THE IMPACT OF EDUCATION ON THE LIFESTYLE OF PREGNANT WOMEN: A CASE STUDY OF THE KUMASI METROPOLIS IN GHANA.

by

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DECLARATION

I declare that this thesis submitted herein is an original work I have personally undertaken under supervision except where due acknowledgement has been made in the text.

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DEDICATION

This study is dedicated to my Late father Sheikh Imam Imran Musah (Former Ashanti Regional Chief Imam) who died on the 2nd of July, 2011.

Also to Hajia Aisha Alhassan Asiedu Ampem (my mum), my siblings: Baba, Mariam, Jamil, Fati, Anyars and Tijani and to my cousin Maame Aisha.

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Lastly, as errors are found in all human endeavours, I accept full responsibility for any error of fact or interpretation in this study.

ABSTRACT

Most countries in the world including Ghana are striving to reduce maternal mortality in order to attain the millennium development goal number 5. Institutions like the United Nations Children Fund (UNICEF) believe that, ‘‘educating girls for six years or more drastically and consistently improves their prenatal care, postnatal care and childbirth survival rates’’ (www.unicef.org/mdg/maternal.html). Also the 2008 Millennium development goal report points out low literacy rate among girls as one of the major challenges in combating maternal mortality. These claims above, suggest that, education will help girls or women adopt lifestyles, which will improve maternal health and hence reduce maternal mortality. This study therefore was carried out basically to find out the impact of education on the lifestyle of 400 conveniently selected pregnant women in the Kumasi Metropolis of Ghana. The study looked at the impact of education on six lifestyles (Smoking, drinking alcohol, using a mosquito treated net, attending antenatal regularly and whether a respondent will prefer to deliver in a hospital and still seek for postnatal care after delivery). Using the Probit regression model to find the impact of education on each lifestyle question separately, it was found that, education had no or little impact on drinking alcohol and attending antenatal regularly, but had a positive significant impact on the probability that, a pregnant woman in the sampled population will use a treated Mosquito net and engage in regular physical exercises. No regression was run, to find the impact of education on smoking, hospital delivery and postnatal care, because both the educated and the uneducated answered yes throughout. The study also used the likelihood ratio test to find out whether the positive significant impact of the education parameters when it comes to regular physical exercise and the usage of a treated mosquito net varied or not and it was revealed that all the coefficients of the education variables (Basic, Senior High and Tertiary) were statistically not different in terms of their impact on treated mosquito net usage and embarking on regular physical exercises. The study recommended that, since education and income had a significant impact on the usage of mosquito treated net and embarking on regular physical exercises which are key to maternal health, it is important that, the Government of Ghana and all other stake holders institute measures towards providing mosquito treated nets to the uneducated and people with low income since they are unlikely to buy and also encourage them to embark on physical exercises regularly. The study also among its policy prescriptions, recommended that affirmative action’s that will increase the enrolment of girls in schools should be instituted since education has proven to impact on certain lifestyles that affect the survival of pregnant women.

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CHAPTER ONE

INTRODUCTION

1.0 Background of the study

According to the World Health Organization (WHO), ‘‘maternal health refers to the health of women during pregnancy, childbirth, and the postpartum period. It encompasses the health care dimensions of family planning, preconception, prenatal, and postnatal care in order to reduce maternal morbidity and mortality’’(World Health Organization, 2011). Prenatal refers to the period occurring "around the time of birth, specifically from 22 completed weeks (154 days) of gestation (the time when birth weight is normally 500 g) to 7 completed days after birth’’ (European Regional Office, World Health Organization March 1999 & January 2001) and post natal refers to the period just after a woman has given birth up to six weeks (Ghana Health service, 2008). Preconception includes all initiatives (proper diet, exercise and relaxation, medical screening e.t.c) among women of child bearing age to reduce risk factors that will affect future pregnancies (V. Ruth Bennett and Linda K. Brown, 1996). The health care that a woman receives during pregnancy, at the point of delivery, and immediately after delivery is very essential for the survival and well-being of both the mother and her child (2008 Ghana Demographic and Health Survey).

Ronsmans and Graham (2006) contend that the most dominant direct medical causes of maternal mortality are hypertensive diseases, excessive bleeding and infections whilst the indirect causes of maternal deaths according to Thaddeus and Maine (1994) are delays in seeking, reaching, and receiving care.

Maternal mortality is still a serious problem and according to the World Health Organization, ‘‘about 1000 women die from pregnancy or childbirth-related complications around the world every day’’. Also ‘‘in 2008, 358 000 women died during and following pregnancy and

childbirth. Almost all of these deaths occurred in developing countries, and most could have been prevented'' (World Health Organization, 2010).

The Government of Ghana and other institutions have recognized the importance of maternal health in curbing maternal mortality and have since established the millennium development authority to carry out the millennium development goals in which the fifth goal is to improve maternal health.

Findings from the Ghana Maternal Mortality Survey of 2008 showed a sluggish reduction in maternal deaths from 503 per 100,000 live births in 2005 to 451 per 100,000 live births in 2008, this is an average estimate for the seven-year period prior the 2008 survey. This trend is backed by institutional data which implies that maternal deaths per 100,000 live birth has reduced from 224/100,000 in 2007 to 201/100,000 in 2008, after a rise from 187/100,000 in 2004 to 197/100,000 in 2006. However, if the current situation persist, maternal mortality will reduce to only 340 per 100,000 by 2015, and it will be impossible for Ghana to meet the millennium development goal target of 185 per 100,000 by 2015 unless measures are taken to accelerate the pace of maternal health initiatives(2008 Ghana Millennium Development Goals report).

Also according to the 2008 Ghana Millennium Development Goals report, births that were aided by a health professional showed a slow progress, rising from 40% in 1988 to 59% in 2008. In the Northern region, 25% of children compared with 80% of children in the Greater Accra region are likely to be given birth in a health facility. Professional support at delivery for women in urban areas was found to be twice more possible than those in rural areas (Ministry of Health, 2008a). The information at hand showed that over 40 % of women did not give birth in a health facility because some of them thought it was not needed, others said lack of money, transportation problems, problems with accessibility to health facility, not

having information on where to go and the absence of someone to accompany them as the main reasons. Others had issues with the services rendered at the health facility including waiting time, the absence of a female doctor and unfavourable service hours (2008 Ghana Millennium Development Goals report).

According the theory of demand and production of health, the higher an individual's level of education the higher the amount of health that will be demanded and produced.

Also according to the pure consumption model of the human capital model of the demand for health by Michael Grossman, the higher an individual's level of education (formal) the higher his or her demand for health. Thus the model implies that the amount of health capital enters the utility equation as a consumption good because good health raises satisfaction. Health capital also determines the quantity of time that can be devoted to work in the market, and to the production of nonmarket goods (Duha and others 2010).

Thus according to economic theory,if Ghana wants to improve maternal health, it can increase formal education among women. That is if education improves health, then education must help people to adopt lifestyles that lead to good health.

Also most studies dealing with the relationship between health and education do not take in to account the area of specialization, be it mathematics, business, medicine e.t.c.but According to Grossman (1999) the area of specialization may have an impact on life style. This study therefore looked at the impact of education on the lifestyle of pregnant women as well as the impact of the area of specialization on lifestyle

1.1 Statement of the problem

The United Nations Children'sFund (UNICEF) has this to say in one of its attempts to reduce maternal mortality ''Educating girls for six years or more drastically and consistently improves their prenatal care, postnatal care and childbirth survival rates"(www.unicef.org/mdg/maternal.html).

Also according to the 2008 Ghana Millennium Development Goals report, one of the main challenges in attaining the maternal health target has been "Low female literacy rate, low level of women's empowerment, poor health-seeking behaviours among the poor."

That is from all these statements by the UNICEF, the 2008 Ghana Millennium Development Goals report and what economic theory postulates, it means formal level of schooling will really impact on maternal health among women and hence reduce maternal mortality.

Given the fact that the Ghanaian Government is striving to ensure that the millennium development goal number 5: Improve maternal health in order to reduce maternal mortality ratio by ¾ in 2015 is achieved, it is very important that a study is conducted to investigate what economic theory says and the claims by these institutions, to find out whether education helps women to adopt life styles that improve maternal health which will help reduce maternal mortality or otherwise. Also it is important to find out whether education alone irrespective of the area of specialization has an impact on healthy maternal life style or it is actually the programme of study (Mathematics, business, economics, nursing, medicine, physics, chemistry, general arts e.t.c) that has a significant impact on healthy maternal life style since most studies done on the relationship between education and health focused on just education and not the impact of the area of study on health or lifestyle.

1.2 Objective of the Study

The general objective of the study is to assess the impact of Education on the lifestyle of pregnant women: a case study of the Kumasi metropolis of Ghana.

The specific objectives of the study are:

- To find the impact of other factors such as age, income, employment status, parental influence, family and friends and the mass media on maternal lifestyle.
- To find out whether the programme studied or area of specialization and not only the level of education has an impact on healthy maternal lifestyle.
- To provide appropriate policy measures emanating from the study to support as to which of these factors (Formal education, area of specialization, age, income, parent's influence, family, friends and the mass media) must be given priority in the fight against maternal mortality.

1.3 Hypothesis

H_0: Education does not impact on maternal lifestyle.

H_1: Education has an impact on maternal lifestyle.

1.4 Justification of the study

Maternal health is one of the top most priorities for the United Nations, the World Health Organization, the United Nations Children Fund and most Governments and institutions around the world. As a result many attempts have been made in order to improve maternal health but it seems many countries in the world especially, Sub- Saharan African countries including Ghana might not be able to attain the millennium development goal target of improving maternal health, thereby reducing maternal mortality ratio by ¾ in 2015.

Maternal health continues to be an important priority to the Government of Ghana in its attempt to attain the millennium development goal (MDG) of improving maternal health in order to reduce maternal mortality.

This study therefore after is expected to help the government of Ghana and other stake-holders know how education as well as the area of specialization impact on lifestyles or attitudes which help in improving maternal health and hence reduce maternal mortality. That is, it will provide information on the kind of attention that should be given to education and the area of specialization in the fight against maternal mortality.

Also, the study will help us know how income, age, the mass media and other factors affect pregnant women's life style and hence maternal health, which would therefore send signals to the various institutions and other stakeholders on how to prioritize these factors in the fight against maternal mortality.

1.5 Methodology and data analysis

Solely primary data which was personally administered questionnaires were used to carry out this study. It involved the use of convenient sampling. That is, pregnant women were conveniently selected to find out information about their age, income, employment status, educational level, area of specialization e.t.c and assess them on six important lifestyle questions. The reason for using primary data was the absence of data on the kind of information needed. Quantitative and descriptive methods were used for the analysis of data and the study employed the Probit regression model as the empirical method of estimation under the quantitative method.

1.6 Scope of the study

This study was limited to only pregnant women in the Kumasi Metropolis of the Ashanti Region by looking at those who are uneducated, those with education up to the basic level, those with education up to the Senior high level, those with education up to the tertiary level as well as the area of specialization (Art, Business, Mathematics, economics, finance, medicine e.t.c) and their responses to six lifestyle questions.

Kumasi was selected because of its large population and its heterogeneous nature as well as its propinquity and familiarity to the researcher and also in terms of resource constraint.

In this study education refers to formal education.

1.7 Organization of the study

The study was organized in five chapters with each chapter having sections and subsections. Chapter one covered introduction, chapter two dealt with literature review, chapter three covered methodology, chapter four dealt with analysis of data and results and the fifth chapter dealt with summary of findings and policy recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The Economics Literature on the relationship between education and health is that education leads to good health. The past three and half decades have witnessed a whole lot of research concentrating on the relationship between education and health (Grossman, 2008). Some scholars like Mosley have argued that schooling has contributed more to the decrease in mortality than the provision of health care (Mosley, 1985).

Most of the stakeholders(UNICEF, Ghana Millennium Development Goal report 2008 and others) dealing with maternal health do contend that, the low literacy rate among women is one of the challenges they face in their attempt to improve maternal health which will reduce maternal mortality to meet the fifth Millennium development goal. Ghana is not an exception with regard to the above problem (low literacy rate among women).

