Distribution Agreement

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

______________________________ _______________

Anne S. Mirabito Date

Impact of Women's Education and Empowerment on Health Status and Wellbeing in Low and Lower Middle Income Countries

By

Anne S. Mirabito

Global Health

____

Dabney Evans, PhD, MPH
Committee Chair

Impact of Women's Education and Empowerment on Health Status and Well-Being in Low and Lower Middle Income Countries

By

Anne S. Mirabito

B.S., Degree with Distinction, University of Delaware, 2010

Thesis Committee Chair: Dabney Evans, PhD, MPH

An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirement for the degree of
Master of Public Health
in Global Health
2012

Abstract

Impact of Women's Education and Empowerment on Health Status and Well-Being in Low and Lower Middle Income Countries
By Anne S. Mirabito

Women are often the main providers of primary health care and as a result play an important role in maintaining family as well as community health. The links between women's education and empowerment and family health have been well established but the connection between women's education and empowerment and their own health and well-being have been less well researched. This paper seeks to determine what studies have been done concerning the inter-relation of women's education and empowerment and their health status and well-being while also addressing the following questions:

1. What impact does the education and empowerment of women have on women's health and well-being, including but not limited to reducing gender equalities?
2. Which indicators have been used successfully in the past to best monitor women's health and well-being?
3. Which covariates including the social contextual determinants of health must also be present for education and empowerment to have a significant impact?

Low and lower middle income countries were chosen as the focus because of the relationship between low socioeconomic status and poor health status. These countries were identified based World Bank classifications. After a broad search, the topic of health and well-being was narrowed to HIV/AIDS, cardiac disease, mental health and maternal health. These topics were selected based on WHO projections of the leading causes of morbidity and mortality among women in low income countries in 2015, 26%, 10%, 10%, and 11% of healthy life years lost respectively. Based on the results of the literature review, there seem to be generally positive links between women's health and well-being and education and empowerment. However, in the instances that education and empowerment had a negative impact, the importance of study setting and cultural norms became very clear. Many of the studies reviewed did not focus on covariates, which are potentially very important to the outcome of programs. As a result, it is recommended that a broad, long term study be conducted in order to better monitor potential covariates and optimize program success. In addition, a list of recommended indicators for future research was compiled.

Table of Contents

Chapter 1 Introduction and Objectives **1**

1.1 Background and Significance 2
1.2 Statement of Problem 4
1.3 Purpose of Study 7
1.4 Research Questions 7

Chapter 2 Methods **8**

2.1 Study Selection 10
2.2 Data Collection 11

Chapter 3 Results **11**

3.1 Education and Women's Health and Well-Being 11
3.2 Impact of Women's Education and Empowerment on HIV/AIDS 12
3.3 Impact of Women's Education and Empowerment on Cardiac Disease 16
3.4 Impact of Women's Education and Empowerment on Maternal Health 19
3.5 Impact of Women's Education and Empowerment on Mental Health 22
3.6 Impact of Women's Education and Empowerment on Access to Care 25

Chapter 4 Recommendations and Conclusions **27**
4.1 Recommendations 27
4.2 Conclusions 29

Resources **33**

Appendix **37**

CHAPTER 1 INTRODUCTION AND OBJECTIVES

Women are often the main providers of primary health care, and thus play an important role in maintaining family as well as community health. In addition, women are most aware of sickness and suffering in the community because of their societal role as nurturers and caretakers of the young, old, sick, and the infirm as well as exerting an important influence on the health habits of the family (Health, Education, and the Role of Women Statement to the ninth meeting of the Committee of Representatives Governments and Administrations, South Pacific Commission, 1988).

The links between women's education and a broad range of development outcomes, such as reductions in fertility and child mortality, as well as increased economic growth have been established (World Bank, *Engendering Development: Through Gender Equality in Rights, Resources, and Voice*, 2001). Additionally, in all countries with relevant data childhood mortality is lowest where maternal education is the highest (Bicego and Boerma, 1993).

The objective of this paper is to understand how the socio-contextual determinants of health including education, can serve as a stimulus for reducing gender inequality, thus benefiting women themselves. It is generally assumed that education enhances women's well-being in addition to giving them a greater voice in household decisions, greater autonomy over their life decisions, and improved opportunities to participate in community affairs, thus contributing to decreasing gender inequalities (Malhotra, Pande, and Grown 2003). Yet, the empirical evidence supporting this idea is limited. With the exception of studies on women's decision-making, mobility, and issues of gender

equality, many studies are not specifically interested in the impact of women's education for women themselves (Malhotra et al, 2003).

1.1 Background and Significance

Globally, many of the main causes of women's morbidity and mortality have their origins in societal attitudes and treatment of women (WHO, *Women and Health*, 2009). While interventions and technical solutions can act as a band-aids, sustainable progress requires more fundamental change (WHO, *Women and Health,* 2009). Public policies such as targeted action to encourage girls to enroll in school (by ensuring a safe school environment and promoting later marriage) have the potential to influence exposure to risks, access to care, and the consequences of ill health in girls and women (WHO, *Women and Health,* 2009).

However, the question of how best to assess women's health status remains. In the public health community, women's health and the indicators used to measure it are often merely disaggregated by sex or otherwise narrowed to maternal health. While this is most certainly an important aspect of women's health, it is one among many. It has also been suggested by experts that health education and promotion, rates and impact of personal violence against women, and access to healthcare are the most important indicators to measure the health status and well-being of women in the future (Garcia, Freund, Berlin, Digre, Dudley, Fife, Gabeau, Geller, Magnus, Trott, White, 2010). Though most indicators chosen will ultimately be insufficient to completely measure all facets of the complex issue of women's health, it is important that the public health community seeks to broaden indicators. Doing so will send the message that women are valued for more

their ability to bear healthy children and that success in meeting women's needs to reflect the belief stated in the WHO Constitution, that health is truly a state of "complete physical, mental, and social well-being, and not merely the absence of disease or infirmity" (WHO Constitution, 1946), (Psaki and OlaOlorun, 2011).

Gender Inequalities and Women's Health

It is generally known that low socioeconomic status negatively impacts health. For women, the adverse health impacts of low socioeconomic status are compounded by gender inequalities (WHO, *Women and Health*, 2008). Progress has been made with more countries than ever before guaranteeing women equal rights under the law in areas such as property ownership, inheritance, and marriage but changes do not affect all women and are not seen in all domains of gender equality (World Development Report on Gender and Equality, 2012). For example, the likelihood of a woman dying in childbirth in Sub-Saharan Africa is currently equal to rates in Northern Europe during the 19th century (UNESCO, *Comparing Education Statistics Around the World,* 2010). Further, gender inequalities can be seen in the difference in school enrollments in Nigeria, where a wealthy urban child averages around 10 years of schooling, while poor rural Hausa girls average less than 6 months (UNESCO, *Comparing Education Statistics Around the World,* 2010).

