

DECLARATION

I hereby declare that to the best of my knowledge, the work presented in this study for the Master of Science in Epidemiology has not been presented either wholly or in part for any Degree, Diploma or other qualifications.

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Signed.....

Date.....

Candidate

Having supervised and read this document, I confirm that the work has been completed satisfactorily and it befits the award of Master of Science in Epidemiology.

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CERTIFICATE OF APPROVAL

This dissertation by Thomas Chirwa is approved in partial fulfillment of the requirements for the award of Master of Science in Epidemiology by the University of Zambia.

Examiner 1

Signed:

Date:

Examiner 2

Signed:

Date:

Examiner 3

Signed:

Date:

DEDICATION

I dedicate this study to my wife Milika Bulaya Chirwa and my beautiful daughter Grace Faith Chirwa. You are a blessing to me.

ACKNOWLEDGEMENTS

I would like to thank the University of Zambia for the encouragement and support during the course of this work. I would like to further appreciate my supervisor: Dr. Charles C. Michelo for his support and guidance towards the success of this study.

My appreciation is further extended to Norwegian Agency for Development Cooperation (NORAD)' Programme for Master Studies (NOMA) for the financial support towards my studies.

I would like to further appreciate all the individuals who are too numerous to mention whose support contributed to the success of this study.

ABSTRACT

Background

Globally, about 16 million girls aged 15 to 19 years and two million girls under the age of 15 give birth every year. In Zambia, 3 in 10 young women aged 15 to 19 years have either given birth or carrying a pregnancy. This study was aimed at identifying determinants that may be associated with teenage pregnancies in Zambia.

Methodology

This was a cross-sectional study that used secondary data from the Zambia Demographic and Health Survey (ZDHS) of 2007. Inclusion criteria for this study included female teenagers aged 15- 19. All records for female teenagers aged 15 to 19 who participated in the ZDHS were eligible and the question “have you ever been pregnant?” defined the outcome measure. Logistic regression was used to explore the relationship between independent variables and dependent variable.

Results

Overall (n=1,598), most teenagers were from urban than rural (51% vs. 41%, P<0.001). There is a differential risk associated with teenage pregnancies, showing protective effect of education with those with primary level (AOR 0.47 95% CI (0.28- 0.77) and secondary level, AOR 0.25 95% CI (0.15- 0.41) than those who never went to school. The likelihood of teenagers becoming pregnant was differentially heavier in rural than urban areas AOR 1.95 95% CI (1.57- 2.43). Teenagers that were divorced had a higher probability of being pregnant AOR 61.70 95% (7.98- 477.01) than those that were never married. The teenagers that are working have a higher risk AOR 2.42 95% CI (1.88- 3.11) as compared to those that are not working. Teenagers who used contraceptives had higher chances of becoming pregnant AOR 13 95% CI (6.59- 25.68) as compared to those who never used contraceptives.

Conclusion

This study has identified a number of factors that contribute to teenage pregnancies in the general population of Zambia. These factors range from low education levels, employment, low economic status, residing in rural areas, marriage, living together, divorce, sexually activeness to contraception use. To this end, unless something is done by all stakeholders in

addressing the risk factors of teenage pregnancies that have been identified in this study, teenage pregnancies may continue to be on the increase in Zambia.

Recommendations

- Teenagers must be encouraged to be in school since education has a protective effect on teenage pregnancies. More resources need to be allocated in the education sector.
- All teenagers must be discouraged from being involved in employment. This is because employment puts teenagers at risk of becoming pregnant.
- Teenagers that are sexually active need to be taught on how to correctly use contraceptives.
- All parents and guardian needs to be discouraged from marrying off teenagers. Thus, the government must come up with stiff punishment for those people marrying off teenagers.

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ACRONYMS

| | |
|----------|---|
| AOR | Adjusted Odds Ratio |
| CI | Confidence Interval |
| CPH | Census of Population and Housing of the Republic of Zambia |
| CSO | Central Statistical Office |
| MOESTVEE | Ministry of Education, Science, Vocational Training and Early Education |
| NORAD | Norwegian Agency for Development Cooperation |
| OR | Odds Ratio |
| UNICEF | United Nations Children's Fund |
| UNFPA | United Nations Population Fund |
| WHO | World Health Organization |
| ZDHS | Zambia Demographic Health Survey |

CHAPTER ONE: INTRODUCTION

1.1 Background

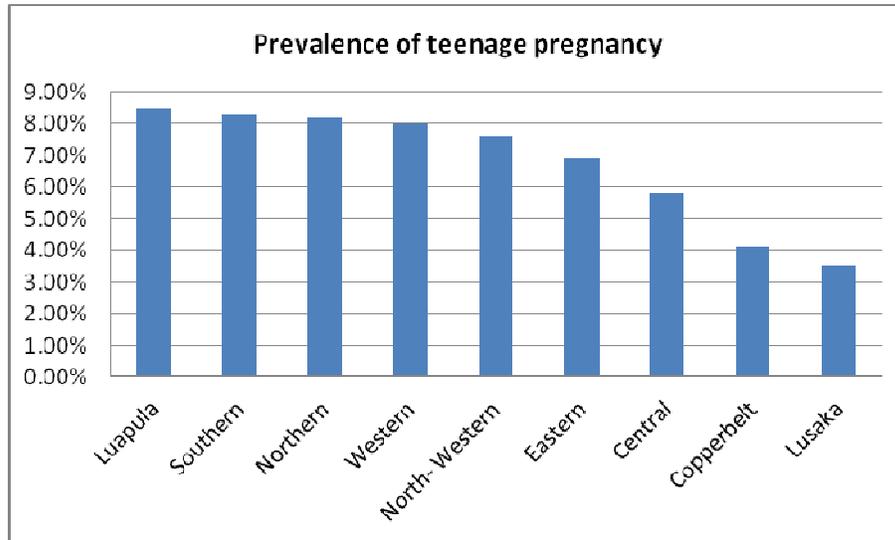
Globally, about 16 million girls aged 15 to 19 years and two million girls under the age of 15 give birth every year (WHO, 2012). Almost all adolescent births – about 95% – occur in low- and middle-income countries (ibid). West and Central Africa has highest teenage pregnancies at 28%, Eastern and Southern Africa at 25% compared to just 4 per cent in Eastern Europe and Central Asia (UNFPA, 2013). By contrast, Latin America and the Caribbean show a value close to the global estimates at around 18 per cent (ibid). An estimated 2.2 million adolescents, around 60 per cent of them girls, are living with HIV (UNICEF, 2012). According to the UNFPA (2013), over the recent past, the global prevalence of pregnancies among girls less than 18 years of age has slightly declined, by 14 per cent, from 23.3 per cent to 20.1 per cent. All regions, with the exception of Latin America and the Caribbean, appear to be moving towards a decline, although this is still incipient in some cases (ibid). Eastern Europe and Central Asia and South Asia have experienced the largest declines at 20 per cent, followed by East Asia and the Pacific at 13 per cent (op cit). Unfortunately, the overall levels in sub-Saharan Africa, the Arab States, and Latin America and the Caribbean have remained relatively constant, with changes of less than 10 per cent (UNFPA, 2013).