This chapter therefore reviews empirical and theoretical literature on the relationship between education, health and lifestyle as well as the relationship between maternal education and healthy lifestyle.

2.1.Theoretical review

Until the early 1960s, attention was not given to the effects of education on non market outcomes such as health. The issue was that, the impacts of variables other than real income or real wealth and relative prices will operate through tastes, and economists had less to say about the formation of tastes and it took Gary S. Becker to change this line of thinking (Grossman, 2006).

Many of the economics literature try to explain the relationship between education, lifestyle and health through the productive efficiency hypothesis and the allocative efficiency hypothesis.

In the productive efficiency hypothesis, Grossman (1972a; b; 1999; 2000; 2008) developed a model in which education causes health due to a productive efficiency effect in the context of health production and the demand for health. The model involves the choosing of an optimal life cycle path of a stock of health capital and being associated with levels of gross investment in that stock and inputs in the gross investment production equation. The model looked at health both as consumption good and as an investment good. He employed a static version of his pure investment model to study the impacts of education on the demand for health and health inputs. He assumed that the total amount of time that can be devoted to market and non market production ***(h)*** is not fixed but it is a positive function of health (H) since rising health lower the time lost from these activities due to injury and illness ($\partial h/\partial H = G > 0$). He continued to say since the output of health has a finite limit of 8760 h or 365 days times 24 hours per day and if it happens that the year is the necessary period then the marginal product of health falls as Health (H) rises ($\partial^2 h/\partial H^2 = GH < 0$). He further assumed that health is produced with medical care (M) and the own time of the consumer (T):

$H = e^{ps} F(M, T)$

where S is the years of formal education completed, ***P*** the positive parameter, and F is linearly homogeneous in M and T. Education has a productive efficiency effect in the sense that an increase in the years of formal education raises the amount of health obtained from given amounts of medical care (M) and own time of the consumer (T). Since Health (H) is homogeneous of degree one in medical care (M) and own time of the consumer (T), an increase in education increases their marginal products on average.

Grossman (1999) further contends that, the area specialised in education could influence lifestyle such that a medical doctor is expected to live a healthy lifestyle as compared to somebody who specialized in arts.

Thus in the productive efficiency hypothesis, a rise in education raises the efficiency of the production mechanism in the non-market or household sector, just as increases in technology increases the efficacy of the production process in the market sector. That is a rise in the level of education increases the efficiency of health production (Grossman, 2006).

Becker (1965) in his model of the allocation of time also assumed that, increases in education (number of years of formal schooling) and knowledge capital, in general, raise efficiency in the nonmarket sector. That is a rise in education will raise efficiency in the production of non market outcomes such as health.

Considering those who see education to improve health through the allocative efficiency approach and not through a production process, Deaton (2002) contends that many economic models on health postulate that education increases an individual's ability to produce health but these models are not explicit about the processes involved. Also it has been questioned as to how education can affect the marginal products of inputs to produce health without altering the input mix (Rosenzweig and Schultz 1982). That is the allocative efficiency approach has

to do with the educated people picking an input combination that makes them produce more health than the uneducated (Grossman, 2006).

The allocative efficiency approach contends that the educated have enough knowledge about the production function than the uneducated, that is the more educated may have enough information about the deleterious effects of taking alcohol and what is a good food, they may also respond to new information or knowledge more quickly(Grossman 2008).

That is based on the allocative efficiency hypothesis; education provides the skills that increaseunderstanding. Ross and Mirowsky(1999) and Mirowsky and Ross(2003;2005) argue that schooling builds social ,analytical and cognitive skills, which are all needed to interpret, communicate and understand health matters which helps in leading a healthy life style.

Also Glewwe (1999) argues that the most important framework for knowledge gain is not directly through curricula; rather the skills gained in school facilitate the acquisition of health knowledge.

Adam Wagstaff (1986), contend that the educated individuals will have more knowledge concerning the technology needed to produce health than the uneducated and that they are better placed to assimilate information about health matters from their physician and other media than the less educated. This makes them well efficient to produce a healthy meal from a given outlay on food and to understand information concerning health hazards where ever they find themselves.

Also it is often argued that the higher educated can set long term goals and easily change their attitudes and these are needed to improve health as Pearlin and Schooler (1978), contend that good health behaviours like quitting smoking and alcohol, doing exercises etc. require long-term action and the better educated have great skills in setting long term goals. They

further say that change in behaviour is required to gain a better health status and higher educated persons control this change better because they realize more options whereas less educated people are more likely to worry about their ability to deal with change. Their coping strategies for dealing with life are not that effective.

Ross and Mirowsky (1999; 2003; 2005) say that although schooling increases health because it enhances better economic conditions, it also affects health through influencing sense of personal control, social support and lifestyle.

There has been discussions as to which of these hypotheses (allocative and production) dominate the other in the explanation of the relationship between education and health and Kenkel(1991), contends that if education increases allocative efficiency by improving health knowledge and thereby changing the choice of health inputs, then education should have a small or no direct effect on health inputs in a model that controls for health knowledge. However after conducting a study on the impact of education on smoking and drinking alcohol he finds that even though part of the impact of education on smoking and drinking alcohol is linked to health knowledge, most of the impact of education on smoking and drinking alcohol remains, even after controlling for health knowledge, meaning that allocative efficiency is not a dominant factor(Duha and others 2010).

Concerning the impact of education on maternal health specifically, Justin McCrary and Heather Royer (2006) argue that education may increase a woman's stock of knowledge concerning contraceptive technologies or good pregnancy behaviours, either because it augments her knowledge directly (i.e., educational curricula are important), or because it increases her ability to absorb and process information generally.

Anoop S. and others (2004) argue that, higher levels of education are linked to higher levels of maternal intelligence. That is education will help women have a better understanding of the rudiments of maternal care in terms prenatal care, post natal care, family planning e.t.c.

Fuchs (1982) contends that, personal lifestyle is an integral or the most important factor leading to wide variations in health.

2.1.1 The effects of lifestyles chosen by the study on pregnancy

This section now tries to look at why the lifestyles(smoking, drinking alcohol, regular physical exercises, usage of a treated mosquito net, attending antenatal regularly and seeking postnatal care and hospital delivery) chosen by the study are key when it comes to maternal health or the health of pregnant women.

Firstly, smoking in pregnancy is linked with premature birth and low birth weight, as well as higher rates of illness (colds, bronchitis, ear infections, etc.), problems with breathing and sudden infant death syndrome (SIDS). Birth deformities of the heart, brain, and face are also more seen among children born to mothers who smoke. Children whose mothers smoked during pregnancy tend to be physically smaller than children of non-smokers, and may continue to have higher levels of respiratory illness, such as asthma, for many years (Guy Slowik, 2011).

Also the negative effects of drinking alcohol during pregnancy are also alarming. As a matter of fact, drinking of alcohol during pregnancy is the leading cause of birth deformities. Drinking during pregnancy can lead to Fetal Alcohol Syndrome (FAS) which is a combination of defects that may include any combination of reduced growth (before or after birth), a small head (likely related to reduction of brain size), abnormal behavioural

development and facial defects. Fetal Alcohol Syndrome (FAS) is by far the most common non-hereditary cause of mental retardation. In addition, pregnant women who drink are more likely to experience a miscarriage. Children of mothers who drank during pregnancy are more likely to have severe behavioural problems and attention deficit disorders, even if they have no obvious physical defects (Guy Slowik, 2011).

The usage of a mosquito treated net especially during pregnancy is very important because pregnant women form the main adult risk group for malaria and 80% of mortalities due to malaria in Africa occur among pregnant women and children below 5 years whiles perinatal mortality due to malaria is at about 1500/day in Africa. In areas where malaria is endemic, 20-40% of all babies born are likely to have a low birth weight. Malaria and pregnancy are mutually exacerbating situations. The physiological changes of pregnancy and the pathologicalchanges due to malaria have a synergistic effect on the course of each other, thus making life difficult for the mother, and the child. In pregnant women the morbidity due to malaria includes anaemia, fever illness, hypoglycemia, cerebral malaria, pulmonary edema, puerperal sepsis and mortality. The defects in the new born include low birth weight, prematurity, and mortality (Kakkilaya, 2011).

Concerning engaging in physical exercises among pregnant women, research has shown that pregnant women with no complications can and should do aerobic and strength-conditioning exercises but it is important that the pregnant woman seeks the advice of her nurse or physician. Regular physical exercises during pregnancy can help strengthen the muscles a pregnant woman needs for labour and delivery, control mood swings, reduce some of the discomforts of pregnancy (e.g., swelling, shortness of breath, backache, and constipation), reduce fatigue, gain a healthy weight level, improve circulation and posture e.t.c. (www.healthyalberta.com\Activeliving\875.htm)

Also with regard to seeking regular antenatal care, hospital delivery and postnatal care, medical Practioners have confirmed that, proper care during pregnancy and childbirth is important to the health of mother and child. Antenatal care forms an integral part of comprehensive maternal health care. Antenatal care helps the detection and treatment of problems during pregnancy and provides an avenue to inform and educate pregnant women and their families, about their health and the danger signs associated with a pregnancy. Also, early and regular contact with a qualified health care provider during pregnancy and child birth can contribute to timely and effective use of services during and after delivery or in the event of an obstetric complication. It is during an antenatal care visit that screening for complications and advice on a range of maternity-related issues take place (2007 Ghana Maternal Health Survey).

Last but not the least, according the 2007 Ghana Maternal Health Survey ‘‘a number of problems that women and children experience surrounding childbirth occur during the postpartum period. The first forty-eight hours following delivery are especially critical for detecting and monitoring potential complications that if unattended could result in the death of the mother and or her baby. Thus, postnatal checkups and care are recognized as an integral component of comprehensive maternity and delivery care’’.

The above tell us the importance of the lifestyles chosen by the study when it come maternal health.

2.2 Empirical review on the relationship between education, lifestyle and health

Quite surprisingly, most of these empirical studies were conducted in developed nations and these nations have better maternal health and general health conditions than developing nations. We must also state that, the empirical results being reviewed is mixed with most of

them focusing on the relationship between formal education, lifestyle and health, others assessing the impact of a health education course on maternal health knowledge e.tc.

Bichaka Fayissa etal (2011) did a research to find the impact of education on lifestyle variables (smoking, cocaine use, marijuana use and drinking) using National Longitudinal Survey of Youth 79 panels for 1992, 1994 and 1998. They found that, using robust ordinary least squares, education had a significant impact on these lifestyle variables, but no impact when estimated through the robust fixed effects model.

Flandorfer and fliegenschee (2010) through a qualitative approach and interviewing 31 medical experts in Austria concerning what they perceive as the link between education and health of their patients, concluded that men and women who are highly educated exhibited a greater interest in health matters and have a better understanding of their health conditions than the uneducated.

Duha and others (2010) conducted a study on the impact of education on health knowledge using data from the 1997 and 2002 waves of the National longitudinal survey of youth 1997 cohort (NLSY 97). The design of the survey gave room to observe the increase in health knowledge of individuals after increasing their level of education by differential and plausibly exogenous amounts and by using ordinary least squares and instrumental variable techniques. They found weak evidence that an increase in the level of schooling increases the health knowledge of those who ultimately attend college and for those with schools as terminal degree there was no link between education and health knowledge.

Aizer and Stroud (2010) found that after the publication of the 1964 Surgeon General Report on smoking and health, the more educated mothers reduced their smoking while the less-educated did not.

Nian Liu and others (2009) conducted a research in china on the effect of a health and nutrition education intervention on women's postpartum beliefs and practices. They used a randomized controlled trial technique. In both rural and urban areas of Hubei from August 2003 and June 2004, a total of 302 women who received prenatal care during the third trimester with no pregnancy complications were selected. Women randomized in the education intervention group in rural and urban areas received 2 hour prenatal education sessions and 4 hour postpartum counselling visits. Control group women received normal medical care during pregnancy and postpartum period. Women were followed up until 42 days postpartum. Outcome measures were nutrition and health knowledge, dietary attitude, health attitude and complications during the postpartum period. After the research it was found that women in the intervention groups showed greater improvement in overall dietary behaviour such as eating fruits, soybean, vegetables as well as possessing health knowledge than those in the control groups and most women in the intervention groups gave up the traditional taboos concerning postpartum. Cases of leg cramp, constipation and prolonged lochia rubra were significantly lower in the intervention group relative to those in the control groups.

