Levels and Determinants of age at first marriage in Namibia

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ABSTRACT

Age at first marriage is the age at which one gets married for the first time. This study examines the trends and socio-economic factors of age at first marriage in Namibia this topic has been under researched and as a result a gap in the knowledge exists. This research aims to determine age at marriage across different social demographic characteristics well to determine factors associated with age at first marriage. Data from NDHS for the years 1992, 2000, 2006 and 2013, are used in this study and The Hajnals SMAM was used to determine the trends in ages. Results showed that in 1992, Namibian women remained single for 26 years, 28 years in 2000, 29 years in 2006/07 and 30 years in 2013. The study also used the Kaplan Meier and Cox proportional hazard regressions to explain the factors associated with age at first marriage for each survey year. Results revealed selection effects on age at marriage among women in the 15-24 age group. An increase in age, commencement in sexual activity, premarital birth, first birth, and better educational opportunities decrease the risk associated with early marriage. The study also found that the Northeast region which comprised of Kavango East, Kavango West and Zambezi/Caprivi region had the highest risk of early marriage compared to other regions. Overall, there was significant decrease in age at first marriage across all age groups. The results also showed that this delay was linear with an increase in premarital births, however there is still a general decline in fertility rates.

Keywords: Nuptial transition, age at first marriage, women, Namibia, Cox proportional hazards

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LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
DHS	Demographic and Health Survey
EA	Enumeration Area
HIV	Human Immunodeficiency Virus
NDHS	Namibia Demographic and Health Survey
PH	Proportional Hazard
PSU	Primary Sampling Unit
SDG	Sustainable Development Goals
SMAM	Singulate Mean Age at Marriage
STDs	Sexually Transmitted Diseases
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organization

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1 INTRODUCTION

Marital status and the age at which women get married are among the most important subjects in demography. Where levels and patterns of fertility are strongly conditioned by age of entry into marriage, this research will focus on assessing the timing, and the effect of socioeconomic factors on age at first marriage in Namibia.

1.1 BACKGROUND OF STUDY

A marriage is the act, ceremony, or process by which the legal relationship between two persons is formed. The legality of the union may be established by civil, religious, or other means as recognised by the laws of each country (European Union, 2022).
Age at first marriage, is the age at which one gets married for the first time, that is legally, traditionally, or religiously. The paucity of studies of marriage and its determinants in sub-Saharan Africa has been noticed, and with the negligible data available, demographers have noted that African nuptial patterns and ages at first marriages exhibit similar marriage patterns as historical European (Hajnal, 1982; Lesthaeghe, Kaufmann and Meekers, 1986; Way, 2014; Westoff, 2003).

Studies of marriage in sub-Saharan Africa have been limited for two principal reasons: historically, precise information on age at first marriage was difficult to obtain owing to limited and deficient civil registration and vital statistics systems in most countries in the region, compounded with low levels of numeracy; and because – in many African societies - marriage is often a process than a single event, involving many stages and ceremonies and this leads to varying interpretations of the timing of entry into a union (Van de Walle, Foote, Hill *et al.*, 1993). Additionally, for a developing continent, researchers have had to rely on data on reported marital status at the date of interview, as routine survey programmes such as the DHS do not collect full marital histories. Hence, important aspects of the African nuptial systems remain under-studied: polygamy, spousal inheritance due to widowhood or divorce, and information widowhood, divorce, and remarriage is largely absent (Westoff, 2003).

Compared to western countries, sub-Saharan Africa still has the youngest age at first marriage for women, where, according to UNICEF (2020) in 2020, 37 per cent of young women marry before the age of 18. Studies show that age at first marriage levels differs by country: in some countries in Southern and Eastern Africa less than 50 per cent of women marrying before age 20, while in others, perhaps 70 to 90 per cent of

women are married before age 20, including in some of the least developed countries in Africa: Burkina Faso, Central African Republic, Chad, Guinea, Madagascar, Malawi, Mozambique, and Uganda (Westoff, 2003).

Marriage is a key that opens a whole new world especially for women, introducing them to events that have manifold physical, psychological, or emotional effects. Early marriage is usually associated with negative effects such as adolescent motherhood, dropping out of school, maternal morbidity, and mortality as well as forfeiting future life opportunities (Gobena and Alemu, 2022).

Marital status is associated with fertility patterns, as women who marry early have a longer period of exposure to the risk of pregnancy, which (other things equal) leads to higher fertility but also places women at higher risk of exposure to health issues like sexually transmitted diseases (STDs) and HIV/AIDS in particular (Bongaarts, 2007; Garenne, 2004). Early marriage is also argued to lead to greater marital instability (Lee, 1977).

Age at first marriage plays a significant part in demographic change, as mentioned before affects fertility, labour, mortality and migration. With its association to every facet of life, understanding the trends and dynamics in age at first marriage assists us in understanding the country's economic levels, access to information and education.

1.2 GEOGRAPHY

The Republic of Namibia formerly known as South-West Africa gained its independence in 1990. With the Atlantic Ocean to the west, Namibia is bordered by Zimbabwe, Zambia, Angola to the north, Botswana to the east, and South Africa to the south and east. Administratively, the country is divided into 14 regions. The country has various ethnic groups which consist of Bantu origin this includes the Ovambo, Herero, Himba, Khoisan such as the Nama and San, and the Whites made up of Afrikaner, German, British and Portuguese.

In the last census carried out, in 2011, the country's population was estimated at 2.1 million, while in 2019, the population was estimated at around 2.3 million with 66 per cent of the population being below the age of 30, the country reports 43 per cent youth unemployment of which 49.4 per cent are female (UNFPA, 2019). According to UNFPA (2019), Namibia had an HIV prevalence rate of 16.9 per cent among pregnant women, while the total fertility rate stood at 3.6 children per woman.

1.3 STATEMENT OF THE PROBLEM

The propensity to marry as well as the timing of marriage has a great effect on the rate of population growth, economic activity, mortality, migration, and fertility (Keeley, 1979; Palamuleni, 2011). As previously mentioned, early marriage has shown to have potentially detrimental effects on women as this propels young women into adulthood without being physically or mentally ready: this is cause for concern as child marriages are still taking place in Namibia (Pazvakawambwa, Kazembe and Indongo, 2014). Although significant advances have been made in the provision of education to girls and young women, and initiatives aimed at increasing women's empowerment in the country have been implemented, many women still get married at early ages and this tends to negatively impact these women by having lost out on life-changing opportunities like better jobs, living standards and overall quality of life due to early motherhood and dropping out of school or not furthering studies. These effects thence contribute to other social issues, especially poverty.

1.4 SIGNIFICANCE OF THE STUDY

This study intends to contribute to the limited Namibian and sub-Saharan Africa literature on marriage and age at marriage. In developing this study, the research will be useful to government and policy makers, regarding the effect marriage has on the socio-economic development of the country. In this sense, the study contributes to the broader area of research into transitions into adulthood: the commencement of marriage, sexual activity, and childbearing, and the impacts of foreclosing opportunities for education, employment, and social participation to Namibian women. This research will also contribute to Namibia's commitment to eliminate child marriages, SDG 5.3 aims to "eliminate all harmful practices, such as child, early and forced marriage and female genital mutilations" by 2030 (United Nations, 2022).

1.5 AIMS AND OBJECTIVES OF THE STUDY

This study aims to update and extend the current literature of age at first marriage by examining age at first marriage in Namibia.

This aim will be achieved with the following objectives;

- To assess trends of age at first marriage in Namibia between 1992, 2000, 2006 and 2013
- To determine the age at first marriage across different social demographic characteristics
- To determine factors associated with age at first marriage.

1.6 STRUCTURE OF THE DISSERTATION

The dissertation is arranged in 6 chapters. Chapter 2 discusses the literature review and theoretical framework; Chapter 3 explains the data and methodology used. Chapter 4 presents the findings of this research. Chapter 5 draws conclusions regarding the trajectory and determinants of age at first marriage in Namibia in the period 1992-2013. It documents an increase in age at first marriage across all age groups across all socio-economic factors. Current age, Education level age at first birth, premarital fertility age at first sexual debut and the region one is from is associated with age at first marriage, results indicate that the more she postpones age at marriage, she is also more likely to have a premarital birth. Measures that target women in regions with early age at marriages could be implemented, these measures could include promotion of education.

2 LITERATURE REVIEW

2.1 INTRODUCTION

This chapter discusses the theories related to the delay of age at first marriage; its importance in demography, the socio-economic determinants of age at first marriage, trends in age at first marriage globally, and in Namibia specifically that have been observed. Section 2.2 explores nuptiality and household formations, Section 2.3 presents theories that explain age at first marriage. Section 2.4 presents the factors associated with age at first marriage in previous studies. Section 2.5 delves into what has been discussed about age at first marriage in Namibia by other authors. Section 2.5 concludes with a brief discussion of the implications of the material presented for the research engaged with here, identifying gaps in our knowledge of age at first marriage.

2.2 AGE AT FIRST MARRIAGE

2.2.1 Nuptiality and Household formation systems

The household formation system was used to compare types of behaviour that resulted in the formation of various kinds of households (Hajnal, 1982). The formation of households in preindustrial Northwest Europe were said to be different from the systems that formed households in India, China, and other populations. The formation of these households were partly attributed to age at first marriage, and a closer look at the study of household formation showed evidence of late patterns of marriage that dated back to the seventeenth century. Hajnal (1982) saw that age at first marriage was related to household composition as the age structure of a population has a strong effect on household size, and Lesthaeghe, Kaufmann and Meekers (1986) found that sub-Saharan Africa exhibits similar marriage patterns of age at first marriage like the ones found in Northwest Europe by Hajnal (1982).

The nuptiality transition was used to describe the causes of shifts in age at first marriage among women in the demographic transition within a population. The same changes in age at marriage together with household composition observed by Hajnal (1982) in pre industrial Northwest Europe were similar to the changes observed by Lesthaeghe, Kaufmann and Meekers (1986) in sub-Saharan Africa. Lesthaeghe, Kaufmann and Meekers (1986) concluded that the nuptial transition in sub-Saharan Africa however slow has begun, this was also noticed by Westoff (2003) who noted that

the 1990s age at first marriage in 21 out of the 30 countries surveyed in sub-Saharan Africa had increased and confirmed there was a transition underway.

