kenya.

#### **1.3.2: Specific Objective**

The objectives in detail will be:

- 1) To identify the socio-demographics and economic factors influencing pregnancy outcomes among women attending postnatal services at Thika level five hospitals, Thika sub-county, Kiambu County, Kenya.
- 2) To determine pre-existing medical conditions associated with pregnancy outcomes among women attending postnatal services at Thika level five Hospital, Thika-Sub County and Kiambu Kenya.
- 3) To evaluate obstetric emergency aspects related with hostile pregnancy consequences among women of attending postnatal services at Thika level five Hospital, Thika-Sub-County, and Kiambu, Kenya.
- 4) To determine which characteristics affect women attending postnatal services in the health care setting at Thika level five hospitals, Thika-Sub-County, Kiambu, Kenya.

## **2.0 Literature Review**

### **2.1 Theoretical Literature review**

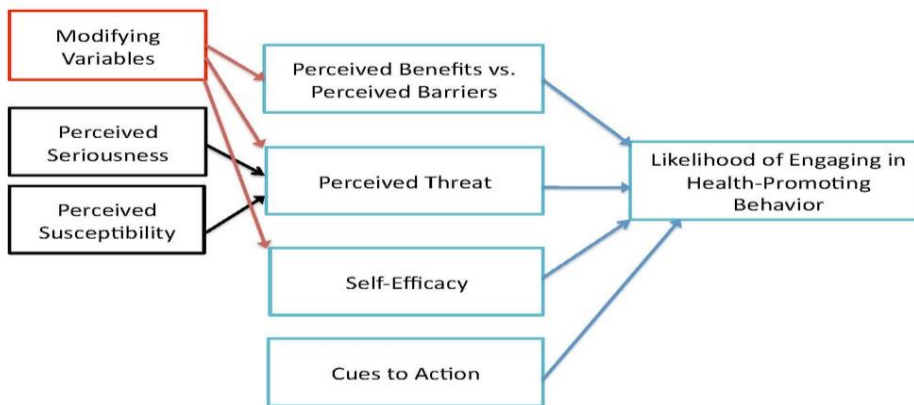
#### **2.1.1: Health Belief Model (HBM)**

McNally *et al* believe that it is important to have a health belief model as it shows the health status of a being as well as their behaviors and extent they will need for health care services. The Health Belief Model was established in the 1950s by psychologists for the US Public Health Service and currently universally known and used concepts in contemporary health behavioral research (McNally *et al.*, 1991). The health belief model according to Rosenstock, in 1974 hypothesized that if people believed in a common health problem, then there would be a need for immediate action to find a cure for the health problem (Rosenstock, 1974).

##### **2.2.1.a). History**

In the 1950s, social psychologists at the University of Pennsylvania (Kegeles, and Leventhal) established that Health Belief Model as one of the first theories of health behavior (Rosenstock, 1974). As according to Kowalski and Czajka they stated that the Health Belief Model is been used to utilize a prediction of a number of health-related behaviors this includes screening for and diagnosis of asymptomatic disorders and vaccination. Recently, the model was used to gain a better understanding of patients' responses to disease signs and symptoms, adherence to medical treatments, lifestyle behaviors changes and chronic disease behaviors. This may lead to require long-term behavior maintenance, as well as the addition of initial health behavior changes. Even as late as 1988, modifications to the model were made to reflect new psychology studies on self-role efficacy's in decision-making and health behavior (Kowalski & Czajka, 2010).

## The Health Belief Model



**Table 1: Health Belief Model**

Source: (Siddiqui *et al.*, 2016).

### 2.1.2.B: Social Cognitive Theory (SCT).

According to Donsbach's social cognitive theory, which is utilized in psychology, education, and the media, some parts of a person's acquisition of information may be directly tied to how they see others in the context of social interactions, experiences, and external media influences. This theory was developed by Donsbach. Bandura went on to expand on the premise of this theory by including it into his social learning theory (Donsbach, 2008).

Evans *et al.*, states that whenever people see a model performing health-related activities and get to witness the effects of these actions first hand. They secretly store the sequence of events in their mind and use this stored information in order to influence later behavior. As observing a pattern can also cause the observer to reproduce a previously learned behavior. In simple words, people don't learn new behaviors but they simply trying ones that they have already seen whether they and succeeding or failing; as it is a fundamental aspect in human behavior. The observers usually choose on whether to replicate the modeled behavior depending on whether the individual(s) performing the action were rewarded or punished, with also the result of the action (Evans *et al.*, 1989).

The model acts as a role model for a diverse range of people across a range of contexts. The social cognition hypothesis of learning is a school of thought that asserts that humans learn through seeing the actions of others. These learned behaviors have the capacity to form an individual's personality. While social psychologists believe that the environment in which an individual grows has an effect on behavior, they also believe that the individual (and thus cognition) is critical, (Evans *et al.*, 1989). Individuals acquire knowledge through observation, with environment, behavior, and perception all playing a role in the reciprocal triad interactions that drive progress. Every observed behavior has the potential to change one's state of mind (perception). Similarly, a person's upbringing can influence their later behavior. For example, a caregiver's mental state (also known as cognition) affects the environment, in which their child is raised (Donsbach, 2008).