Price and Simon (2009) find that the occurrence of vaginal birth after having a previous C-section birth (VBAC), decreased in a significant manner among the more educated mothers after the publication of an article concerning the risk of a vaginal birth after having a previous C-section birth (VBAC) in the New England Journal of Medicine.

Park and Kang (2008) studied multiple lifestyle choices such as smoking, regular checkups drinking alcohol and exercise using instrumental variable technique and they found that, education does not have a significant effect on smoking and drinking alcohol but has significant effects on physical exercise and regular checkups

David cutler and Adriana Llras-Muney (2007) employ data from the National Health Interview Survey (NHIS) in the United States to test the relationship between education and health. Their analysis included only those who were at least twenty five years because most of these individuals had completed their schooling. They examined mortality rates by comparing respondents with death certificates they obtained through the National Death Index and they found that people with higher levels of schooling are not likely to die within five years of the interview and an extra four years of schooling decreases five year mortality by 1.8 percentage points relative to a base of 11 percent. They also find that well educated people are not likely to die from the most common acute and chronic infections, not likely to self-report a past diagnosis of an acute or chronic disease and are less likely to report anxiety or depression. From their results, the degree of relationship between education and health varies across diseases, but it is generally high.

Chou and others (2007) following the extension of compulsory education in 1968 by the Taiwanese government, employed a natural experiment to estimate the causal impact of parental schooling on child health by forming control and treatment groups of women who were age twelve or below on one side and from the ages of 13 to 20 on the other side in 1968. They constructed an instrument for schooling by exploiting changes across cohorts in new junior high school openings and this instrument was employed to estimate the causal effects of mother's education on the situation of low birth weight and mortality of children born to

women in the control and treatment groups in the period from 1978 to 1999. Their results show that Mother's education does indeed cause better infant health outcomes and they also find that the rise in schooling as a result of the reform saved almost 1 infant life in 1,000 live births, resulting in a reduction in infant mortality of approximately 11 percent.

De Walque (2007) shows that, in Uganda there has been a major change in the HIV/education gradient after more than a decade of prevention campaigns about the dangers of HIV/AIDS. He also reported a positive relationship between schooling and condom use during the current period.

Llras-Muney (2005) uses compulsory education laws from 1915 to 1939 in the United States (US) to generate consistent estimates of the effect of education on mortality in synthetic cohorts of successive US Censuses of Population for 1960, 1970, and 1980. The Instrumental variable (IV) estimates implies that, an additional year of schooling decreases the probability of dying in the next 10 years by 3.6 percentage points whilst her Ordinary Least square (OLS) estimate is quite lower: 1.3 percentage points.

Currie and Moretti (2003) assessed the impact of college openings on women's educational attainment and the health of their infants. Their results show that maternal schooling helps in bettering their children's health and this effect can partially be attributed to the increased use of prenatal care and reduced smoking.

E. Suchocka etal (2001) conducted a research in Poznan in Poland on the impact of health education on knowledge and prevention behaviour for congenial toxoplasmosis which was very common among young pregnant women in Poland. As result, between 1991 and 1997,

educational activities were undertaking in the Poznan region of Poland to promote health education for the prevention of Toxoplasmosis. E. Suchocka and others conducted a study to find out the impact of this health education and knowledge on the prevention of congenial toxoplasmosis by examining 2710 pregnant women on their knowledge of toxoplasmosis transmission using a questionnaire survey. It was found that knowledge of toxoplasmosis and its prevention was almost doubled within 4 years and also the proportion of women having antenatal serological tests for toxoplasmosis significantly increased but the level of knowledge among women with Secondary and or higher education level was very high than those with education below the Secondary level.

Elke Rawma etal (2000) conducted a study on the impact of maternal education on intrauterine growth by comparing east and west Germany and they found that, Women with the least education had a significantly high risk of delivering a small-for-gestational-age (SGA) newborn below the 10th percentile of birth weight newborns compared to women with the high education in West Germany (odds ratio [OR] = 2.58, 95% CI : 1.17–5.67) and East Germany (OR = 2.77, 95% CI : 1.54– 5.00).

Gilleskie and Harrison (1998) employed the 1987 National Medical Expenditure Survey in the U.S to estimate a self –rated health production function. By controlling for the past stock of health and including the number of chronic conditions and the body mass index (weight in kilograms divided by height in meters squared) as regressor and adopting Mroz's (1999) discrete factor estimator to account for the endogeneity of the inputs, they reported that, schooling has a positive and significant coefficients for both males and females.

Strauss (1990) shows that in the Ivory Coast mothers education has a positive effect on child height.

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Leigh (1983) using data from the University of Michigan's Quality of Employment Surveys of 1973 and 1977 find that most of the statistically significant positive effect of schooling on self-rated health can be explained by decisions with regard to cigarette smoking, exercise, and the choice of less hazardous occupations by the more educated.

2.3 Demographic and socio-economic factors that affect health and lifestyle.

Demographic and socio-economic factors such as age, income, parent's influence, friends and family influence and the mass media may have an effect on one's lifestyle and hence health. As Grossman 1999 and 2000 models postulate that, a rise in age comes with a rise in the depreciation rate of the stock of health and therefore as age rises one's stock of health reduces. Concerning the relationship between lifestyle, health and income, the economic literature postulates that, there is a positive relationship between healthy life leading to good health and income. That is, when people have higher income they will be able to seek for health care and adopt lifestyles that will improve their health since they need health to work to get a higher wage (Grossman 1999).

The literature in health economics however, does not show the relationship between age and lifestyle.

With regard to the parental influence and how it affects children who grow to be adults, Grossman (2005) contends that, the positive relationship between parental level of education and child health is because educated parents are more efficient 'producers' of child health through good hygiene standards or it is because they choose health input mixes that generate

more health output and since Duha and others (2010) contend that '' it is plausible that more educated individuals have more health knowledge not because of education itself, but because of other attributes that allow them to acquire health knowledge and that these attributes are correlated with education. For example, if wealthier and knowledgeable parents transmit their health knowledge to their children at home and if children of such parents obtain more education, then the impact of the home environment may be attributed to education if home environment is not adequately controlled for''. Then it is possible that people are healthy or adopt good lifestyles not because of formal schooling alone but, because of healthy treatments, health seeking behaviours and the good hygienic practices they got and learnt from parents, the mass media and other sources such as family and friends.

Concerning the media it is also possible that people might have gotten health knowledge or adopted health seeking behaviours or healthy lifestyles through the mass media and other avenues of communication.

The empirical results on the effects of age, income and employment, parent's level of education or influence and the mass media on maternal lifestyle, maternal health and health in general is mixed.

Gunasekara and etal (2011) conducted a research in Newzealand on the relationship between income and health using 4 years of annual data (2002-2005) from the Newzealand Longitudinal Survey of Family, Income and Employment. They tried to find out the relationship between annual income of household and self-rated health using a fixed effects ordinal logistic regression model and it was found that a rise in income of $10,000 over the past year rose the odds of reporting better self rated health by 1 percent and $10,000 increase

in household income increased the odds of better self rated health by 10% for those with two or more chronic conditions. That is, the overall small positive, but statistically insignificant, income-health effect size is in line with similar results from various longitudinal studies.

Johan Fritzell and others (2004) using a logistic regression including polynomial terms of the income variable and data from the 1996-97 Swedish living condition surveys which included individuals aged 25-64 found that both disposable house hold income and earnings are strongly linked to health and this results holds for both men and women.

Stelmach W. etal (2004) conducted a study in Poland on the impact of income on healthy lifestyleand revealed that, older men drank alcohol the most and Healthy physical activity was mostly among men in the higher income group.

Soowon Kim etal (2004) conducted a study to find the impact of socioeconomic status (income and education) on lifestyle (smoking, drinking alcohol, physical activity and diet) in China and the USA and they found that In China, as socioeconomic status (income and education) improved, lifestyle was less healthy. Contrary, in the United States, higher socioeconomic status was related to a healthier lifestyle.

Robert L. and others (1997) conducted a study in Canada and found a positive association between unemployment and adverse health outcomes.

Catherine E. Ross etal (1990) conducted a study and found that Women's employment and high family socioeconomic status are associated with good psychological and physical health.

BjørgEvjen-Olsen and others (2008) conducted a study on the risk factors for maternal death in the highlands of rural northern Tanzania by comparing women dying of maternal reasons

with women from the same population who visited antenatal clinics in the same period using a case control study. The results of the study revealed a rise in the risk of maternal deaths among women age from 35-47 years versus those who are between 15-29years or (4.0; 95%Confidence interval, 1.5–10.6).

Ulf Hogberg and Stig Wall(1986) conducted a study on age and parity as determinants of maternal mortality and the impact of their shifting distribution among parturient in Sweden between 1781 to 1980 by analyzing the reduction in maternal mortality between 1781 and 1980 based on the changes in the age distribution and parity among parturient over this period. Their results show that changes in maternal age contributed to almost 3 percent of the reduction in maternal mortality between 1981-1911 and rose to 5 percent between 1911 and 1980. However there was a 50 percent reduction in maternal mortality between 1965 and 1980 due to a decrease in maternal age.

Marcella Nunez-Smith etal (2008) evaluated over 30,000 titles and reviewed 173 quantitative studies systematically to find out the relationship between media and seven health outcomes. Their results show that, out of the 173 cross-sectional and longitudinal quantitative data reviewed, 80% found higher media exposure associated with negative health outcomes for children and adolescents. Concerning studies studying media content, 93% found associations between rising media exposure and negative health outcomes. Also 75% of studies evaluating sheer amount of media exposure reported an association with a negative health outcome. In total, 82% of longitudinal studies supported a causal association between media exposure and negative health outcomes.

Ernersto Jaramillo (2001) conducted a study to find out the impact of media-based health education on tuberculosis diagnosis in Cali, Colombia. The media based education aimed at increasing case finding and decreasing levels of prejudice against people with Tuberculosis. The impact assessment reveals that the campaign resulted in an increase of 64% in the number of direct smears processed by the laboratories and a rise of 52% in the number of new cases of positive pulmonary Tuberculosis with respect to the previous period.

Thomas, Strauss and Henriques (1990) assessed the role of mother's literacy and information processing, income and the interaction of maternal education with community services in Brazil. They found that almost all the impact of maternal education on child height can be explained through mother's exposure to the media.

Peter Jon Mitchell (2009) conducted a study in Canada to find out the relationship between parental influence and teen sexuality and his findings showed that there is a relationship between parental behaviuor (drinking and smoking) and future teen sexuality.

Doyle and others (2005) employed a parental smoking attitude and schooling reform to instrument parental schooling and income and find weak effects of parental schooling on health of their children but no effect of parental income on the health of their children.

The works of the above literature largely conclude that, education improves health, healthy lifestyle, health knowledge, maternal health and maternal health knowledge using various approaches: qualitative method, Interviews, ordinary least square, Instrumental variable, Natural experiments, randomized controlled trial, questionnaire survey, self rated health, and

case control study techniques e.t.c. Most of these studies however, did not take in to account the impact of specific programme of study or area of specialization on healthy life style.

Also none of the works reviewed above looked specifically at the impact of education on the lifestyle of pregnant women.

This study therefore employs a probit regression technique to find out the Impact of education on the lifestyle of pregnant women or maternal lifestyle and whether the programme of study or the area of specialization will be a factor in terms of leading a healthy lifestyle among the educated as Grossman (1999) contends.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter focuses on the background of the study area, the design of the study and the method of data collection to find out the impact of education on the lifestyle of pregnant women and taking in consideration the specific programme of study or area of specialization with regards to the senior high school and tertiary level respondents. This chapter also finds out information on the demographic and socio-economic characteristics of pregnant women and how it affects their lifestyles. Quantitative and descriptive methods were used for the data analysis. The study specifically, employed the probit regression model as the empirical method of estimation under the quantitative method.