Unequal power relations and gender norms translate into differential access to and control over health resources both in the nuclear family and beyond (WHO, *Women and Health,* 2009). Gender inequalities in the allocation of resources, including education,

income, health care and political voice are strongly associated with poor health and reduced well being (WHO, *Women and Health*, 2009).

Education and Women's Health

Achieving equality in education in primary school and beyond is essential if women are to fully participate in society and the economy (WHO, *Women and Health,* 2009). More than 70 million girls are not in school and more than 580 million women remain illiterate (twice the number of illiterate men) (UNICEF, *The Situation of Women and Girls: Facts and Figures,* 2009). Increasing the numbers of girls and women who receive education could have important benefits both in terms of women's overall health and well-being as well as their societal standing.

1.2 Statement of the Problem

Though many health indicators are measured and disaggregated by sex, ascertaining the best combination of indicators to measure the complex issue of women's health and well-being remains a challenge. Some sources suggest measuring rates and impact of domestic violence, access to healthcare, and health education and promotion (Garcia et el 2010), whereas other public health authorities such as the Commission on Information and Accountability for Women's and Children's Health (convened by WHO at the request of the UN) use only reproductive health indicators when measuring progress in women's health. Psaki and OlaOlorun argue that neither of these types of indicators comes close to fully capturing women's health status. Instead, they propose creation of a health women's scale with the following components: women's self-reported health

overall, women's reports of intentional injuries, the proportion of women who have received primary education and an indicator of women's empowerment (i.e. do women think wife beating is acceptable)(Psaki and OlaOlorun, 2011).

As healthcare reform is conducted both in the US and abroad, a review of studies using a variety of indicators would be helpful in determining which will provide the most accurate information about women's health status and well-being. By studying the methods, programs, and conclusions of prior studies in light of the impact and interplay women's education and empowerment on these indicators, the most effective research can be conducted in the future, leading to the development of the best possible interventions to promote women health and well-being.

Gender Inequalities and Women's Health

Although the number of women in politics has increased in recent years, men hold political control in most societies, and by extension hold social and economic control (Millennium Development Goals Report, 2007). Although there are not dependable data on the exact proportion of women that live in poverty, women tend to be especially vulnerable to income poverty as they are less likely than men to be in formal employment and much of their work is unpaid (World Development Indicators, 2008). Furthermore in many developing countries, a large proportion of agricultural workers are women, many of who are unpaid as this type of work is part of their role within the family (World Development Indicators, 2008).

Despite the fact that women's participation in employment has increased since 1990, employment ratios are still significantly higher for men than for women, with gender

gaps ranging from 15% in developed areas to more than 40% in South Asia, the Middle East, and North Africa (MDGs and Gender, UN, 2008).

Since women are less likely to be part of the formal labor market, they often lack job security and other benefits such as access to healthcare. Even within the formal work force, women face challenges related to their lower status (Hall, 1989), suffer discrimination and sexual harassment (Paoli and Merllie, 2001), as well having to balance work with domestic duties, leading to work related fatigue, mental health problems, infections, and other issues (Ostlin, 2002).

Finally, women's health maybe put at increased risk as a result of their traditional household duties. For example, women tend to be responsible for preparing family meals, and often suffer as a result of indoor air pollution exposure, where solid fuels are used for cooking (WHO, *Women and Health,* 2009). Breathing air polluted by the burning of solid fuels is estimated to be the cause of approximately 641,000 of the 1.3 million deaths worldwide due to chronic obstructive pulmonary disorder (COPD) among women (WHO, Global Burden of Disease, 2004). Women are also disproportionally responsible for collecting food and water for the household (WHO and UNICEF Joint Monitoring, 2008). Time spent on collecting water and fuel for the family could otherwise be spent on education or income generation, improving the health status of the women as well as their families (WHO, *Women and Health,* 2009).

Gender inequalities are relevant to this review as they not only impact women's health on their own but have an interaction with education and empowerment in many cases. Lack of education for women is a form of gender inequality but education and

empowerment can also serve a catalyst for decreasing gender inequalities and thus improving health through several different pathways.

1.3 Purpose of the Study

The purpose of this study is gain knowledge about prior research that has been done on women's empowerment and education and its impact and interconnection with women's health and well-being. Gathering and synthesizing information about this topic is an important step for achieving change in policy, identifying gaps in the research to be further explored, as well as what indicators are best suited to measure women's health status and empowerment.

1.4 Research Questions

This paper seeks to address the following questions:

1. What impact does the education and empowerment of women have on women's health and well-being, including but not limited to reducing gender equalities?
2. Which indicators have been used successfully in the past to best monitor women's health and well-being?
3. Which covariates including the social contextual determinants of health must also be present for education and empowerment to have a significant impact?

CHAPTER 2 METHODS

This review followed the general Cochrane method, in which there is clearly defined review question, specific population, intervention, comparison, and outcome. Data collected included source information, eligibility, methods, participants, interventions, outcomes, and results. Microsoft Excel was used to manage data. Meta-analysis was not conducted in this study.

Research for this paper began with a review of the literature of articles published on the impact of women's education and empowerment on a woman's individual health and well being in low and lower middle income countries as defined by the World Bank. Economies are categorized by 2010 GNI (Gross National Income) per capita, calculated using the World Bank Atlas Method. Countries falling into the low-income category had a GNI per capita of $1,005 whereas those falling into the lower middle-income category had a GNI per capita of $1,006-$3,975.

Low income countries include: Afghanistan, Bangladesh, Benin, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Eritrea, Ethiopia, The Gambia, Guinea, Guinea-Bisau, Haiti, Kenya, Korea (Democratic Republic of), Kyrgyz Republic, Liberia, Madagascar, Malawi, Mali, Mozambique, Myanmar, Nepal, Niger, Rwanda, Sierra Leone, Somalia, Tajikistan, Tanzania, Togo, Uganda, and Zimbabwe.