Large proportions of adolescent girls aged 15–19 have experienced sexual violence, and domestic violence is common among adolescent girls who are in relationships (Handicap International and Save the Children, 2004). Nearly one in every four adolescent girls aged 15–19 in the developing world (excluding China) are married or in union (UNICEF, 2012). Teenage pregnancy is a major health concern because of its association with higher morbidity and mortality for both the mother and child (CSO, 2007). Childbearing during the teenage years also frequently has adverse social consequences, particularly on female educational attainment, because women who become mothers in their teens are more likely to curtail education (ibid). The youngest mothers are the most likely to experience complications and die of pregnancy-related causes (WHO, 2008).

Zambia with a population of 1,442,000 teenagers aged 15- 19, has continued to have high rates of teenage pregnancies. This is so in that 3 in 10 young women aged 15 to 19 years have either given birth or are pregnant (Republic of Zambia Situation Analysis Report, 2009). In

2002 there were 3,663 teenage pregnancies among school going teenagers; in 2004, the number rose to 6,528; in 2007 the figure had risen further to 11,391 and to 13,634 in 2009 (MOESTVEE, 2009). The number of teenage pregnancies rose to over 15,000 in 2010 (MOESVTEE, 2010). Figure shows the prevalence of teenage pregnancies in the Zambian provinces.

Figure 1: Prevalence of teenage pregnancy in Zambia



Source: WHO, 2007

1.2 Studies on Teenage Pregnancies

Although there are differential contexts that drive the problem of teenage pregnancy in varying geographical contrasts, available evidence in literature suggest that these drivers could be looked at using varying models such as the proximate determinant model by Mosley and Chen. The conceptual core of their framework was the idea that all background (socioeconomic and cultural) variables have to operate through a limited set of proximate determinants that directly influence the risk of disease and the outcome of disease processes (Mosley and Chen, 1984). As a result of this explorative approach to name these determinants, many studies have been conducted on them with a view to understand the dynamics at play and what environments exist to propel enabling milieu for teenage pregnancies. These factors will range from socio-cultural and socio-economic factors including available programs some of which may act not only as mediator but also proximate

determinants. These studies helped in defining the problem for this study. This is so in that through the studies, a number of proximate determinants were explored in this study.

Global Studies

According to the study by Walker et al (1990), it was found that rural teenagers were just as likely to be sexually active and were at equally high risk for pregnancy as their urban counterparts. In China, adolescents who had relatives or friends who had been pregnant as teens were nearly four times more likely to have given birth (Wang & Chou, 1999). Lee (2001) found that adolescents who grew up in single-parent homes were almost five times more likely to be mothers compared to those who grew up with both parents.

Furthermore, women with higher education are less likely than their less educated peers to become mothers at a young age. Four studies found that adolescents with a higher level of education were much less likely to be at risk for pregnancy or early childbearing (Marques et al., 1991; Zelaya et al., 1996; Gupta & Leite, 1999; Wang & Chou, 2001). For example, among 14-19 years olds in Brazil, those who had a lower level of education were almost four times more likely to have been pregnant compared to those with higher levels of education (Marques et al., 1991).

Substance use has been found to not only increase adolescents' chances of engaging in unprotected sex, but also in becoming mothers and fathers at an early age. In China, Province of Taiwan, three separate studies showed that smoking cigarettes and drinking alcohol significantly increased the risk of early childbearing (Lee & Chou, 2001; Wang & Chou, 1999; Wang & Chou, 2001). Similar findings were found by Staton et al (1999). Heavy use of alcohol was correlated with increased casual sex without condoms and with increased number of sexual partners among youth (ibid). Early puberty was found to be associated with earlier age of alcohol use and sexual initiation, which in turn predicted early pregnancy (Deardorff et al, 2005). Having future goals and aspirations is also important to prevent adolescents from unwanted pregnancy. Two studies found that adolescents with lower future aspirations were much more likely to be at risk for pregnancy compared to those with higher aspirations and goals (Marques et al., 1991; Pick de Weiss et al., 1991). Interestingly, having a job increases the risk for being pregnant or getting someone pregnant. Two studies found

that adolescents who were employed were at least four times more likely to be pregnant than those who were not (Marques et al., 1991; Okonofua, 1995).

Knowledge about contraception is another determinant contributing to teenage pregnancies. Two studies found that having knowledge about contraception significantly protects adolescents from getting pregnant (Marques et al., 1991; Pick de Weiss et al., 1991). In fact, in Ecuador, adolescents with higher levels of knowledge about contraception were nearly 14 times more likely to avoid being pregnant compared to those with lower knowledge levels, and this was the strongest predictor to avoiding pregnancy (Pick de Weiss et al., 1991). The authors found that no aspect of religiousness in adolescents was associated with a decrease in the likelihood of sexual activity or sexual abstinence (Miller & Gur, 2002). In another study on religiosity and teenage childbearing, Zavodny (2001) found that women's religious background does not affect the likelihood of a non-marital teenage pregnancy. In addition, O'Connor (1999) found that membership in a school religious organization was associated with lowered odds (0.3) of having a child as a teenager though significant findings were only identified for white teenagers.

Regional Studies

About two-thirds of sub-Saharan African women gave birth before 20 years of age due to cultural norms which encourage early marriage and proving fertility at young age (WHO, 1998). If a girl does not marry at 14 or 16 years, it becomes a curse to the family (Sekiwunga and Whyte, 2009). In some African societies, the norms expecting adolescent girls to be sexually active are so strong that virgin girls tend to be marginalized, not only by males, but also by other females (Meekersa & Anne-Emmanuèle, 1997). According to the study by Alemayehu et al (2010), adolescents coming from rural areas had a higher chance of fertility. As compared to those living in Addis Ababa, adolescents living in rural (AOR=3.6; 95% CI=1.9 to 6.9) and other urban area outside Addis Ababa (AOR= 2.1; 95%CI=1.1 to 3.9) were four and two times more likely to be fertile respectively (ibid).

Zambian Studies

According to the desk review of teenage pregnancy in Zambia conducted by Restless Development (2012), education and staying in school play a major role in changing this situation. It creates awareness, it delays marriage and childbearing, and it reduces the otherwise high fertility rate (ibid). The more a woman excels in education, the healthier the

child (op cit). According to the study by Katayamoyo (2010) teenagers below 16 years were 70% less likely to get pregnant compared to those above, singles were 60% less likely to be pregnant compared to those who are married, while participants with breadwinners who were not in gainful employment were two times more likely to get pregnant. Lack of knowledge on female physiology or hormones was shown to predispose to teenage pregnancy by three times whereas lack of knowledge on condoms had similar effect by twofold while shyness to access contraceptives by teenagers increased chances of pregnancy by fifty percent (ibid).

Since teenage pregnancy is mostly unplanned (Cassel, 2002; Pettifor et al., 2004), and often coincides with other transitions such as schooling it can result in negative consequences for the teenage mother and more especially for the child (Ashcraft and Lang, 2002; Kirby, 2007; Finer & Henshaw, 2006). Table 1 shows the consequences of early childbearing.