3.1 Background of the study area

The Kumasi metropolis is situated in the transitional forest zone and is about 270km north of Accra which is the capital of Ghana. It is found between longitude $1.30^{o} – 1.35^{o}$ and between latitude $6.35^{o} – 6.40^{o}$, an elevation which ranges between 250 – 300 metres above sea level with an area of about 254 square kilometres. Its central location makes it attractive for many people to migrate to. The metropolis shares boundaries with Atwima District to the west, Ejisu-Juaben Municipal to the east, Kwabre East District to the north and the south with Bosomtwe. Its green environment has accorded it the accolade of being the "Garden City of West Africa"(Ministry of Local Government and Rural Development and Maks Publications & Media Services, 2006).

Beginning with the three communities of Krobo, Bompata and Adum, it has grown in a concentric form to cover an area of approximately ten (10) kilometers in radius. The direction of growth started along the arterial roads due to the accessibility they offered

resulting in a radial pattern of development. Kumasi encompasses about 90 suburbs, many of which were absorbed into it as a result of the process of physical expansion and growth. Figures from the year 2000 Population Census kept the population at 1,170,270. It was projected to be about 1,610,867 in 2006 and 1,889,934 by 2009 (Ministry of Local Government and Rural Development and Maks Publications & Media Services, 2006).

In the Metropolis can be found the Komfo Anokye Teaching hospital which is the second largest health facility in Ghana as well other district hospitals and many private hospitals and clinics. There are also many schools and some industries. It is very heterogeneous in the sense that it has people with almost all the features of the people in the other regions of Ghana living in it.

Concerning physical exercises in the metropolis, there have been several keep fit clubs formed with their membership consisting of both women and men who embark on physical exercises every Saturdays or Sundays. Also there are some gymnasiums located in hotels like Golden tulip, Miklin hotel e.t.c as well as the Kwame Nkrumah University of Science and Technology (KNUST) sports centre which are all opened to the general public. Smoking among women in the Metropolis is very uncommon and even if a woman smoke's she is regarded as a pariah. Concerning drinking of alcohol and drinking spots in the Metropolis, it is in only some few areas that you will not find drinking spots and in my small area (Akurem) for instance, there are about ten drinking spots. Drinking alcohol among women in the Metropolis is now quite common as compared to previous times; this is because from time to time women are found drinking alcohol at funerals and at several drinking spots even though the percentage of men who drink alcohol far outweighs the percentage of women. The above situation can be attributed to the unrestricted advertisement of alcohol on radio, television and other media in Ghana.

3.2 Method of Data Collection

The study employed primary data in the form of personally administered questionnaires as the means of data collection since the kind of information needed from pregnant women did not exist. The personally administered questionnaires contained questions that centred on whether pregnant women smoke, they drink alcohol, they use mosquito treated nets, they do regular physical exercises, they have been attending the clinic or hospital for antenatal care and whether they will deliver in a clinic or a hospital and will seek for postnatal care after delivery. Also pregnant women gave information on income level, age, educational level, family and parent's influence on maternal life style and the influence of mass media on maternal life style.

Kumasi was selected as the case study area because of its large population and its heterogeneous nature as well as its propinquity and familiarity to the researcher and also in terms of resource constraint.

The study used a sample of 400 pregnant women who were conveniently selected in the Kumasi Metropolis. In order to avoid biased response, women were interviewed outside health facilities. This is because respondents were asked if they had been attending antenatal regularly. The sampled pregnant women included the uneducated, pregnant women with education up to the basic level, those with education up to the senior high level and those with education up to the tertiary level.

3.3 Data Analysis

Both quantitative and descriptive methods were used for the data analysis. Quantitative methods helps one to know the actual relationships between two or more variables being studied as Strauss and Corbin (1990) contend that, using quantitative techniques helps in providing insight on issues that little is known about. A quantitative technique enables us to describe fine differences between people in terms of the characteristics being studied as well as providing a consistent yard stick for arriving at such distinctions. It also provides the basis for the actual estimate of the degree of relationship between concepts (Alan, 2008). As mentioned earlier, this study specifically, employed the probit regression technique as the empirical method of estimation under the quantitative method because the dependent variables studied were dichotomous.

Concerning the descriptive method, the research used tables to analyze the information on pregnant women in the sampled population.

3.4 Empirical Estimation

Three different probit regression models were used by the study to determine the impact of education on maternal health focusing on lifestyle and taking in to consideration the programme studied among the pregnant women with education up to the tertiary and senior high levels in the sampled population. The probit models were adopted because the dependent variables in this study were dichotomous in nature.

As stated, the study used three models, thus models 1, 2 and 3 and six dependent variables. Thus for each model, six regressions were run on each of the six dependent variables.

The dependent variables were:

1. Whether pregnant women smoke
2. Whether they drink alcohol
3. Whether they use mosquito treated nets
4. Whether they do regular physical exercises
5. Whether they have been attending the clinic or hospital for antenatal care regularly and
6. Whether they will deliver in a clinic or a hospital and still seek for postnatal care after delivery.

The models are thus specified as below:

Model 1

This model basically has been specified to find out the impact of education, income, age and employment on the lifestyles stated above. Here six regressions were run with model 1 for each dependent variable. Model 1 is therefore specified as below:

$Pr\ (Q_i=1|\ I, A, E, UN, BASIC, SHS, TER.) = \Phi\ (\beta o + \beta_1 I + \beta_2 A + \beta_3 E + \beta_4 UN + \beta_5 BASIC + \beta_6 SHS + \beta_7 TER + \varepsilon_i)$ ----------model 1

Where:

Pr = probit model

Q_i = Qualitative dependent variable (Maternal life style dummy): 1 if the person answered yes to a particular question; 0 if a person answered no.

Φ= is the cumulative standard normal distribution function.

I = Income

A = Age

E = Dummy variable (E= 1 if Employed, E= 0 if otherwise)

UN = Dummy variable (UN= 1 if uneducated UN = 0 if otherwise)

BASIC = Dummy variable (BASIC= 1 if education is up to the basic level, BASIC= 0 if otherwise)

S.H.S= Dummy variable (S.H.S= 1 if education is up to the senior high level, S.H.S= 0 if otherwise)

TER= Dummy variable (TER= 1 if education is up to the tertiary level, TER= 0 if otherwise)

ε_i= Stochastic error term.

Model 2

Model 2 takes in consideration the programme of study if the person had education up to the senior high level to find out the impact of the programme studied on the lifestyles stated above among respondents with senior high level of education. Thus six regressions were run with model 2 for each dependent variable.

Model 2 is therefore specified as below:

Probit model: $Y_i = Pr\ (Q_i=1|\ I, A, E, T, Ar, S, B.) = \Phi\ (\beta o + \beta_1\ I + \beta_2 A + \beta_3 E + \beta_4 T + \beta_5 Ar + \beta_6 S + \beta_7 B + \varepsilon_i)$ IF SHS……model 2

Pr = probit model

Q_i = Qualitative dependent variable (Maternal life style dummy): 1 if the person answered yes to a particular question; 0 if a person answered no.

Φ= is the cumulative standard normal distribution function.

I = Income

A = Age

E = Dummy variable (E= 1 if Employed, O= 0 if otherwise)

T = Dummy variable (T= 1 if technical, visual or vocational skills T = 0 if otherwise)

Ar= Dummy variable (Ar= 1 if general arts, Ar= 0 if otherwise)

S= Dummy variable (S= 1 if general science or agric science, S= 0 if otherwise)

B= Dummy variable (B= 1 if business, B= 0 if otherwise)

ε_i = Stochastic error term.

Model 3

Model 3 takes in to consideration the area of specialization if the person had education up to the tertiary level to find out the impact of the area of specialization among respondents with education up to the tertiary level on the lifestyles stated above. The area of specialization among the respondents with tertiary level education was grouped in to health related (HR) and non health related (NHR) and six regressions were run with model 3 for each dependent variable.

Model 3 is therefore specified as below:

Probit model: $Y_i = Pr\ (Q_i=1|\ I, A, E, HR, NHR) = \Phi\ (\beta o + \beta_1\ I + \beta_2 A + \beta_3 E + \beta_4 HR + \beta_5 NHR + \varepsilon_i)$ IF TERTIARY ……..model 3

Where:

Pr = probit model

Q = Qualitative dependent variable (Maternal life style dummy): 1 if the person answered yes to a particular question; 0 if a person answered no.

Φ= is the cumulative standard normal distribution function.

I = Income

A = Age

E = Dummy variable (E= 1 if employed E = 0 if otherwise)

HR= Dummy variable (HR= 1 if health related, HR= 0 if otherwise)

NHR= Dummy variable (NHR= 1 if non health related, NHR= 0 if otherwise)

ε_i = Stochastic error term.

3.4.1 Testing for the equality of the educational parameters.

Here the likelihood ratio test was conducted to find out whether the educational variables (Basic, senior high and Tertiary) that had positive statistical significant impact on engaging in regular physical excersises and the usage of mosquito treated net varied in terms of their impacts or not.

For the likelihood ratio testwe have the unrestricted regression to be model 1 above which is Pr (Q_i=1/ I, A, E, UN, BASIC, SHS, TER.) = Φ ($\beta o + \beta_1$ I+ β_2A + β_3E + β_4UN + β_5BASIC + β_6SHS+ β_7TER+ ε_i) ----------model 1 where the meanings of the variables remain as stated already.

Testing for whether or not the coefficients of the basic and senior high variables varied interms of their impacts on engaging in regular physical excersises and the usage of mosquito treated,we have:

H_O: $\beta_5 = \beta_6$ **H_1**: $\beta_5 \neq \beta_6$

Imposing **H_O** on model 1 means $\beta_5 = \beta_6$, so we get the restricted regression as:

Pr (Q_i=1/ I, A, E, UN, BASIC, SHS, TER.) = Φ ($\beta o + \beta_1$ I+ β_2A + β_3E + β_4UN + β_5 (BASIC + SHS) + β_7TER+ ε_i).....model 4

Testing for whether or not the coefficients of the basic and tertiary variables variedinterms of their impacts on engaging in regular physical excersises and the usage of mosquito treated net, we have:

H_O: $\beta_5 = \beta_7$ **H_1**: $\beta_5 \neq \beta_7$

Imposing **H_O** on model 1 means$\beta_5 = \beta_7$,so we get the restricted regression as:

$Pr\ (Q_i=1/\ I, A, E, UN, BASIC, SHS, TER.) = \Phi\ (\beta o + \beta_1\ I + \beta_2 A + \beta_3 E + \beta_4 UN + \beta_5\ (BASIC + TER) + \beta_6 SHS + \varepsilon_i)$.....model5

Testing for whether or not the coefficients of the senior high and tertiary variables varied interms of their impacts on engaging in regular physical exercises and the usage of mosquito net we have:

$\mathbf{H_O}$: $\beta_6 = \beta_7$ $\mathbf{H_1}$: $\beta_6 \neq \beta_7$

Imposing $\mathbf{H_O}$ on model 1 means $\beta_6 = \beta_7$, so we get the restricted regression as:

$Pr\ (Q_i=1/\ I, A, E, UN, BASIC, S.HS, TER.) = \Phi\ (\beta o + \beta_1\ I + \beta_2 A + \beta_3 E + \beta_4 UN + \beta_5\ BASIC + + \beta 6\ (S.H.S+TER) + \varepsilon_i)$.....model 6.

The likelihood ratio test statistic is calculated as $2(ll_{ur} - ll_r)$ which follows the chi-square distribution. Where ll_{ur} is the log likelihood of the unrestricted regression and ll_r is the log likelihood of the restricted regression.

3.5 Expected signs of the estimated parameters

This research expects income (I) to have a positive impact on all the qualitative dependent variables with the exception of smoking and drinking alcohol in all the three models (1,2 and3). This is because people need good health to work for a higher income and therefore will adopt a good life style. Also higher income people have the means to seek for antenatal care regularly, deliver in the hospital and seek postnatal care even in the absence of free maternal health care. β_1 is therefore expected to have a positive sign on all the dependent variables with the exception of smoking and drinking alcohol where it is expected to be negative and this means, the higher a pregnant woman's income level the greater the degree

to which the person will lead a good maternal lifestyle since good maternal lifestyle leads to good health which allows one to work for a higher income. The expected sign of β_1 stated above applies to all the three models (1, 2 and 3).