2.2.2 Marriage and Fertility

Researchers used to study fertility as an aftermath of marriage as first births and first marriages were usually related, and according to Van de Walle (1968), previous literature found European incidence of marriage which was the combined result of age at marriage and the proportion who never married as the main factor affecting fertility. However, Van de Walle (1968) argues that there should be a distinction between the total birth rate and marital fertility, and that though age at first marriage appears to be related to fertility, there is no cause and effect relationship as he attributed Europe's marital and fertility events to economic and social causes.

Coale (1971) found that attempts to construct fertility models have been futile because researchers have not considered looking at age patterns of marriage and Hertrich (2017) explained this could be due to that most countries experienced a nuptial transition before their fertility transition. However, Lesthaeghe, Kaufmann and Meekers (1986) argue that a rise in the age at first marriage for women does not necessarily imply a corresponding reduction of the reproductive age span as premarital fertility is often overlooked. He further argues that the fertility postponement effect of later marriage is partially counteracted by a high incidence of premarital pregnancies in the absence of contraceptives in several countries in sub-Saharan Africa.

There have not been many studies regarding age at marriage for the African continent, and most of these studies took place many decades ago, when data were generally limited. Lesthaeghe, Kaufmann and Meekers (1986) suggested that new efforts were required to better understand and theorise African nuptiality. There is evidence that sub-Saharan Africa is experiencing changing fertility patterns as well as marital patterns however there is not enough data regarding this topic to find out the reasons for these changes (Van de Walle, Foote, Hill *et al.*, 1993). Hence why revisiting this topic is crucial.

2.3 THEORETICAL FRAMEWORK

Although not much data is available regarding marriage and family formation in sub-Saharan Africa, there have been several theories explaining that marriage patterns respond to certain elements related to social and economic development. Many (though by no means all) developing countries, however, have followed the pattern of the modernization of marriage first documented in Europe. The evolution of this pattern was driven by the growth of a wage economy, the restructuring of class stratification and the spread of education (Lesthaeghe, Kaufmann and Meekers, 1986).

This dissertation draws on four theories, the theory of marriage, the job search theory, female agency, and modernization theory are discussed in this section. These theories touch on how women have gained to a certain degree of control they have over their own lives or in other words their capacity for autonomous decision-making on when and with whom to get married if they choose to, and how they have been educated and empowered to work outside their households.

2.3.1 The theory of marriage

Becker (1974) proposed that the sole purpose of marriage was for economic benefit for individuals to maximize their own wellbeing and production. This means that unmarried men and women are viewed as potential "trading" partners and that a couple marries because each partner has more to gain by marrying than by remaining single. Like in all trading relationships, the gains to marriage are based on everyone having something to trade. Women with home production and men in labour market, Becker (1974) explains that this mutual dependence produced between the sexes provides the major gains to marriage for each partner.

Becker (1974) as well adds that the timing of marriage also depends on how lucky they are in their search for a partner, he argues that early marriage occurs when both individuals think they cannot attract someone better or that they are optimistic about the person they have met due to certain traits that complement one another. While later marriages are caused by a reduced gain in marriage, this is caused by a rise in the earnings and labour force participation of women and by a fall in fertility because a sexual division of labour becomes less advantageous.

The traits that influence choosing a partner includes those that can be easily ascertained, education, income, intelligence, family background, the health of persons, however, ambition, resiliency under pressure, or potential for growth are ascertained with much greater difficulty. Therefore, (Becker, 1974) concludes that women who are

active in the labour force will more likely delay marriage as the gains to marriage is decreased.

2.3.2 The job search theory

Oppenheimer (1988) applied the job search theory to the marriage market; she argues that the job search theory will be able to explain marriage timing by focusing on the timing of entry into adult economic roles and the various factors that affect them, better than Becker (1974) theory of marriage. The job search theory notion is based on individuals remaining single up until they find a partner, they believe will make a suitable spouse, this is also known as assortative mating. Oppenheimer (1988) argues that with assortative mating, women chose individuals from similar backgrounds, whether social, cultural, and other societal factors, this suggests that the success of youthful marriages depends partly on how well the partners can predict what their future characteristics and future lives together will be like.

Unlike Becker (1974) theory of marriage, the job search theory recognizes women as contributors to the economy, and it states that women's labour market position affects her ability to marry, as it affects the ability to set up an independent household. This means economic independence enables already formed relationships to proceed to the marital stage and remain single longer if they are still economically dependent. Since more women have joined the labour market, education has become more important, therefore, the opportunity costs of dropping out of school before completion or of missing other training opportunities have been rising for women. That means a "premature" commitment to marriage may require just such dropout behaviour (Oppenheimer, 1988).

Oppenheimer (1988) also brings to our attention the increasing prevalence of cohabitation among young people as a factor to rising ages at marriage. Cohabitation the act of living together without legally getting married has slowly begun to gain popularity as it offers the same benefits of marriage, this includes the pooling of resources and economies of scale the living together provides. Oppenheimer (1988) adds that cohabitation also enables the kind of communication that increases the knowledge of oneself and that of a potential marriage partner. On the other hand, cohabitation also provides some of the advantages of remaining single. Though it may tie people up, its influence on future mating behaviour is much less, and the long-run financial obligations are also relatively low. In short, cohabitation can be viewed as one type of

adjustment to delays in the optimum conditions for assortative mating (Oppenheimer, 1988).

2.3.3 The female agency

The female agency theory coined by Sen (2000), states that the younger age a woman gets married, the less power and say she has in a relationship. His motion states that when women marry early, they do not have "time" to mature and build up their knowledge base and human capital investments. Thus, women who marry early have their marriages determined and negotiated by their parents. This notion was supported by Carmichael (2011) who noted that if women marry in their mid-late twenties, they then have "time" between puberty and married life to mature and build up their knowledge base and human capital, this also means that women have increased educational and employment opportunities.

Working and earning an independent income has been found to have a clear impact on enhancing a woman's social standing in society as her contribution to prosperity is more visible than when she works in the household.

2.3.4 Modernization and Culture theory

The modernization theory studied by Malhotra and Tsui (1996) compared developing Sri Lanka to Europe, the modernization theory states that changing norms and ideas are one of the most important pathways through which processes of socioeconomic development delay women's entry to marriage. The shift of women's roles and options from traditional family concerns to individualization which is the social alternatives women have apart from getting married, then translates to later marriage by the distinction of choice rather than arranged marriages. There is a preference for nuclear as opposed to extended family residence and economic and social independence of women (Malhotra and Tsui, 1996).

Malhotra and Tsui (1996) believe that the modernization theory is too general, and that developing countries have individual historical and development contexts which is the relevance in influencing female age at first marriage. They also argue that the modernization theory believed to be individualism that is associated with modern norms and ideas replace traditional and cultural practises, however they found that it was not the case with Asian countries. They realised that traditional as well as modern ideas and motivations for marriage can coexist and social change does not involve a linear shift from a consistent, packaged, set of traditional conditions to modern ones.

Rather, familial interests, and cultural prescriptions are likely to continue to play a substantial role in determining when young women enter the marital state despite the infusion of modern ideational factors (Malhotra and Tsui, 1996). This is in line with Hammel (1990) who described culture as a type of behaviour specific to individuals in a particular social position, time, and place. The individuals repeat these behaviours and are aware of the symbolic effect these behaviours have on other individuals. Hammel (1990) wants other demographers to recognise that culture and social change is brought about by a repetition of behaviours by individuals rather than the oversimplified theories such as modernization.

2.3.5 How these theories relate to Africa

Lesthaeghe, Kaufmann and Meekers (1986) noted that partner selection has become a matter of personal choice in sub-Saharan Africa, this observation was similar with the job search theory, as they saw that there was a shift from arranged to love marriage due to changes in socio-cultural settings that undermines parental roles in making decisions on the timing of marriage and childbearing. Lesthaeghe, Kaufmann and Meekers (1986) also saw that there was a shift away from extended families to nuclear families which requires residential and economic independence.

The negative side to the job theory is described by Bongaarts (2007) that self-selection of a partner takes a longer time to search for an "appropriate" mate and free selection of mates involves premarital sexual relations, these sexual relations increase the risk of HIV infection among sexually active never-married women: a higher rate of partner change and higher infectivity of partners in sub-Saharan Africa. This is supported by Garenne (2004) that age at first marriage is an important factor that shows exposure multiple sexual partnerships and consequently STDs, in particular HIV/AIDS.

Evidence of the modernization theory where women chose not to get married was proved in South Africa, where Hosegood, McGrath and Moultrie (2009) found that there was a reduction in the proportion of married adults in reproductive ages is being largely driven by non-marriage rather than widowhood or divorce despite increasing young adult mortality given the high level of AIDS mortality.

2.4 DETERMINANTS OF AGE AT FIRST MARRIAGE

Studies have shown age at first marriage is influenced by biological and socio-economic factors. This section will review the theory and literature used to explain age at first marriage, and which factors have played a role in the evolving age at first marriage patterns globally.

2.4.1 Education

Education has been mentioned as a factor that is associated with delaying age at first marriage by (Becker, 1974; Malhotra and Tsui, 1996) and Oppenheimer (1988), who have theorised that an increase in education is linear to delaying age at marriage. This was also supported by Sen (2000), who saw that when women are educated, it strengthens their agency and tends them more informed and skilled. Carmichael (2011) as well saw that female schooling, empowered women, this translates to allow them to have a job and live independently. This then produces a delay in marriages.

In the United States of America, Payne (2012) saw that women with the least educational attainment had the lowest age at first marriage which was 26 years and women who had at least obtained a master's degree married around age 31.

In sub-Saharan Africa, Lesthaeghe, Kaufmann and Meekers (1986) mentioned that if rising female age at first marriage was observed and no link to education was mentioned, the quality of data was questionable as the data showed as they found that the pattern of rising age at marriage associated with increased levels of female education and literacy. This was in line with what Amoo (2017) found, he carried out a study in three sub-Saharan African countries from 1990-2014. The results indicated that tertiary education was a significant indicator in marriage delay and that primary education or secondary education did not delay early marriage.

