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ABSTRACT

ASSOCIATION OF HEALTH, ECONOMIC, AND EDUCATIONAL OUTCOMES WITH CHILD MARRIAGES IN ETHIOPIA

by

Maryellen Malone

07/19/2023

Child marriage is a serious and widespread public health issue. As of 2018, 650 million women worldwide were married before their 18th birthday (Efevbera et al., 2020). In low and middle income countries 1 in 3 girls will be married under 18 (UNFPA, 2016). Child marriage is of particular concern in Ethiopia. In Ethiopia, 40% of girls are married before their 18th birthday (Ethiopia, 2023). Child marriage is associated with numerous negative health outcomes for the women and girls that experience it. Child marriage is a strong predictor of intimate partner violence (Kidman, 2017). Girls in child marriages are more likely to give birth as teens (Fan et al., 2022). Mothers are also 4 times more likely to die from pregnancy complications if they are under the age of 16 (Conde-Agudelo et al., 2005). The aim of this study is to understand the association child marriage with specific outcomes for women who have experienced or are experiencing a child marriage in Ethiopia. Data was obtained from the 2016 Ethiopia

Demographic and Health Survey (ICF, 2016). This is a national survey with data collection on the prevalence, health outcomes, and educational outcomes of child marriage in Ethiopia from January 18, 2016, to June 27, 2016 (ICF, 2016). The maternal outcomes to be considered here were underweight, anemia, miscarriage, abortion or still birth, physical or sexual assault by an intimate partner, poverty, and whether or not a secondary education was received. The association of child marriage and these health outcomes was measured using adjusted odds ratio. All data was analyzed with Stata SE version 17. When considering the unadjusted odds ratio all of the outcomes were associated with child marriage. When adjusting for study design, sample weight, age, region of residence, and urban vs rural, a significant association was found between child marriage and anemia, miscarriage and abortion, and not receiving a secondary education. This was evident with each outcome having a OR value greater than 1 and a p-value less than 0.10.

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MARRIAGES IN ETHIOPIA

by

Maryellen Malone

B.S., GEORGIA INSTITUTE OF TECHNOLOGY

A Thesis Submitted to the Graduate Faculty
of Georgia State University in Partial Fulfillment
of the
Requirements for the Degree

MASTER OF PUBLIC HEALTH

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APPROVAL PAGE

HEALTH, ECONOMIC, AND EDUCATIONAL OUTCOMES OF CHILD MARRIAGES IN ETHIOPIA

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Author's Statement Page

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Maryellen Malone

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INTRODUCTION

1.1 Purpose of Study

Child marriage is a serious and widespread public health issue. Child marriage is of consequence in many regions around the world including Ethiopia. Child marriage has many negative health, educational, and economic outcomes. Little research has been done into specific health, educational, and economic outcomes in Ethiopia of child marriage. This is the first study to explore the association of specific health, economic, and educational outcomes with child marriage in Ethiopia.

The purpose of this study is to investigate the relationship between child marriage and specific potential negative health, economic and educational outcomes of women experiencing these marriages in Ethiopia. In this study child marriage will be defined as the formal or informal union between a person under 18 years of age and an adult or another child.

1.2 Research Questions

- What is the prevalence of child marriage in Ethiopia among women aged 18-49?
- What is the association between maternal health outcomes and child marriage in Ethiopia among women aged 18-49?
- What is association between maternal educational and economic outcomes and child marriage in Ethiopia among women aged 18-49?

LITERATURE REVIEW

2.1 Child Marriage Globally

Child marriage is a serious and widespread public health issue. It is an issue that affects many regions around the world. Each day, an estimated 25,000 girls under the age of 18 are married (Mathur et al., 2003.) 15 million girls are married before their 18th birthday each year (Petroni et al., 2017). This issue is of particular concern in Africa. In sub-Saharan countries, 60% of girls are married before the age of 18 (Nour, 2009). As of 2018, 650 million women worldwide were married before their 18th birthday (Efevbera et al., 2020). In low and middle income countries 1 in 3 girls will be married before the age of 18 and 1 in 5 before the age of 15 (UNFPA, 2016). No country is on track to achieve Sustainable Development Goal 5 (SDG 5) by 2030, specifically target 5.3 (UNICEF, 2018). SDG 5 target 5.3 aims to eliminate all harmful practices, such as child early forced marriage and female genital mutilations. Child marriage impacts both girls and boys, but girls are disproportionately impacted (United Nations Children's Fund, 2022). 7 out of 10 countries that have the highest rates of child marriage are in the African continent, specifically west and central Africa (United Nations Children's Fund, 2022). If child marriage is not decreased, 25 million more girls will become child brides by 2030 (United Nations Children's Fund, 2022).