Table 1: Consequences of early childbearing (evidenced based from Breheny & Stephens, 2007; Hoffman, 2006; Kirby, 2007)

| | |
|--|--|
| <p>Health consequences</p> <ul style="list-style-type: none"> • Elevated risks of maternal death • Elevated risk of obstetrics complications • Low birth weight • High risk of infant mortality | <p>Economic consequences</p> <ul style="list-style-type: none"> • Lower family income • Increased dependency ratio • Exacerbated poverty • Children most likely to be poor |
| <p>Educational Consequences</p> <ul style="list-style-type: none"> • School dropout • School absenteeism • Poor academic performance • Lower educational attainment • Poorer cognitive development of children • Poorer educational outcomes for children | <p>Social consequences</p> <ul style="list-style-type: none"> • Stigma and discrimination • Less likely to be married • Most likely to suffer abuse • Less supportive & stimulating home environment for children • Increased behavior problems among children • Higher rates of imprisonment among sons • Children more likely to give birth as teens |

Source: Breheny & Stephens, 2007; Hoffman, 2006; Kirby, 2007

CHAPTER TWO: RESEARCH FOCUS

2.1 Problem Statement

Studies that have been identified in this paper indicate that proximate determinants contribute to teenage pregnancies. In Zambia, statistics from the Ministry of Education indicate that teenage pregnancies are on the increase. As a result of teenage pregnancies, there has been an increase in school dropouts, poor academic performance and various maternal and health challenges associated with pregnancy and child-birth. In averting teenage pregnancies, the re-entry into school and sexually reproductive health in curriculum has been introduced in Zambia. Despite this, teenage pregnancies have continued to be on the increase in Zambia. There is also the gap in identifying the determinants of teenage pregnancy using population data in Zambia. It is based on this gap that this study was conducted. By this study identifying the determinants of teenage pregnancies using population data, it is hoped that this will help the policy makers and other stakeholders to come up with strategies that will help in addressing the problem.

This study was worthy undertaking because of the consequences that come with teenage pregnancies in Zambia. As a result of teenage pregnancy in Zambia, there been a lot of consequences such as health, educational, economic and social. For instance, teenage pregnancy has negatively affected the female educational attainment, because women who become mothers in their teens are more likely to curtail education (CSO, 2007). The youngest mothers are the most likely to experience complications and die of pregnancy-related causes (WHO, 2008).

2.2 Research Question

What are the determinants of teenage pregnancies in Zambia?

2.3 General Objective

To identify determinants that may be associated with teenage pregnancies in Zambia.

2.4 Specific Objectives

1. To find out if socio- economic factors are associated with teenage pregnancies in the general population of Zambia.

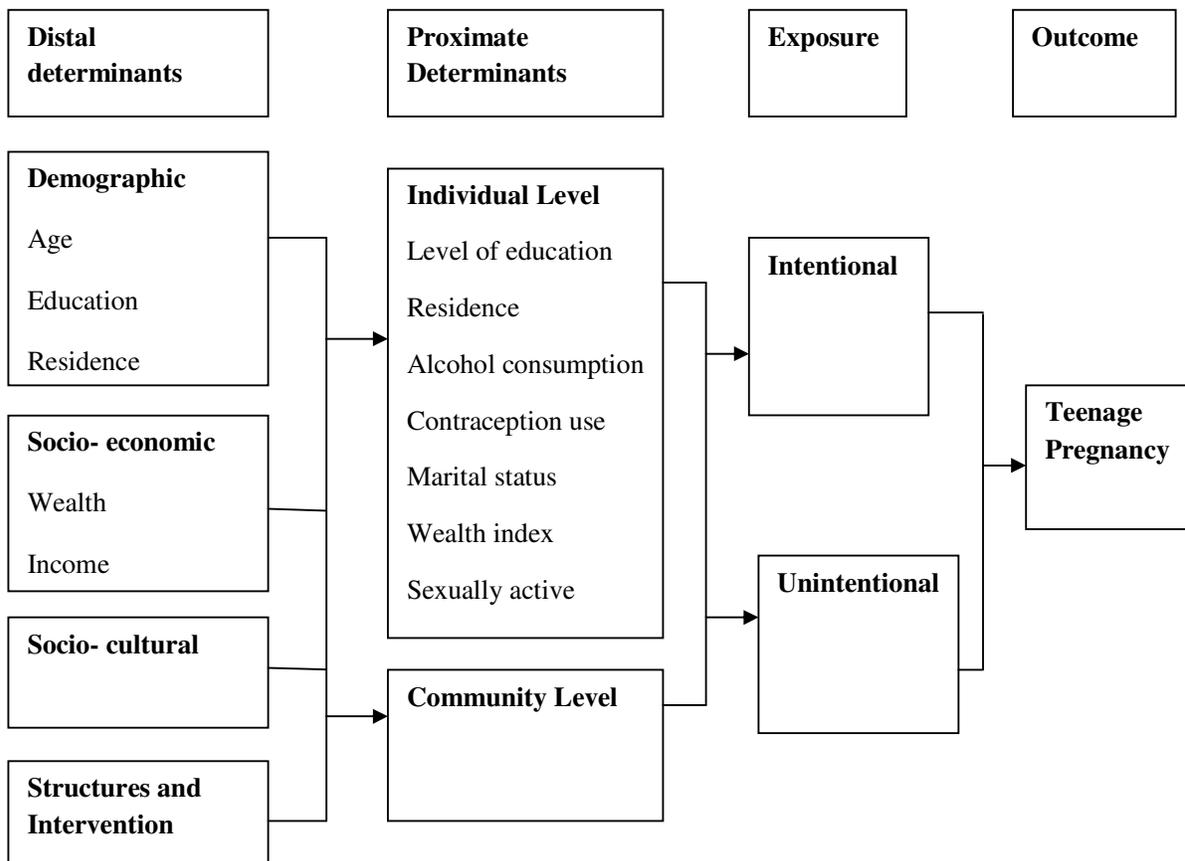
2. To explore if alcohol consumption is influencing teenage pregnancies in the general population of Zambia.

3. To find out if contraception use among teenagers has influence on teenage pregnancies in the general population of Zambia.

Conceptual Framework

The conceptual core of this framework is the idea that all background (socioeconomic and cultural) variables have to operate through a limited set of proximate determinants that directly influence teenage pregnancies. According to this framework it assumed that the outcome variable is influenced by proximate determinants. This framework fits into this study because it is assumed that teenage pregnancy is influenced by the proximate determinants. The conceptual framework was applied in this study by examining if teenage pregnancies is influenced by the factors namely education, residence, marital status, wealth index, contraception, sexually active and alcohol consumption. The conceptual framework shown below was used in this study. See figure 2.

Figure 2: Conceptual Framework



CHAPTER THREE: METHODOLOGY

3.1 The ZDHS Design

The sample for the 2007 ZDHS is based on the sampling frame for the 2001-2002 Zambia DHS survey, which was designed to provide estimates of health and demographic indicators at the national and provincial levels and for urban and rural areas. The sample design allowed for specific indicators, such as contraceptive use, to be calculated for each of the nine provinces (Central, Copperbelt, Eastern, Lusaka, Luapula, Northern, North-Western, Southern, and Western). The frame consists of 16,757 standard enumeration areas (SEA) created for the CPH 2000. A SEA is a convenient geographical area with an average size of 130 households or 600 people. A SEA contains information about its location, the type of residence, the number of households and the number of males and females in the population. A representative sample of 8,000 households was drawn for the 2007 ZDHS survey. The sample for ZDHS 2007 was a stratified sample selected in two stages from the CPH 2000 frame. (CSO, 2007).