In Namibia, from 1992-2006, Pazvakawambwa, Kazembe and Indongo (2014) found that women with no formal education were at a higher risk of getting married than their counterparts with higher education. Thus, changes of the effect of increased education over time will be investigated in this research and see whether this difference still holds.

2.4.2 Current residence

Carmichael (2011) states that urbanisation is a phenomenon that is intrinsically bound up with modernisation and societies undergoing a process of development. As societies shift from agricultural, nomadic norms to non-agricultural pursuits, agglomeration in cities becomes economically efficient. It is for this reason, urbanisation is justified as a proxy for the larger process of "modernization"(Carmichael, 2011). Adebowale, Fagbamigbe, Okareh *et al.* (2012) agrees and states that this indicator assists us in capturing the effects of urbanization and modernization.

Due to the confounding effects such as education and employment of this variable on at first marriage, Carmichael (2011) proposes two possible explanations on how urbanisation affects age at marriage, first, the increase in urban population particularly since migration typically peaks in early adulthood (Rogers, Castro and Lea, 2005), creates a larger marriage market. This marriage market in turn increases the opportunity for young people to meet a suitable partner thereby resulting in lower ages at first marriage. The other possible explanation is that young people moving to the cities break from the traditions of their original homes and/or the sphere of parental influence. This increases their opportunities both in terms of more casual relationships and in terms of labour force participation. This effect would result in delaying marriage and therefore higher average age at marriage.

The effect of urbanisation on age at first marriage has never been clear due to the confounding factors mentioned above. However, researchers should also not ignore the weakness of the DHS as it measures residence status as time of interview, which may have changed over time. If neither full residence history nor full marriage histories are collected, then association will be hard to determine. This has however not stopped researchers from using this variable, in Bangladesh: according to Islam and Ahmed (1998), women who lived in rural areas were more at risk of getting married than their urban- born and -bred counterparts and these differentials were then attributed to a difference in education.

In sub-Saharan Africa, Lesthaeghe, Kaufmann and Meekers (1986) also found that modernization has affected two features of the African nuptiality, these are increased individualization of lineage members permitting free partner choice and a weakening in the practice of polygyny. What has been observed in sub-Saharan Africa is that women who live in rural areas are at a higher risk of marrying at a younger age compared to those in urban areas (Amoo, 2017; Aryal, 2007; Garenne, 2004; Keeley, 1979) .This was also evident in Malawi, where Manda and Meyer (2005) also found that

women who live in urban areas were more likely to prolong not entering a union as there could be greater opportunities for education and employment outside marriage.

The social consequence of the contract labour system has left an impact on the Namibian society, the movement of people from rural to urban areas has been the factor paramount in the development of informal settlements and residential and social segregation (Likuwa and Shiweda, 2017). This variable will assist us in finding out whether the theorised effects of modernisation on nuptiality regimes holds in Namibia and determine if there is any significant difference between women from rural areas and urban areas age at first marriage.

2.4.3 Culture and Religion

Hammel (1990) proposed the theory of culture so that it may explain why living under parallel economic conditions but differing in language or tradition, often behave very differently demographically and culture may as well explain why the population of a certain geographic region or linguistic area continues to behave demographically in much the same way over time, even though economic conditions change. Hammel (1990) warns us not to solely use one variable such as religion or ethnicity to explain culture, as there are several other elements and when joined together form culture.

In sub-Saharan Africa, Lesthaeghe, Kaufmann and Meekers (1986) found that the institution of polygyny was being replaced by another union formation which was "outside wives", this meant that although sub-Saharan Africa was following western marital patterns, they only adopted some of these patterns and created novel marital practices of their own. Lesthaeghe, Kaufmann and Meekers (1986) as well found that the introduction of religion into ethnic groups has some sort of effect on age at first marriage as there was a difference in age at marriage between Christian and Islamic populations, however these had confounding factors, a cross section of education and religious groups showed higher age at first marriage among educated Christian females and lower schooling rates and age at first marriage among Islamic populations. This shows an interconnected relationship between culture, religion, education, and age at first marriage. These findings were as well observed by Amoo (2017), who explains that some religions reinforce early marriage patterns, and that marriage, religion and culture were intertwined. Amoo (2017) further presents evidence from Zambia, Ghana, and Malawi, that early marriage of young women is driven by the high societal value placed on virginity to obtain a higher bride price. Evidence in Ethiopia also showed that the

transition from age at first marriage to motherhood is severely dependant on traditional norms and values Gurmu and Etana (2014).

In Namibia, Pazvakawambwa, Indongo and Kazembe (2013) determined that there are various marriage patterns in Namibia, they attributed these differences to the country having many different cultures and traditional norms. To attribute differences of age at first marriage to culture, one must identify the relevant aspects of that culture, this is a gap that needs to be looked at.

2.4.4 Premarital Fertility

Van de Walle (1968) writes that researchers in the past believed that marriage affected fertility, however he argues that an increase in age at marriage and decrease in fertility were due to the same economic and social causes, this was evident in some parts of Europe in the 17th century. Sen (2000) theorises that there is a close connection between women's well-being and their agency in bringing about change in fertility patterns. So, it is not surprising that reductions in birth rates have often followed the enhancement of women's status and power.

In sub-Saharan Africa, Lesthaeghe, Kaufmann and Meekers (1986) saw that that the rise in age at first marriage for women did not imply a corresponding rise in age at first birth due to the presence of premarital births. This was in line with Garenne (2004) who as well found that South Africa, Namibia and Botswana had a significant proportion of women who had children before their first marriage. In South Africa, Timæus and Moultrie (2015) also found that an increase in childbearing among single women. Evidence of premarital fertility patterns experienced in South Africa noted by Garenne, Tollman, Kahn *et al.* (2001), explained that this pattern could be a consequence of late marriage and high adolescent fertility.

In Namibia, Indongo and Pazvakawambwa (2015) and Shemeikka, Notkola and Siiskonen (2005) as well found that as women's entry into married life was postponed, the link with the start of motherhood was weakened and the proportion of women who bore children before marriage increased. Pauli (2019) also found that in Fransfontein women preferred not to be married and bear their children outside of marriage. Pauli (2019), notes the reasons were motivated by economic conditions, as most men in Fransfontein were unemployed and they did not want husbands living off their income, another reason was that women had enhanced their agency and purposefully decided against marriage.

2.4.5 Work and Occupation

A popular explanation in the social demographic and economic literature is that employment status and occupation influence age at first marriage by, increasing women's economic independence from marriage, leads to greater marriage delays, and a rising incidence of nonmarriage (Oppenheimer, 1988). As the job application theory states that more women going into the labour market will lead to changing marriage behaviour. However, Hertrich (2017) argues that the independence effect is probably being given more credit than it is due and that other reasons unrelated to the economics independent effect should not be ignored. Work is also seen as a modernisation indicator as previously women stayed at home, Malhotra and Tsui (1996) state that work can also provide a direct alternative to marriage for young women.

Hertrich (2017) explains that, as women's labour-market attachments have grown, schooling has become more important, as indicated by the substantial rise in women's college enrolments, the opportunity costs of dropping out of school before completion or of missing other training opportunities have been rising for women. This means a "premature" commitment to a marriage may require one to dropout.

Research in sub-Saharan African countries like Zambia, Ghana, and Kenya, found that type of profession has an impact on delaying marriage. Certified professionals have in most cases stayed longer in schools, which delays marriage (Amoo, 2017; Aryal, 2007; Keeley, 1979).

This was not the case with what Pazvakawambwa, Indongo and Kazembe (2013) found in Namibia, there was no association between work status and getting married in Namibia. This could be explained that the variable current work status is measured at the time of the survey not at time of marriage. This research will look at how occupational structure plays a role in raising age at marriage.

2.5 AGE AT FIRST MARRIAGE IN NAMIBIA

This section discusses literature findings about the timing of marriage in Namibia, starting with the effects of the contract labour system on families, and the marital climate after independence with the effects of HIV and AIDS. Like South Africa, Namibia was subject to oppressive and political injustices called the apartheid era, this era had policies in place that required couples to live apart, as only employed Africans were permitted to live in urban areas, and hence women typically had to remain in the "homelands" (Hosegood, McGrath and Moultrie, 2009).

Few authors have explored the subject of marriage in Namibia, Pauli (2019) research focused on the southern part of the country in Fransfontein, while Shemeikka, Notkola and Siiskonen (2005) focused on the Northern part of the country specifically in Oshana, Ohangwena, Oshikoto and Omusati regions, and Pazvakawambwa, Kazembe and Indongo (2014) studied the timing of age at first marriage among women.

Most researchers used the data from censuses and demographic surveys after independence as there is a lack of Namibian demographic data during the colonial period. However there is an exception with data from the Northern Namibia due to parish registers. Shemeikka, Notkola and Siiskonen (2005) only reported on an overall age at first marriage, where the mean age at first marriage was around 24 years and the median was 23 years from 1956 until 1969. From 1970-1979 the mean age at first marriage increased slightly to age 25, and by the 1990s, the mean age of females at first marriage was around 30 years while the median age was 29 years for women keeping in mind that this only represented the northern regions. This information was substantiated by the Ministry of Health and Social Services Namibia (2003), as the median age at first marriage reported in 2000 was also 29 years among women aged 30 - 49.

Regarding the proportion first marriage by exact age, Table 2.1 indicates that in all four surveys, women in the 25-29 age group, of those women, more than 30 per cent were first married at 25 years, while the 45-49 age group, of those women who were married, in 1992 and 2000 50 per cent of them were married by exact age 25, while in 2006/07 and 2013, these women married at exact age 25 had substantially decreased. Comparing the other three years with 2013 NDHS results, the proportion of married by age 25 had decreased, and this is in line with Shemeikka, Notkola and Siiskonen (2005) findings in northern Namibia.