Child marriage is more common in areas experiencing poverty (Nour, 2009). Child marriage is most common in rural areas experiencing poverty with a lack of access to health care (Raj, 2010). Child marriage is driven by poverty, parental belief that it offers protection, gender inequality, and the reinforcement of social ties (Raj, 2010). Parents specifically believe that marrying their daughters young will protect their daughters from "rape, premarital sexual

activity, unintended pregnancies, and sexually transmitted infections, especially human immunodeficiency virus (HIV) and AIDS” (Nour, 2006). Gender inequality is intrinsically tied to child marriage as it impedes education and employment access (Raj, 2010). It is girls who are the least educated and the least economically advantaged that are at the greatest risk of child marriage (Raj, 2010).

Efforts have been undertaken to combat child marriage globally and in Africa specifically. Some countries, like Ethiopia, have outlawed marriage under 18 with exemptions for parental permission. Other efforts include programs such as ones that empower young girls with information, skills, and safe spaces like the Maharashtra Life Skills Program in India (Greene, 2014). Other programs include ones that improve quality and availability of education to young girls such as the two-year Ishrag program in Egypt (Greene, 2014). Some programs seek to offer economic support and incentives to families against marrying their daughters early, such as the Berhane Hewan program in Ethiopia (Greene, 2014). Another type of program, such as the Tostan program in Senegal, seeks to educate community members and mobilize parents to combat the social norms that lead to child marriage (Greene, 2014).

2.2 Child Marriage in Ethiopia

Child marriage is of particular concern in Ethiopia. Between 2005 and 2016 the rate of child marriage among women in Ethiopia declined from 49% to 40% (Erulkar, 2022). However, 40% is still an incredibly high percentage (Ethiopia, 2023). Child marriage is continuing in this region at an alarming rate. This is despite Ethiopia passing a law in 2000 that raised the legal

age of marriage from 15 to 18 in some regions. It is still possible for a minister of justice to grant a dispensation for individuals 16 years old or older to marry with parental/guardian permission. Early marriage in Ethiopia is typically of one of three types: promissory marriage, adolescent marriage, or child marriage (Alemu, 2008). A promissory marriage is where a verbal promise between parents to marry their children is made at infancy. An adolescent marriage is when a girl aged 10-15 is married typically to a much older husband (Alemu, 2008). The third type, which is also referred to as child marriage is when girls under 10 are wedded (Alemu, 2008). More than 55% of women who were married as children reported being pressured into their marriage with 60% reporting that they were not informed about the wedding until after the decision was already made (Alemu, 2008). 72% reported that their consent was never requested (Alemu, 2008).

Child marriage continues in Ethiopia for many reasons. As discussed in section 2.1, there are several drivers of child marriage globally that are also relevant for child marriage in Ethiopia. Poverty and economic instability along with social norms and gender inequality are the main drivers of child marriage. Tradition is also an important factor, with 80% of respondents citing it as their main reason to marry their daughter early (Alemu, 2008).

Beyond creating a legal framework around child marriage several other steps have been taken to combat child marriage in Ethiopia. Ethiopia is a focus country of UNICEF-UNFPA Global Programme to Accelerate Action to End Child Marriage which is a multi-donor, multi-stakeholder program. Ethiopia also undertook a National Action Plan for Gender Equality 2006-2010, National Harmful Traditional Practices Platform, the National Alliance to End Child Marriage in Ethiopia, and the first ever Ethiopia Girl Summit (Ethiopia, 2023). Non-

governmental initiatives include the Dutch Yes, I Do Alliance and Her Choice Alliance, and the Ethiopian Women Lawyers Association.