The relationship between age (A) and all the six maternal lifestyle questions is unknown. This is because one can't be certain that the sort of maternal life style a pregnant woman may live will depend on her age. Therefore the expected sign of β_2 is unknown for all the three models (1, 2 and 3).

This research expects Employment (E) to have a positive impact on all the qualitative dependent variables with the exception of smoking and drinking alcohol. This is because people need good health to work for a higher income and therefore will adopt a good life style. β_3 is therefore expected to have a positive sign on all the dependent variables with the exception of smoking and drinking where it is expected to have a negative sign in models 1, 2 and 3. Thus the expected sign for $\beta_3$stated above applies to all the three models (1, 2 and 3) stated above.

Pregnant women with basic level of education (BASIC), senior high education (S.H.S) and tertiary education (TER) are expected to have a positive impact on attending antenatal regularly, postnatal care, hospital delivery, regular physical exercise and using of a treated mosquito net as compared to those without any formal education (UN). Therefore the expected signs of β_5, β_6, and β_7 in model 1 is positive for attending antenatal regularly, delivering in a hospital as well as seeking for postnatal care, exercising regularly and using a treated mosquito net and that of $\beta_4$in model 1is expected to be negative for these four dependent variables. The expected sign of β_5, β_6, and $\beta_7$in model 1 is negative for smoking

and drinking alcohol and that of β_4 is expected to be positive with regards to smoking and drinking alcohol. The reason being that people with formal education are better placed to understand the negative consequences of smoking, drinking alcohol and not sleeping under mosquito treated nets. They are well placed to know the importance of using a treated mosquito net,attending antenatal regularly and hospital delivery as well as seeking for postnatal care and exercising their bodies regularly than the uneducated(The control group).

β_4, β_5, β_6, and β_7 in models 2 and 3 are all expected to have positive signs on attending antenatal regularly, exercising regularly, using a treated mosquito net and hospital delivery as well as seeking for postnatal care but they are expected to have negative signs on smoking and drinking alcohol since all senior high and tertiary respondents are all educated and hence are expected to live healthy lifestyles.

CHAPTER FOUR

ANALYSIS OF RESULTS

4.0 Introduction

This chapter used Stata 11.2 to analyse data obtained on 400 pregnant women in the sampled population in both the descriptive statistics and the quantitative aspect. Probit regression estimates were used to find out the impact of age, income, employment status and education on the six life style questions mentioned in chapter three. Also Probit regression estimates were used in the discussion to find out the impact of the area of specialization on the six life style mentioned in chapter three for both respondents with Senior High and the Tertiary level education. In addition, descriptive statistics were used to find out the impact of other factors such as the media, parental influence, family, friends and all other factors that may affect lifestyle positively aside education. In this discussion all these factors mentioned shall be named as other.

4.1 Descriptive analysis

Table 1a: **Descriptive Statistics of Variables Used in the Empirical Model.**

Variable	Mean Value	Standard Deviation	Minimum Value	Maximum Value
Age (Years)	28.0275	4.833233	15	42
Income (Monthly)	271.6275	169.0243	20	800

In Table1a above, the age structure of the sampled pregnant women ranged between 15 years and 42 years. The mean age for the pregnant women sampled was 28.03years. Concerning the income level, the minimum income was GH¢20.00 and the maximum income wasGH ¢800.00 with the average income being GH¢271.7

Table 1b: Descriptive Statistics of Variables.

Variable	Percentage of respondents
Employed	69.5
Other	93.5
Basic Education	29.25
Senior High School	25.75
Tertiary Education	16.75
Uneducated	28.25
General arts	24.27
Science or Agric	28.16
Business	26.21
Visual/Technical/Visual	21.36
Health related	23.53
Smoking	0
Drinking alcohol	7.75
Mosquito net	63
Exercises	58.5
Delivering in hospital and postnatal	100
Attending Antenatal regularly	94.5

In Table 1b above, 69.5% of the respondents were employed while 30.5% were not employed. With regards to factors such as the media, parental influence, family, friends and all other factors that may affect lifestyle positively aside education (other), 93.5% of

respondents said these factors have positive impact on their lifestyles whiles 6.5% said otherwise. This suggests that, it is not only formal education that has an impact on positive lifestyle. On educational attainment, respondents with education up to the basic level, senior high level and tertiary level were 29.25%, 25.75% and 16.75% of the sampled pregnant women respectively while 28.25% of the sampled pregnant women were people without any formal education. Concerning pregnant women with education up to the Senior High level, 24.27%, 28.16%, 26.21% studied General arts, General science or Agric science and Business respectively whilst 21.36% studied vocational, visual arts or technical skills. Concerning Pregnant women with education up to the tertiary level, areas of specialization were grouped in to health related and non health related. From the results, 23.53% of the tertiary respondents specialised in a health related area whilst 76.47% specialised in a non health related area.

Concerning smoking, all the 400 pregnant women respondents said they were not smoking and this appears to be good. Also with drinking alcohol, only 7.75% of the 400 pregnant women said they do drink alcohol whilst 92.25% said they were not drinking alcohol. Concerning the usage of treated mosquito nets, 63% of the respondents were using, whilst 37% were not using and the reasons they gave for not using were:

It is itchy

Their rooms are too small

It is too hot and

Lack of money to buy one

With engaging in physical exercises regularly, 58.5% of the 400 sampled pregnant women said they do engage in physical exercises regularly while 41.5% said they do not do physical exercises regularly. Concerning antenatal care, 94.5% of the respondents were attending regularly whilst 5.5% were not. Here a respondent is declared as not attending antenatal

regularly if the person failed to attend at least for a month since from my research, antenatal is to be attended every two weeks for an uncomplicated pregnancy. With regards to whether they will deliver in the hospital and attend postnatal care after delivery, all pregnant women answered yes, thus they will do so and this 100% can be attributed to the futuristic nature of the question.

4.2 Quantitative analysis

The regression results of the Probit model (model 1): $Y_i = Pr (Q_i=1/ I, A, E, UN, BASIC, SHS, TER.) = \Phi (\beta o + \beta_1 I + \beta_2 A + \beta_3 E + \beta_4 UN + \beta_5 BASIC + \beta_6 SHS + \beta_7 TER + \varepsilon_i)$ are presented in the tables below:

Table 2.0: Probit Results for Whether Pregnant Woman Drink's Alcohol .

Explanatory Variable.	Coefficient	Standard Error	P-Value
Constant	-1.636794	.5797647	0.005
Age	.0239709	.0199725	0.230
Income	-.0013311	.0008196	0.104
Employment Status			
Employed	- .1943793	.205302	0.344
Educational Level			
Basic Education	.0182332	.2384102	0.939
Senior High Education	.1114573	.2603013	0.669
Tertiary Education	-.4883293	.4759159	0.305

In Table 2.0, with drinking of alcohol as the dependent variable, none of the independent variables was significant at 5% significance level. This means age, income, employment

status and education (basic, Senior High and Tertiary) had little or no impact on the probability that a pregnant woman in the sampled population will drink alcohol or not. This implies that, concerning the drinking of alcohol among the sampled pregnant women, the Ho hypothesis of education having no impact on maternal life style (drinking alcohol) is accepted at 95% confidence level. This is very similar to a study by Park and kang (2008) in South Korea which showed that education has little effect on smoking and drinking alcohol. It means concerning the drinking of alcohol, there is no difference between the educated and the control group (uneducated). The reason can be attributed to the addictive nature of drinking alcohol.Income, employment and tertiary explanatory variables met the expected signs whiles basic and senior high explanatory variables did not and can also be attributed to the addictive nature of drinking alcohol.

Table 3.0: Probit Results for Whether Respondent Use a Mosquito Treated Net.

Explanatory Variable.	Coefficient	Standard Error	P-Value
Constant	-1.329099	.4528013	0.003
Age	-.0024084	.0156621	0.878
Income	.0030202	.000574	0.000
Employment Status			
Employed	.2245747	.1568314	0.152
Educational Level			
Basic Education	1.221812	.1850028	0.000
Senior High Education	1.198122	.1995292	0.000
Tertiary Education	1.033779	.2702487	0.000

The Probit regression results in Table 3.0 with the usage of a treated mosquito net as the dependent variable showed that, education and income had signs that met the expectation of the study. Also education and income had a positive significant impact on the probability that a pregnant woman will use a mosquito treated net since the p-values of income, basic, senior high and tertiary explanatory variables were all below 0.05. The positive sign of income also implies that, the higher a respondent's income, the higher the degree that, the respondent will use a mosquito treated net. With regards to education concerning the usage of mosquito treated net, education had a significant impact and therefore the Ho hypothesis of education having no impact on maternal life style (using treated mosquito net) is rejected at 95% confidence level. The positive signs of basic, senior high and tertiary imply that, education increases the possibility that a pregnant woman in the sampled population will use a mosquito treated net as compared to the uneducated (the control group).

Even though employment met the expected sign, it was insignificant. Age also was not significant at 5% significance level. This means that both age and employment had no impact on whether a pregnant woman in the sampled population will use a mosquito treated net or not. The overall regression was statistically significant since its P-value of 0.0000 was less than 0.05. This means that, the variables jointly had an impact on the probability that a sampled pregnant woman used a treated mosquito net.

Table 4.0: Probit Results for Whether Pregnant Woman Does Regular Physical exercises.

Explanatory Variable.	Coefficient	Standard Error	P-Value
Constant	-1.24527	.4568843	0.006
Age	-.0116983	.0157415	0.475
Income	.0022088	.0005481	0.000
Employment Status			
Employed	.1580356	.1609958	0.326
Educational Level			
Basic Education	1.563235	.1938477	0.000
Senior High Education	1.653258	.2086506	0.000
Tertiary Education	1.23259	.2599242	0.000

The Probit regression results in Table 4.0 with regular physical exercises as the dependent variable showed that, education and income had signs that met the expectation of the study and also had a positive significant impact on the probability that a pregnant woman will do physical exercises regularly. This is because the p-values of income, basic, senior high and tertiary explanatory variables were all below 0.05.The positive signs of the basic, senior high, tertiary and income explanatory variables implies that, the higher a person's income the higher the degree at which the respondent in the sampled population will engage in physical exercises and also, if the person is educated the higher the degree at which the respondent in the sampled population will engage in regular physical exercises as compared to the uneducated (the control group).

This implies that concerning engaging in physical exercises, education had a significant impact and therefore the Ho hypothesis of education having no impact on maternal life style (physical exercises) is rejected at 95% confidence level.

Even though employment met the expected sign, it was insignificant. Age also was not significant at 5% significance level. This means that, both age and employment had no impact on whether a pregnant woman in the sampled population will do physical exercises or not. The overall regression was statistically significant since its P-value of 0.0000 was less than 0.05**.** The results of education having a significant impact on regular physical exercises is similar to a study conducted by Park and Kang (2008)in South Korea which showed that education influenced people to do more physical exercises and this results is also consistent with what the health economic theory states.

Table 5.0: Probit Results for Whether Pregnant Woman Attends Antenatal Regularly

Explanatory Variable.	Coefficient	Standard Error	P-Value
Constant	1.290215	.6548526	0.049
Age	-.0238311	.0224145	0.288
Income	.0042356	.0013629	0.002
Employment Status			
Employed	-.0505433	.2612645	0.847
Educational Level			
Basic Education	.2044573	.2595712	0.431
Senior High Education	.496864	.3692798	0.178
Tertiary Education(omitted)	-	-	-

From the Probit results in table 5.0 with attending antenatal regularly as the dependent variable, Income, basic and secondary variables met the expected signs of the study. However aside income that was significant when it come to pregnant women attending antenatal regularly, all the other explanatory variables: basic, age, employment and senior high were not significant at 5% level of significance. This implies that, concerning attending antenatal regularly among the sampled pregnant women, the Ho hypothesis of education having no impact on maternal life style (attending antenatal regularly) is accepted at 95% confidence level. That is concerning the attendance of antenatal regularly there was no difference between the educated and the uneducated (the control group). Also the positive sign of income and it being significant implies that, the higher a pregnant woman's income, the higher the possibility that she will attend antenatal regularly.