Table 2.1 Proportion of women first married by exact age

1992						2006/07					
Current age	15	18	20	22	25	Current age	15	18	20	22	25
15-19	1.1	N/A	N/A	N/A	N/A	15-19	1.1	N/A	N/A	N/A	N/A
20-24	1.6	1.5	20.1	N/A	N/A	20-24	2.4	8.6	15.6	N/A	N/A
25-29	2.0	11.2	20.4	30.2	44.8	25-29	2.2	9.2	16	23.9	35.5
30-34	3.8	14.7	24.7	34.8	50.4	30-34	2.0	8.5	13.8	21.3	34.7
35-39	4.2	14.4	26.3	40.1	54.9	35-39	1.8	10.1	16.9	24.3	34.9
40-44	4.4	14.1	28.2	39	53.3	40-44	2.1	11.5	18.4	26.0	38.9
45-49	2.2	10.4	23.1	38.1	56.8	45-49	4.4	12.6	24.3	38.4	50.2
2000						2013					
Current age	15	18	20	22	25	Current age	15	18	20	22	25
15-19	1.7	N/A	N/A	N/A	N/A	15-19	0.9	N/A	N/A	N/A	N/A
20-24	2.2	9.8	16.7	N/A	N/A	20-24	16.0	6.9	13.0	N/A	N/A
25-29	1.9	9.7	17.7	25.7	37.9	25-29	2.0	7.8	14.3	21.6	33.0
30-34	2.7	11.7	21.3	32.2	42.0	30-34	1.2	7.3	12.6	18.3	28.7
35-39	2.6	11.5	19.8	28.8	42.6	35-39	2.2	8.6	15.3	20.7	30.9
40-44	4.9	15.8	25.7	38.0	50.3	40-44	1.9	8.7	13.9	20.7	31.3
45-49	4.3	11.2	20.9	34.8	47.3	45-49	2.2	8.9	16.6	25.8	39.1

Source: Namibia Demographic and Household Surveys (NDHS)1992,2000,2006/7 and 2013

Pauli (2019) found that in Fransfontein in the year 2004 only 30 per cent of women in that community have ever been married, and the research revealed that some women in Fransfontein preferred to remain unmarried and have children with multiple partners, this was as well the case in the Northwest and Central regions reported by Shemeikka, Notkola and Siiskonen (2005) as women remain unmarried longer to protect their independence, however at the same time, young women and single mothers are economically dependent on their lovers, multiple partners guaranteed adequate levels of economic assistance. They had children with several fathers, none of whom they married. All fathers and their kin were supposed to support the unmarried woman and her children.

Pazvakawambwa, Kazembe and Indongo (2014) found significant differences in the timing of first marriage between birth cohorts: women born in the 1950-1974 cohort had lower risk of first marriage compared to their counterparts in the 1985-1992 cohort. This could be explained by the labour migration system, which had a significant effect of males moving to urban areas for work and some never returning, and after that the Namibian war which led to independence in 1990.

Pazvakawambwa, Kazembe and Indongo (2014) also found that in Namibia, women with the highest educational level after controlling for other factors, were at a higher risk of getting married than their counterparts with no formal education, women from the richer economic background were at a higher risk of early marriage compared to women from middle income and poorer backgrounds, this was consistent with Pauli (2019), that found in Fransfontein the women that were most likely to be married were

those from high social class background and marriage also favoured those who were educated, Pauli (2019) explained that marriage costs had tremendously increased, this was a contributing factor as the most of the population lived in poverty.

Indongo and Pazvakawamba (2015), found that age at first marriage in Namibia differs by region, they reported the presence of early marriages in remote rural areas, this is consistent with UNFPA (2020) that 18.4 per cent of women under the age of 18 are married, with the highest prevalence of child marriages being in the two Kavango regions which are mostly rural. While Pauli (2019), reported that in 2003, only 30 per cent of Fansfonteiners that were 15 years and above were married, while 70 per cent of women 60 years and older were married.

Pauli (2019) did an ethnographic study in the Southern part of the country in a town called Fransfontein, this research concluded that class was the main reason for the decline in marriage, rather than colonialism. However Fransfonteiners experienced colonial lives as those described by Shemeikka, Notkola and Siiskonen (2005) as they were also forced to migrate and work under racist conditions on white settler farms. Pauli (2019) states that the decline of marriage commenced in late 1970s together with the establishment of homelands there was an emergence of local elites of politicians, administrators, and professionals in Fransfontein. There were expensive weddings that made it impossible for the lower class to marry as they could not afford the "new way" of marriage. This is how class formation became a major explanation to the decline in marriage in Fransfontein. This research on Fransfonteiners does not fully acknowledge the contributing factors such as education and employment have on creating a social class.

The legal age at first marriage in Namibia is 21 years of age without parental consent, however, it is evident from Pazvakawambwa, Kazembe and Indongo (2014) investigation of age at first marriage in Namibia by using discrete time to event models that there were regions with high hazard ratios of risk to early marriage in poorer areas, they attributed this to different levels of economic development and clustering of ethnic groups. These regional differences have their background in the colonial history of the country as there was an ethnic segregation policy before independence (Shemeikka, Notkola and Siiskonen, 2005). Nonetheless, the timing of first marriage was explored by region and Pazvakawambwa, Kazembe and Indongo (2014) used it as a proxy for culture and ethnicity which Hammel (1990) warns about.

Indongo and Pazvakawambwa (2015) used a qualitative study in Namibia to get in-depth understanding of women's feelings and attitudes towards marriage practices, this was supplemented by a trend analysis to determine the age at first marriage and factors influencing marital status using 1992, 2000 and 2006 NDHS data. They found that most women agreed that marriage was a good idea so that people could build families and suggested that ideal age at first marriage to range between 25-35 years. The reasoning behind that included that by that age range women could legally make a sound choice to get married and that she could potentially have acquired adequate education. Indongo and Pazvakawambwa (2015) analysis revealed that Namibia was predominantly made up of never-married women.

2.6 SUMMARY

This section points out some of the gaps identified in the literature presented in the previous section. As marriage being universal, there have been many theories used to explain the formation of households, and to finding explanations as to how a delay in age at first marriage comes about. Researchers have studied sub-Saharan Africa and have built on each other's theories to explain the marital patterns and trends experienced there as well as they could. Hence there is an adequate amount of literature on age at first marriage globally.

This literature review has found out that Southern Africa's marital trends were different from the rest of sub-Saharan Africa and their age at first marriage was also generally higher than the other countries, and one of the one main reason was due to colonialism and apartheid, which had changed the structure of households.

Evidence shows that Namibia has undergone a significant transformation over the past two decades after independence with regards to marital patterns, with the limited data available on marital status and age at first marriage there are several factors that have not been explored by existing literature regarding the topic like premarital fertility. There is a need to control for the effects of individual characteristics such as education and residence type whilst investigating the relationship between age at first marriage and biological factors such as first birth and first sexual encounter. This is vital since the interplay between the timing of marriage and first birth rests not only on individual characteristics affecting fertility but also on societal approval to have children. Some of the proxies used to explain the rise in ages of first marriage in Africa are education, traditional social organization, and migration.

To test the explanatory influence of the marriage, job search, female agency, and modernization theories, the following variables: age of respondent, age at first sexual activity, and socio-economic variables educational level of women, type of residence, employment status and occupation, and region are included in the model. The proposed hypothesis is that women with an education level of secondary or higher education delayed age at first marriage. Likewise, women that live in urban areas compared to rural areas delay age at first marriage. These theories are not exhausted in explaining the marriage patterns, as there are many elements involved in household formation for us ever to achieve a full explanation of the marriage behaviour of any group or individual.

3 DATA AND METHODS

3.1 INTRODUCTION

This chapter gives more information on the data and quantitative methods deployed in analysing patterns and determinants associated in age at first marriage in Namibia from 1992 to 2013.

3.2 DATA SOURCE AND SAMPLE DESIGN

This is a retrospective cross-sectional study design as the data used in this study were extracted from the Namibia Demographic and Health Survey (NDHS) data collected in 1992, 2000, 2006/07 and 2013. The NDHS is a national survey carried out by the Ministry of Health and Social Services in conjunction with the Namibia Statistics Agency. The sampling methods used for collecting the data in the DHS can be found in the official reports on the NDHS for each respective year (Ministry of Health and Social Services Nambia, 1993; Ministry of Health and Social Services Namibia, 2003, 2008; Ministry of Health Social Services Namibia, 2014).

NDHS Sample

For all four surveys, to make the sample nationally representative, a two-stage stratified sample which was self-weighting. The first stage Enumeration Areas (EAs) in urban and rural areas are selected, the second stage a fixed number (respective of the year of survey) of households were selected in every urban and rural cluster according to equal probability systematic sampling.

The sampling frame was stratified by their urban/rural characteristic and then by census district. In 1992, oversampling was necessary for the Northeast region as it only accounted for 14.8 per cent of the population. In that survey, 175 primary sampling units (PSUs) were selected. In 2000, 260 PSUs were selected proportional to the number of households. In 2006/07, a total of 500 PSUs were selected with probability proportional the number of households enumerated in each PSU in the 2001 Population Census. In 2013, a total of 554 PSUs were selected proportional to the number of households enumerated on each PSU in the 2011 Population Census. All women aged 15-49 in the selected households were eligible for interviews.

3.3 VARIABLES OF INTEREST

This section summarizes all response and explanatory variables used in this paper.

3.3.1 Response variable

The NDHS response variable is age at first marriage. This is defined by the DHS as the age at which women first started living with a man, lawfully recognised.

3.3.2 Explanatory variables

Based on the literature review presented in Chapter 2, demographic, socioeconomic and spatial variables were considered as predictors and shown below in Table 3.1 for the analyses based on the NDHS data which will be used for analysis.

Table 3.1 NDHS variables and their descriptions

Variable	*Description*
Sample Weights	
Clusters/PSU	
Current Age in Single years	
5-year age groups	
Strata Urban/Rural Sample Domain	
Age of respondent at first birth	
Year of Start of Marriage	
Age at First Marriage	
Age at first sexual initiation	
Place of Residence	Rural, Urban
Highest Education level Grade 8-12	Higher, Secondary, Primary, No education
Marital Status	Never Married, Married, Widowed, Divorced,
Region	Northwest, Northeast, Central, South
Occupation	Not working, Managerial, Clerical/Sales,
Current work status	Yes, No
Number of Children born Pre-marriage (NCBBM)	

The DHS state **educational level** is generally reported as the highest level of education attended (not necessarily completed) in categories of no education, primary, secondary, or higher than secondary. For example, high school encompasses all women who commenced grade 8, whether they completed grade 12 or not.