Lower middle income countries include: Angola, Armenia, Belize, Bhutan, Bolivia, Cameroon, Cape Verde, The Republic of Congo, Cote d'Ivorie, Djibouti, The Arab Republic of Egypt, El Salvador, Fiji, Georgia, Ghana, Guatemala, Guyana, Honduras, Indonesia, India, Iraq, Kiribati, Kosovo, Loa PDR, Lesotho, Marshall Islands,

Mauritania, Federal States of Micronesia, Moldova, Mongolia, Morocco, Nicaragua, Pakistan, Papua New Guinea, Paraguay, Philippines, Samoa, Sao Tome and Principe, Senegal, Solomon Islands, Sri Lanka, Sudan, Swaziland, Syrian Arab Republic, Timor-Leste, Tonga, Turkmenistan, Tuvalu, Ukraine, Uzbekistan, Vanuatu, Vietnam, West Bank and Gaza, Republic of Yemen, Zambia.

The age restrictions for a woman included from the beginning of childbearing years until death.

PubMed was used for all literature searches. Search topics included “women’s education”, “empowerment”, and “impact”. Search topics specific to the health and well-being of women included “domestic violence”, “infectious disease”, “mental health”, “chronic disease”, “nutrition”, “access to care”, and “HIV/AIDS”. The term equality was not searched directly but information about gender equality and education found during research for the background section was included to provide context for women’s education and empowerment being a possible stimulus for decreasing gender inequality.

Following this broader search of the literature, a search to determine which indicators were most commonly used to measure women’s health status and overall well-being was conducted by reviewing the methods of the studies found in the original search. Next, the health topics specifically related to health and well-being were narrowed to mental health, HIV/AIDS, cardiac disease, maternal health, and access to care. HIV/AIDS, cardiac disease, mental health and maternal health were selected based on WHO projections of leading causes of morbidity and mortality among women in low income countries in 2015, 26%, 10%, 10%, and 11% of healthy life years lost respectively.

2.1 Study Selection

The inclusion criteria for the review of studies were as follows:

- Enrollment of women (womanhood was defined as the time of childbearing ability on);
- Assessment of effects of education and empowerment on aspects of women's health status and well-being;
- Publication in English;
- Publication between 1998 and 2011; and
- Conducted in low or lower middle income county as defined by World Bank.

Exclusion criteria for studies included:

- Being conducted in a country that was not low income;
- Being published outside the specified time period;
- Publication in a language other than English and
- Full article text not available.

All of the studies that were selected were published in English in medical or public health related journals. Articles dated back to 1998 with a majority being from 2004 or later. Both qualitative and quantitative studies were included in order to get a broader picture of the impact of education and empowerment on women's health and well-being. A special effort was made to find recent publications so the most current public health knowledge about the subject area could be reflected on. Selection was based on relevance to previously mentioned search topics and the depth to which the impact of education and/or empowerment on the chosen areas of focus was discussed. Articles that related to

specialized circumstances such as natural disaster or war were not included in order to get a more generalized view.

2.2 Data Collection

Articles were gathered and put into a Microsoft Excel spreadsheet. The following information was recorded: citation information, eligibility, study methods, participant characteristics, interventions used, indicators or outcomes measured, and results. The country where the study was conducted, age range of the women included in the study, and key findings were listed as well. The spreadsheet was categorized by subject area. These subjects were: access to care, cardiac disease, HIV/AIDS, and mental health though a broader base of topics was searched initially.

CHAPTER 3 RESULTS

The links between women's education and empowerment and their health and well-being are not well established. However, some studies exist that detail the links that have been observed between these areas.

Though the impact of gender inequalities and education on women's health have been discussed previously a more extensive explanation follows.

3.1 Education and Women's Health

Achieving equality in education in primary school and beyond is essential if women are to fully participate in society and the economy (WHO, 2009). Despite significant

gains in female enrollment in recent years, girls still account for over half of the out-of-school population (WHO, 2009). More than 70 million girls are not in school and more than 580 million women remain illiterate (twice the number of illiterate men) (UN Children's Fund, 2009). Increasing the numbers of girls and women who receive education could have important benefits both in terms of women's overall health and well-being as well as their societal standing (World Education, Girls' and Women's Education Initiative). Educated girls and women have been seen to be less vulnerable to HIV infection, human trafficking, as well as other forms of exploitation, are more likely to marry later in life, and raise fewer children who themselves are more likely to get an education and make important contributions to family income (World Education, Girls' and Women's Education Initiative).

Risk of infectious disease plays an important role in the health status of any woman and should be considered when determining the impact education and empowerment on women's overall health and well-being. As HIV/AIDS is the number one cause of death for women of reproductive age in lower income countries (WHO, *Ten Leading causes of death in female, by age and country income group*, 2004), it was selected from the broad category of infectious disease to be focused on.

3.2 Impact of Women's Education and Empowerment on HIV/AIDS

Education and empowerment have been associated with decreased risk of infectious disease among women of low-income countries. Additionally, studies have shown the same positive association exists between the education and empowerment of women in

low-income countries and risk of HIV/AIDS. (Chiao, Mishra, Ksobiech, 2011), (Bradley, Bedada, Brahmbhatt, Kidanu, Gillespie, Tsui, 2007), (Dugassa, 2004), (Lee, Pollock, Lubek, Niemi, O'Brien, Green, Bashir, Braun, Kros, Huot, Ma, Griffiths, Dickenson, Pring, Sohkurt Houn-Ribeil, Lim, Turner, Winkler, Wong, Van Merode, Dy, Prem, Imeda, 2010), (Gregson, Terceira, Mushati, Nyamukapa, Campbell, 2004), (Smith, Nalagoda, Wawer, Serwadda, Sewankambo, Konde-Lule, Lutalo, Li, Gray, 1999).

A study conducted in Kenya explored how a specific aspect of empowerment, women's position relative to their male partners, influenced spousal communication about HIV prevention (Chiao et al, 2011). This study is important as authors looked at gaps in age and education between spouses as well as female decision making power as key factors impacting spousal communication about HIV, while also controlling for sexual behavior of both partners as well as other individual and contextual factors (Chiao et al, 2011). Analyses showed higher levels of education for the female partner and participation in household decisions were positively associated with spousal communication about HIV (Chiao et al, 2011). A secondary paper used the situation of Oromo women in Ethiopia as a case study calling for the empowerment of these women to containing the growing HIV/AIDS epidemic, providing additional evidence that empowerment may be an effective intervention for curtailing the spread of HIV/AIDs and other infectious diseases (Dugassa, 2004).