### **2.1.3.: The Trans theoretical Model (Stages of Change)**

In the late 1970s, Prochaska and Di-Clemente produced the Trans theoretical Model, which is now often referred to as the Stages of Change Model. Both of these models were influential in the field of organizational change management. They did this as a direct result of the findings of their study, which compared the experiences of smokers who were able to quit smoking on their own and those who need more assistance. This was done with the goal of gaining an understanding of the elements that lead to some people being able to stop smoking on their own while others were unable to do so (Prochaska & Di-Clemente, 1983). The authors of the study cited in the previous sentence conducted the study.

As one alternative explanation of the term puts it, the Trans theoretical Paradigm (TTM) is a more purposeful transformation paradigm that aims to focus on the decision making of a person. The Trans theoretical Model (TTM) is predicated on the assumption that people do not make rapid changes to their conduct, nor do they change their behavior in reaction to external inputs such as threats. Changes in behavior, on the other hand, start in the domain of habits and are defined by a process that is more continuous and cyclical. Behavioral change begins in the realm of habits. According to Prochaska and Di-Clemente *et al.* (1983), the TTM is a model and not a theory since it is possible to include other theories and behavioral constructs at different stages of the model depending on how advantageous they are. Consequently, the TTM is a model. According to the TTM, the phases of transition that individuals go through include the following: anticipating, pondering, planning, acting on, and maintaining the transformation. When trying to modify behaviors that are relevant to one's health via the use of stages of change, initial termination is not a component of the idea, and as a result, it is utilized less often. According to Prochaska and Di-Clemente's research from 1983, at each stage of change, a new intervention method proved to be the most successful in terms of bringing individuals ahead and eventually through the model. This was done in order for them to perceive more maintainable and optimum levels of behavior.

The following phases are included in the steps; however the list is not exhaustive:

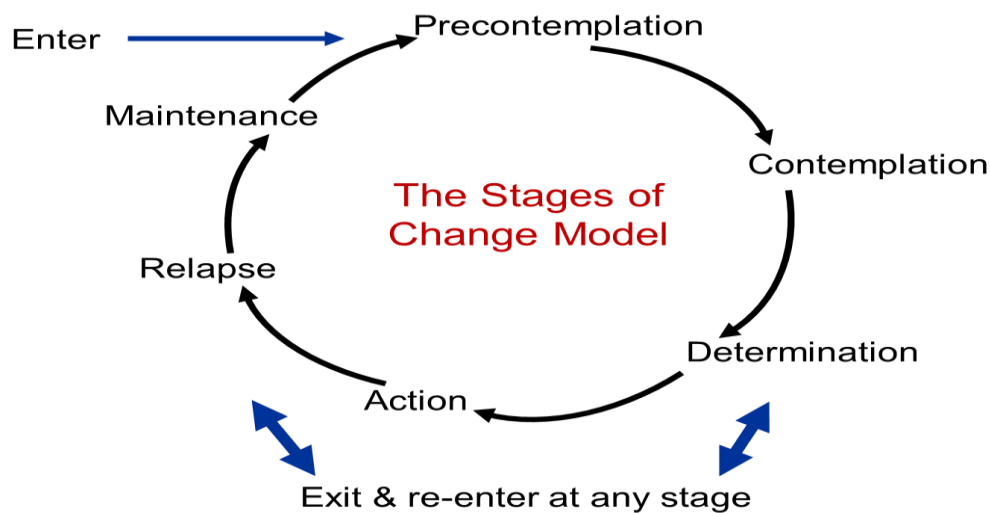
**The Pre-contemplation:** At this point in time, individuals do not have a plan of action for the very near future, which is defined as occurring within the next six months. People often fail to recognize that their actions are harmful to themselves or others, or that their actions have adverse impacts on them. When individuals are at this stage of the change process, they often minimize the positive aspects of altering their behavior while simultaneously exaggerating the negative aspects of doing so. **The Contemplation:** People who have reached this step feel hopeful about their possibilities of successfully adopting a good habit in the not-too-distant future, which is defined as within the next six months. The Contemplation is the third stage in the Change Model. People are aware that their behaviors may be detrimental, and they examine the advantages and downsides of adjusting their behavior in a way that is both more comprehensive and more practical. In other words, people are aware that their actions may be harmful, and they are considering how changing their behavior may affect them. Even when individuals are aware of this, there is a possibility that they may continue to be resistant to altering the patterns they have created.