2.3 Health Outcomes of Child Marriage

Child marriage is associated with numerous negative health outcomes for the women and girls that experience it. Studies in South Asia have indicated that child marriage is a strong predictor of intimate partner violence (Kidman, 2017). Girls in child marriages in Sub-Saharan Africa and South Asia are more likely to give birth as teens (Fan et al., 2022). In Latin American countries, mothers are also 4 times more likely to die from pregnancy complications if they are under the age of 16 (Conde-Agudelo et al., 2005). Girls in child marriage are more likely to experience increased risk for sexually transmitted diseases, cervical cancer, malaria, death during childbirth, and obstetric fistulas (Nour, 2006). Women in child marriages are more likely to give birth early and bear more children with an average of 4.96 children in Ethiopia (Alemu, 2008). In Ethiopia, their births are also more likely to be complicated and dangerous (Parsons et al., 2015). They are also more likely to contract HIV (Alemu, 2008). Child marriage also comes with the risk of increased physical and sexual intimate partner violence (Kidman, 2017). In Ethiopia, girls experiencing a child marriage are more likely to experience suicidal thoughts and ideation and to attempt suicide (Gage, 2013). In both Ethiopia and Niger, child marriage is also negatively associated with depression, anxiety, negative well-being, vitality and general health (John et al., 2019). In Ethiopia among girls aged 15-19, anemia was found to be associated with child marriage (Tiruneh et al., 2021). The maternal outcomes to be considered here

underweight, anemia, miscarriage, abortion or still birth, physical or sexual assault by an intimate partner. These outcomes were selected as previous research had not considered in Ethiopia. The association of Intimate partner violence and anemia with child marriage has been previously studied on their own but not in conjunction with other health outcomes. Health outcomes previously considered include mental health outcomes, reproductive health outcomes, and infant mortality.

2.4 Economic and Educational Outcomes of Child Marriage

Poverty and child marriage are intrinsically linked. Poverty is a driver of child marriage. Child marriage also results in negative economic outcomes for the women who experience it. Girls who experience child marriage are more likely to drop out of school, lack literacy, and have reduced employment opportunities and ability to earn money, and lack control over household assets (Parsons et al., 2015). They also tend to have poorer health and less educated children (Parsons et al., 2015). These women often lack power in their marital home (Parsons et al., 2015). Child marriage is a serious barrier to young girls receiving their education. Child marriage reduces secondary education enrollment of girls who are subjected to it (Wodon et al., 2016). A secondary education can act as a protective factor for child marriage (Raj et al., 2014).

2.5 Important Theoretical Concepts

For the purpose of this study, child marriage will be defined as the formal or informal union between a person under 18 years of age and an adult or another child. The purpose of

this study is to investigate the relationship between child marriage and specific potential negative health, economic and educational outcomes of women experiencing these marriages in Ethiopia. While there is some research into the effect of child marriage on these outcomes, there is a lack of research on all these outcomes of child marriage together, specifically for children in Ethiopia. The maternal outcomes to be considered here underweight, anemia, miscarriage, abortion or still birth, physical or sexual assault by an intimate partner, poverty, and whether or not a secondary education was received. These outcomes were selected as little research has been done in Ethiopia to determine the relationship between these outcomes and child marriage, especially considering these outcomes all together. All of these health outcomes have been investigated in Africa but not Ethiopia specifically except for anemia, and intimate partner violence.

Important concepts for this research are health outcomes, prevalence, odds ratios, and health in all policies. Prevalence and odds ratios are defined in section 1.1. Health in all policies is the belief that health should be considered in the crafting of all policies. This is based on the idea that all policies affect individual and community health. This is especially true with policies surrounding child marriage as child marriage can have devastating effects both on the individual and community level.

METHODS

3.1 Context & Rational of Study

Child marriage is still a serious issue in Ethiopia despite efforts taken to combat child marriage. This study seeks to determine if these previous efforts have been effective at combating child marriage and what outcomes are associated with child marriage. Little research has been done looking into health, economic, and educational outcomes all together in Ethiopia. These outcomes are usually considered separately. Furthermore, these outcomes were selected as little research has been done in Ethiopia to determine the relationship between these outcomes and child marriage. All of these health outcomes have been investigated in Africa but not Ethiopia specifically expect for anemia, and intimate partner violence.