Bradley et al examined the association between HIV infection and educational attainment level among a population of 34,512 voluntary counseling and testing clients in Ethiopia, utilizing client data from the Family Guidance Association of Ethiopia (FGAE) (Bradley H, Bededa A, Brahmbhatt H, Kidanu A, Gillespe D, Tsui A, 2007). Based on

these data, it was found that HIV prevalence levels decrease significantly with increase in education level among both women and men. This association continues with secondary and tertiary education in the multivariate model (Bradley et al, 2007). Female clients with more than secondary level education were 66% less likely to be HIV positive than those women with no education (Bradley et al, 2007).

Similar patterns can be found in the low-income countries of Asia. A study conducted in Cambodia used health psychology to provide a framework to allow local citizens to systematically effect change in health and social inequalities, partially through Participatory Action Research (PAR) (Lee, 2010). A Cambodian NGO, SiRCHESI, launched a 2 year Hotel Apprenticeship Program in 2006 with the goal of providing literacy, English, social skills, health education, hotel skills training, work experience, and a living wage to women formally selling beer in restaurants (Lee et al, 2010). In their prior workplace, women had faced many risks including HIV/AIDS, alcohol overuse, violence, and sexual coercion (Lee et al, 2010). Quantitative and qualitative analyses were carried out and indicated significant changes in health knowledge, behavior, self-image, and empowerment among the Hotel Apprenticeship Program trainees (Lee et al, 2010). This study provides an example of a specific education and empowerment intervention that successfully brought about changes in education, self-image and behavior and thereby decreased risks women in this setting were exposed to.

Although education and empowerment were associated with decreased risk of HIV in the previously mentioned studies, Smith et al. conducted a study in Uganda, which found that higher levels of education were associated with higher HIV seroprevalence

(OR of 2.7 for primary and 4.1 for secondary, as compared to no education). The strength of the association decreased but remained statistically significant after adjustment for socio-demographic and behavioral factors (Smith et al, 1999). Educational attainment proved to be a significant predictor of HIV risk in rural Uganda partially because of risk behaviors and other characteristics present among better educated individuals, illustrating that though interventions of this type have proven to be beneficial in other countries, there might other mechanisms at work in the association between educational attainment and HIV risk. A broader, multi-county level survey should be conducted in order to ascertain what the generalizability of the associations between these two issues.

A study conducted in Zimbabwe provides some insight into the interconnectedness of education and empowerment. This study found that participation in local community groups was often positively associated with successful avoidance of HIV, which in turn was positively associated with psychosocial determinants of safer behavior (Gregson et al, 2004). However, whether or not these relationships hold depends on variety of factors, including the educational level of the participant (Gregson et al, 2004). Young women who had secondary education were disproportionately likely to be involved in well-functioning community groups in addition to being more likely to avoid HIV through participation (Gregson et al, 2004).

As seen through these examples, education and empowerment tend to have a positive effect on women's health, in these cases decreasing their risk of HIV. As HIV is an important cause of healthy life years lost, especially among women in low-income counties, these findings are very important. Applying successful education and

empowerment strategies in similar settings could be a very useful tool for reducing the burden of HIV/AIDS and possibly other infectious diseases worldwide.

Most of the previously mentioned studies reference an intervention that was some combination of the two. Additionally, there could be variables such as cultural norms or community support for a program that would influence the ability of education and empowerment to impact risk of HIV or other diseases, though none of these variables were mentioned in the studies reviewed above.

Though HIV and infectious diseases are important components of a women's health status as whole, they represent just one piece of the puzzle. The impact of education and empowerment on chronic disease, specifically cardiac disease is discussed in the following section.

3.3 Impact of Women's Education and Empowerment on Cardiac Disease

Studies have reported a protective effect seen between increased educational attainment and incident cardiac events among men in high income countries, but a limited impact among women in high income countries and men in low- and middle-income countries (Goyal, Bhatt, Steg, Gersh, Alberts, Ohman, Corbalan, Eagle, Gaxiola, Gau, Goto, D'Agostinio, Califf, Smith, and Wilson; Reduction of Atherothrombosis for Continued Health (REACH) Registry Investigators, 2010). Interestingly, this association completely disappears for women in low- and middle-income countries (Goyal et al, 2010).

The authors' explanations for this include the fact that cardiac disease is on the rise in low-and middle-income countries (thought to be in an earlier stage of epidemiologic

transition as compared to high income countries) whereas deaths from cardiac disease are declining in high-income countries (Yusuf, Reddy, Ounpuu, Anand, 2001). In addition, women may be at different point in the epidemiological transition than men even though they may be living in the same setting (Goyal et al). A similar situation was observed among different ethnic groups living in the same regions in the INTERHEART Africa study, with higher educational attainment predicting a greater odds ratio for first myocardial infarction (MI) in black Africans but a lower odds ratio for first MI in colored Africans and Europeans (Styen, Sliwa, Hawken, Commerford, Onen, Damasceno, Ounpuu, Yusuf, 2005).

Higher educational attainment has been shown to improve health through a variety of pathways in other settings, including increasing income, expanding access to health care, improving health literacy and compliance with therapy protocols, and adoption of healthier behavior (Yan, Liu, Daviglus, Colangelo, Kiefe, Sidney, Matthews, Greenland, 2006), (Laaksonen, Talala, Martelin, Rahkonen, Roos, Helakorpi, Laatikainen, Prattala, 2008), (Leigh, 1983). Despite the demonstration of this link in some settings, higher educational attainment may not distribute these benefits equally between men and women as women may be less independent or empowered than men to make healthy choices or to seek adequate health care (Gayol et al, 2010). Based on the results of the study by Yan et al, promoting higher educational attainment among women in low- or middle-income countries alone may not be enough to protect them from cardiac disease. Interventions should instead try to ensure that women of all education levels have adequate access to preventative measures and health care.

Some of the limitations of the Yan et al study include the fact that subjects recruited had established cardiac disease or multiple risk factors. This may mean the results may not be generalizable to community based populations or healthier patients (Gayol et al, 2010). Also this study did not include countries in South Asia, where a previous study reported increased educational attainment as having a protective effect (Joshi, Islam, Pais, Reddy, Dorairaj, Kazmi, Pandey, Haque, Mendis, Rangarajan, Yusfuf, 2007) or sub-Saharan Africa where the impact of educational attainment may differ by ethnic groups (Steyn et al, 2005). Furthermore, most of the participants in this study were older, meaning that their formal education occurred in the past so these results might not necessarily apply to younger populations (Gayol et al, 2010). Finally, the countries in this were classified in based upon world region, not indices of wealth. The authors justified this decision based on the fact that a prior study looking at global cardiac disease and that "misrepresenting" any countries would only serve to strengthen the relationship between attained education level and cardiovascular disease (Gayol et el, 2010).