**The Planning and Effort (or Determination):**

People are prepared to take action within the next thirty days, given the current state of affairs. People often begin the process of adopting a healthier lifestyle by making a few relatively basic alterations to their patterns of behavior. This is done in the aim of having a healthy lifestyle. People who are now in this phase have modified at least one part of their behavior over the last six months

and are currently working toward the modification of other aspects of their conduct. People are able to achieve this objective by either modifying habits that are harmful to themselves or by acquiring new behaviors that are helpful to themselves. Both of these strategies are viable options. Those who have made it to this stage have been working on changing their habits for a significant amount of time (more than six months), and they want to keep doing so in the future. During this stage, the person or people make a concerted effort to keep oneself from falling back to a previous level of functioning.

People who have reached this point are certain that they will not return to their previous harmful behaviors and have no desire to do so. Due to the rarity of this stage and the inclination of individuals to stay in the maintenance phase, it is commonly overlooked in health promotion programs.



**Table 2: Planning and Effort**

**Source: (Prochaska & DiClemente, 1983).**

Through cognitive, emotional, and evaluative processes, individuals move through stages of change. There are 10 recognized change processes, with some being more suitable than others or a given stage of change. These processes create solutions that help individuals implement and sustain change.

The Enhancing Consciousness:

Heightening awareness of beneficial conduct, emotional enthusiasm, whether positive or negative, toward the health habit provides significant relief.

Self-Evaluation: Recognizing the critical role of healthy conduct in becoming who they wish to be.

The Environmental reappraisal:

A social reconsideration in order to recognize the impact of one's negative actions on others, social emancipation is a term that refers to the environmental chances that exist to demonstrate that society supports appropriate behavior. Self-Liberation - The determination to alter one's behavior on the basis of the notion that healthy behavior is achievable. It is vital to foster supportive relationships that promote desired change.

Action and Counter-conditioning:

This is the process of exchanging desirable behaviors and attitudes for unfavorable ones.

Maintenance and Reinforcement:

The Management is the concept of rewarding positive conduct while decreasing the benefits associated with poor behavior. This can be accomplished with the help of rewarding good healthy behaviors while discouraging poor health behaviors as well as helping the person understand the danger they put themselves in through the poor health decision.

From the theoretical literature review, Health Belief Model will be suitable for my research and hence this model will be frequently used with regard to this thesis.

## **2.2. Empirical literature review**

### **2.2.1: Global perspective**

According to Jebet, (2012) research there is a universal estimate of 42% maternal deaths that are related to pregnancy, with an approximately 535,900 which lead to maternal deaths (Jebet, 2012). Maawiya states in a different piece of work that, according to a comprehensive study conducted by the WHO, around 73% of all maternal fatalities are caused owing, most typically, by hypertension, hemorrhage, and sepsis occurrences. According to the findings of a validated cross-sectional research carried out in India, hemorrhage, hypertensive disorders, and sepsis as a reason for death are in fact among the most common causes of maternal mortality during pregnancy (Maawiya & Obsgyn, 2018).

According to major risk factors that contribute to maternal mortality, such as teenage pregnancy, these women are at a greater risk of having labor obstructed than needing assisted episiotomy. This can without a doubt lead to a higher risk of bleeding postpartum and severe sepsis cases (Magadi *et al.*, 2004). Another major risk factor that contributes to maternal mortality is smoking during pregnancy. According to Yogev *et al.*'s (2010) research, having a child at an older age is associated with an increased risk of adverse outcomes for both the mother and the unborn child. Other risk factors include hypertensive illnesses, such as preeclampsia, which affects roughly 8,370,000 women per year around the globe (Parish, 2007). Although the UK is a developed nation, it still suffers from about 6% mortality death due to difficulties during pregnancies (Villar *et al.*, 2006). Preeclampsia appears to be one of the primary reasons behind maternal, fetal, and neonatal mortality rate in the UK. Preeclampsia seems to be one of the leading reasons behind maternal, fetal, and neonatal mortality rate in the UK.

Other exogenous variables, such as the possible presence of maternal HIV infection, may also contribute to low CD4 levels. According to Maawiya & Obsgyn (2018), a number of factors, including maternal neurological impairment, malaria, and trauma, may potentially contribute to unfavorable mother outcomes. According to Wachira, the presence of ABO infection in developing countries acts as a higher cause of maternal death despite the many efforts to reduce its presence. This is because there is a 60% of premature births that occur in Africa, while an average of 12% of babies are born prematurely compared with 9% in high-income countries. In addition, there is a 60% of premature births that occur in Africa, while an average of 12% of babies are born prematurely in developing countries. According to Wachira and colleagues (2022), preterm delivery is the biggest direct cause of infant mortality, accounting for nearly 35 percent of the 3.1 million fatalities that occur globally each year.