Stratification was achieved by separating every province into urban and rural areas. Therefore, the nine provinces were stratified into 18 sampling strata. Samples were selected independently in every stratum by a two-stage selection. Implicit stratifications and proportional allocation was achieved at each of the lower geographical/administrative levels by sorting the sampling frame according to the geographical/administrative order and by using a probability proportional to size selection at the first stage sampling. The household listing operation was conducted in all selected SEAs, with the resulting lists of households serving as the sampling frame for the selection of households in the second stage. Selected SEAs with more than 300 households were segmented, with only one segment selected for the survey with probability proportional to the segment size. Household listing was conducted only in the selected segment. Therefore, a ZDHS 2007 cluster is either an SEA or a segment of an SEA. In the second stage selection, an average number of 25 households were selected in every cluster, by equal probability systematic sampling. A complete listing of households and a mapping exercise was carried out for each cluster in August 2006. All private households were listed. The listing excluded people living in institutional households (army barracks, hospitals, police camps, boarding schools, etc.). The sample was constructed to allow for separate estimates for key indicators in each of the nine provinces in Zambia, with the result that the sample is not self-weighting at the national level. (ibid).

3.2 The Teenage Pregnancy Design

Population and sampling procedures: This was a cross-sectional study that used secondary data that stem from the Zambia Demographic and Health Survey (ZDHS) of 2007. Inclusion criteria for this study included female teenagers aged 15- 19. The teenagers aged 10- 14 were excluded because ZDHS (2007) does not interview teenagers in this age group. All records for female teenagers aged 15 to 19 who participated in the DHS were eligible and the question “have you ever been pregnant?” defined the outcome measure.

Data Extraction: A personal structured data extraction sheet was used to collect the needed information from all eligible records. This was information on education, socio-demographic characteristics, family history, obstetrical history, economic and education background and appropriate sexual history. Records of participants who were either not found, refused or had migrated out during the time of primary survey, was classified as absent and not included in the final analysis except to estimate non-participation rate.

Data Analysis: Data was analysed using STATA version 13 (College Station, Texas, USA) software. The main outcome measure was ever or never pregnant, categorized as “1” or “0” respectively. Prevalence was standardised for age using the Zambian census (2000) as standard population. Logistic regression was used to estimate age-adjusted odds ratios showing contrasts between reference and comparison categories of the selected exposure variables when checking the association with the teenage pregnancy status. Analysis was done at univariate level. The data was weighted to account for variations in the sampling. Hence, adjusted odds ratios (AOR) were used in explaining the relationship between outcome variable and independent variables. Interaction was examined and when found it was controlled. Completeness of records was used to estimate non-participation. The binary logistic regression was used in analysing data. This is because the dependent variable (teenage pregnancy) is dichotomous.

3.3 Ethical Considerations

This study used secondary data for ZDHS (2007) that had ethical approval. For this study, ethical approval was sought from Ethic Reviews (ERES) Converge before undertaking this study. In particular, ERES Converge provided approval for the research design and data analysis. Permission was sought from Central Statistical Office (CSO) to access the dataset for the ZDHS for 2007.

CHAPTER FOUR: FINDINGS

5.1 Socio- demographic and economic characteristics

Overall (n=1,598), the median age was 17 years (IQR 16-18), mean age of 16.9 (SD 1.43) with no sex differentials although most teenagers were from urban than rural (51% vs. 41%, $P<0.001$). Lusaka province had the highest number of teenagers (14.02%) followed by Eastern province that had 12.27%. Southern province had 11.95%, Copperbelt had 11.89%, Northern province had 10.58%, Western province had 10.45% and Northwestern had 9.82%. However, Central and Luapula provinces each had the least number of teenagers (9.51%). Almost all (96%) teenagers ever went to school of which 48% had secondary education, 47% primary education, all significantly higher than those with no education (4%, $P<0.0001$) except those with post-secondary education (0.5%). In terms of religion, most of the teenagers were Protestants (78.46%). 324(20.29%) were Catholics, 14 (0.88%) were coming from other religious groups while 6 (0.38%) were Muslims. Most (81.48%) of the teenagers were not married. In terms of employment status, 79.15% of teenagers were not working while 20.85% were working. The finding further indicates that 27.41% of the teenagers were richer, 26.72% were in the richest category, 18.15% were in the middle, 15.08% were poorer while 12.64% comprised the poorest teenagers. Almost all (97.12%) of the teenagers never took alcohol. A large percentage (90.55%) of teenagers knew of contraceptive methods. However, a lot of teenagers never used contraceptive methods. See table 2.

Table 2: Distribution of teenagers by socio- demographic and economic characteristics in Zambia, observations from the 2007 Zambia Demographic and Health Survey (ZDHS)

| Characteristics | | n | Percent |
|-----------------|----|-----|---------|
| Age | 15 | 370 | 23.15 |
| | 16 | 330 | 20.65 |
| | 17 | 303 | 18.96 |
| | 18 | 299 | 18.71 |
| | 19 | 296 | 18.52 |

| | | | |
|----------------------------|---------------|-------|-------|
| Median Age | 17 | | |
| IQR | 16- 18 | | |
| Mean Age | 16.9 | | |
| SD | 1.43 | | |
| Type of place of residence | Urban | 809 | 50.63 |
| | Rural | 789 | 49.37 |
| Province | Central | 152 | 9.51 |
| | Copperbelt | 190 | 11.89 |
| | Eastern | 196 | 12.27 |
| | Luapula | 152 | 9.51 |
| | Lusaka | 224 | 14.02 |
| | Northern | 169 | 10.58 |
| | Northwestern | 157 | 9.82 |
| | Southern | 191 | 11.95 |
| Highest education level | Western | 167 | 10.45 |
| | No education | 69 | 4.32 |
| | Primary | 756 | 47.31 |
| | Secondary | 767 | 48 |
| Marital status | Higher | 6 | 0.38 |
| | Never married | 1,302 | 81.48 |

| | | | |
|----------------------------|---------------------|-------|-------|
| | Married | 257 | 16.08 |
| | Living together | 13 | 0.81 |
| | Widowed | 2 | 0.13 |
| | Divorced | 13 | 0.81 |
| | Not living together | 11 | 0.69 |
| Employment status | Working | 332 | 20.85 |
| | Not working | 1,260 | 79.15 |
| Wealth index | Poorest | 202 | 12.64 |
| | Poorer | 241 | 15.08 |
| | Middle | 290 | 18.15 |
| | Richer | 438 | 27.41 |
| | Richest | 427 | 26.72 |
| Alcohol consumption | No | 1,551 | 97.12 |
| | Yes | 46 | 2.88 |
| Religion | Catholic | 324 | 20.29 |
| | Protestant | 1,253 | 78.46 |
| | Muslim | 6 | 0.38 |
| | Other | 14 | 0.88 |
| Knowledge of contraceptive | Knows no method | 150 | 9.39 |

| | | | |
|-------------------|----------------------|-------|-------|
| | Knows only folkloric | 1 | 0.06 |
| | Knows modern method | 1,447 | 90.55 |
| Contraception use | Never used | 1,226 | 76.72 |
| | Folkloric | 6 | 0.38 |
| | Traditional method | 23 | 1.44 |
| | Modern method | 343 | 21.46 |

5.2 Association using Logistic Regression

Logistic regression was used to estimate age-adjusted odds ratios showing contrasts between reference and comparison categories of the selected exposure variables when checking the association with the teenage pregnancy status. Analysis was done at univariate level. The data was weighted to account for variations in the sampling. Hence, adjusted odds ratios (AOR) were used in explaining the relationship between outcome variable and independent variables.