3.2 Sample

Data was obtained from the 2016 Ethiopia Demographic and Health Survey. This is a national survey with data collection on the prevalence, health outcomes, and educational outcomes of child marriage in Ethiopia from January 18, 2016, to June 27, 2016 (ICF, 2016). This survey had a stratified two-stage cluster design, and the first stage sampling units were enumeration areas. The sampling frame was developed in 2007 by the Ethiopia Central Statistical Agency. It involved the use of enumeration areas, geographical areas containing 131 households. There were 84,915 of these areas. Each of Ethiopia's nine geographical regions and

two administrative cities were stratified into urban or rural areas. This yielded 21 sampling strata. Samples of enumeration areas were then independently selected in each stratum in two stages. 645 enumeration areas were selected in the first stage and in the second stage 28 households per cluster were selected with equal probability. Enumeration areas with more than 300 households were segmented. 16,650 households were selected with women aged 15-49 and men aged 15-59 included from each household. There were 15,683 female respondents, and 12,688 male respondents. In half the households selected, one woman per household was selected for the domestic violence module and all women 15-49 were eligible for the Female Genital Mutilation/cutting. Biomarker data was collected from each household selected, such as height and weight for both women aged 15-49 and children aged 0-59 months, hemoglobin testing for both women aged 15-49 and children aged 6-59 months, presence of malaria for children aged 6-59 months, and presence of sickle cell disease for children aged 6-59 months.

Five surveys were administered: household questionnaire, women's questionnaire, biomarker questionnaire, and the health facility questionnaire. Basic demographic information was collected on participants including age, sex, marital status, education, and relationship to the head of the household. The health facility questionnaire obtained vaccination information of children who were without a vaccination card. The household questionnaire collected information on the household's source of water, toilet facilities, flooring materials, dwelling unit, and ownership of various durable goods. The women's questionnaire included questions on the following topics: background characteristics (including age, education, and media exposure) Birth history and childhood mortality, Family planning, including knowledge, use, and sources of contraceptive methods, Fertility preferences, Antenatal, delivery, and postnatal

care, Breastfeeding and infant feeding practices, Vaccinations and childhood illnesses, Women's work and husbands' background characteristics, knowledge, awareness, and behavior regarding HIV/AIDS and other sexually transmitted diseases (STDs), Knowledge, attitudes, and behaviors related to other health issues (e.g., injections, smoking, use of Chat), Adult and maternal mortality, Female genital mutilation or cutting, Fistula, and Violence against women. The male questionnaire was collected similar information except on reproductive history, maternal and child health and questions on domestic violence. The surveys were administered by 2016 EDHS interviewers using tablet computers to record the interviews. Anemia testing was done by collecting blood samples through a finger prick of women aged 15-49 and men aged 15-59. The haemoglobin analysis was done on site with a battery operated HemoCue analyzer.

The underweight variable was measured using the weight and height data collected. The anemia variable was measured using the data from the anemia testing. The intimate partner violence, poverty, and education variable was measured using data from women's questionnaire.

3.3 Statistical Analysis

The maternal health outcomes to be considered here were maternal death, underweight, anemia, miscarriage, abortion or still birth, and physical or sexual abuse by an intimate partner. The other outcomes to be considered are poverty and whether or not the women received a secondary education. The independent variable was the child marriage status of the mother. The dependent variable was the maternal outcomes. The control

variables used for adjustment of the odds ratios were: mother's age, region of residence, area of residence (urban vs. rural).