There were no studies matching the inclusion and exclusion criteria in the current research that linked women's empowerment and cardiac disease. Based on the finding of studies linking education to cardiac disease it does seem that empowerment may boost the impact of education, further encouraging women to make healthy life decisions and seek access to health care. However, more research in this area is needed in this area to fully ascertain the impact of women's empowerment on cardiac disease.

It would be helpful to conduct more research to truly determine how education and empowerment are related to chronic disease among women in lower income settings. Though educational attainment has been linked to reduced risk for cardiac disease in

women in high-income countries, the relationship is less clear among women in low income countries. Additionally, little work has been done to determine the influence of empowerment alone and in combination with education for reducing risk of cardiac disease. As chronic disease begins to spread to lower income countries, conducting studies of this matter would be helpful in order to develop the most effective interventions going forward.

Though infectious and chronic diseases are very integral parts of a women's health and well-being, issues relating to maternal health are another important facet that merit attention. Maternal health is the aspect of women's health that currently receives the most attention and focus, especially in low resource areas, and is unarguably a very important aspect of women's health. As maternal mortality is still a major public health issue, especially in developing countries, the impact of education and empowerment is important to ascertain in order to come up with more effective intervention strategies in the future.

3.4 Impact of Women's Education and Empowerment on Maternal Health

Education has been seen to offer women the opportunity to make the right decision for themselves, especially during emergencies (Harrison and Bergstrom, 2001). Education also generally has a positive effect on reproductive behavior and maternal health standards (Harrison and Bergstrom, 2001; Harrison, 2009). Yet, education is certainly not the only factor affecting maternal mortality as illustrated by a study conducted in Nigeria (Agan, Archibong, Ekabua, Ekanem, Abeshi, Edentekhe, Bassey, 2010). In this case, a chaotic social, political, and economic situation all contributed to poor maternal

health care (Harrison, 2009). As many lower income countries have problems with stability, it is important to recognize the important role that education may play and that measures must be taken to address these other issues in order to truly have an impact on maternal morality, and more broadly, women's health and well-being.

An additional study, conducted in rural Bangladesh, confirmed through univariate and multivariate analysis, that maternal education was important in the use of maternal health care services. In this study, female education had a net positive benefit, regardless of other background characteristics, household socioeconomic status, and access to health care services (Chakraborty, Islam, Chowdhury, Bari, Akhter, 2003). This strong influence of a mother's education on utilization is consistent with prior findings in similar settings (Abbas and Walkerns, 1986), (Elo, 1992), (Becker, Peters, Gray, Guliano, Blake, 1993) (Fosu, 1994). These findings are important as they suggest that a women's education may help her to overcome other obstacles to receiving care, such as access and financial barriers.

Empowerment is widely considered to be crucial to improving maternal health in developing countries, though there is not consistent empirical evidence relating to the issue (Kamiya, 2011). Using household survey data from Tajikistan, Kamiya et al examined whether or not women's autonomy at the household level impacted the use of reproductive healthcare (Kamiya, 2011). In this setting, results reconfirmed that a woman's status within the household is closely related to their reproductive health care utilization in developing countries (Kamiya, 2011). These findings should encourage policymakers to implement not only maternal health specific interventions but also more broad polices that address women's empowerment. It should also be recognized that the

quality of health care provided is crucial to reducing maternal mortality. Health care facilities and staff knowledge level could also be evaluated and taken into account in order to develop the best overall policy, something that was not examined in this study.

A broad study has also linked the 3 E's (women's economic, educational, and empowerment status) in 31 developing countries with utilization of crucial services that influence maternal health (Ahmed, Creanga, Gillespie, Tsui, 2010). While prior studies conducted in individual countries have consistently shown the links between women's wealth, education attainment, empowerment or autonomy, and use of maternal health services/maternal survival, this study was the first to provide multi-country evidence from developing countries including the magnitude of association with modern contraceptive use, antenatal care, and skilled birth attendance (Ahmed et al, 2010). Of the three factors examined, empowerment was the least strongly associated with women's use of maternal services in all countries studied, especially those in Africa (Ahmed et al, 2010). An additional study conducted in Nairobi, Kenya seems to echo this finding, identifying household wealth and education as being strongly correlated with place of delivery, while the association with women's autonomy was weaker (Fotso, Ezeh, Essendi, 2009). Despite the benefits of linking women's economic, educational, empowerment status cross-sectional, this only allows for associations and not causal relationships to be examined. Qualitative heterogeneity was accounted for by using a random effects model but authors were unable control for all sources of qualitative heterogeneity among data from different countries, which may have biased estimates of the relationships between women's status and maternal health service utilization (Ahmed et al, 2010). More research in addition to in-depth county specific assessments are

needed in order to determine the true nature of women's status and maternal health care use, but this study provides a good starting point.

Though maternal health has been focused on in the past, the links between women's education and empowerment have not been well established. Education and empowerment could be key factors in women seeking out services crucial to maternal health and as such may play an important role in the success of maternal health initiatives. As mentioned previously, more extensive research is needed in this area to determine if a relationship exists and if so, how this relationship impacts efforts to improve maternal health, as well as women's health status overall.

As discussed in the previous sections, physical health is a crucial component in determining women's health status. However, mental health status is another integral part of women's overall health status and well-being, in addition to being one that is often overlooked or not fully appreciated. Mental health issues are an important and widespread problem. For example, according to the WHO, depression is the number one cause of disability worldwide, with approximately 73 million women worldwide suffering a major depressive episode (WHO, Women's Health Fact Sheet, 2009).

3.5 Impact Of Women's Education And Empowerment On Mental Health

As mentioned above, poor mental health is a serious problem globally. Many of those affected by mental illness reside in lower income or developing countries where options for care are much more limited. Furthermore, women seem to be more susceptible to common mental disorders than men. Possible explanations for this increased susceptibility include biological factors, including hormone regulation, social factors

such as the imposition of strict traditional roles specifically those that restrict women's autonomy and agency and attribute lower social status to women; and exposure to domestic and sexual violence (WHO, *The World Health Report 2001: Mental Health-new understanding, new hope, 2001).*

Searches did not yield any studies relating women's education specifically to mental health in lower income countries. It is possible that links between mental health and education would follow similar patterns as those seen between infectious and chronic disease but studies should be conducted to determine the true nature of the relationship Furthermore it would be interesting to follow-up on some of the studies that have been done exploring empowerment and mental health to see determine what, if any interaction education and empowerment might have.