Influence of socio- economic factors on teenage pregnancy

There is a differential risk associated with teenage pregnancies, showing protective effect of education with those with primary level (AOR 0.47 95% CI (0.28- 0.77) and secondary level, AOR 0.25 95% CI (0.15- 0.41) than those who never went to school. The likelihood of teenagers becoming pregnant was differentially heavier in rural than urban areas AOR 1.95 95% CI (1.57- 2.43). In terms of province, those teenagers that came from western province had a higher chance of being pregnant AOR 1.77 95% CI (1.11- 2.82) as compared to those that came from central province. Teenagers that were divorced had a higher probability of being pregnant AOR 61.70 95% CI (7.98- 477.01) than those that were never married. The teenagers that are working have a higher risk AOR 2.42 95% CI (1.88- 3.11) as compared to those that are not working. Wealth index showed a protective effect on teenage pregnancies with those teenagers in the richest category AOR 0.23 95% CI (0.16- 0.34) and rich category, AOR 0.64 95% CI (0.45- 0.90) than those teenagers in the poorest category. See table 3.

Table 3: Analysis of socio- economic factors of teenage pregnancy, observations from the 2007 Zambia Demographic and Health Survey (ZDHS)

| Variables | n (%) | AOR (95% CI) | P- value |
|------------------|--------------|---------------------|-----------------|
| Education level | | | |
| No education | 69 (4.32) | 1 | |
| Primary | 756 (47.31) | 0.47 (0.28- 0.77) | 0.00 |
| Secondary | 767 (48) | 0.25 (0.15- 0.41) | 0.00 |
| Higher | 6 (0.38) | 1 | |
| Residence | | | |
| Urban | 809 (50.63) | 1 | |
| Rural | 789 (49.37) | 1.95 (1.57- 2.43) | 0.00 |
| Region | | | |
| Central | 152 (9.51) | 1 | |
| Copperbelt | 190 (11.89) | 0.7 (0.43- 1.14) | 0.15 |
| Eastern | 196 (12.27) | 0.96 (0.60- 1.53) | 0.86 |
| Luapula | 152 (9.51) | 1.10 (0.67- 1.80) | 0.71 |
| Lusaka | 224 (14.02) | 0.72 (0.45- 1.16) | 0.18 |
| Northern | 169 (10.58) | 0.84 (0.51- 1.37) | 0.48 |
| Northwestern | 157 (9.82) | 1.25 (0.77- 2.02) | 0.36 |
| Southern | 191 (11.95) | 1.33 (0.84- 2.10) | 0.23 |
| Western | 167 (10.45) | 1.77 (1.11- 2.82) | 0.02 |

Marital status

| | | | |
|---------------------|---------------|----------------------|------|
| Never married | 1,302 (81.48) | 1 | |
| Married | 257 (16.08) | 37.48 (25.05- 56.10) | 0.00 |
| Living together | 13 (0.81) | 17.14 (4.68- 62.80) | 0.00 |
| Widowed | 2 (0.13) | 1 | |
| Divorced | 13 (0.81) | 61.70 (7.98- 477.01) | 0.00 |
| Not living together | 11 (0.69) | 51.42 (6.55- 403.76) | 0.00 |

Employment status

| | | | |
|-------------|---------------|-------------------|------|
| Not working | 1,260 (79.15) | 1 | |
| Working | 332 (20.85) | 2.42 (1.88- 3.11) | 0.00 |

Wealth index

| | | | |
|---------|-------------|-------------------|------|
| Poorest | 202 (12.64) | 1 | |
| Poorer | 241 (15.08) | 0.84 (0.57- 1.23) | 0.37 |
| Middle | 290 (18.15) | 0.83 (0.57- 1.19) | 0.31 |
| Richer | 438 (27.41) | 0.64 (0.45- 0.90) | 0.01 |
| Richest | 427 (26.72) | 0.23 (0.16- 0.34) | 0.00 |

Religion

| | | | |
|------------|---------------|-------------------|------|
| Catholic | 324 (20.29) | 1 | |
| Protestant | 1,253 (78.46) | 1 (0.76- 1.30) | 0.97 |
| Muslim | 6 (0.38) | 0.48 (0.55- 4.12) | 0.50 |

| | | | |
|-------|-----------|-------------------|------|
| Other | 14 (0.88) | 1.32 (0.43- 4.04) | 0.63 |
|-------|-----------|-------------------|------|

Notes: 1. Sample size was 1,598 (n=789 in rural & n=809 in urban)

Influence of sexually active and contraceptive use on teenage pregnancy

There is increased risk among teenagers who had intercourse in last 4 weeks AOR 6.62 95% CI (4.68- 9.36) as compared to those who never had intercourse. Similar findings were observed among teenagers who used contraceptives AOR 13 95% CI (6.59- 25.68) as compared to those who never used contraceptives. See table 4.

Table 4: Analysis of correlates of teenage pregnancy, observations from the 2007 Zambia Demographic and Health Survey (ZDHS)

| Variables | n (%) | AOR (95% CI) | P- value |
|---------------------------|----------------|-------------------|----------|
| Sexually active | | | |
| Never had intercourse | 802 (50.22) | 1 | |
| Active in last four weeks | 339 (21.23) | 6.62 (4.68- 9.36) | 0.00 |
| Postpartum | | | |
| Postpartum | 155 (9.71) | 1 | |
| Not postpartum | 301 (18.85) | 1 | |
| Contraception use | | | |
| No | 1, 226 (76.72) | 1 | |
| Yes | 372 (23.28) | 13 (6.59- 25.68) | 0.00 |

Notes: 1. Sample size was 1,598 (n=789 in rural & n=809 in urban)

Teenage pregnancy correlates alcohol consumption

The likelihood of teenagers becoming pregnant was differentially heavier among those who take alcohol than those who do not take alcohol AOR 1.28 95% CI (0.69- 2.38). This effect is not statistically significant. See table 5.

Table 5: Analysis of influence of alcohol consumption on teenage pregnancy, observations from the 2007 Zambia Demographic and Health Survey (ZDHS)

| Variables | n (%) | AOR (95% CI) | P- value |
|---------------------|---------------|---------------------|-----------------|
| Alcohol Consumption | | | |
| No | 1,551 (97.12) | 1 | |
| Yes | 46 (2.88) | 1.28 (0.69- 2.38) | 0.43 |

Notes: 1. Sample size was 1,598 (n=789 in rural & n=809 in urban)

CHAPTER FIVE: DISCUSSION

This study has established that socio- economic factors and contraception use were associated with teenage pregnancy. In particular, education has protective effect on teenage pregnancy with those with primary level and secondary level than those who never went to school. Teenagers that were working had a higher chance of becoming pregnant. This was not the case among teenagers who came from well to do families. The likelihood was differentially heavier in rural than urban areas and this was more prominent among respondents who used contraceptive methods. This study has also established that alcohol consumption was not associated with teenage pregnancy in Zambia though the teenagers that took alcohol had a higher chance of becoming pregnant as compared to those that never took alcohol.