Birth that is premature They believe that 9.6% of all births are premature, which is 12.9 million births. Of this burden, 85% will be in Africa and Asia, where 10.9 million preterm births have been documented in the literature (Beck *et al.*, 2010). According to Stacy Becks *et al.*, they estimate that 9.6% of all births are preterm, or 12.9 million births. Genetic factors, infertility therapies, behavioral variables, and socioeconomic factors are among the reasons of preterm birth, according to a research on preterm birth rates throughout the globe (Beck *et al.*, 2010). Preterm birth and PMR may have a link with one another. As having a low birth weight is one of the top causes of bad birth outcomes around the globe, occurring in 15.5% of each year's 20 million births (WHO, UNICEF, 2010), it is important to be aware of the risks associated with this condition. Joyce believes that preterm delivery, low birth weight, and small size for gestational age are the three primary factors responsible for around 60-90% of all baby fatalities worldwide. According to Jebet (2012), birth-related neonatal death is also a significant contributor to infant mortality. According to the globe Health Organization (WHO), there are about 2.6 million stillbirths across the globe each year, with 7178 fatalities every day (WHO, 2015). The bulk of these deaths occur in sub-Saharan Africa.

Stillbirth is responsible for a significant proportion of the total number of perinatal fatalities that occur in the United States, despite the fact that its root cause is not fully understood (Lawn *et al.*, 2009). According to an article by Dellicour, which explores risk perceptions and attitudes towards miscarriage and birth defects in the rural western part of Kenya, it points out that the birth defect statistics (adverse pregnancy outcomes) estimate is high, As about 3 million children worldwide die each year from birth defects, and another 3 million in addition to those with birth defects who are not properly cared for at birth will be born with birth defects can last a lifetime (Dellicour *et al.*, 2013).

### **2.2.2: African context.**

Out of 830 maternal fatalities worldwide, 530 occur in Sub-Saharan Africa, making African women 33 times likeable to experience a maternal death (Maawiya & Obsgyn, 2018). According to a study conducted in Tanzania, preeclampsia, postpartum Hemorrhage, anemia and Sepsis are Common causes of maternal fatalities. Another study by Jebet found that endemic diseases like malaria, HIV/AIDS, and tuberculosis, micronutrient deficiencies like Iron and folic acid, malnutrition, childbirth complications, inadequate antenatal and prenatal care, and financial constraints are common causes of maternal morbidity and mortality. She also cites in the UNICEF, that there is a high lifetime risk of maternal death at 1/176 in impoverished countries and a startling 1/800 in industrialized nations (Jebet, 2012). Preterm birth occurs in about 60% of African women and it is a global issue because it is significantly increases neonatal mortality.

Adverse births outcomes are still common in Sub-Sahara Africa (Wachira, 2022). According to a Rwandan's study, having an ANC of more three was linked to a lower probability of having an LBW or premature baby. According to reports, preterm birth rates are 10 percent in Rwanda and Low birth weight rates are 7 percent and 13 percent in East Africa, respectively (Akintije, 2020). It has been reported that within the last 12 weeks of pregnancy, 900,000 newborns in Sub-Saharan Africa are stillborn (WHO, 2010). According to a study conducted in Nigeria, teenage pregnancy and low Socioeconomic level have a risk factor for anemia (33%), low birth Weight (18%), preeclampsia (12%), preterm labor (11%), and Stillbirth at 3% (Maawiya & Obsgyn, 2018). In this study they conducted in Rariedo District Nyanza province Western Kenya they noted that poor health seeking behavior and poor access to hospitals is associated with miscarriages which is an

adverse pregnancy outcome. Nevertheless ,regional estimates miscarriages and stillbirths prevalence stand at 12.2% and 3.3% per pregnancy respectively(Dellicour *et al.*, 2013).

### **2.2.3: Kenyan situation.**

The risk of a Kenyan woman dying in childbirth is 1 in 35 years (UNFPA, 2006). A study that looked at the relationship between poverty and maternal poverty outcomes was conducted in Nairobi, the capital city of Kenya. The study found that poverty increases the likelihood of such outcomes for reasons such as having to work difficult jobs while pregnant women experience intimate partner violence and are treated unfavorably by service providers (Izugbara&Ngilangwa, 2010). According to the findings of a research that was carried out in Kilifili by Weiner *et al.* (2003), complications during birth such as hemorrhage, premature rupture of membranes (PROM), and blockage of labor are all associated with an elevated risk of maternal and newborn death.

Studies from the district Keiyo in Kenya have shown to possess a number of risk factors that can be attributed to poor obstetric outcomes in the region. These risk factors include a low education level, unemployment, being a single mother, having previous medical problems, having an obstetric emergency, having a cesarean section, having a vacuum delivery, and having an insufficient number of staff members. This was done by a research that was undertaken at New Teaching and Referral Hospital. The study found that poor education, untrained midwives, favorable medical history, and patients with preeclampsia were all strongly associated with higher rates of maternal death. According to Maawiya&Obsgyn (2018), teenage pregnancies are rather prevalent in Kenya. These pregnancies are related with worse pregnancy outcomes, such as premature birth.