3.3.3 RECODING OF VARIABLES

Due to changes over time in the questionnaires between surveys, it was necessary to recode some variables to ensure consistency and comparability over time. In addition, categorical variables with sparse data (fewer than 50 responses in any category) were regrouped to improve the robustness of the modelled estimates.

The **Occupation** variable had several categories with fewer than 50 respondents in each. These variables were then grouped in the following manner: those that did not know their occupation status were grouped with those that were not working, this may be due being unofficially employed or where no cash is earned for services rendered, for

example helping at a family members house in exchange for a place to stay. Those still in education were also included in this group. Clerical workers were grouped with Prof, Tech, and Managerial work as they were all formally employed. Those that were in the agricultural sector, as well as those with skilled and unskilled labour, sales, household/domestic workers, and other services rendered were grouped together as they are all blue-collar workers. Table 3.2 shows the effect of this regrouping in the NDHS data.

Table 3.2 Women by occupational category before and after recoding, NDHS 1992-2013

	Before Recode	1992	2000	2006/07	2013
0	Not working	2466	3150	3438	3793
1	Prof, Tech, Managerial	185	460	618	627
2	Clerical	171	316	389	443
3	Sales	45	313	1342	1377
4	Agric-self emp	1	178	570	111
5	Agric- employee	18		235	47
6	HH and Domestic	486			
7	Services	28	234	877	847
8	Skilled Man	55	94	202	163
9	Unskilled Man	308	831	98	151
10	N/A	9	20	56	19
98	Other, Don't Know	14	12	235	3
	After Recode	1992	2000	2006/07	2013
1	Not working, Others/ Don't know	2489	3182	3729	3815
2	Prof, Tech, Managerial, Clerical	356	776	1007	1070
3	Skilled /Unskilled labourers, Agricultural, Sales, Services	941	1650	3324	2696

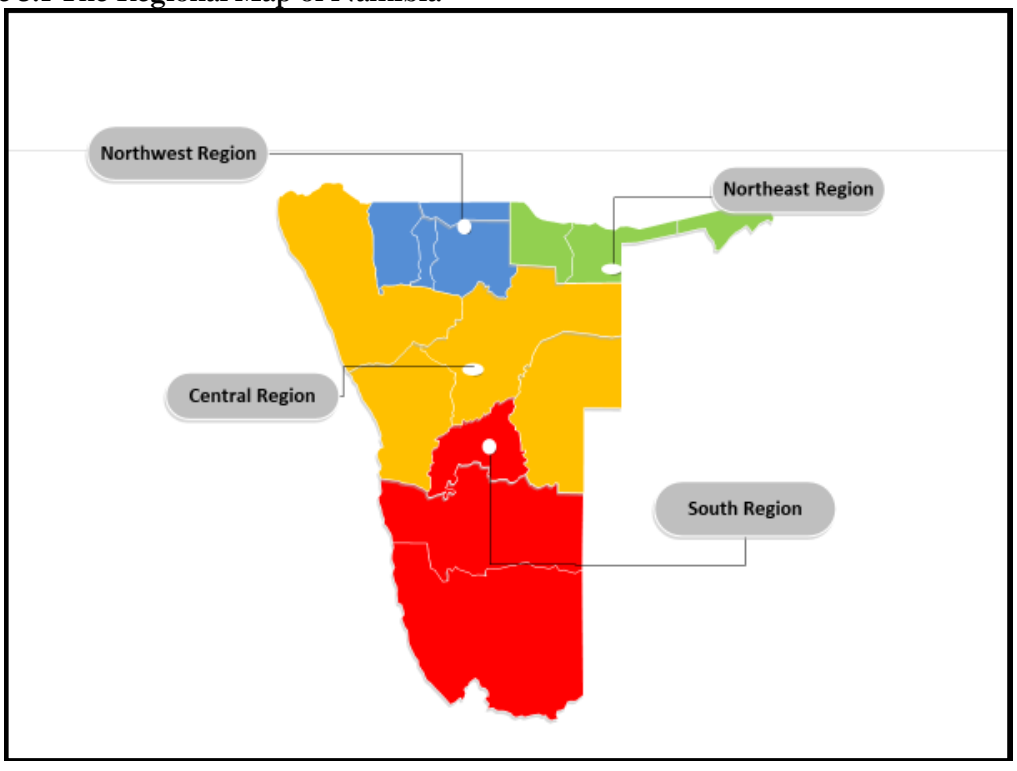
The **Work status** variable had missing variables, the missing variables were regrouped to No, they do not currently work Table 3.3, shows the changes made.

Table 3.3 Women by work status before and after recoding, NDHS 1992-2013

	Before recode	*1992*	*2000*	*2006/07*	*2013*
0	No	2457	3441	4185	3987
1	Yes	1320	2159	3832	3554
10	N/A	9	8	43	40
	After recode	*1992*	*2000*	*2006/07*	*2013*
0	No	2466	3449	4228	4027
1	Yes	1320	2159	3832	3554

The **Region** variable in the NDHS 1992 data set was only divided into four major regions, while from 2000 to 2013 NDHS data the country was divided into 13 regions. Since the new regions map exactly on the to four regions used in 1992, the new regions were all recoded into the four major regions for easier comparison. The analysis will be performed according to broad grouping of regions. Great care will be taken not to generalize these regions and attribute their differences to cultural practices and ethnicity. The regions composition is as follows Northwest; Oshana, Omusati, Ohangwena and Oshikoto. Northeast; Kavango and Caprivi (now Zambezi). Central; Kunene, Otjozondjupa, Erongo and Omaheke. South; Khomas, Hardap and Karas. The regional groupings used are shown in Figure 3.1.

Figure 3.1 The Regional Map of Namibia



Source: www.yourfreetemplates.com

The **number of children born before marriage (NCBBM)** is a variable that was created to establish how many children each woman had before marriage. NCBBM is used to capture the effect of premarital fertility. The variable was derived by comparing the woman's year of marriage and the year of each of her children's birth from the full birth history. We do not know the exact dates of when each woman got married and when the children were born, so to calculate this variable, we assume that, if the year of marriage was greater than the child's year of birth then that child was born before marriage. Children born in the year of marriage were born after marriage: this of course underestimates premarital childbearing. However, had all such children been regarded as premarital births, this would have had the effect of overstating premarital fertility. The fact that the number of premarital births is constructed to be a (slight) underestimate necessitates a degree of caution in interpreting the results predicated on this variable.

Marital Status in the NDHS was recoded as follows; Not living together was recoded as Never married while Living together was recoded as Cohabitating, the other categories remained the same, these categories were adopted from the definition of married from the response variable. (Ministry of Health Social Services Namibia, 2014). The DHS guidelines also state that women with unknown or missing marital status are considered never married. The changes are illustrated in the tables Table 3.4.

Table 3.4 Marital status before and after recoding in NDHS

	Before recode	*1992*	*2000*	*2006*	*2013*
0	Never Married	1691	2504	4007	3969
1	Married	1152	1456	1897	1539
2	Living together	632	1158	1516.0	1497.0
3	Widowed	57	102	249	173
4	Divorced	150	61	92	85
9	N/A	104		3	
5	Not Living Together	102	327	296	318
	After recode	*1992*	*2000*	*2006*	*2013*
0	Never Married	1795	2831	4306	4287
1	Married	1152	1456	1897	1539
2	Cohabitating	632	1158	1516	1497
3	Widowed	57	102	249	173
4	Divorced	150	61	92	85

3.4 REGRESSION: TIME-TO-EVENT ANALYSIS

Survival analysis, also known as time-to-event analysis, is a statistical approach to analysing the duration of time until an event of interest occurs. Time-to-event analysis allows description of the distribution of survival times and how those are affected by covariates. Subjects are followed up until the event of interest, which in this case is age at first marriage. Two different forms of survival analysis are applied in this research: the Kaplan-Meier Method and the Cox Proportional Hazard Model, each of which are described more in the following sections.

3.4.1 The Kaplan Meier Method

The Kaplan Meier Method offers a non-parametric approach to analysing time-to-event data. The event of interest is age at first marriage, the Kaplan-Meier method is used to compute the differences at age at first marriage with respect to each covariate by breaking down estimates of the survivor function into a series of intervals based on observed event times. The function is illustrated as $S(t)= Pr (T>t)$, where t is some time point, T is a random variable and Pr is the probability. Thus, we can say the survival function $S(t)$ will show the probability of age at first marriage from time at birth until before or at the time of the survey.

An assumption when using the Kaplan-Meier method is that at any time the women who are censored should have the same survival prospects as those who are still being followed in the study. Women in this study are censored if they were found never married at the time of study, however if they are still in the study 15-49 age group, their likelihood of getting married is still there. The Kaplan-Meier method compares groups based on the covariates to find out if the survival functions are equal across the groups.

3.4.2 The Log-Rank Method

The Log-Rank Method is usually used for comparing the survival distribution of two or more groups in survival analysis, which shows whether there is a statistical significance or not Bland (2004). The assumptions underlying the log-rank test are; that the survival times are ordinal or continuous and that the risk of an event in one group relative to the other does not change with time. Another consideration is that if the Kaplan-Meier survival curves cross then this is clear departure from proportional hazards, and the log rank test should not be used Campbell (1997). The Log-Rank was not used in this research as the survival data used is severely tied, tied observations refer to instances where multiple individuals in a study have the same survival time and individuals with tied survival times could potentially influence each other's survival experiences. As a

result, the test statistic may not accurately reflect the true differences in survival between groups.

3.4.3 Cox Proportional Hazard Model

The Cox Proportional Hazard (PH) model is the most common approach adopted for studying the dependency of survival time on predictor variables, which models the time it takes for events to occur (Fox and Weisberg, 2002; LaMorte, 2016). The Cox PH model is usually expressed as the hazard of some event occurring at time *t* for an individual, *i*, with a given specification of a set of *p* explanatory variables denoted by X_i which are predictor variables that are being modelled to predict an individual's hazard (Adebowale, Fagbamigbe, Okareh *et al.*, 2012).