The first determinant that was explored in this study was socio- economic status. This study has shown that there is an association between differences in education level and teenage pregnancies. The higher the education teenagers attained, the less likely they are to have pregnancies. This is so in that when teenagers are enlightened, they tend to avoid things that put them at risk of becoming pregnant. This finding is similar with what Katayamoyo (2010) and Woodward (1995) found. Teenagers with poor academic achievement, low self esteem and low aspiration embarked on motherhood as a means of giving their lives direction and to increase status (Woodward, 1995). The findings of this study further indicates that teenagers that were coming from well to do families had a reduced chance of getting pregnant as compared to those coming from poor families. This could be attributed to the fact that teenagers from well to do families are provided with most of their needs by their families, thereby prohibiting them from seeking these needs from their peers and adults. This finding is similar with the findings of the study conducted in South Africa by Population and Development Directorate (2012) that found that teenagers were becoming pregnant due to poverty. In terms of employment status, this study has established that teenagers that are working had higher risk of becoming pregnant as compared to those that were not working. This finding supports the finding of Okonofua (1995). The study by Okonofua (1995) found that adolescents who were employed were at least four times more likely to be pregnant than those who were not.

Furthermore, the finding of this study has shown that there is an association between area of residence and teenage pregnancies. The teenagers coming from rural areas are more likely to become pregnant as compared to those who come from urban areas. This finding could be

attributed to lower levels of education among teenagers coming from rural areas. This finding does not contradict with the finding of Alemayehu et al (2010). As compared to those living in Addis Ababa, adolescents living in rural (AOR=3.6; 95%CI=1.9 to 6.9) and other urban area outside Addis Ababa (AOR= 2.1; 95%CI=1.1 to 3.9) were four and two times more likely to be fertile respectively (ibid). This study has established that there is no association between religion and teenage pregnancies. In other words, one's religious affiliation does not have a bearing on teenage pregnancy. The finding does not contradict with the findings of Miller & Gur (2002) and Zavodny (2001). No aspect of religiousness in adolescents was associated with a decrease in the likelihood of sexual activity or sexual abstinence (Miller & Gur 2002). In another study on religiosity and teenage childbearing, it was found that women's religious background does not affect the likelihood of a nonmarital teenage pregnancy (Zavodny, 2001).

Additionally, this study has established that teenagers that are sexually active have a higher probability of becoming pregnant as compared to those that are not sexually active. This finding is supported by South African Population and Development Directorate (2012) that showed that exposure to sex is associated with teenage pregnancies. Teenagers who used contraceptive were at a higher risk of becoming pregnant as compared to those who never used contraceptives. This could be due to the failure by the teenagers to correctly use the modern contraceptives. This finding does not contradict with the study by Martinez et al (2011) that showed that teenagers who do not use a contraceptive method at first sex have twice as high odds of becoming teen mothers as those who use a method. This study has established that teenagers who drink alcohol have a higher chance of becoming pregnant as compared to those who do not drink alcohol. This finding does not contradicts with the findings by Deardorff et al (2005) that showed that early puberty was found to be associated with earlier age of alcohol use and sexual initiation, which in turn predicted early pregnancy. Although alcohol consumption by adolescent girls can lead to a decrease in contraceptive precautions, this behavior can be used as a lifestyle indicator and a symptom of dissatisfaction with family relations (Jessor, 1993). As such, alcohol consumption is present in unprotected sexual behavior, with its roots in the primary socialization context (Faler et al, 2013).

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study has identified a number of factors that contribute to teenage pregnancies in the general population of Zambia. These factors range from low education levels, employment, low economic status, residing in rural areas, marriage, living together, divorce, sexually activeness to contraception use. In particular, education has protective effect on teenage pregnancy with those with primary level and secondary level than those who never went to school. Teenagers that were working had a higher chance of becoming pregnant as compared to those were not working. This was not the case among teenagers who came from well to do families. The likelihood was differentially heavier in rural than urban areas and this was more prominent among respondents who used contraceptive methods. However, alcohol consumption was not associated with teenage pregnancy in Zambia though the teenagers that took alcohol had a higher chance of becoming pregnant as compared to those that never took alcohol. To this end, unless something is done by all stakeholders in addressing the risk factors of teenage pregnancies that have been identified in this study, teenage pregnancies may continue to be on the increase in Zambia.

6.2 Recommendations

- Teenagers must be encouraged to be in school since education has a protective effect on teenage pregnancies. More resources need to be allocated to the education sector.
- Teenagers must be discouraged from being involved in employment. This is because employment puts teenagers at risk of becoming pregnant. The government through the Ministry of Labour and Social Security should consider increasing inspections to ensure that no organization employs teenagers.
- Teenagers that are sexually active need to be taught on how to correctly use contraceptives.
- All parents and guardian needs to be discouraged from marrying off teenagers. Thus, the government should consider coming up with stiff punishment for those people marrying off teenagers.
- Since teenagers from rural areas are at high of becoming pregnant, it is imperative to develop the community intervention programs such as sensitizations targeting teenagers mainly from rural areas.

6.3 Limitations

There was need for the study to explore more factors that are likely to be associated with teenage pregnancies. However, the use of secondary data from ZDHS (2007) limited this study to explore other factors such as cultural because such data was not captured in the ZDHS (2007). It is important for future researchers to consider the use of mixed methods of both quantitative and qualitative methods in understanding the problem of teenage pregnancies.

APPENDICES

Appendix 1: Data collection tool extracted from women questionnaire for ZDHS 2007

Background Characteristics

1. Province.....
2. Urban/Rural (Urban=1, Rural=2).....
3. Lusaka=1, Other City=2, Town=3, Village=4.....
4. How old were you at your last birthday?.....
5. Have you ever attended school?
 1. Yes
 2. No
6. What is the highest level of school you attended: primary, secondary, or higher?
 1. Primary
 2. Secondary
 3. Higher
7. What is the highest grade you completed at that level?
Grade/Form/Year.....

Reproduction

8. Are you pregnant now?
 1. Yes
 2. No
 3. Unsure

Contraception

9. Which ways or methods of family planning have you heard about?
 1. Female Sterilization 1. Yes..... 2. No.....
 2. Male sterilization 1. Yes..... 2. No.....
 3. Pill 1. Yes..... 2. No.....
 4. IUD 1. Yes..... 2. No.....
 5. Injectables 1. Yes..... 2. No.....
 6. Implants 1. Yes..... 2. No.....
 7. Male Condom 1. Yes..... 2. No.....