At the conclusion of the study, the Kenya Population Health Service reported a reduction in the under-5 mortality rate from 74/1000 to 52/1000 live births. This reduction referred to asphyxia at birth, neonatal sepsis, and neonatal sepsis, respiratory failure, and hypothermia are the main causes of neonatal morbidity, mortality rate. According to Olack *et al.*'s research from 2021, the top cause of infant death in Migori County, which is located in Western Kenya, are all circumstances that may be avoided.

According to the KDHS (2014), the newborn death rate in Kenya is 52 per 1000, whereas the rate of infant mortality in the United States is 20.9 per 100. It is estimated that Kenya has 193,000 babies that are preterm each year, with 13,300 of those births being very early (KDHS, 2014). According to one research (Olack *et al.*, 2021) conducted on the subject, the primary causes of premature mortality and low birth weight were determined to be asphyxia at delivery, respiratory failure, newborn infection, and hypothermia.

During the newborn era, having a meticulous computed tomography performed may lead to the identification of possible risks, which can then help minimize the incidence of asphyxia and respiratory failure, which can lead to the avoidance of all of the adverse consequences that cause mortality and death. All of this, however, may be prevented by thorough assessment and the use of sterile methods during labor. Chorioamnionitis is the leading cause of neonatal sepsis in preterm children. In Kenya, the incidence of low birth weight, which is directly associated to preterm delivery, is 8%, while in the central area where Nairobi and Kiambu are located, the rate is 8.9% (KDHS, 2014). According to Jebet (2012), there are 23 stillbirths for every 1,000 live births in Kenya, and the majority of them are recent stillbirths. According to the World Health Organization's 2009 statistics, Kenya has the 42nd highest stillbirth rate out of all 193 nations in the world.

According to the findings of a research project that was carried out at the Mbagathi Hospital in Kenya (Ongeso *et al.*, n.d.). Variables connected to the fetus include prematurity, fetal distress following PROM, and intrauterine growth restriction (IUGR). It is essential to carry out this study in order to identify possible risk factors as well as risk factors that can be modified in order to prevent these outcomes or to enable early enough diagnosis and intervention interventions in order to prevent progression, which can ultimately lead to neonatal death, and maternal mortality, which is the most serious consequence of pregnancy, remain high in Kenya. Both of these outcomes are a result of the fact that the country has a high birthrate. Although these findings are a global issue, many of the studies mentioned above have shown that they are common in Africa, especially in the sub-Saharan region, to which Kenya belongs. In addition, Kenya reports a high rate of these strikingly enhanced pregnancy outcomes. The current status of adverse pregnancy outcomes was specifically reviewed in this study at fifth-tier thika (general Kago) hospitals in Kiambu County. This will provide a limited view of the problem in Kenya, but can be used for extrapolation purpose.

#### **2.2.4: Kiambu Context**

According to the study done in Kiambu county referral hospital by Nderitu they reported that Preterm deliveries in 6.4% of the patients, post-partum hemorrhage in about 8% of the participants as well as puerperal sepsis occurred in about 8.8% of the participants including mean birth weight of their livebirths being at 2.9kg. This study focused on comparing adolescence pregnancy and delivery against non adolescent pregnancy and thus however did not express the exact prevalence of the outcomes of the pregnancy that this study intends to portray (Nderitu, 2015).

#### **2.3 Critical Review Gaps**

As previously mentioned regarding the types of adverse pregnancy outcomes stillbirths worldwide is still a staggering 2.5 million (WHO, 2006) a third of them happening in Africa and Kenya records 23 livebirths per 1000 livebirths making Kenya ranked 42<sup>nd</sup> out of 193 countries with highest stillbirth rate(WHO, UNICEF, 2010, p. 2).

As before discussed infant mortality rate in Kenya is 52 per 1000 (KDHS, 2014) and prematurity births standing at 193000 births annually which is an adverse pregnancy and a major contributor to the high rate 20.9 per 100 of infant mortality (Wachira, 2022) which is a huge concern and worth investigating into. The rate of infant mortality worldwide in comparison to Kenya stands at 2.5 million (Jebet, 2012). Maternal mortality is a devastating reality and worldwide the number hits 830 maternal mortality on a daily basis about 530 of them happening in sub-Saharan Africa and Kenya 360/100000, 10 cases reported in Kiambu (Maawiya & Obsgyn, 2018) which is still a cause for concern which needs further investigating and hence proper measures can be put in place to prevent and therefore reduce the numbers.