The model can be expressed as:

$$\log\left(\frac{h_i(t)}{h_0(t)}\right) = \beta_1 x_{i1} + \beta_2 x_{i2} + \cdots .. + \beta_p x_{ip}$$

where:

t: is the time at which the event occurs

h_i: is the hazard for the i^{th} individual

h_0: is the baseline hazard function. This is the function when all the covariates equal to zero

β: are the (fitted, estimated) coefficients

The Cox PH model, which is linear, is important in investigating the event of interest, which in this case is the time it takes until women get married for the first time. The survival time is assumed to begin at birth and ends when the individual gets married for the first time. The data are right censored for those respondents still unmarried at the time of the survey. The Cox Proportional Hazard Regression model is a semiparametric model that assumes independence of survival times between distinct individuals in the sample and a constant hazard ratio over time.

3.5 SUMMARY

This chapter discussed the data source, and how the data was manipulated to suit this research, it also discussed the methodologies used to explore age-at-first marriage trends and factors associated with age-at-first marriage. The regression method used is the Cox Proportional Hazard model. The following chapter will present the findings from these analyses.

4 RESULTS

4.1 INTRODUCTION

This research aims to examine trends and factors of age at first marriage among Namibian women aged 15-49 years for the NDHS dataset for the years 1992, 2000, 2006/07 and 2013. Section 4.2 presents a brief description, using univariate and bivariate analysis, of the background characteristics of women aged 15-49 years in each survey using frequencies and measures of central tendency. Section 4.3 presents the crosstabulation of proportion of married women. Section 4.4 shows Hajnal Singulate Mean Age at Marriage and Section 4.5 presents the time-to-event data analysis.

4.2 UNIVARIATE AND BIVARIATE EXPLORATORY DATA ANALYSIS FOR NDHS AND CENSUS DATA

4.2.1 Univariate data analysis

This section presents tables and graphs describing the basic demographic characteristics and distribution of the respondents that took part in the NDHS in each survey. Table 4.1 shows the distribution of background characteristics of the sampled women 15-49 years between 1992-2013.

The variables are presented as used in the time-to-event analysis. Age group composition is as follows; the population distribution of women remained young, although there is a decrease in proportions in the 15-19 age group and an increase in proportions in the 40-45 and 45-49 age groups. This shows evidence of gradual historical fertility decline, producing a gradual aging of the population.

The population distribution by region shows an increase in the Central and South regions and a decrease in the Northeast region over time. Rural areas also show a proportional decrease while urban areas showed an increase over time. This shows the migration of women from rural to urban areas. The proportions of never married and cohabitating women increased over time, despite the ageing of the population, while the proportions of married women decreased, this indicates decreasing marital rates. The distribution of those that were employed at the time of the survey increased in proportions, while those that were unemployed decreased.

Table 4.1 Univariate exploratory analysis for categorical weighted data Namibian DHSs 1992-2013

	1992		2000		2006/7		2013	
	N	%	N	%	N	%	N	%
Age								
15-19	709	16.82	722	13.19	950	11.92	842	11.17
20-24	977	23.17	1185	21.64	1624	20.38	1589	21.10
25-29	760	18.04	1022	18.66	1533	19.23	1418	18.82
30-34	637	15.12	950	17.34	1350	16.93	1194	15.85
35-39	443	10.52	671	12.26	1002	12.57	1033	13.71
40-44	419	9.94	557	10.18	882	11.07	830	11.02
45-49	269	6.38	369	6.74	630	7.90	628	8.33
Type of residence								
Rural	2778	65.90	3056	55.81	3951	49.57	3170	42.08
Urban	1437	34.10	2420	44.19	4019	50.43	4364	57.92
Marital status								
Never Married	1918	45.47	2910	53.13	4348	54.55	4447	59.02
Married	1425	33.83	1395	25.48	1844	23.13	1432	19.01
Cohabitating	591	14.04	1001	18.28	1447	18.15	1398	18.56
Divorced	210	4.99	63	1.15	99	1.24	86	1.14
Widowed	71	1.67	108	1.97	233	2.92	172	2.28
Region								
Central	418	9.92	23	22.88	1631	20.47	1530	20.31
Northeast	1740	41.28	13	12.97	1244	15.61	1133	15.04
Northwest	1154	27.38	36	36.49	2693	33.78	2489	33.03
South	903	21.42	28	27.66	2403	30.14	2383	31.62
Education Level								
No education	685	16.25	528	9.64	570	7.15	362	4.81
Primary education	2037	48.32	1748	31.92	2068	25.94	1451	19.26
Secondary	1436	34.07	3042	55.54	4730	59.35	4947	65.66
Higher education	58	1.36	159	2.89	602	7.55	774	10.28
Work Status								
No	2922	69.33	3419	62.44	4009	50.29	3872	51.38
Yes	1293	30.67	2057	37.56	3962	49.71	3663	48.62
Occupation								
Not working	2944	69.85	3223	58.86	3618	45.39	3664	48.63
Managerial	351	8.32	783	14.30	1107	13.89	1180	15.67
Manual Labour	920	21.83	1470	26.84	3246	40.72	2690	35.70
Median age at 1st sexual intercourse		17.43		18.52		18.69		18.33
Median age at 1st birth		19.82		20.32		20.49		20.60
Median age at 1st marriage		21.19		22.52		22.84		23.64
Mean # of children born before marriage		2.18		2.14		1.96		1.96

4.2.2 Bivariate data analysis

Bivariate data analysis is used to evaluate and assess the strength of the association between each of the independent variables and the response variable. This is the crosstabulation of the exploratory variables and the response variable using the NDHS data.

Table 4.2 shows the proportions of married women by 5-year age groups. Marriage among women of those who are married aged 15-19 and 25-29 decreased markedly between 1992 and 2013, and among the older women of those who were married the proportions also decreased by 10 per cent in 2013. This suggests that as age increases the proportion of those married increases due older women having more time to marry. Overall, the data indicates that there is an overall slight decrease in the proportions of marriage over time.

Table 4.2 Proportion of women married by 5- year age group, Namibian DHSs 1992-2013

Age	1992			2000			2006/07			2013		
groups	N	(n)	(%)	N	(n)	(%)	N	(n)	(%)	N	(n)	(%)
15-19	709	123	17.4	722	88	12.2	950	118	12.3	842	104	12.4
20-24	977	388	39.7	1185	353	29.8	1624	429	26.4	1589	368	23.2
25-29	760	446	58.7	1022	483	47.3	1533	704	45.9	1418	586	41.4
30-34	637	496	77.8	950	620	65.3	1350	817	60.5	1194	656	54.9
35-39	443	361	81.5	671	516	76.9	1002	694	69.3	1033	645	62.4
40-44	419	351	83.6	557	455	81.7	882	648	73.5	830	561	67.6
45-49	269	238	88.4	369	319	86.5	630	519	82.4	628	468	74.5

Table 4.3 presents the mean age at first marriage for the categorical data, While the overall mean age at marriage is 22.6 for all women in all four surveys, the mean age at first marriage varies by background characteristics of the study population. The mean age at first marriage is lower among the younger women than the older women of those who were married, the overall mean age at first marriage is 16 for those women who got married between 15-19 years, increasing to 24.2 years for women aged 35-39 and 25.2 years for women aged 45-49, this not surprising as age at marriage increases with the increasing age of the woman at the time of the survey, as the older women have more time to get married.

In 1992, the mean age at first marriage is lowest in the Northeast region, followed by the Central region, and highest in the Northwest and South regions. In 2013, the mean age at first marriage is also lowest in the Northeast region and highest in the Northwest and South region. Overall, women in the Northwest and South regions on average get married later than women in the Northeast and Central regions.

Women living in urban areas on average got married slightly later than women in rural areas. In 1992, the mean age at first marriage was 22.14 years in urban areas compared to 20.68 years in rural areas, similar estimates for 2013 are 24.06 and 23.12 years respectively. Keeping in mind this variable only captures current place of residence at the time of the surveys and not where the women lived at the time they got married.

Women with no, or only primary, education were married at younger ages compared to women who had secondary and higher education. In 1992 the mean age at first marriage ranged from 21.24 years among women with no education, 20.76 years among women with primary education and 21.55 years among women with secondary education and 24.92 years among women with higher education. In 2013 the mean age at first marriage ranged from 23.05 year among women with no education, 21.99 years among women with primary education, 24.04 years among women with secondary education and 25.84 years among women with higher education. The differences in age at first marriage comparing no education with those who had higher education were: 3.7 years in 1992 and 2.7 years in 2013, this could imply that educational differentials in age at marriage might be narrowing over time in Namibia.

Table 4.3 Bivariate exploratory analysis for categorical weighted data, showing mean ages at first marriage, Namibian DHSs 1992-2013

	1992	***2000***	***2006/7***	***2013***
Background Variables	*Mean*	*Mean*	*Mean*	*Mean*
Age group				
15-19	16.29	15.77	16.02	16.14
20-24	18.52	18.57	18.44	18.71
25-29	20.59	20.95	21.06	21.21
30-34	21.48	22.40	23.40	24.05
35-39	22.70	24.11	24.73	25.05
40-44	22.77	24.28	24.89	26.33
45-49	23.78	25.86	24.56	26.70
Type of residence				
Rural	20.68	22.05	22.44	23.12
Urban	22.14	22.94	23.25	24.06
Marital status				
Never Married	20.54	22.38	22.24	22.63
Married	21.09	23.00	23.54	24.61
Cohabitating	21.97	21.98	22.15	22.84
Divorced	20.05	20.28	22.55	24.44
Widowed	20.42	21.62	22.74	24.06
Region				
Central	22.02	21.87	22.17	23.36
Northeast	19.03	19.74	20.26	20.14
Northwest	23.41	23.94	24.83	25.84
South	23.47	23.20	25.52	24.63
Education Level				
No education	21.24	22.20	21.56	23.05
Primary education	20.76	22.14	22.29	21.99
Secondary education	21.55	22.56	23.02	24.04
Higher education	24.92	25.45	25.41	25.84
Work Status				
No	20.67	22.06	22.07	22.42
Yes	22.18	22.99	23.52	24.77
Occupation				
Not working	20.67	22.16	21.93	22.50
Managerial	23.05	23.35	24.72	25.26
Manual Labour	21.85	22.49	23.01	24.30

Table 4.4 presents the F- statistics which shows whether the difference between the means was statistically significant or not. The F-statistic values are high across all 4 years among the age groups, this suggests significant differences in the mean age at first

marriage across the different age groups. This is supported by the p-value, which is less than 0.05, to conclude the differences between the age groups are statistically significant.