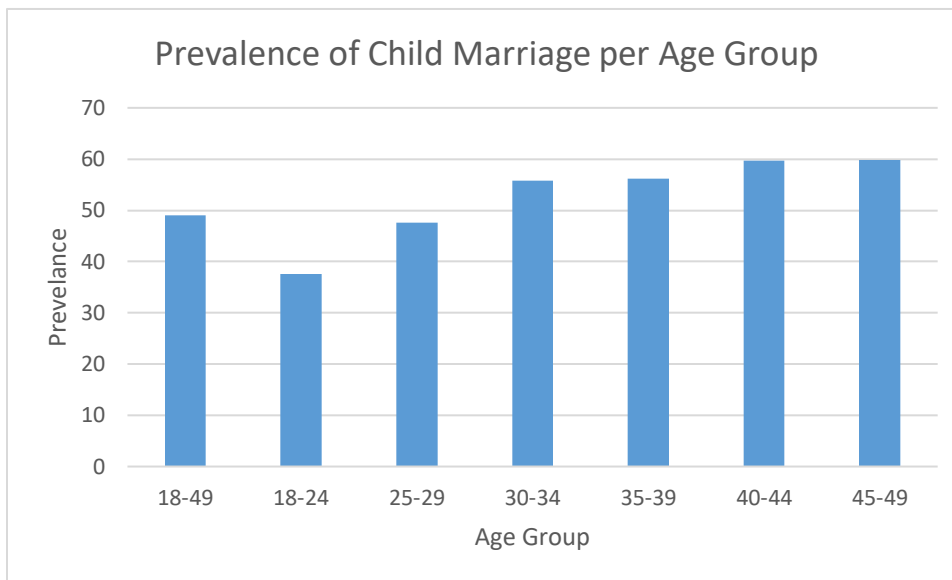
The association of child marriage and these outcomes was measured using adjusted odds ratio. The frequency of each outcome was determined. All data was analyzed with Stata SE version 17.17 (StataCorp., College Station, Texas). This is a statistical software package that offers sample processes that use both weights and cluster designs. This analysis takes into account the complex sample design and produces appropriate standard errors for each estimate.

RESULTS

4.1 The prevalence of child marriage among women aged 18-49 in Ethiopia

Age group	18-49	18-24	25-29	30-34	35-39	40-44	45-49
Prevalence (%)	49.0	37.54	47.56	55.73	56.13	59.75	59.88
95% CI	50.21-53.78	34.5-40.27	45.87-52.76	57.79-64.56	56.51-63.74	62.04-69.77	59.43-68.23

Figure 1: The prevalence of child marriage among women aged 18-49 in Ethiopia



4.2 Unadjusted Odds Ratios of Maternal Outcomes and Child Marriage for women in Ethiopia aged 18-49

		Child Marriage Status			
Outcome		Yes	No	Unadjusted OR	95% CI
Underweight	Total (n)	6,425	6,483	1.22	[1.14, 1.35]
	Yes %	23.63	20.01		
	No %	76.37	79.99		
Anemia	Total (n)	6,311	6,287	1.35	[1.25, 1.46]
	Yes %	30.69	24.65		
	No %	75.35	69.31		
IPV	Total (n)	2,739	1,891	1.16	[1.01, 1.34]
	Yes %	23.88	21.21		
	No %	78.79	76.12		
Miscarriage & Abortion	Total (n)	6,658	6,931	1.60	[1.42, 1.81]
	Yes %	10.98	7.14		
	No %	92.86	89.02		
Secondary Education	Total (n)	6,658	6,931	6.26	[5.66, 6.93]
	Yes %	91.92	64.49		
	No %	8.08	35.51		
Poverty	Total (n)	6,658	6,931	1.88	[1.74, 2.03]
	Yes %	31.02	19.29		
	No %	68.98	80.71		

Note. This table depicts the unadjusted odds ratio of each outcome.

4.3 Adjusted Odds Ratios of Maternal Outcomes and Child Marriage for women in Ethiopia aged 18-49

Outcome	Adjusted OR	P value	95% CI
Underweight	0.98	0.799	[0.85, 1.14]
Anemia	1.19	0.009**	[1.05, 1.37]
IPV	1.22	0.058	[0.99, 1.51]
Miscarriage & Abortion	1.21	0.025*	[1.03, 1.45]
Secondary Education	5.64	0.000**	[4.59, 6.94]
Poverty	1.12	0.298	[0.91, 1.38]

Note. The variables controlled for here were study design, sample weight, age, region, and urban vs rural * $p < .05$. ** $p < .01$.

4.4 Results of Research Questions

This analysis considers several research questions. First, whether the negative health outcomes including underweight, anemia, miscarriage, abortion or still birth, and physical or sexual abuse by an intimate partner, are associated with a woman experiencing or having experienced child marriage. Second, whether child marriage is associated with poverty. Third, whether child marriage is associated with negative educational outcomes, specifically receiving a secondary education. The significance of each proposed association is also being considered.