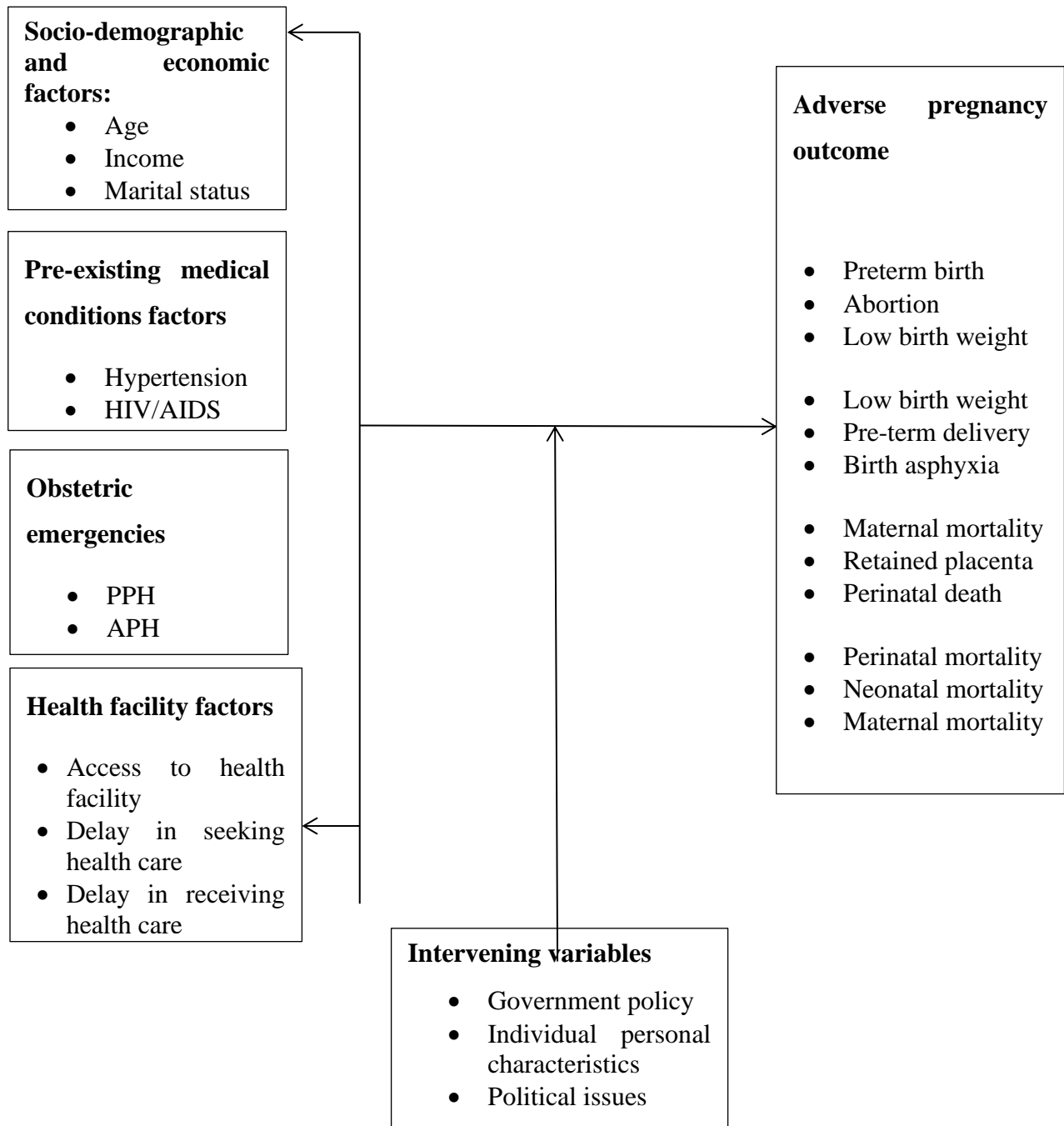
Pregnancy with preexisting conditions has been known risk factor to adverse pregnancy outcomes as an example preeclampsia which affects 8370000 women worldwide (Paredes *et al.*, 2005) and in Kenya there is also a considerable amount of women with preeclampsia which is a leading cause of pregnancy loss or preterm delivery that can result in prematurity of the infant which estimated on a global estimate of 12 million (Maawiya & Obsgyn, 2018) in which 85% was reported to be in Africa and due to its tendency to lead to perinatal mortality as a fatal complication it needs further digging into in order to tackle this.

#### **2.4 Conceptual framework.**

The fate of a woman's pregnancy is determined by a number of factors. These factors may be inter-linked and contribute to poor pregnancy outcomes which are ultimately reflected in indicators such as stillbirth, maternal mortality, neonatal mortality, and perinatal mortality. Others factors such as affordability of health facility spending lead to other factors such as delays in seeking care which are influenced by independent variables ,demographics factors, social and economic. The health of mother and baby can be affected by delayed menstruations. Pre-existing medical conditions and obstetric emergencies contribute to poor pregnancy outcomes because they endanger the lives of both mother and baby. The delivery and quality of health care in a health facility has also a significant impact on pregnancy outcomes (Jebet,2012). The relationship between the variables is shown in the chart below.