- 8. Female Condom 1. Yes..... 2. No.....
- 9. Lactational Amenorrhea method 1. Yes..... 2. No.....
- 10. Rhythm Method 1. Yes..... 2. No.....
- 11. Emergency Contraception 1. Yes..... 2. No.....
- 12. Standard days method 1. Yes..... 2. No.....
- 13. Have you heard of any other ways or methods that women or men can use to avoid pregnancy?
 - 1. Yes
 - 2. No
- 14. If you have heard of any other ways or methods that women or men can use to avoid pregnancy, specify.
- 10. Have you ever used (method)?
 - 1. Female Sterilization 1. Yes..... 2. No.....
 - 2. Male sterilization 1. Yes..... 2. No.....
 - 3. Pill 1. Yes..... 2. No.....
 - 4. IUD 1. Yes..... 2. No.....
 - 5. Injectables 1. Yes..... 2. No.....
 - 6. Implants 1. Yes..... 2. No.....
 - 7. Male Condom 1. Yes..... 2. No.....
 - 8. Female Condom 1. Yes..... 2. No.....
 - 9. Lactational Amenorrhea method 1. Yes..... 2. No.....
 - 10. Rhythm Method 1. Yes..... 2. No.....
 - 11. Emergency Contraception 1. Yes..... 2. No.....
 - 12. Standard days method 1. Yes..... 2. No.....
 - 13. Any other ways or methods that women or men can use to avoid pregnancy?
 - 1. Yes
 - 2. No

Marriage and Sexual Activity

- 11. Are you currently married or living together with a man as if married?
 - 1. Yes, currently married
 - 2. Yes, living with a man
 - 3. No, not in union
- 12. How old were you when you first started living with your first husband/partner?

13. The last time you had sexual intercourse with this (second/third) person, did you or this person drink alcohol?

1. Yes
2. No

14. Were you or your partner drunk at that time?

1. Respondent only
2. Partner only
3. Respondent and partner both
4. Neither

Fertility Preferences

15. Do you think you will use a contraceptive method to delay or avoid pregnancy at any time in the future?

1. Yes
2. No
3. Don't know

16. Which contraceptive method would you prefer to use?

1. Female sterilization
2. Male sterilization
3. Pill
4. IUD
5. Injectables
6. Implants
7. Condom
8. Female Condom
9. Diaphragm
10. Foam/jelly
11. Lactational Amen. Method
12. Natural Family Planning (Rhythm Method)
13. Withdrawal
14. Cycle Beads
15. Other (Specify)
16. Unsure

Appendix 2: Authorization Letter from Central Statistical Office



REPUBLIC OF ZAMBIA

CENTRAL STATISTICAL OFFICE

[All correspondence should be addressed to the Director]
[Website: www.zamstats.gov.zm]

REF: 101/8/8

30th July 2013

Mr. Thomas Chirwa,
School of Medicine,
Department of Public Health,
University of Zambia,
P.O Box 510110,
Lusaka.

RE: REQUEST FOR CONDITIONAL PERMISSION TO GRANT A LETTER OF AUTHORITY REQUIRED BY THE RESEARCH ETHICS COMMITTEE TO USE DATASET FOR 2007 ZAMBIA DEMOGRAPHIC AND HEALTH SURVEY

Reference is made to the above.

This is in response to the letter, dated 7th June, 2013, you sent to our office requesting our office to grant you authority to use the dataset for 2007 Zambia Demographic and Health Survey as one of the requirement by the research Ethics committee.

Authority is being granted for you to use the 2007 Zambia Demographic and Health Survey dataset.

A blue ink signature of John Kalumbi.

John Kalumbi

Director of Census and Statistics

P. O. Box 31908, Lusaka, Zambia, Tel: +260- 211- 251377 / 253655 / 251385 / 257605 / 257604
Fax: +260- 211- 253468 / 253908, E-mail: info@zamstats.gov.zm

"To coordinate and provide timely, quality and credible official statistics for use by stakeholders and clients for sustainable development"

Appendix 3: Authorization Letter from ERES Converge



33 Joseph Mwilwa Road
Rhodes Park, Lusaka
Tel: +260 955 155 633
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Cell: +260 966 765 503
Email: eresconverge@yahoo.co.uk

I.R.B. No. 00005948
E.W.A. No. 00011697

22nd August, 2013

Ref. No. 2013-June-009

The Principal Investigator
Mr. Thomas Chirwa
C/o The University of Zambia-
School of Medicine
Dept. of Public Health
P.O. Box 50110,
LUSAKA.

Dear Mr. Chirwa,

RE: Determinants of Teenage Pregnancies in Zambia.

Reference is made to your resubmission dated 7th August, 2013. Noting that you addressed all concerns raised the IRB resolved to approve this study and your participation as Principal Investigator for a period of one year.

| | | |
|---|---|---|
| Review Type | Ordinary | Approval No. 2013-June-009 |
| Approval and Expiry Date | Approval Date: 22 nd August, 2013 | Expiry Date: 21 st August, 2014 |
| Protocol Version and Date | Version-Nil | 21 st August, 2014 |
| Information Sheet, Consent Forms and Dates | • N/A | 21 st August, 2014 |
| Consent form ID and Date | Version-Nil | 21 st August, 2014 |
| Recruitment Materials | Nil | 21 st August, 2014 |
| Other Study Documents | Data Collection Tool. | 21 st August, 2014 |
| Number of participants approved for study | | 21 st August, 2014 |

Specific conditions will apply to this approval. As Principal Investigator it is your responsibility to ensure that the contents of this letter are adhered to. If these are not adhered to, the approval may be suspended. Should the study be suspended, study sponsors and other regulatory authorities will be informed.

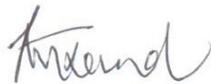
Conditions of Approval

- No participant may be involved in any study procedure prior to the study approval or after the expiration date.
- All unanticipated or Serious Adverse Events (SAEs) must be reported to the IRB within 5 days.
- All protocol modifications must be IRB approved prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address.
- All protocol deviations must be reported to the IRB within 5 working days.
- All recruitment materials must be approved by the IRB prior to being used.
- Principal investigators are responsible for initiating Continuing Review proceedings. Documents must be received by the IRB at least 30 days before the expiry date. This is for the purpose of facilitating the review process. Any documents received less than 30 days before expiry will be labelled “late submissions” and will incur a penalty.
- Every 6 (six) months a progress report form supplied by ERES IRB must be filled in and submitted to us.
- ERES Converge IRB does not “stamp” approval letters, consent forms or study documents unless requested for in writing. This is because the approval letter clearly indicates the documents approved by the IRB as well as other elements and conditions of approval.

Should you have any questions regarding anything indicated in this letter, please do not hesitate to get in touch with us at the above indicated address.

On behalf of ERES Converge IRB, we would like to wish you all the success as you carry out your study.

Yours faithfully,
ERES CONVERGE IRB



Dr. E. Munalula-Nkandu
BSc (Hons), MSc, MA Bioethics, PgD R/Ethics, PhD
CHAIRPERSON

BIBLIOGRAPHY

Alemayehu T. et al (2010). Determinants of adolescent fertility in Ethiopia. *Ethiop. J. Health Dev.* 2010;24(1)

Ashcraft, A. & Lang, K. (2006). *The Consequences of Teenage Childbearing*. (NBER Working Paper No.W12485). Cambridge, MA: NBER. Retrieved 15 April, 2009, from <http://ssrn.com/abstract=926063>

Berry, E.H., Shillington, A.M., Peak, T., & Hohman, M.M. (2000). Multi-Ethnic Comparison of Risk and Predictive Factors for Adolescent Pregnancy. *Child and Adolescent Social Work Journal*, 17, 79-96.