Regarding type of residence, in 2000 and 2013, there are significant differences in mean age at first marriage between rural and urban areas, as indicated by the low p-values, however, in 2006/7, although the p-value is not significant, there is a noticeable increase in the F-statistic compared to 1992, indicating some differences emerging over the years. Since 2013, the difference becomes significant again, this suggests a fluctuating trend in the significance of differences between rural and urban areas over the years.

Marital Status, the F-statistic values for marital status are consistently high across all years, indicating significant differences in mean age at first marriage across different marital statuses, with the p-values being close to 0 in all years, indicates highly statistically significant differences. Interestingly, the F-statistic and p-value for 2006/7 are lower compared to other years, suggesting a slight deviation in trends during that period.

The F-statistic across the regions and education level are consistently high across all years, indicating significant differences in mean age at first marriage across different regions as well as education levels, this is supported by the p-values that are close to 0 in all years, which indicates a high statistically significant difference. The trends suggest that individuals with higher education tend to marry at a later age.

Regarding work status, the F-statistic values are steadily high across all years, indicating significant differences in mean age at first marriage between those who are employed and those who are not. The trends propose that those who are employed tend to marry at a later age.

Occupation has consistently high F-statistic values across all years, indicating significant differences in mean age at first marriage across different occupations. The p-values are close to 0 in all years, indicating highly statistically significant differences. The trends suggest that individuals in managerial positions tend to marry at a later age compared to those in other occupations, and this pattern remains consistent over the years.

When it comes to the mean age at first intercourse, the evidence suggests that there are significant differences in mean age at first sexual intercourse across the years, except in 1992. There are as well significant differences in the mean age at first birth across the years except in 1992 and 2000. When it comes to children born before

marriage, there are significant differences across the years. All the p-values are below 0.05.

In a nutshell, Table 4.4 highlights consistent trends in the significant differences in median age at first marriage across various demographic and socio-economic factors over the years in Namibia, and the evidence suggests that there are significant variations in mean age at first marriage across different background variables and.

Table 4.4 Bivariate exploratory analysis for weighted data, showing if there is a difference of means at first marriage, Namibian DHSs 1992-2013

Background Variables	***1992***		***2000***		***2006/7***		***2013***	
	F-statistic	*p value*	*F-statistic*	*p value*	*F-statistic*	*p value*	*F-statistic*	*p value*
Age group	130.64	0.0000	134.93	0.0000	188.85	0.0000	146.84	0.0000
Type of residence	0.17	0.6781	7.45	0.0068	0.18	0.6694	1.87	0.1726
Marital status	336.35	0.0000	382.54	0.0000	21.14	0.0000	891.42	0.0000
Region	20.63	0.0000	28.28	0.0000	47.25	0.0000	66.58	0.0000
Education Level	47.93	0.0000	35.28	0.0000	83.95	0.0000	31.11	0.0000
Work Status	8.72	0.0036	58.54	0.0000	21.14	0.0000	29.16	0.0000
Occupation	6.63	0.0016	23.67	0.0000	17.78	0.0000	22.00	0.0000
Median age at 1st sexual intercourse	1.60	0.0417	2.49	0.0003	2.61	0.0000	1.76	0.0072
Median age at 1st birth	1.17	0.2689	1.04	0.4068	1.51	0.0411	1.91	0.0044
Median age at 1st marriage	100.49	0.0000	102.29	0.0000	70.80	0.0000	56.59	0.0000
Mean # of children born before marriage	182.72	0.0000	543.84	0.0000	964.64	0.0000	1532.80	0.0000

Table 4.5 indicates that of those women that married between the age 15-19, on average get married around the age of 16 years, this has been constant from 1992 to 2013. The noticeable change in mean age at first marriage is among those aged 30 and over: where the mean age at first marriage has increased by 1 to 2 years comparing 1992 to 2013. The women in the 45-49 age group in 1992 on average got married at the age 25 and in 2013, the same age group got married at 26.7 years. This indicates that women are getting married at later ages.

Table 4.5 Mean age at first marriage by 5-year age group, Namibian DHSs 1992-2013

Age	*1992*	*2000*	*2006/07*	*2013*

15-19	16.20	15.80	16.00	16.10
20-24	18.60	18.60	18.40	18.70
25-29	21.00	21.00	21.10	21.20
30-34	22.70	22.40	23.40	24.10
35-39	23.50	24.10	24.70	25.10
40-44	24.40	24.30	24.90	26.30
45-49	25.20	25.90	24.60	26.70

Table 4.6 indicates the proportion of women who had births before getting married. In 1992 women have a high proportion of births before marriage compared to the other three years. In 2013 the proportion of women who had births before marriage had decreased substantially, this can be linked to Table 4.2 shows the proportions of married women by 5-year age groups. Marriage among women of those who are married aged 15-19 and 25-29 decreased markedly between 1992 and 2013, and among the older women of those who were married the proportions also decreased by 10 per cent in 2013. This suggests that as age increases the proportion of those married increases due older women having more time to marry. Overall, the data indicates that there is an overall slight decrease in the proportions of marriage over time.

Table 4.2 which indicated a significant decrease in the proportion of married women over the years. This could suggest women who have children prefer to remain unmarried or women are generally having fewer children.

Table 4.6 Proportion of married women with births before marriage by 5- year age group, Namibian DHSs 1992-2013

Age groups	*1992*			*2000*			*2006/07*			*2013*		
	N	*(n)*	*(%)*	*N*	*(n)*	*(%)*	*N*	*(n)*	*(%)*	*N*	*(n)*	*(%)*
15-19	709	199	28.0	722	13	1.7	950	20	2.1	842	11	1.3
20-24	977	516	52.9	1185	100	8.4	1624	121	7.5	1589	121	7.6
25-29	760	428	56.3	1022	206	20.1	1533	310	20.2	1418	255	18.0
30-34	637	335	52.6	950	287	30.2	1350	402	29.8	1194	348	29.1
35-39	443	208	47.0	671	247	36.9	1002	376	37.5	1033	386	37.4
40-44	419	184	43.9	557	208	37.4	882	325	36.8	830	309	37.3
45-49	269	107	39.6	369	154	41.9	630	241	38.3	628	258	41.0

Table 4.7 shows the proportion of the respondents who gave birth in 1992, had the highest proportion of women who had a birth compared to the other 3 years, and 2013 had the lowest percentage of women who had a birth in their respective ages. This is interesting because the table shows a very limited change in women's entry into motherhood over time, so presumably, the change in fertility over time is due not to women not having children; but in general, having fewer children.

Table 4.7 Proportion of women who have ever given birth by 5-year age group, Namibian DHSs 1992-2013

Age	1992			2000			2006/07			2013		
groups	N	(n)	(%)	N	(n)	(%)	N	(n)	(%)	N	(n)	(%)
15-19	709	271	38.3	722	218	30.2	950	280	29.5327	842	261	31.0
20-24	977	758	77.6	1185	775	65.4	1624	1056	64.9764	1589	978	61.6
25-29	760	670	88.1	1022	898	87.9	1533	1268	82.6943	1418	1193	84.1
30-34	637	609	95.6	950	899	94.6	1350	1242	92.0664	1194	1099	92.0
35-39	443	424	95.6	671	654	97.5	1002	963	96.1301	1033	988	95.6
40-44	419	411	98.0	557	549	98.6	882	852	96.5842	830	774	93.2
45-49	269	263	97.8	369	362	98.1	630	612	97.1352	628	603	96.0

Table 4.8 shows the average number of children born by each age group, from 1992 to 2013 women between the ages 15-19 and 20-24 have on average 1 to 2 children. In the 25-29 to 45-49 age group there is a noticeable trend of decreasing average numbers of children born from age 35-39 to 45-49 across all the years. In 1992 women in the 45-49 age group had on average 5.9 children and in 2013 this number decreased to an average of 4.3 children in the same age group. To conclude, this table shows a decrease in the mean number of children born in each age group and concurs with Table 4.7 that women are in general having fewer children.

Table 4.8 Mean number of children born by 5- year age group, Namibian DHSs 1992-2013

Age	1992	2000	2006/07	2013
15-19	1.08	1.09	1.15	1.11
20-24	1.59	1.47	1.45	1.38
25-29	2.49	2.08	2.05	2.05
30-34	3.55	3.08	2.75	2.71
35-39	4.73	4.03	3.56	3.37
40-44	5.73	4.82	4.29	3.66
45-49	5.85	5.62	4.89	4.29

Table 4.9 shows the average age at which Namibian women who have given birth from the ages 15-49 years had their first births. The table shows a constant average across all age groups for all 4 years. On average of the women who had given birth in the 15-19 age group, gave birth at age 16.91 in 1992 and 16.71 in 2013, while in the 45-49 age group, it was at age 21.77 and 21.84 respectively. Another noticeable thing is that after age 30, in all 4 years Namibian women would have had their first birth by age 20. Keep in mind this only counts for women who have had a birth and those who have had one may be different from all other women in this group.

Table 4.9 Mean age at first birth by 5- year age group, Namibian DHSs 1992-2013

Age	*1992*	*2000*	*2006/07*	*2013*
15-19	16.91	16.81	16.58	16.71
20-24	18.73	18.54	18.79	18.81
25-29	19.97	20.12	20.09	20.25
30-34	20.37	20.77	21.1	20.99
35-39	20.62	21.35	21.23	21.27
40-44	20.97	21.03	21.55	21.86
45-49	21.77	21.41	20.95	21.84

Table 4.10 shows that from 1992 the mean age at first sex between the 15-19 age group is around 15.67 years. The 30-34 to the 49-49 age groups show that age at first sex stabilises and this suggests that Namibian women would have had sex by the age of 18 for the first time. However, it is noticeable that in 2013, the age at first sex in the 15-19 age group is around 15.98 years, this is constant over the other age groups, which indicates a slight increase in age at first sexual debut.