**Independent variables**

**Dependent**



**3.0 Research Methodology**

This research is descriptive as it highlights the participant's experiences and perspectives on how socio-demographic, socioeconomic, lifestyle, pre-existing medical conditions and health systems influences outcomes pregnancy for mothers giving birth at Thika Level 5 Hospital. The main focus of this study is quantifiable. However, some qualitative approaches were used to gain a better understanding and possibly enable a better and more insightful interpretation of the results from

the quantitative study. In Kiambu County, Thika Sub-District Fifth Hospital the venue I conducted my research. As many of the patients that were emitted into the care of the facility. According to the statements in the research performed by Kimani in the article “Determinants of mother-to-child HIV transmission performed at level 5 hospitals in Thika”, it is said that there are 364 healthcare facilities in Kiambu. These health facilities include public and private hospitals (Kimani, 2018). However, there are four tertiary hospitals in Gatunda North Juja, Kiambu and Limuru wards and three tier 4 hospitals in Gatunda South, Kiambu and kikuyu. In addition, there are 54 primary-level dispensaries and 20 secondary-level medical centers. Kiambu County has 169 private clinics, five nursing homes, 36 health stations, and 17 mission hospitals listed in private facilities. A typical year for tier 5 hospitals in Thika has 2,000 inpatients and 350,000 outpatients.

The hospital provides comprehensive obstetric services and prenatal care and serves as the county referral center. This survey also took place in the postpartum clinic. This study focused on pregnant women who attended comprehensive antenatal, obstetric and postpartum care services at THIKA Level Five Hospital. According to Comprehensive Care Clinic (CCC) (2020), THIKA Level 5 Hospital, there are 400 pregnancy outcomes for mothers visiting all health care/obstetrics and postpartum care departments. Since Thika Hospital serves as the county's primary referral facility and receives the majority of referrals from the county (700 per month), it was purposefully chosen. This is a good example of a good representation of the sample and close to generalizing the results to a larger real population. Therefore selected 80 pregnant mothers, nurses took a list of pregnant mothers who met the criteria discussed above.

The data was collected from the sample population that was available and voluntarily, which was deemed sufficient for the qualitative analysis and scale of this study by using Judgment (or Purposive) sampling and Convenience sampling technique to select sample size respondents as the limited attendees of pregnancy medical care were hard to reach. This is why the Thika's list consisted of pregnant mothers who gave birth at level 5 of Thika and were compiled from records of postpartum, antenatal care, delivery, postpartum care and registers so that mothers can be identified and tracked future mother.

The sample size for this study was calculated according to Yamane's formula (Adam, 2020). Making the Assumption that the population size of women receiving care in Thika level five hospitals was 100. This represented a proportion of 95% of confidence level. The non-response rate constituted a margin of error of 5%. Given that:

$N =$  population

$n =$  sample size obtained from the target population

$e =$ margin error; Yamane formula will determine by:

$$n = \frac{N}{1 + Ne^2}$$

Therefore,  $n = \frac{100}{1 + 100 \cdot 0,05^2}$

$$n = 80$$

Thus, the sample size  $n$  was calculated to 80 for women with adverse pregnancy outcomes receiving care at level 5 hospitals in Thika. The questionnaire used for this study was composed of closed-ended questions and open-ended questions and was addressed to the women with adverse pregnancy outcomes receiving care at level 5 hospitals in Thika. The data

will be collected After editing and coding into tables, the research analyzed the data from respondents and generated the results. Therefore, quantitative data was analyzed using descriptive analysis with the help of Statistical Packages for Social Sciences (SPSS Version 28) and it included percentage, frequencies, means and standard deviations. Qualitative data was analyzed in relation to the study themes based on the objectives and reported in narrative form. A regression analysis was done to really examine the effect/influence and relationship of independents variables on dependent variable by focusing to partnership between participant's experiences and perspectives on how socio-demographic, socioeconomic, lifestyle, pre-existing medical conditions and health systems influences outcomes pregnancy for mothers giving birth at Thika Level 5 Hospital. The regression was able to estimate the coefficients of the linear equation involving more independent variables which projected the value of the dependent variable and result was also tested at 95% level of confidence. Analysis of variation by chi-square method at 95% confidence level should be used. This statistic method is accustom establish correlations between the study variables and maternity outcomes, evaluation of the study hypothesis based on independent variables (i.e. socio-demographic characteristics, maternal factors and pregnancy outcomes).

Inferential statistics such as correlation and Chi-square analysis were used to analyses data and indicate the level and direction of the association of the study variables. Multiple regression Model was used to establish the relationship between the independent variables, social-demography and economic characteristics, pre-existing medical issues, obstetric emergencies, and health facility factors and the dependent variable which is risk factors related to adverse pregnancy outcome among women of reproductive age.