A study was conducted in rural Maharashra India to evaluate how women involved in the Comprehensive Rural Health Project described concepts of mental health and beliefs about determinants in addition to evaluating the impact of the program on individual and community factors related to mental health (Kermode, Herrman, Arole, White, Premkumar, Patal, 2007). Women in this study were involved in the Comprehensive Rural Health Project, a program based equity, integration, and empowerment, with a strong focus on women. Participants explained that women's mental health was improved by interventions that served to promote their ability to earn money independent from their husbands, including promoting literacy and numeracy, creation of micro-credit groups, and training women in marketable skills (Kermode et al, 2007).

This study found that for women in this population, mental health and empowerment were inextricably linked. Participants in this study frequently acknowledged that the

opportunity to earn money independently resulted in positive outcome at the individual and family level, which in turn seemed to have a direct and desirable impact on mental health (Kermonde et al, 2007). Increased freedom of movement and greater input in decision making were also linked to economic participation, in addition to being seen as important for a women's sense of competence and control and ultimately their mental health (Kermonde et al, 2007).

This study is important because it reports women themselves identifying empowerment interventions as positively impacting their mental health rather than solely describing a statistical association that is seen to exist. Despite this, a more formal assessment of the relationship between the two topics would add strength to the argument. Finally, improving mental health for women in low resource setting requires the strengthening of the health care systems as well as recognizing other development issues including gender and power issues, access to economic resources and human rights (Kermonde et al, 2007).

The links between mental health and women's health in lower income countries were fairly well established in the studies reviewed. Yet further studies conducted in this area would strengthen the relationship and the likelihood that empowerment would be considered as a strategy to improve women's mental health. As mentioned previously, studies explicitly linking education to mental health in lower income countries were not found. Determining if education had a positive effect on mental health status would be beneficial not only for improving mental health but also in gaining support for women's education programs as a whole.

Physical and mental health are obviously very important components of women's overall health status and well-being. However, women's ability to access care plays a significant role in the prevention and treatment of physical and mental health symptoms, thus making access to care another aspect of women's overall health and well-being.

3.6 Impact of Women's Education and Empowerment on Access to Care

The impact of women's education and empowerment on their ability to access care makes intuitive sense, yet there is not much empirical evidence in support of this idea. A study conducted in Ghana served to tie together some of these concepts (Buor, 2004). This study used a questionnaire and formal interviews with 650 participants (covering over 3,108 houses in the Ashanti Region) as the main research instruments, in addition to building a multiple regression model. Results showed that females have a greater need for health services than males but tend to utilize health services less (Buor, 2004). Furthermore, it was found that education, quality of service, health status, and service cost were important factors impacting male utilization of services whereas distance and income had a greater impact on female utilization (Buor, 2004). This study also suggested that women be empowered through increased access to education and sustainable income in order ensure equality in health care access. It would be helpful to do a follow-up study to learn more about why certain factors affecting utilization differ so dramatically between males and females in this region. Conducting similar studies in other areas might help to determine if these particular differences in utilization are generalizable or unique to this region, and as a result of its specific culture.

In some situations, health care services may be available in particular region but may not be being utilized by the population and thus not serving in reaching the ultimate goal of improved health status. In this case, programs to empower women and the community as a whole have been shown to improve utilization (Saaka and Galaa, 2011). It is important to realize that empowerment may increase access and utilization of health care services in order to most effectively use financial resources. Improving quality of clinics is not going to have effect on improving health status if community members are not empowered or educated enough to realize the benefits of these health care services.

Though education and empowerment seem to have positive effects on access to health care and utilization of services, more research needs to be done in this area in order to cement the relationships and determine their generalizability. There is not much empirical evidence to be found that specifically links women's education and empowerment to their ability to access care, something that should be studied in the future in order to understand what sort of relationship might exist and take full advantage of it. Without evidence, unsuccessful programs may be undertaken. The failure of programs to expand access to care would waste valuable resources, especially an issue in low-income settings. Furthermore, failure of these programs could discourage investments and interest in programs of expanding access to care among governments, diverting funds way from this important issue. Even if steps are taken to promote other facets of women's health, their overall health status will still be negatively impacted if they are unable to access care when it is needed.

CHAPTER 4 RECOMMEDATIONS AND CONCLUSIONS

4.1 Recommendations

Women's education and empowerment have been identified as important covariates in family and child health, making investments in this area especially cost effective and well suited to implementation lower income countries. Yet, the impact of women's education and empowerment on their own health status and well-being has yet to be explored very significantly. Studies that have been done have looked at a variety of indicators to measure health status and empowerment.

In the past women's health status measurements have typically been limited to their reproductive health. Reproductive health, while important, only represents a small portion of women's overall health status. Various indicators have been put forth in the research that has been conducted on this topic. Yet, it might be most helpful to develop a standard set of indicators in order to measure women's health status and well-being more comprehensively. If the same set of indicators was used consistently it would be far easier to make comparisons on the progress made both in country and globally. Yet, while it is important to be able to make comparisons, the research that does exist illustrates the importance of context in the selection and evaluation of indicators. Culture often plays an important role especially when measuring indicators of empowerment.

In this case, the impact of women's education and empowerment on health and well-being was examined using the following examples: HIV/AIDS, cardiac disease, maternal health, mental health, and access to care. These first four issues were chosen because they account for a significant portion of morbidity and mortality among women, especially in

lower income countries. The issue of access to care was chosen because of its importance in the treatment of physical and mental health symptoms and conditions.

Generally speaking, women's education and empowerment had a positive effect on women's overall health and well-being in the areas explored, decreasing risk of HIV/AIDS, improving maternal health, mental health, and access to care.

After reading through the existing literature, several broad ideas emerged. Based on the studied reviewed, education and empowerment tend to have positive impacts on women's health and well-being individually. However, it should be taken into consideration that education and empowerment seem to work best as team.

In the area of chronic disease, specifically cardiac disease, more research should be untaken in order to understand the links between women's education and chronic disease. As there were no studies to review relating to cardiac disease and women's empowerment, there is clearly a gap in the literature relating to women's empowerment and chronic disease. It may be valuable to conduct research in this area in order to determine if programs focusing on empowerment among women could have additional outcomes in chronic disease levels.

In terms of maternal health and education and empowerment, more research in addition to in-depth county specific assessments are needed in order to determine the true nature of women's status and maternal health care use, but studies reviewed provided a good starting point for future work.

As previously mentioned, searches did not yield any studies relating women's education specifically to mental health in lower income countries, another gap in the literature relating women's health and well-being to education and empowerment.