To contextualize the associations of child marriage and the outcomes of interest, the severity of child marriage in Ethiopia needs to be understood. The prevalence of child marriage for women aged 18-49 is 49%, in other words nearly half of women aged 18-49 in Ethiopia have experienced or are still experiencing child marriage. Across age groups, the older the respondent the more likely she is to have experienced child marriage. Nearly 60% of women aged 40-49 have experienced child marriage.

When considering the crude odds ratio, child marriage is associated with every maternal outcome considered. This is indicated by odds ratio values greater than one. However, when adjusted for study design, sample weight, age of women, region of residence, and urban vs rural not all the outcomes are significantly associated. The adjusted OR for the underweight outcome is 0.98 with a 95% confidence interval of [0.85, 1.14] and a p-value greater than 10% (0.799), which indicates that being underweight is not significantly associated with child marriage. The adjusted OR for anemia is 1.19 with a 95% confidence interval [1.05, 1.37] and a p-value of 0.009, which indicates that anemia is significantly associated with child marriage. The adjusted OR for intimate partner violence (IPV) is 1.22 with a 95% confidence interval and a p-value of 0.058, which indicates that intimate partner violence is significantly associated with child marriage. The adjusted OR for miscarriage and abortion is 1.21 with a 95% confidence interval [1.03, 1.45] and a p-value of 0.025, which indicates that miscarriage and abortion is significantly associated with child marriage. The adjusted OR for lack of secondary education is 5.64 with a 95% confidence interval [4.59, 6.94] and a p-value of 0.000, which indicates that not receiving a secondary education is significantly associated with child marriage. The adjusted OR for poverty is 1.12 with a 95% confidence interval [0.91, 1.38] and a p-value of 0.288, which indicates that poverty is not significantly associated with child marriage. Every outcome except underweight and poverty are significantly associated with child marriage.

DISCUSSION AND CONCLUSION

5.1 Implications of Findings

Little research has been done into the association of specific health, economic, and educational outcomes in Ethiopia. The few studies that have been done do not consider a wide of age range as considered here. The prevalence of child marriage for women aged 18-25 is 37.54% versus 59.88% for women aged 45-49. This indicates that the measures Ethiopia has taken to combat child marriage have been at least partially successful. However, despite this success child marriage is still a serious issue with devastating health, economic, and educational consequences. Child marriage is a violation of a girl's human rights: rights to physical and mental well-being, rights to education and equality. A significant association was found between child marriage and anemia, intimate partner violence, miscarriage and abortion, and not receiving a secondary education. Intimate partner violence can have devastating effects on both physical and mental health (Cambell, 2002). Anemia can result in poor concentration, fatigue, cardiovascular disease and chronic kidney disease (Benson et al., 2001). Anemia is especially dangerous during pregnancy where it is associated with higher maternal mortality and increased risk of postpartum hemorrhage (Benson et al., 2021). Poor educational outcomes are associated with poverty and similar poor health outcomes such as more smoking, drinking, obesity, asthma, diabetes, heart disease (Feinstein et al., 2006)

Child marriage negatively effects the entire wellbeing of the women who experience it. They are more likely to live in poverty, not receive a secondary education, and experience lifelong health consequences. Despite improvements in the severity of child marriage too many women are still being subjected to child marriage and all its negative consequences. The effect

of the Covid-19 pandemic has had on this success must also be considered. More needs to be done to effectively combat child marriage and address the negative outcomes associated with child marriage. The results of this study can be used to align funding with the consequences of child marriage that need the most immediate addressing. It can be used to craft new policies and direct funding to prevent the outcomes found to be significant here.

Given the variety and severity of the outcomes associated with child marriage for women it is likely that child marriage has negative effects on a country's human capital. This negative effect may also be intergenerational as the health and wellbeing of a child is so intimately tied to their mother's (need reference).

5.2 Study Strengths and Limitations

This study has several strengths and limitations. Child marriage was assessed using self-reports which can be subject to recall bias, reporting bias, and social pressures. This is especially important to keep in mind when considering the reports of intimate partner violence or social taboos like abortion/miscarriage as respondents can be less forthcoming. It is also possible that the association could be due in part to unobservable factors. In future studies more health outcomes should be considered such as mental health outcomes, HIV/AIDS, and age of first pregnancy. This would allow a fuller consideration of the negative effects child marriage could have on the wellbeing of women who experience it. The data used for this thesis is from 2016 and thus the associations observed here could have changed in the years following the data collection. This is especially important to consider given the potential effects of the Covid-19 pandemic on drivers of child marriage such as poverty and educational opportunities. It would

also be important in future studies to consider the intergenerational effects of child marriage by determining the association of negative outcomes for both mother and child.