The overall regression was significant since its P-value of 0.003 was less than 0.05. This means that, the variables jointly had an impact on the probability that a sampled pregnant woman attends antenatal regularly.

In Table 5.0 the tertiary explanatory variable was omitted because all the tertiary respondents attended antenatal regularly and this confirms the argument of Anoop S. and others (2004) that, higher levels of education are linked to higher levels of maternal intelligence (understanding the rudiments for prenatal care and post natal care).

Concerning smoking, a regression could not be run because all sampled pregnant women said they were not smoking.

Also no regression was run on whether respondents are willing to deliver in a hospital as well whether they will still seek postnatal care because all respondents answered yes.

4.2.1 Testing for the equality of the educational parameters in Table 3.0.

Using the Likelihood ratio test to test for the equality of the statistically significant education coefficients in Table 3.0 above, where the result of Table 3.0 became the unrestricted regression, we have the results as presented in Table 5.1 below:

Table 5.1: Likelihood Ratio Test Results for the impact of education on the Usage of Treated mosquito Net.

Hypothesis	Log likelihood for the restricted regression	Log likelihood for the unrestricted regression	Likelihood ratio test statistic	P-Value
$\mathbf{H_O}$: $\beta_5 = \beta_6$ $\mathbf{H_1}$: $\beta_5 \neq \beta_6$	-196.76075	-196.75353	0.01	0.9044
$\mathbf{H_O}$: $\beta_5 = \beta_7$ $\mathbf{H_1}$: $\beta_5 \neq \beta_7$	-196.99175	-196.75353	0.48	0.4900
$\mathbf{H_O}$: $\beta_6 = \beta_7$ $\mathbf{H_1}$: $\beta_6 \neq \beta_7$	-196.94561	-196.75353	0.38	0.5354

The test results presented in Table 5.1 was done to find out whether the coefficients of the educational parameters (Basic, Senior High and Tertiary) were statistically different in terms

of their impact on the usage of treated mosquito net and since none of the hypotheses tested produced a P-value that was below 0.05, we do not reject H_o in all these cases. This implies that the coefficients of the educational parameters (Basic, Senior High and Tertiary) were not statistically different from each other in terms of their impact on the probability that a pregnant woman would use a treated mosquito net.

4.2.2 Testing for the equality of the educational parameters in table 4.0.

Using the Likelihood ratio test to test for the equality of the statistically significant education coefficients in Table 4.0 above where the result of Table 4.0 becomes the unrestricted regression, we have the results as presented in Table 5.2 below:

Table 5.2 Likelihood Ratio Test Results for the Impact of education on Regular Physical Exercises.

Hypothesis	log likelihood for the restricted regression	Log likelihood for the unrestricted regression	Likelihood ratio test statistic	P-Value
H_O: $\beta_5 = \beta_6$ **H_1**: $\beta_5 \neq \beta_6$	-197.0682	-196.96027	0.22	0.6422
H_O: $\beta_5 = \beta_7$ **H_1**: $\beta_5 \neq \beta_7$	-197.82807	-196.96027	1.74	0.1877
H_O: $\beta_6 = \beta_7$ **H_1**: $\beta_6 \neq \beta_7$	-198.41207	-196.96027	2.90	0.0884

The test results presented in Table 5.2 was than to find out whether the coefficients of the educational parameters (Basic, Senior High and Tertiary) were statistically different in terms of their impact on regular physical exercises and since none of the hypotheses tested in Table 5.2 produced a P-value that was below 0.05, we do not reject H_o in all these cases. This implies that the coefficients of the educational parameters (Basic, Senior High and Tertiary) were not statistically different from each other interms of their impact on the probability that a pregnant woman embark on regular physical exercises.

4.2.3 Results of Regressions on the impact of area of specialization on life style for senior high respondents.

The regression results of model 2: $Y_i = Pr\ (Q_i=1/\ I, A, E, T, Ar, S, B.) = \Phi\ (\beta o + \beta_1\ I + \beta_2 A + \beta_3 E + \beta_4 T + \beta_5 Ar + \beta_6 S + \beta_7 B + \varepsilon_i)$ IF SHS are presented in the tables below:

Table 6.0: Probit Regression Results on the Impact of Area of Specialization on the Probability that a Senior High Respondent will Drink Alcohol.

Explanatory Variable.	Coefficient	Standard Error	P-Value
Constant	.0776449	1.539377	0.960
Age	.010416	.0540108	0.847
Income	-.0026725	.0018362	0.146
Employment Status			
Employed	-.7286593	.4263414	0.087
General Arts	-1.113442	.593223	0.061
General Science or Agric science	-1.183562	.6372461	0.063
Business	-.5303144	.4887141	0.278

Table 6.0 shows the regression results of the impact of area of specialization on drinking alcohol among the pregnant women with education up to the senior high level and it revealed that, even though income, employment, general arts, general science or agric science and business explanatory variables met the expected signs, they were all not significant at 5% level of significance. The control group was vocational, visual arts or technical. Since general arts, general science or agric science and business were not significant, it means the area of specialization had no impact on whether a pregnant woman will drink alcohol or not as compared to the control group. The overall regression was not significant since its P-value of 0.1054 was greater than 0.05.

Table 7.0: Probit Regression Results on the Impact of Area of Specialization on the Probability that a Senior High Respondent will Use a Mosquito Treated Net.

Explanatory Variable.	Coefficient	Standard Error	P-Value
Constant	-1.249564	1.097123	0.255
Age	.0024655	.037731	0.948
Income	00046535	.0014198	0.001
Employment Status			
Employed	.3100606	.3191409	0.331
General Arts	.8040561	.4399919	0.068
General Science or Agric science	.6078435	.4274365	0.155
Business	.6464993	.4210837	0.125

Table 7.0 shows the regression results of the impact of area of specialization on using a mosquito treated net among the pregnant women with education up to the senior high level

and it revealed that even though income, employment, general arts, general science or agric science and business explanatory variables met the expected signs, it was only income that was significant and all the rest were not significant at 5% level of significance. The control group was vocational, visual arts or technical. The insignificance of general arts, science and business means that, the area of specialization had no impact on whether a sampled pregnant woman in the senior high category will use a mosquito treated net or not as compared to the control group. The positive significance of income means that, the higher the level of a pregnant woman who is a senior high respondent's income, the higher the degree of her sleeping under a mosquito treated net. The overall regression was significant since its P-value of 0.0062 was less than 0.05. This means the variables jointly had an impact the use a mosquito treated net.

Table 8.0: Probit Regression Results on the Impact of Area of Specialization on the Probability that a Senior High Respondent will engage in Regular Physical Exercises.

Explanatory Variable.	Coefficient	Standard Error	P-Value
Constant	-.5540154	1.079916	0.608
Age	-.0154674	.0376281	0.681
Income	.0042052	.0014539	0.004
Employment Status			
Employed	.4173951	.3267401	0.201
General Arts	.3768256	.4269394	0.377
General Science or Agric science	.8933089	.4852141	0.066
Business	.3956677	.4094895	0.334

Table 8.0 shows the regression results of the impact of area of specialization on engaging in physical exercises regular among the pregnant women with education up to the senior high level and it revealed that, even though income, employment, general arts, general science or agric science and business explanatory variables met the expected signs, it was only income that was significant and all the rest were not significant because their p-values were greater than 0.05. The control group was vocational, visual arts or technical. Thus, since general arts, science and business were not significant; it means the area of specialization had no impact on whether a pregnant woman who is a senior high respondent in the sampled population will engage in physical exercise or not as compared to the control group. Finally the overall regression was significant since its P-value of 0.0127 was less than 0.05 which implies that, all the variables jointly had an impact on whether a pregnant woman who is a senior high respondent will engage in regular physical exercises in the sampled population.

Table 9.0: Probit Regression Results on the Impact of Area of Specialization on the Probability that a Senior High Respondent Attends Antenatal Regularly.

Explanatory Variable.	Coefficient	Standard Error	P-Value
Constant	7.201813	8.860575	0.416
Age	-.3403997	.4016465	0.397
Income	.0148291	.0142298	0.297
Employment status			
Employed	2.595908	2.983788	0.384
General Arts	1.536854	2.367485	0.516
General Science or Agric science(omitted)	-	-	-
Business(omitted)	-	-	-

In Table 9.0, the Probit regression omitted general science or agric science and business explanatory variables because all general science, agric science and business respondents attended antenatal regularly. Table 9 shows the Probit regression results of the impact of area of specialization on attending antenatal regularly among the pregnant women with education up to the senior high level and it revealed that, even though income, employment and general arts explanatory variables met the expected signs, none of them was significant at 5% level of significance. The control group was vocational, visual arts or technical. Thus, since general arts was not significant, it means that the area of specialization had no impact on whether a pregnant woman who is a senior high respondent will attend antenatal regularly or not as compared to the control group.

No regression was run on whether respondents smoke among the respondents with senior high education because all of them answered no and also no regression was run for whether r will deliver in a hospital and still seek postnatal care after delivery in terms of the area of specialization or programme studied at the senior high level because all respondents answered yes. The above results show that, the course studied at the senior high level did not have any impact on lifestyle which contradicts what Grossman (1999) contends that the course studied may influence lifestyle.

4.2.4 Results of Regressions on the impact of area of specializationon life style for tertiary respondents.

The regression results of the Probit model (model 3): $Y_i = Pr(Q_i=1/ I, A, E, HR, NHR) = \Phi(\beta o + \beta_1 I + \beta_2 A + \beta_3 E + \beta_4 HR + \beta_5 NHR + \varepsilon_i)$ IF TERTIARY are presented in the tables below:

Table 10.0: Probit Regression Results on the Impact of Area of Specialization on the Probability that a Tertiary Respondent will Use a Mosquito Treated Net.

Explanatory Variable.	Coefficient	Standard Error	P-Value
Constant	.0335281	1.651168	0.984
Age	.0147977	.0603839	0.806
Income	-.000617	.0020161	0.760
Employment Status			
Employed	1.227473	.7118786	0.085
Health related	0.3322595	0.5402146	0.539

From the Probit regression in table 10.0, with the respondents specializing in a non health related area among the tertiary respondents as the control group and the usage of a treated

mosquito net being the dependent variable, age, income, employment and health related explanatory variables were all not significant at 5% level of significance. This means that, specializing in a health related area does not have any impact on whether a pregnant woman in the sampled population who has a tertiary level of education will use a treated mosquito net or not comparing to specializing in non health related field (control group).

Table 11.0:Probit Regression Results on the Impact of Area of Specialization on the Probability that a Tertiary Respondent will Engage in Regular Physical Exercises.

Explanatory Variable.	Coefficient	Standard Error	P-Value
Constant	2.539533	1.349836	0.060
Age	-.1198514	.0515052	0.020
Income	.0029787	.00177	0.092
Employment Status			
Employed	0.3420907	.6457034	0.596
Health related	1.377514	.6018844	0.022

Table 11.0 shows the Probit results of the impact of specializing in a health related field on physical exercises among pregnant women in the tertiary category with those specializing in a non health related area as the control group. From the Probit regression, income, employment and health related explanatory variables met the expected signs but it was only age and the health related explanatory variable (variable of interest) that were significant at 5% significance level and this means, specializing in a health related area had a significant impact on the probability that a pregnant woman in the sampled population who is a tertiary respondent will engage in regular physical exercises as compared to the control group. This

finding is consistent with what Grossman (1999) postulates. The negative sign of age and its being significant implies that the lower the age of a pregnant woman who is tertiary respondent in the sampled population, the higher the probability that she will engage in regular physical exercises and vice versa. The overall regression was significant since its P-value of 0.0158 was less than 0.05. This means that, the variables jointly had an impact on the probability that a pregnant woman who is a tertiary respondent will engage in regular physical exercise or not.

No regression was run on attending antenatal regularly, delivery in a hospital and attending postnatal, smoking and drinking alcohol to find out the impact of specializing in a health related area because all the tertiary respondents were attending antenatal regularly and said they would prefer to give birth in a hospital and would still seek postnatal care after delivery and none of them drinks nor smokes. This means the course studied at the tertiary level did not have any impact on these lifestyles which is not in line with what Grossman (1999) contends that the course studied or area of specialization may influence lifestyle.