Determining if education had a positive effect on mental health status would be beneficial not only for improving mental health but also in gaining support for women's education programs as a whole.

Through out this review, the importance of study context has been highlighted. It is very difficult to address the subject of women's health status and well-being globally when the same indicators are not being used consistently. In order to truly measure the impact of education and empowerment, standard indicators to measure women's health status and well-being should be agreed upon in the future. Leading organizations such as the WHO, UN Women and others could help the process by forming a task force to help develop a list of potential indicators to be used in future research.

Also indicators that focus on one specific area of women's health status do not adequately capture the status of women's health, nor do they provide adequate information to developed well informed programs to improve heath.

Cultural context is another important factor to be considered. As illustrated in the study conducted on HIV/AIDs in Uganda, just because an association has been made in similar situations, does not mean it will be hold true in every situation. There are specific behaviors and factors that vary from country to country and culture to culture that must be considered both when conducting research on this topic are and when trying to develop programs.

4.2 Conclusions

For this paper, women's health and well-being was divided into five broad categories; infectious diseases, chronic diseases, maternal health, mental health, and access to care.

HIV and cardiac disease were chosen as specific examples of infectious and chronic disease because of their prevalence in lower income counties.

Based on the studies reviewed, education and empowerment tend to have positive effects on the various aspects of women's health and well-being. Yet there were exceptions. Though education and empowerment tended to be associated with decreased risk of HIV, a study conducted in Uganda found that higher education levels were associated with increased HIV seroprevalence. Another exception was seen in the relationship between cardiac disease and education. These exceptions highlight the important of context and the country specific considerations that should be taken into account when developing education and empowerment initiatives.

During the review, several gaps in the literature were in identified. No studies could found that linked women's education and mental health in lower income countries or women's empowerment and cardiac disease. Also virtually all of the links between women's health status and education and empowerment could be enhanced and better understood with further research.

As mentioned in the recommendations sections, it would be helpful if a standard list of indicators could be developed in order to measure women's health status and well-being. Based on the studies read in the review, the following broad indicators are suggested to be considered in future work monitoring the impact of education and empowerment on women's health status:

- Risk of important infectious/maternal/chronic/mental illnesses (i.e. highest global burden of each type of illness) by education level;

- Risk of infectious/maternal/chronic/mental illnesses (highest global burden of each type of illness) among women who participated in community activities versus those who did not;
- Risk of infectious/maternal/chronic/mental illnesses (highest global burden of each type of illness) among women who were able to earn money independently versus those who were not;
- Risk of infectious/maternal/chronic/mental illnesses (high global burden of each type of illness) among women with positions relatively equal to men and those whose positions in society are unequal; and
- Prevalence of women accessing care based on education level, ability to earn money independently, and position in society relative to men.

It would be especially valuable if a broad, long-term study using these indicators was done to determine how accurate they are at assessing women's health and well-being. Another possible idea would be to collect information about indicators used to determine the impact of women's education and empowerment on health and well-being in a database that is updated regularly.

It would also be interesting look at how women's nutritional status and physical activity levels are impacted by women's education and empowerment, especially given the epidemiological transition of disease that is currently going on in many lower income countries. Studies focusing on changing health characteristics during this time could be helpful in order to develop more effective health care programs and protocols.

In exploring the majority of topics, it was seen that education and empowerment seemed to work best as a team. Also the importance of culturally specific covariates was

made clear though the exceptions to broader associations between women's health and education and/or empowerment. No other common covariates emerged during the review. Most studies did not devote a lot of time to looking into potential covariates but this could be another possible area of focus in future research in order to optimize program outcomes and ultimately better women's health and well-being. It would be most useful to devise a study that put a special emphasis on potential covariates in order to determine which factors truly influence the impact of women's education and empowerment on women's health status and well-being. This information would help to fully ascertain the relationship between women's education and empowerment and their health status, ultimately allowing for the bettering of lives of women worldwide.

REFERENCES

1. South Pacific Commission. Health, Education and the Role of Women Statement. 1988.

2. World Bank. Engendering Development: Through Gender Equality in Rights, Resources, and Voice. 2001.

3. Bicego and Boerma. Maternal Education and Child Survival: A Comparative Study of Survey Data from 17 Countries. Soc Sci Med. 1993 May.

4. Malhotra, Pande, Grown. Impact of Investments in Female Education on Gender Equality. International Center for Research on Women. Commissioned by World Bank Gender Development Group. 2003.

5. World Health Organization. Women and Health. 2009.

6. Garcia FA, Freund KM, Berlin M, Digre KB, Dudley DJ, Fife RS, Gabeau G, Geller SE, Magnus JH, Trott JA, White HF. Progress and priorities in the health of women and girls: a decade of advances and challenges. J Womens Health (Larchmt). 2010 Apr;19(4):671-80.

7. World Health Organization. Constitution of the World Health Organization. 1946.

8. Psaki and OlaOlorun. More than Mothers: Aligning Indicators with Women's Lives. Lancet. 2011 Oct 3. [Epub ahead of print].

9. United Nations. World Development Report on Gender Equality and Development. 2012.

10. UNESCO Institute for Statistics. Global Education Digest 2010: Comparing Education Statistics Around the World. Special Focus on Gender. 2010.

11. United Nations Children's Fund. The Situation of Women and Girls: Facts and Figures. 2009.

12. Millennium Development Goal Report. 2007

13. World Development Indicators. 2008.

14. United Nations. Millennium Development Goals and Gender, 2008.

15. Hall EM. Gender, Work Control, and Stress: A Theoretical Discussion and Empirical Test. Int J Health Serv. 1989;19(4):725-45.

16. Paoli and Merrile. Third European Survey on Working Conditions. 2001

17. Ostlin. Gender Inequalities in Health: The Significance of Work. 2002

18. WHO and UNICEF Joint Monitoring. 2008.

19. World Education. Girls' and Women's Education Initiative. http://www.worlded.org/WEIInternet/gwe/index.cfm.

20. WHO. *Ten Leading Causes of Death in Females, by age and income group, 2004.*

21. Chiao C, Mishra V, Ksobiech K.Spousal Communication and HIV Prevention in Kenya. J Health Commun. 2011 Nov;16(10):1088-105.

22. Bradley H, Bedada A, Brahmbhatt H, Kidanu A, Gillespie D, Tsui A. Educational attainment and HIV status among Ethiopian voluntary counseling and testing clients. AIDS Behav. 2007 Sep.