The strength of this study is its consideration of health, educational, and economic outcomes together. The presence of one of these outcomes can often increase the likelihood of another outcome being observed. By considering all three of these types of outcomes this study paints a picture of the effect of child marriage on a person in its totality. Another strength of this study is the data selected which was very thorough and collected data on a variety of outcomes for over sixteen thousand households. This data was obtained from a national study. By clustering the data, a more precise population estimate can be produced, however it is important to keep in mind that for a fixed sample cluster designs can produce larger standard errors. This is because people living in the same geographical area often have more shared attributes than randomly selected members of the entire population.

5.3 Recommendations and Prevention Strategies

There are several recommendations and prevention strategies that need to be considered. The law making child marriage illegal in Ethiopia has an exemption for children 16 years or older with parental consent. This exemption should be removed. Education can act as a protective factor for child marriage as it helps break the cycle of poverty that often drives child marriage. Increasing educational opportunities for girls could help continue to reduce the severity of child marriage in Ethiopia. Beyond increasing educational opportunities, the social drivers of child marriage must also be addressed: gender inequality and female genitalia

mutilation/cutting. By addressing these drivers, we can materially improve the lives of the young women who experience child marriage and prevent it before it starts.

5.5 Conclusions

Child marriage is a serious public health issue both globally and in Ethiopia specifically. No country is on track to achieve Sustainable Development Goal 5 (SDG 5) by 2030, specifically target 5.3 (UNICEF, 2018). SDG 5 target 5.3 aims to eliminate all harmful practices, such as child early forced marriage and female genital mutilations. According to the data analysis done here, in 2016 49% of women in Ethiopia were married before their 18th birthday. Data was obtained from the 2016 Ethiopia Demographic and Health Survey. The maternal outcomes considered were underweight, anemia, miscarriage, abortion or still birth, and physical or sexual abuse by an intimate partner, poverty, and whether or not a secondary education was received. The association of child marriage and these health outcomes was measured using an adjusted odds ratio. All data was analyzed with Stata SE version 17. When considering the unadjusted odds ratios all tested outcomes were associated with child marriage. When adjusting for study design, sample weight, age, region of residence, and urban vs rural, a significant association was found between child marriage and anemia, intimate partner violence, miscarriage and abortion, and not receiving a secondary education. This was evident with each outcome having a OR value greater than 1 and a p-value less than 0.10.

REFERENCES

- Alemu, B. (2008). Early marriage in Ethiopia: causes and health consequences. *Exchange on HIV and AIDS, Sexuality and Gender*, 1, 4-6.
- Benson, C. S., Shah, A., Stanworth, S. J., Frise, C. J., Spiby, H., Lax, S. J., ... & Klein, A. A. (2021). The effect of iron deficiency and anaemia on women's health. *Anaesthesia*, 76, 84-95.
- Campbell, J. C. (2002). Health consequences of intimate partner violence. *The lancet*, 359(9314), 1331-1336.
- Conde-Agudelo, A., Belizán, J. M., & Lammers, C. (2005). Maternal-perinatal morbidity and mortality associated with adolescent pregnancy in Latin America: Cross-sectional study. *American journal of obstetrics and gynecology*, 192(2), 342-349.
- Efevbera, Y., & Bhabha, J. (2020). Defining and deconstructing girl child marriage and applications to global public health. *BMC public health*, 20(1), 1547.
- Erulkar, A. (2022). Changes in the prevalence of child marriage in Ethiopia, 2005–2016. *Reproductive Health*, 19(Suppl 1), 195.
- *Ethiopia*. Girls Not Brides. (2023). <https://www.girlsnotbrides.org/learning-resources/child-marriage-atlas/regions-and-countries/ethiopia/>
- Fan, S., & Koski, A. (2022). The health consequences of child marriage: a systematic review of the evidence. *BMC public health*, 22(1), 1-17.
- Feinstein, L., Sabates, R., Anderson, T. M., Sorhaindo, A., & Hammond, C. (2006, March).
What

are the effects of education on health. In *Measuring the effects of education on health and civic engagement: Proceedings of the Copenhagen symposium* (pp. 171-354). Paris, France: Organisation for Economic Co-operation and Development.