CHAPTER FIVE

SUMMARY OF MAJOR FINDINGS AND POLICY RECOMMENDATION

5.0 Introduction

This study was carried out basically to find out the impact of education on the lifestyle of pregnant women in the Kumasi Metropolis of Ghana. Chapter five will therefore deal with a review of the major findings of this study as well as churning out policy recommendations and conclusions from the entire study.

5.1 Summary of major findings

The study revealed that about 93.5% of the sampled pregnant women said that, factors such as the media, parental influence, family and friends had a positive influence on their lifestyle. The study revealed that, none of the sampled respondents was smoking and also all respondents said they would want to deliver in the hospital and still seek postnatal care after giving birth and as such no regression was run on these questions to find out the impact of education because there was no differences between the responses of all the respondents.

Concerning the drinking of alcohol, none of the explanatory variables (Basic, Senior High, Tertiary, age, income and employment) was significant. This means age, income, employment status and education (Basic, Senior High and Tertiary) had little or no impact on the probability that a pregnant woman in the sampled population will drink alcohol or not.

With regards to using a mosquito treated net, the study revealed that, education and income had a positive significant impact on the probability that a pregnant woman will use a mosquito treated. This implies that, the higher a pregnant woman's level of income the higher the degree at which she will use a mosquito treated net. Also concerning education, it implies

that, if a pregnant woman in the sampled population is educated, the probability that she will use a mosquito treated net is very high as compared to the uneducated (the control group). Concerning the usage of a mosquito treated net; age and employment were all not significant. The implication is that age and employment have no impact on the probability that a pregnant woman in the sampled population will use a mosquito treated net or not.

With regard to regular physical exercises, the study revealed that, education and income had a positive significant impact on the probability that a pregnant woman will embark on regular physical exercises. This implies that, the higher a pregnant woman's level of income the higher the degree at which she will perform regular physical exercises. Also concerning education, it implies that, if a pregnant woman in the sampled population is educated, the probability that she will conduct physical exercises regularly is very high as compared to the uneducated. Concerning physical exercises, age and employment were all not significant. The implication is that age and employment had no impact on the probability that a pregnant woman in the sampled population will engage in regular physical exercises or not.

Concerning the attendance of antenatal regularly, the tertiary explanatory variable was omitted because all tertiary respondents attended antenatal regularly and apart from income, all the other explanatory variables (Basic, Senior High, age and employment) were not significant. The positive significance of income implies that, the higher a respondent's income, the higher the probability, that the person will attend antenatal regularly.

Looking at the impact of the area of specialization among the senior high respondents with visual arts, vocational or technical being the control group and general arts, general science or agric science, business, income, age and employment being the explanatory variables, it was revealed that, if a respondent studied general arts, science or agric and business, there was no impact on the probability that, the respondent will attend antenatal regularly, do physical exercise regularly, use a mosquito treated net and will drink alcohol or not comparing them to those who studied vocational, visual arts or technical (control group). Thus with regards to the sampled pregnant woman who had education up to the senior high level, the impact of studying general arts, science or agric and business on life style was not statistically different from the control group.

Finally concerning, the tertiary respondents, area of specialization was grouped in to health related and non health related with non health related being the control group. The study revealed that specializing in a health related field had no impact on whether a pregnant woman who has tertiary education will use a mosquito treated net or not with those specializing in a non health related field being the control group. It was further shown that specializing in a health related field had a positive impact on the probability that, a tertiary respondent performs regular physical exercises as compared to the control group. Thus if a pregnant woman with tertiary level of education in the sampled population specializes in a health related field, the greater the probability that the person will engage in regular physical exercises as compared to those who specialized in a non health related field. This confirms the argument of Grossman (1999)

No regression was run on antenatal, whether pregnant women will deliver in a hospital and attend postnatal, smoking and drinking alcohol to find out the impact of specializing in a

health related area, because all the tertiary respondents were attending antenatal regularly and said they would prefer to give birth in a hospital and would still seek postnatal care after delivery and none of them drinks or smokes.

5.2 Conclusion

From the revelations above, it can be concluded that, education has a positive significant impact on the probability that a pregnant woman in the sampled population will use a mosquito treated net and also do regular physical exercises and these life styles are expected to lead to good health. These findings on exercising regularly and using a mosquito treated net, confirms the claims of the 2008 Ghana millennium development goal report and the United Children's Fund (UNICEF), that educating girls will help reduce maternal mortality. Thus educating girls will help them lead healthy lifestyles (frequent physical exercise and using a treated mosquito net) which will reduce maternal mortality through avoiding diseases such as hypertension and also infections like malaria which are part of the causes of maternal mortality. The above findings also confirm what economic theory postulates.

It can be concluded further that, income plays a major role when it comes to respondents doing physical exercises, attending antenatal regularly and using a mosquito treated net. Thus the higher a respondent's income, the higher the probability that, the respondent will use a treated mosquito net, will attend antenatal regularly as well as exercising frequently.

Also it can be stated that, education had no impact on drinking alcohol, smoking and this can be attributed to the addictive nature of drinking alcohol and smoking. Education also had no impact on attending antenatal regularly.

In addition, it can be concluded that, factors such as the media, parental influence, family and friends had a positive influence on the lifestyle of sampled pregnant women and this tells us about the importance of these factors in the fight against maternal mortality.

Finally, it can be said that, the study achieved all the stated objectives in chapter one.

5.3 Policy recommendation

After revealing that, education and income had an important impact on certain life styles (engaging in physical exercises regularly and using a mosquito treated net) that are key to maternal health, this study recommends that the Government of Ghana and all other stakeholders in maternal health institute measures towards providing mosquito treated net to the uneducated pregnant women and those in the low income group since they are less likely to buy or use a mosquito treated net as well as finding means of encouraging the uneducated pregnant women and the low income earners to do physical exercises because the study showed that those with lower income and no education are less likely to engage in physical exercises.

In addition since income had a positive significant impact on the probability that a pregnant woman in the sampled population attended antenatal regularly, it is very important that measures and policies are instituted towards encouraging the lower income groups to attend antenatal regularly.

Also this study recommends that, the Government of Ghana and certain key institutions institute measures and affirmative action's that will increase the enrolment of girls in schools since the study showed that education had a significant positive impact on engaging in physical exercises regularly and using a mosquito treated net and these life styles are very important when it comes to the survival of pregnant women in terms of preventing hypertension and malaria infection which are part of the causes of maternal mortality .

Furthermore the study would recommend that, girls are encouraged to specialize in health related fields at the tertiary level since the study showed that, the tertiary respondents who specialized in health related fields were more willing to engage in regular physical exercises than those who specialized in a non health related area.

Finally the study would recommend that, all stakeholders in the combat against maternal mortality engage in a mass education of women concerning prenatal care, post natal care, hospital delivery, family planning, danger signs in pregnancy, healthy lifestyles e.t.c on radio, television, in schools e.t.c since these factors (mass media, schools e.t.c) have proven to have a positive influence on healthy lifestyle as seen in this study and some of the studies reviewed in chapter two.

5.4 Limitations of the study

This study was limited in terms of the small sample size used since the probit model adopted, is very useful for large samples and this could affect the efficiency and unbiaseness of the results, such that, variables that were expected to be significant were not.

Also the study is challenged interms of the non inclusion of factors such as the culture and religion of the respondents to find out their impact on lifestyle. Thus, if these factors were included we would have been able to find out whether the culture or the religion of a pregnant woman would affect her lifestyle in terms of smoking, drinking alcohol, attending antenatal regularly, using a mosquito treated net and conducting regular physical exercises. This is because factors like culture and religion do have impact on the lifestyles people adopt which in turn affect their health and this has been confirmed by a study in China by Nian Liu and others (2009) which showed that, it was forbidden for a pregnant woman to go out during postpartum, which means such a person would not seek postnatal care and this could pose a

serious threat because it is possible that such a person may experience excessive postpartum bleeding. Therefore if factors such as culture and religion were captured by the study, it would have improved the findings of the study to explore more on the impact of certain key factors such as culture and religion that affect lifestyle and therefore inform us as to what to do.

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Appendix 1: QUESTIONAIRE

The impact of education on the lifestyle of pregnant women: a case study of the Kumasi Metropolis in Ghana.

This study is being conducted in partial fulfilment of the requirements for the award of a Master of Arts degree in Economics. All information received would be used solely for academic purposes and treated with strict confidentiality.

1. Age: [ ]

2. Employment Status: Employed [ ] Unemployed [ ]

3. Monthly Income: [ ]

4. Educational level: Basic or J.H.S [ ] Senior High [ ] Tertiary [ ] None [ ]

5. If Senior high, indicate programme studied by ticking one of the options below:

a. General Arts [ ] b. Science or Agric [ ] c. Business [ ] d. Vocational, Visual arts or technical [ ]

6. If Tertiary, indicate area of specialization: ……..

7. Do you smoke? YES [ ] NO [ ]

8. Do you drink alcohol? YES [ ] NO [ ]

9. Do you use mosquito treated nets? YES [ ] NO [ ]

10. Do you do physical exercises? YES [ ] NO [ ]

11. Have you been attending the clinic or hospital for antenatal care? YES [ ] NO [ ]

12. Will you deliver in a clinic or a hospital and still seek for postnatal care after delivery?

YES [ ] NO [ ]

13. Have the Media, your Parents and other factors aside education had any positive influence on your maternal life style? YES [ ] NO [ ]

Appendix 2: Summary of descriptive statistics.

Descriptive statistics of variables used in the empirical model.

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	400	28.0275	4.833233	15	42
Income	400	271.6275	169.0243	20	800

Descriptive statistics of variables

Variable	Observation	Mean	Std. Dev.	Min	Max
employed	400	.695	.460984	0	1
other	400	.935	.2468346	0	1
primary	400	.2925	.4554804	0	1
shs	400	.2575	.4378047	0	1
tertiary	400	.1675	.3738893	0	1
general arts	103	.2427184	.4308227	0	1
science	103	.2815534	.451956	0	1
business	103	.2621359	.4419468	0	1
health_reltd	68	.2352941	.4273363	0	1
smokes	400	0	0	0	0
drinks	400	.0775	.267718	0	1
mos_net	400	.63	.4834089	0	1
exercises	400	.585	.4933391	0	1
antenal	400	.945	.2282658	0	1
hospital deliv ery and postna tal	400	0	0	0	0

Appendix 3: Results of various regression estimates.

Probit results for whether respondent Drink alcohol.

Drinks Alcohol	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	.0239709	.0199725	1.20	0.230	-.0151744	.0631162
Income	-.0013311	.0008196	-1.62	0.104	-.0029375	.0002752
Employed	-.1943793	.205302	-0.95	0.344	-.5967638	.2080053
Basic	.0182332	.2384102	0.08	0.939	-.4490422	.4855085
SHS	.1114573	.2603013	0.43	0.669	-.3987238	.6216384
Tertiary	-.4883293	.4759159	-1.03	0.305	-1.421107	.4444487
_cons	-1.636794	.5797647	-2.82	0.005	-2.773112	-.5004763

Number of obs	400
LR chi2(6)	10.72
Prob > chi2	0.0974
Pseudo R2	0.0492
Log likelihood	-103.68757

Probit results for whether respondent used a mosquito treated net.