23. Lee H, Pollock G, Lubek I, Niemi S, O'Brien K, Green M, Bashir S, Braun E, Kros S, Huot V, Ma V, Griffiths N, Dickson B, Pring N, Sohkurt Huon-Ribeil K, Lim N, Turner J, Winkler C, Wong ML, Van Merode T, Dy BC, Prem S, Idema R. Creating new career pathways to reduce poverty, illiteracy and health risks, while transforming and empowering Cambodian women's lives. J Health Psychol. 2010 Oct.

24. Dugassa BF. Women's Rights and Health: The Case of Oromo Women in Ethopia. Health Care Women Int. 2005 Feb

25. Gregson S, Terceira N, Mushati P, Nyamukapa C, Campbell C. Community group participation: can it help young women avoid HIV? An exploratory study of social capital and school education in rural Zimbabwe. Soc Sci Med. 2004 Jun.

26. Smith J, Nalagoda F, Wawer MJ, Serwadda D, Sewankambo N, Konde-Lule J, Lutalo T, Li C, Gray RH. Educational attainment as a predictor of HIV risk in rural Uganda: results from a population-based study. Int J STD AIDS. 1999

27. Steyn K, Sliwa K, Hawken S, Commerford P, Onen C, Damasceno A, Ounpuu S,Yusuf S. Risk factors associated with myocardial infarction in Africa: the INTERHEART Africa study. Circulation. 2005;112:3554–3561.

28. Yusuf S, Reddy S, Ounpuu S, Anand S. Global burden of cardiovascular diseases, part I: general considerations, the epidemiologic transition, risk factors, and impact of urbanization. Circulation. 2001;104:2746–2753.

29. Goyal A, Bhatt DL, Steg PG, Gersh BJ, Alberts MJ, Ohman EM, Corbalán R, Eagle KA, Gaxiola E, Gao R, Goto S, D'Agostino RB, Califf RM, Smith SC Jr, Wilson PW; Reduction of Atherothrombosis for Continued Health (REACH) Registry Investigators. Attained educational level and incident atherothrombotic events in low- and middle-income compared with high-income countries. Circulation. 2010 Sep 21;122(12):1167-7

30. Yan LL, Liu K, Daviglus ML, Colangelo LA, Kiefe CI, Sidney S, Matthews KA, Greenland P. Education, 15-year risk factor progression, and coronary artery calcium in young adulthood and early middle age: the Coronary Artery Risk Development in Young Adults Study. JAMA. 2006;295:1793–1800.

31. Laaksonen M, Talala K, Martelin T, Rahkonen O, Roos E, Helakorpi S, Laatikainen T, Prattala R. Health behaviours as explanations for educational level differences in cardiovascular and all-cause mortality: a follow-up of 60 000 men and women over 23 years. Eur J Public Health. 2008;18:38–43.

32. Leigh JP. Direct and indirect effects of education on health. Soc Sci Med. 1983;17:227–234.

33. WHO. Women's Health Fact Sheet. November 2009.

34. World Health Organization The World Health Report 2001: Mental health – new understanding, new hope. Geneva: WHO; 2001.

35. Kermode M, Herrman H, Arole R, White J, Premkumar R, Patel V.Empowerment of women and mental health promotion: a qualitative study in rural Maharashtra, India. BMC Public Health. 2007 Aug 31;7:225

36. Barbara Lopes Cardozo, Oleg O. Bilukha, Carol A. Gotway, Mitchell I. Wolfe, Michael L. Gerber, and Mark Anderson. Journal of Women's Health. May 2005, 14(4): 285-293.

37. Jong de E. Mental health assessment. Ghurian and Zendah Jan districts, Heart province, Afghanistan. Report Medecins Sans Frontieres, July–October 1999.

38. Harrison KA, Bergstrom S. Poverty, deprivation and unsafe motherhood. In: Lawson JB, Harrison KA, Bergstrom S, editors. Maternity Care in Developing Countries. London: RCOG Press; 2001.

39. Harrison KA. The struggle to reduce high maternal mortality in Nigeria. Afr J Reprod Health. 2009;13:9–20.

40. Agan TU, Archibong EI, Ekabua JE, Ekanem EI, Abeshi SE, Edentekhe T, Bassey EE. Trends in maternal mortality at the University of Calabar Teaching Hospital, Nigeria, 1999-2009. Int J Womens Health. 2010 Aug 10;2:249-54.

41. Fosu, G. B. (1994) Childhood morbidity and health services utilization: cross-national comparisons of user-related factors from DHS data. Social Science and Medicine, 38, 1209–1220.

42. *Becker, S., Peters, D. H., Gray, R. H., Gultiano, C. and Blake, R. E. (*1993*) The determinants of use of maternal and child health services in Metro Cebu, the Philippines.* Health Transition Review*, 3, 77–89.*

43. Elo, T. I. (1992) Utilization of maternal health-care services in Peru: the role of women's education. Health Transition Review, 2, 49–69.

44. Abbas, A. A. and Walkern, G. J. A. (1986) Determinants of the utilization of maternal and child health services in Jordan. International Journal of Epidemiology, 15, 404–407.

45. Chakraborty N, Islam MA, Chowdhury RI, Bari W, Akhter HH. Determinants of the use of maternal health services in rural Bangladesh. Health Promot Int. 2003 Dec;18(4):327-37.

46. Kamiya, Y. Women's autonomy and reproductive health care utilisation: empirical evidence from Tajikistan. Health Policy. 2011 Oct;102(2-3):304-13.

47. Ahmed S, Creanga AA, Gillespie DG, Tsui AO. Economic status, education and empowerment: implications for maternal health service utilization in developing countries. PLoS One. 2010 Jun 23

48. Fotso JC, Ezeh AC, Essendi H. Maternal health in resource-poor urban settings: how does women's autonomy influence the utilization of obstetric care services? Reprod Health. 2009;16:6–9.

49. Buor D. Gender and the utilization of health services in the Ashanti Region, Ghana. Health Policy. 2004 Sep; 69 (3): 375-88

50. Saaka M, Galaa S. Improving the utilization of health and nutrition services: experience from the Catholic Relief Services supported the Development Assistance Programme in Ghana. Prim Health Care Res Dev. 2011 Apr

APPENDIX

ACRONYM LIST

- COPD: Chronic Obstructive Pulmonary Disorder
- FGAE: Family Guide Association of Ethiopia
- GNI: Gross National Income
- MI: myocardial infarction
- PAP: Participatory Action Research
- REACH: Reduction of Atherothrombosis for Continued Health
- SiRCHESI: (Siem Reap Citizens for Health, Educational and Social Issues)

GLOSSARY

- Womanhood: time of childbearing ability onward