- Gage, A. J. (2013). Association of child marriage with suicidal thoughts and attempts among adolescent girls in Ethiopia. *Journal of Adolescent Health, 52*(5), 654-656.
- Garcia-Hombrados, J. (2021). Child marriage and infant mortality: causal evidence from Ethiopia. *Journal of Population Economics, 1-61*.
- Greene, M. (2014). Ending Child Marriage in a Generation. *What Research is Needed*.
- Hassfurter, K. (2022, August 31). *Child marriage in West and Central Africa: A statistical overview and reflections on ending the practice*. UNICEF DATA. Retrieved February 25, 2023, from <https://data.unicef.org/resources/child-marriage-in-west-and-central-africa-a-statistical-overview-and-reflections-on-ending-the-practice/#:~:text=An%20estimated%20650%20million%20girls,child%20marriage%20in%20the%20world>.
- ICF. "Ethiopia: Standard DHS, 2016." The DHS Program website. Funded by USAID. <http://www.dhsprogram.com>. [May, 1st, 2023].
- John, N. A., Edmeades, J., & Murithi, L. (2019). Child marriage and psychological well-being in Niger and Ethiopia. *BMC public health, 19*, 1-12.
- Kidman, R. (2017). Child marriage and intimate partner violence: a comparative study of

34 countries. *International journal of epidemiology*, 46(2), 662-675.

- Koç, İ. (2007). The timing of leaving the parental home and its linkages to other life course events in Turkey. *Marriage & Family Review*, 42(1), 29-47.
- Mathur, S., Greene, M., & Malhotra, A. (2003). Too young to wed. *The lives, rights, and health of young married girls*. Washington, DC: International Center for Research on Women.
- Nour N. M. (2006). Health consequences of child marriage in Africa. *Emerging infectious diseases*, 12(11), 1644–1649. <https://doi.org/10.3201/eid1211.060510>
- Nour N. M. (2009). Child marriage: a silent health and human rights issue. *Reviews in obstetrics & gynecology*, 2(1), 51–56.
- Parsons, J., Edmeades, J., Kes, A., Petroni, S., Sexton, M., & Wodon, Q. (2015). Economic impacts of child marriage: a review of the literature. *The Review of Faith & International Affairs*, 13(3), 12-22.
- Petroni, S., Steinhaus, M., Fenn, N. S., Stoebenau, K., & Gregowski, A. (2017). New findings on child marriage in sub-Saharan Africa. *Annals of global health*, 83(5-6), 781-790.
- Raj, A. (2010). When the mother is a child: the impact of child marriage on the health and human rights of girls. *Archives of Disease in childhood*, 95(11), 931-935.
- Raj, A., & Boehmer, U. (2013). Girl child marriage and its association with national rates

of HIV, maternal health, and infant mortality across 97 countries. *Violence against women*, 19(4), 536-551.

- Raj, A., McDougal, L., Silverman, J. G., & Rusch, M. L. (2014). Cross-sectional time series analysis of associations between education and girl child marriage in Bangladesh, India, Nepal and Pakistan, 1991-2011. *PloS one*, 9(9), e106210.
- Tiruneh, F. N., Tenagashaw, M. W., Asres, D. T., & Cherie, H. A. (2021). Associations of early marriage and early childbearing with anemia among adolescent girls in Ethiopia: a multilevel analysis of nationwide survey. *Archives of Public Health*, 79(1), 1-10
- Wodon, Q., Nguyen, M. C., & Tsimpo, C. (2016). Child marriage, education, and agency in Uganda. *Feminist Economics*, 22(1), 54-79.
- UNICEF, E. (2018). Child marriage: Latest trends and future prospects. *New York: UNICEF*.
- United Nations Children's Fund, Child Marriage in West and Central Africa: A statistical overview and reflections on ending the practice, UNICEF, New York, 2022.
- UNFPA. State of the world population 2016 [Internet]. New York, New York: UNFPA; 2016. Retrieved February 25, 2023, from http://www.unfpa.org/sites/default/files/sowp/downloads/The_State_of_World_Population_2016_-_English.pdf.