Mosquito net	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	-.0024084	.0156621	-0.15	0.878	-.0331055	.0282888
Income	.0030202	.000574	5.26	0.000	.0018952	.0041452
Employed	.2245747	.1568314	1.43	0.152	-.0828091	.5319586
Basic	1.221812	.1850028	6.60	0.000	.8592129	1.584411
SHS	1.198122	.1995292	6.00	0.000	.8070525	1.589192
Tertiary	1.033779	.2702487	3.83	0.000	.5041009	1.563456
_cons	-1.329099	.4528013	-2.94	0.003	-2.216573	-.4416252

```
Number of observations   =        400
LR chi2 (6)              =     133.66
Prob > chi2              =     0.0000
Pseudo R2       =     0.2535
Log likelihood = -196.75353
```

Restricted regression for imposing H_O: $\beta_5 = \beta_6$ on the regression results in table 3.0

Mosquito net	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	-.0022789	.0156251	-0.15	0.884	-.0329035	.0283458
income	.0030063	.0005619	5.35	0.000	.0019049	.0041076
employed	.2254898	.1566578	1.44	0.150	-.0815539	.5325334
SHS+ basic	1.21169	.1646121	7.36	0.000	.8890563	1.534324
tertiary	1.036655	.2691734	3.85	0.000	.5090845	1.564225
_cons	-1.33057	.4526187	-2.94	0.003	-2.217687	-.443454

```
Number of obs    =        400
LR chi2(5)       =     133.64
Prob > chi2      =     0.0000
Pseudo R2        =     0.2535
Log likelihood = -196.76075
```

Restricted regression for imposing H_O: $\beta_5 = \beta_7$ on the regression results in table 3.0

Mosquito net	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	-.0026312	.0156667	-0.17	0.867	-.0333374	.0280751
income	.0028436	.0005124	5.55	0.000	.0018392	.0038479
employed	.2300014	.1564616	1.47	0.142	-.0766576	.536660
basic +tertiary	1.178312	.1732716	6.80	0.000	.8387064	1.517919
shs	1.20801	.198679	6.08	0.000	.8186059	1.597413
_cons	-1.290306	.4496404	-2.87	0.004	-2.171585	-.4090272

Number of obs = 400
LR chi2(5) = 133.18
Prob > chi2 = 0.0000
Pseudo R2 = 0.2526
Log likelihood = -196.99175

Restricted regression for imposing H_O: $\beta_6 = \beta_7$ on the regression results in table 3.0

Mosquito net	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	-.0031102	.0156286	-0.20	0.842	-.0337416	.0275213
income	.0029101	.0005452	5.34	0.000	.0018414	.0039787
employed	.2261253	.1566137	1.44	0.149	-.0808319	.5330825
shs+tertiary	1.155996	.1869019	6.19	0.000	.7896751	1.522317
basic	1.219959	.1846588	6.61	0.000	.8580343	1.581883
_cons	-1.287572	.4481951	-2.87	0.004	-2.166018	-.4091254

Number of obs = 400 LR chi2(5) = 133.27
Prob > chi2 = 0.0000
Pseudo R2 = 0.2528

Log likelihood = -196.94561

Probit results for whether pregnant woman does physical exercises.

Exercises	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	-.0116983	.0157415	-0.74	0.457	-.042551	.0191544
Income	.0022088	.0005481	4.03	0.000	.0011345	.0032832
Employed	.1580356	.1609958	0.98	0.326	-.1575104	.4735816
basic	1.563235	.1938477	8.06	0.000	1.183301	1.94317
SHS	1.653258	.2086506	7.92	0.000	1.24431	2.062205
Tertiary	1.23259	.2599242	4.74	0.000	.7231476	1.742032
_cons	-1.24527	.4568843	-2.73	0.006	-2.140747	-.3497935

Number of obs = 400
LR chi2(6) = 148.
Prob > chi2 = 0.0000
Pseudo R2 = 0.2744
Log likelihood = -196.96027

Restricted regression for imposing H_O: $\beta_5 = \beta_6$ on the regression results in table 4.0

exercises	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	-.0121285	.0157128	-0.77	0.440	-.042925	.018668
income	.0022548	.0005395	4.18	0.000	.0011975	.0033122
employed	.1528586	.1604972	0.95	0.341	-.1617102	.4674273
basic + shs	1.601423	.1758594	9.11	0.000	1.256745	1.946101
tertiary	1.222836	.2590309	4.72	0.000	.7151452	1.730527
_cons	-1.239192	.4567951	-2.71	0.007	-2.134494	-.34389

Number of obs = 400 Log likelihood = -197.0682
LR chi2(5) = 148.77
Prob > chi2 = 0.0000 Pseudo R2 = 0.2740

Restricted regression for imposing H_O: $\beta_5 = \beta_7$ on the regression results in table 4.0

exercises	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	-.0131464	.0156868	-0.84	0.402	-.043892	.0175992
income	.0018587	.0004766	3.90	0.000	.0009245	.0027928
employed	.1691123	.160473	1.05	0.292	-.1454089	.4836336
basic + tertiary	1.479523	.1820004	8.13	0.000	1.122808	1.836237
SHS	1.671405	.2076766	8.05	0.000	1.264367	2.078444
_cons	-1.138232	.4482617	-2.54	0.011	-2.016808	-.2596548

Number of obs = 400
LR chi2(5) = 147.25
Prob > chi2 = 0.0000
Log likelihood = -197.82807 Pseudo R2 = 0.2712

Restricted regression for imposing H_O: $\beta_6 = \beta_7$ on the regression results in table 4.0

exercises	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	-.0148769	.0156019	-0.95	0.340	-.045456	.0157021
income	.0018795	.0005101	3.68	0.000	.0008798	.0028793
employed	.1584068	.1602701	0.99	0.323	-.1557167	.472530
SHS + tertiary	1.531509	.1941505	7.89	0.000	1.150981	1.912037
Basic	1.559777	.1929504	8.08	0.000	1.181601	1.937953
_cons	-1.085978	.4455718	-2.44	0.015	-1.959283	-.2126736

Number of obs = 400
LR chi2(5) = 146.08
Prob > chi2 = 0.0000
Log likelihood = -198.41207 Pseudo R2 = 0.2691

Probit results for whether pregnant woman does attend antenatal regularly

Antenatal	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	-.0238311	.0224145	-1.06	0.288	-.0677628	.0201006
Income	.0042356	.0013629	3.11	0.002	.0015643	.0069069
Employed	-.0505433	.2612645	-0.19	0.847	-.5626122	.4615257
Basic	.2044573	.2595712	0.79	0.431	-.304293	.7132075
SHS	.496864	.3692798	1.35	0.178	-.226911	1.220639
Tertiary	(omitted)					
_cons	1.290215	.6548526	1.97	0.049	.0067272	2.573702

Number of obs	333
LR chi2(5)	23.30
Prob > chi2	0.0003
Pseudo R2	0.1437
Log likelihood	-69.385265

Likelihood Ratio Test Results for the impact of education on the Usage of Treated mosquito Net.

Hypothesis	Log likelihood for the restricted regression	Log likelihood for the unrestricted regression	Likelihood ratio test statistic	P-Value
H_O: $\beta_5 = \beta_6$				
H_1: $\beta_5 \neq \beta_6$	-196.76075	-196.75353	0.01	0.9044
H_O: $\beta_5 = \beta_7$				
H_1: $\beta_5 \neq \beta_7$	-196.99175	-196.75353	0.48	0.4900
H_O: $\beta_6 = \beta_7$				
H_1: $\beta_6 \neq \beta_7$	-196.94561	-196.75353	0.38	0.5354

Likelihood Ratio Test Results for the Impact of education on Regular Physical Exercises.

Hypothesis	log likelihood for the restricted regression	Log likelihood for the unrestricted regression	Likelihood ratio test statistic	P-Value
$\mathbf{H_O}$: $\beta_5 = \beta_6$				
$\mathbf{H_1}$: $\beta_5 \neq \beta_6$	-197.0682	-196.96027	0.22	0.6422
$\mathbf{H_O}$: $\beta_5 = \beta_7$				
$\mathbf{H_1}$: $\beta_5 \neq \beta_7$	-197.82807	-196.96027	1.74	0.1877
$\mathbf{H_O}$: $\beta_6 = \beta_7$				
$\mathbf{H_1}$: $\beta_6 \neq \beta_7$	-198.41207	-196.96027	2.90	0.0884

Probit regression results on the impact of area of specialization on the probability that a senior high respondent will drink alcohol.

Drinks Alcohol	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	.010416	.0540108	0.19	0.847	-.0954432	.1162751
Income	-.0026725	.0018362	-1.46	0.146	-.0062714	.0009264
Employed	-.7286593	.4263414	-1.71	0.087	-1.564273	.1069545
General Arts	-1.113442	.593223	-1.88	0.061	-2.276138	.0492539
Science	-1.183562	.6372461	-1.86	0.063	-2.432542	.0654172
Business	-.5303144	.4887141	-1.09	0.278	-1.488176	.4275477
_cons	.0776449	1.539377	0.05	0.960	-2.939479	3.094769

Number of obs = 103
LR chi2(6) = 10.49
Prob > chi2 = 0.1054
Pseudo R2 = 0.1718

Log likelihood = -25.286795

Probit regression results on the impact of area of specialization on the probability that a senior high respondent will use a mosquito treated net.

Mosquito net|	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	.0024655	.037731	0.07	0.948	-.071486	.076417
Income	.0046535	.0014198	3.28	0.001	.0018708	.0074363
Employed	.3100606	.3191409	0.97	0.331	-.3154442	.9355653
General Arts	.8040561	.4399919	1.83	0.068	-.0583121	1.666424
Science	.6078435	.4274365	1.42	0.155	-.2299167	1.445604
Business	.6464993	.4210837	1.54	0.125	-.1788095	1.471808
_cons	-1.249564	1.097123	-1.14	0.255	-3.399886	.9007587

```
  Number of obs   =        103
  LR chi2(6)      =      18.00
  Prob > chi2     =     0.0062
  Pseudo R2       =     0.1645
  Log likelihood =    -45.698289
```

Probit regression results on the impact of area of specialization on the probability that an senior high respondent will engage in regular physical exercises.

Exercises	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	-.0154674	.0376281	-0.41	0.681	-.0892172	.0582824
Income	.0042052	.0014539	2.89	0.004	.0013555	.0070548
Employed	.4173951	.3267401	1.28	0.201	-.2230038	1.057794
General Arts	.3768256	.4269394	0.88	0.377	-.4599603	1.213611
Science	.8933089	.4852141	1.84	0.066	-.0576933	1.844311
Business	.3956677	.4094895	0.97	0.334	-.4069169	1.198252
_cons	-.5540154	1.079916	-0.51	0.608	-2.670612	1.562581

```
Number of obs   =        103
LR chi2(6)      =      16.21
Prob > chi2     =     0.0127
Pseudo R2       =     0.1517
```

Probit regression results on the impact of area of specialization on the probability that a senior high respondent attends antenatal regularly.

Antenatal	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	-.3403997	.4016465	-0.85	0.397	-1.127612	.4468129
Income	.0148291	.0142298	1.04	0.297	-.0130608	.042719
Employed	2.595908	2.983788	0.87	0.384	-3.252209	8.444026
General Arts	1.536854	2.367485	0.65	0.516	-3.103331	6.177039
Science	(omitted)					
Business	(omitted)					
_cons	7.201813	8.860575	0.81	0.416	-10.16459	24.56822

Number of obs = 47

LR chi2(4) = 7.93

Prob > chi2 = 0.0943

Pseudo R2 = 0.4792

Log likelihood = -4.30751

Probit regression results on the impact of a health related area of specialization on the probability that a tertiary respondent will use a treated mosquito net.

Mosquito net	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	.0147977	.0603839	0.25	0.806	-.1035526	.133148
Income	-.000617	.0020161	-0.31	0.760	-.0045685	.0033344
Employed	1.227473	.7118786	1.72	0.085	-.1677837	2.622729
Healthrelated	.3322595	.5402146	0.62	0.539	-.7265417	1.391061
_cons	.0335281	1.651168	0.02	0.984	-3.202702	3.269758

```
Number of obs   =         67
LR chi2(4)      =       6.85
Prob > chi2     =     0.1441
Pseudo R2       =     0.1295
Log likelihood = -23.009348
```


Probit regression results on the impact of a health related area of specialization on the probability that a tertiary respondent will engage in regular physical exercises.

Exercises	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	-.1198514	.0515052	-2.33	0.020	-.2207997	-.018903
Income	.0029787	.00177	1.68	0.092	-.0004903	.0064478
Employed	.3420907	.6457034	0.53	0.596	-.9234647	1.607646
Healthrelated	1.377514	.6018844	2.29	0.022	.1978425	2.557186
_cons	2.539533	1.349836	1.88	0.060	-.1060976	5.185163

```
Number of obs   =         67
LR chi2(4)      =      12.22
Prob > chi2     =     0.0158
Pseudo R2       =     0.1715
Log likelihood = -29.518493
```