Cassell, C. (2002, February/March). Let It Shine: Promoting School Success, Life Aspirations to Prevent School-Age Parenthood (Volume 30, No. 3). Washington, DC: SIECUS

Central Statistical Office (2007): Zambia Demographic Health Survey 2007. Central Statistical Office, Lusaka.

Chirwa T, et al (2014). Manuscript on Correlates of teenage Pregnancies: Population-based observations among selected communities in Zambia.

Deardorff J. et al (2005). Early Puberty and Adolescent Pregnancy: The Influence of Alcohol Use. *Pediatrics* 2005;116;1451

Finer, L. B. & Henshaw, S. K. (2006). Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. In Fischhoff, B. (1992). Risk taking: A developmental perspective. In J. F. Yates (Ed.). *Risk taking Behaviour*. (pp. 133-162). Oxford, England: Wiley.

Gupta & Leite (1999): "Adolescent Fertility Behavior: Trends and Determinants in Northeastern Brazil." *Int Fam Plann Perspect* 25(3):125-130.

Handicap International and Save the Children, *Out from the Shadows: Sexual violence against children with disabilities*, Save the Children, London, 2011, pp. 13, 14; Groce, Nora Ellen, 'Adolescents and Youth with Disability: Issues and challenges', *Asia Pacific Disability Rehabilitation Journal*, vol. 15, no. 2, July 2004, pp. 16, 24; World Health Organization, *World Report on Disability*, pp. 9, 59, 147, 216.

<http://www.who.int/mediacentre/factsheets/fs364/en/index.html>

Kirby, D. (2007). *Emerging Answers 2007: Research Findings on Programs to Reduce Teen Pregnancy and Sexually Transmitted Diseases*. Washington, DC: The National Campaign to Prevent Unplanned Pregnancy.

Lee & Chou (2001): "Association of Risk-Taking Behaviors with Adolescent Childbearing." *J Formos Med Assoc* 100(8):533-538.

Katayamoyo, P. (2010). *Determinants of Teenage Pregnancy in Lusaka District*. University of Zambia, Lusaka.

Lee (2001): "Family and Adolescent Childbearing." *J Adolesc Health* 28:307-312.

Martinez G et al., Teenagers in the United States: sexual activity, contraceptive use, and childbearing, 2006–2010, *Vital and Health Statistics*, 2011, Series 23, No. 31, <http://www.cdc.gov/nchs/data/series/sr_23/sr23_031.pdf> accessed June 25, 2012.

Marques et al. (1991): "The Antecedents of Adolescent Pregnancy in a Brazilian Squatter Community." *J Trop Pediatr* 37:194-198.

Meekersa D & Anne-Emmanuèle CB. 'Main' girlfriends, girlfriends, marriage, and money: the social context of HIV risk behavior in sub-Saharan Africa. *Health Transition Review*, 1997, 7 (suppl): 361~75.

Miller, L., & Gur, M. (2002). Religiousness and Sexual Responsibility in Adolescent Girls. *Journal of Adolescent Health*, 31, 401-406.

Ministry of Education, Science, Vocational Training and Early Education (MOESTVEE), *Annual Education Statistical Bulletin*, (Lusaka, 2009).

Mosley WH, Chen LC. An analytic framework for the study of child survival in developing countries. *Population and Development Review* 1984; 10:25- 45.

MOESVTEE, 'Annual Education Preliminary Statistics', (Lusaka, 2010).

MOESTVEE, Annual School Census for 2011.

Nsemukila B.G, D Phiri, H Diallo, S Banda, W.K Benga and N Kitahara, 1998. "A study of factors associated with maternal mortality in Zambia." MoH, Lusaka pp19 – 42.

Okonofua (1995): "Factors Associated with Adolescent Pregnancy in Rural Nigeria." *J Youth Adolescence* 24(4):419- 438.

O'Connor, M.L. (1999). Academically Oriented Teenage Women Have Reduced Pregnancy Risk *Family Planning Perspectives*, 31, 105-106.

Pettifor, A. E., Rees, H. V., Steffenson, A., Hlongwa-Madikizela, L., MacPhail, C., Vermaak, K. *et al.* (2004). *HIV and sexual behaviour among young South Africans*. Johannesburg: Reproductive Health Research Unit, University of Witwatersrand.

Pick de Weiss et al. (1991): "Sex, Contraception, and Pregnancy among Adolescents in Mexico City." *In Studies in Family Planning* 22(2): 74-82.

Population and Development Directorate (2012). Factors associated with teenage pregnancy in Limpopo province.

Republic of Zambia (2012). 2010 Census of Population and Housing. Population Summary Report. Central Statistical Office, Lusaka.

Republic of Zambia (2009). Situation Analysis. Adolescent Health in Zambia. Government Printers, Lusaka.

Santelli, J., Morrow, B., Anderson, J.E., & Lindberg, L.D. (2006). Contraceptive Use and Pregnancy Risk Among U.S. High School Students, 1991-2003. *Perspectives on Sexual and Reproductive Health*, 38, 106-111.

Sekiwunga R. and WhyteS.R (2009): Poor Parenting: Teenagers' Views on Adolescent Pregnancies in Eastern Uganda

Staton et al (1999). Risk sex behaviour and substance use among youth adults. *Health Soc Work*. 1999;24:147-154. [PubMed]

UNFPA (2013). Adolescent Pregnancy: A Review of the Evidence.

United Nations Children's Fund (UNICEF). Progress for Children A report card on adolescents. Number 10, April 2012. New York.

Wang & Chou (1999): "Risk Factors for Adolescent Primigravida in Kaohsiung County, Taiwan." *Am J Prev Med* 17(1):43-47.

Walker, J.A., Harris, L., Blum, R., Schneider, B.J., & Resnick, M. (1990). *Outlooks and Insights: Understanding Rural Adolescents*. Minneapolis: University of Minnesota.

Wang & Chou (2001): "Characteristics of Males who Father Babies Born to Adolescents Versus Older Adult Women in China, Province of Taiwan." *J Adolesc Health* 28:509-512.

Webb D, N Bull and M Becci, 1996. "The emergency of the adolescent in Zambia." *The Health Policy Response Challenge (UNICEF)*, Lusaka pp. 3 - 26.

World Health Organization (1998). Education levels and cultural norms influence pregnancy in Adolescents.

World Health Organization, '10 Facts on Adolescent Health', Slide 3, WHO, Geneva, 2008, <www.who.int/features/factfiles/adolescent_health/facts/en/index2.html>, accessed 12 February 2012.

World Health Organization (2012). A report on *Early marriages, adolescent and young pregnancies* for the Sixty-fifth World Health Assembly.

Woodward V., 1995. "Why do teenagers fall into the pregnancy trap?" *Modern Midwife*, Aug; 11 pp. 15 - 18.

Zavodny, M. (2001). The Effect of Partners' Characteristics on Teenage Pregnancy and Its Resolution. *Family Planning Perspectives*, 33, 192-199.

Zelaya et al. (1996): Gender and Social Differences in Adolescent Sexuality and Reproduction in Nicaragua." In *Journal of Adolescent Health* 21: 39-46.45