Multiple regression analysis done using the following model;

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Y- Dependent variable

$\beta_0$  – Constant

$\beta_1, \beta_2, \beta_3, \beta_4$ : Regression Coefficients

X1, X2, X3, X4: Independent variables

X1: Social-demography and economic characteristics,

X2: Pre-existing medical issues,

X3: Obstetric emergencies,

X4: Health facility factors,

Y: Risk factors related to adverse pregnancy outcome among women of reproductive age

$\varepsilon$  = Error

#### 4.0 Study Results

**Table 3: Correlations data**

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	Social-demography and economic characteristics	Pre-existing medical issues	Obstetric emergencies
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Social-demography and economic characteristics	Pearson Correlation	1	0.724**	-0.605**
	Sig. (2-tailed)		0.000	0.007
	N	80	80	80
Pre-existing medical issues	Pearson Correlation	0.724**	1	0.683**
	Sig. (2-tailed)	0.00		0.000
	N	50	50	50
Obstetric emergencies	Pearson Correlation	-0.605**	-0.683**	1
	Sig. (2-tailed)	0.007	0.000	
	N	80	80	80

\*Correlation is significant at the 0.05 level (2- tailed)

source: primary data

As the table above shows that there is a continuous correlation between the independent variables and the dependent variable as many of the pregnancy risks ages come from the youth or elderly woman who stems from unhygienic living conditions as well as limited finance. With the available data the research presented itself as the highest contributing risk pregnancy came from social demography as well as less economical structure. With a portion of young woman acting who are also risked with pre-conditioned medical positions, they face a higher risk of losing the unborn child. However, when it comes to looking at the type of hospitals available the majority of children passed due to infection and as well as umbilical cord strangulations. With a large portion of local income mothers as well as pre-teens, they usually face financial difficulties to be admitted into hospitals that can provide them with utmost care.

**Table 3: Regression data analysis**

	Un-standardized		Beta	Standardized	
	Coefficients			Coefficients	
	B0	Std. Error		T	Sig.
(Constant)	5.98	0.877		12.367	0.006
Social-demography and economic characteristics	0.943	0.361	0.233	10.732	0.005
Pre-existing medical issues	0.897	0.323	0.219	7.572	0.003
Obstetric emergencies	0.920	0.240	0.228	13.671	0.005
Obstetric emergencies	0.883	0.203	0.131	9.749	0.001

Source: primary data

This table points out the importance of the independent main driving forces a combination of all the independent and dependent variables. This means that each independent variable is measured on its important with the rest. This will allow the researcher to determine which independent variable is the most important.

**Table 4: Chi-Square Test**

	<b>Value</b>	<b>df.</b>	<b>Asymp. Sig. (2 sided)</b>
<b>Person Chi-Squared</b>	47.633 <sup>a</sup>	3	.000
<b>Likelihood Ratio</b>	42.449	3	.000
<b>Linear-by-linear Association</b>	4.566	1	.064
<b>N of Valid Cases</b>	397		

0 cells (0.0%) have expected counts less than 7. The minimum expected count is 43.067.

There is a positive relation between the independent variables as the Chi-Square table shows the result, when using the SPSS there is a notable of 0 cells have expected count less than 7 and the minimum expected count is 43.067. This makes sure that the sample size requirement for the chi-square test of independence is satisfied and that the researcher was able to reach a concrete correlation between pregnancy risk factors associated with different variables. As the Chi-Square test shows the researcher that the Chi-square (2) = 47.633,  $p < 0.05$ . Which goes a long way to prove that the study has significant input in understanding what affects pregnancy risk factors?

## **5.0 Conclusions and Recommendations**

### **5.1 Conclusions**

In conclusion to my findings, I find a potent to mention that most cases that arise through pregnancy issues usually come from under aged, preteens LOL as households that do not offer any luxury. A large portion of the women 90%, or faced early pregnancy issues to the fact that the incomes are low and are unable to seek medical attention at early stages, or able to have regular checkups. This therefore would lead to many women unable to notice when a pregnancy was going extreme to the wrong direction.

Are therefore come to the conclusion that with proper medical attention offered at a very cheap price as well as medical knowledge passed on to high schools this could lead to a full and pregnancy issues as people become aware and able to combat any problem that may arise.

### **5.2. Recommendations**

Social mobilization and community outreach to address issues of reproductive health through health education. Mass sensitization about reproductive health services including family planning, antenatal care, preconception care, safe obstetric care, optimum postpartum care in accordance to the safe motherhood. Women should be taught about how to prevent the risk factors that contribute to preterm, stillbirth and low birth weight as this were prevalent in this study. Mass Voluntary counseling and testing of the communities in Kenya as most respondent had HIV as pre-existing medical conditions. ARV treatment to be to all that are seropositive. Increase availability of condoms. National Government to increase availability and to reduce the price of supplements such as folic acid and iron. Transport and road work to be improved in order to be timely in health facility. Women being transferred to tertiary facilities like hospitals must be well informed of the

indications and possible treatments and outcomes /complications that are likely to happen to ensure full compliance of the patients. There is a need for concerted effort by community health officers to enlighten the community on the importance of a well-defined referral system so as to enable the timely referrals. Sensitize the women on the importance of antenatal care, family and danger signs of pregnancy.

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