Table 4.10 Mean age at first sex by 5-year age group, Namibian DHSs 1992-2013

Age	*1992*	*2000*	*2006/07*	*2013*
15-19	15.67	15.57	15.81	15.98
20-24	17.52	17.41	17.47	17.75
25-29	18.35	18.54	18.41	18.4
30-34	18.57	18.88	19.28	18.61
35-39	18.38	19.17	19.3	19.02
40-44	18.89	19.39	19.88	19.72
45-49	19.37	20.23	19.7	20.02

Table 4.11 helps us understand premarital birth: it shows on average how many children a woman had before she got married. The table above indicates, that in the 15-19 age group, of those married, a woman will have on average 1 birth before she gets married. The table as well shows that there is a decrease in the average number of children born before marriage in the 35-39 age group where in 1992 to 2013 from 3 children to an average of 2 children. While the 45-49 age group decreased from 1992-2013 from having 4 children to 2 children in 2013. The table indicates that women are having less children before getting married of those that got married. This table also concurs with Table 4.8 that women are having less children in general.

Table 4.11 Mean number of children born before marriage by 5- year age group, Namibian DHSs 1992-2013

Age	*1992*	*2000*	*2006/07*	*2013*
15-19	1.07	1.04	1.08	1.04
20-24	1.38	1.23	1.29	1.25
25-29	2.06	1.52	1.42	1.47
30-34	2.48	1.89	1.74	1.75
35-39	3.37	2.25	2.24	2.07
40-44	3.84	2.90	2.30	2.14
45-49	4.11	2.95	2.57	2.47

4.3 PROPORTIONS OF MARRIED WOMEN BY BACKGROUND CHARACTERISTICS

Table 4.12 shows the proportions of women who were married by the time of the survey and their characteristics at the time of the survey. The data indicate a decrease in the percentage by age group in the proportions of married women. Proportions of married women from both urban and rural areas have also indicated a substantial decrease over the years. The South and Northwest regions as well indicate a decrease in the proportions of married women, education level also shows a decrease in proportions of those married at those with higher education as this decreased by 40 per cent.

Married women were more common in the rural areas in 1992, however this has changed in 2013 where 45.88 per cent were residing in urban areas, there is also a high proportion of married women with no education in all four years.

Table 4.12 Proportions of women married by background characteristics Namibian DHSs 1992-2013

Background	*1991*	*2000*	*2006/7*	*2013*
Age				
15-19	17.39	12.22	12.34	12.35
20-24	39.70	29.82	26.35	23.18
25-29	58.68	47.31	45.92	41.35
30-34	77.80	65.27	60.52	54.90
35-39	81.50	76.89	69.28	62.44
40-44	83.63	81.68	73.45	67.58
45-49	88.38	86.46	82.44	74.48
Type of residence				
Rural	57.44	48.74	48.81	43.72
Urban	56.17	55.60	49.72	45.88
Region				
Central	56.18	62.90	60.56	53.02
Northeast	66.75	64.21	63.56	62.53
Northwest	41.54	37.99	36.41	31.82
South	58.39	54.91	48.63	45.18
Education Level				
No education	80.74	72.04	75.62	65.72
Primary education	56.19	58.72	59.56	55.18
Secondary education	45.76	43.41	40.16	40.46
Higher education	83.86	68.24	60.54	44.92
Work Status				
No	55.02	46.29	45.29	41.04
Yes	61.50	60.88	53.30	49.11
Occupation				
Not working	54.99	45.89	45.10	41.39
Managerial	66.79	64.37	60.16	56.00
Manual Labour	59.75	57.95	50.21	45.00

4.4 HAJNAL'S SINGULATE MEAN AGE AT MARRIAGE

The Singulate Mean Age at Marriage (SMAM) is the average number of years spent single among individuals who marry before age 50 (Hajnal, 1953).

This is denoted by the formula:

$$\left[\sum_0^{49} S_x - 50.\frac{(s_{50}+s_{49})}{2}\right] / \left[1 - \left\{\frac{s_{50}+s_{49}}{2}\right\}\right]$$

Where S_i= proportion single at age *i*

When single by exact age 50 is not available, the equation approximates S50 by averaging S50 and S49 which is (S50 + S49)/2, this is because those aged "50" are (on average) 50.5. Those aged "49" are (on average) 49.5 so the average of S50 and S49 is an estimate of the proportion single at exact age 50.

This equation is summarized as follows, the numerator which in this case is the total number of single years of life lived by all women between ages 0 and ages 50 of those who get married before age 50, divided by the denominator which is the proportion of those women that are married by age 50.

We take note that SMAM measures a single point in time for the marital status, which cannot capture dynamics and includes in its calculation couples who married many years before the date for which the data is recorded, this value is different from the mean age of marriage which is the average age of a person when they first get married.

Table 4.13 shows the average period of a woman being single was 25.57 and 28.16 years in 1992 and 2000 respectively and in 2006, it was 29.49 years, and 29.80 years in 2013. SMAM shows that it is high in Namibia and has increased by 4.23 years over a period of 20 years. The SMAM results indicate later marriage, these results support the findings of rising mean age at first marriage from earlier tables.

Table 4.13 Hajnal Singulate Mean Age at Marriage for Namibian DHS data 1992-2013

SMAM	*1992*	*2000*	*2006/07*	*2013*
Age	25.57	28.16	29.49	29.80

4.5 TIME-TO-EVENT DATA ANALYSIS

This section uses Kaplan Meier Curves as well as the Cox Proportional Hazard models to describe how the distribution of occurrence of marriage differs from one group of women to another by covariate.

4.5.1 Kaplan Meier Survival Curves

This section discusses only the significant variables that will be featured in the Cox proportional hazard model.

4.5.1.1 Survival function by 5-year age groups

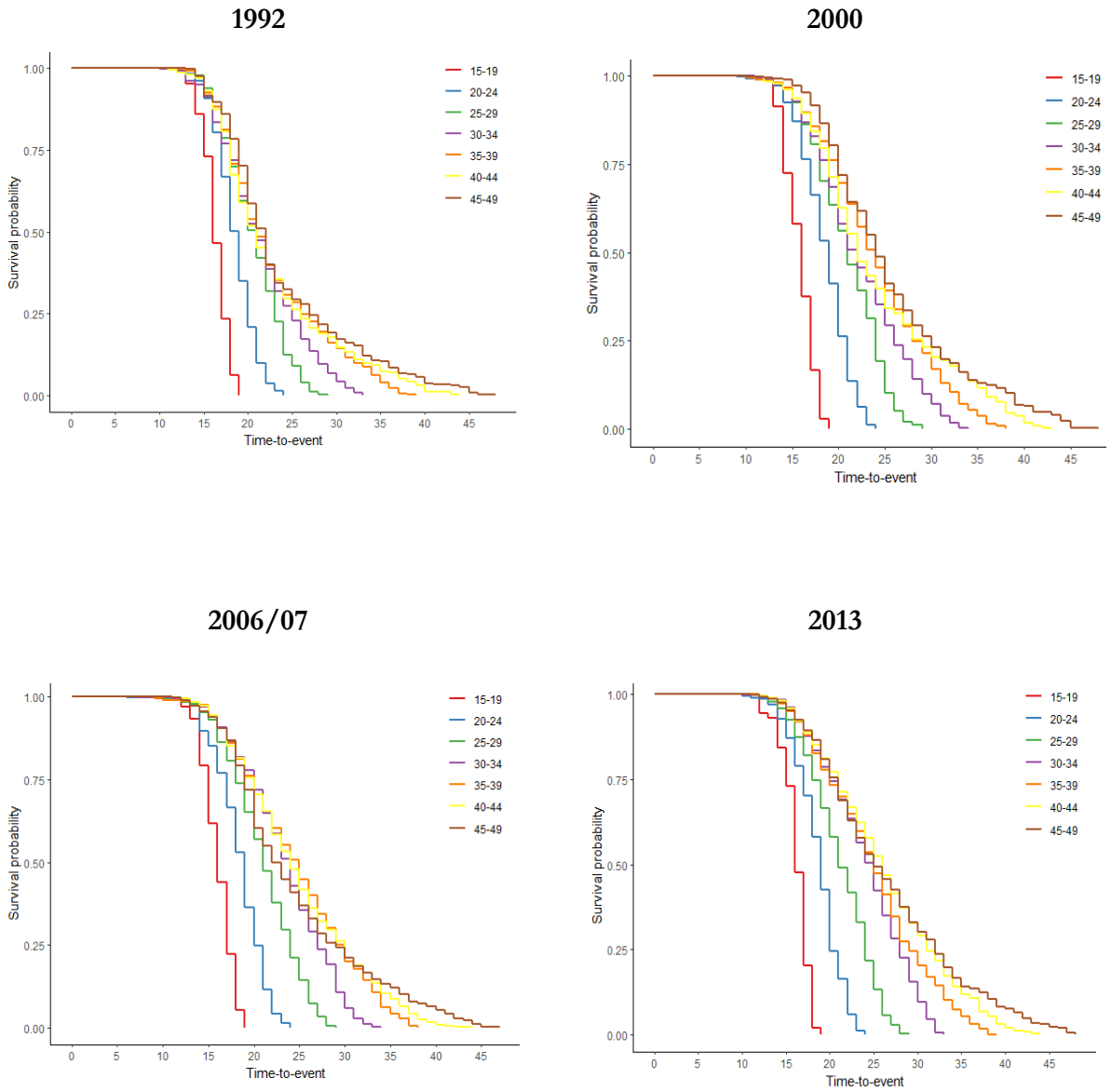


Figure 4.1 Kaplan Meier plots of survival in an un-married state by 5-year age groups, NDHS 1992-2013

Figure 4.1 shows the 5-year age groups for all four NDHS surveys, the data indicates that age at first marriage is heavily select on the younger age groups and as from the 30-34 age group, the figures show that the probability of age at first marriage stabilises.

4.5.1.2 Survival function by Children Born Before Marriage

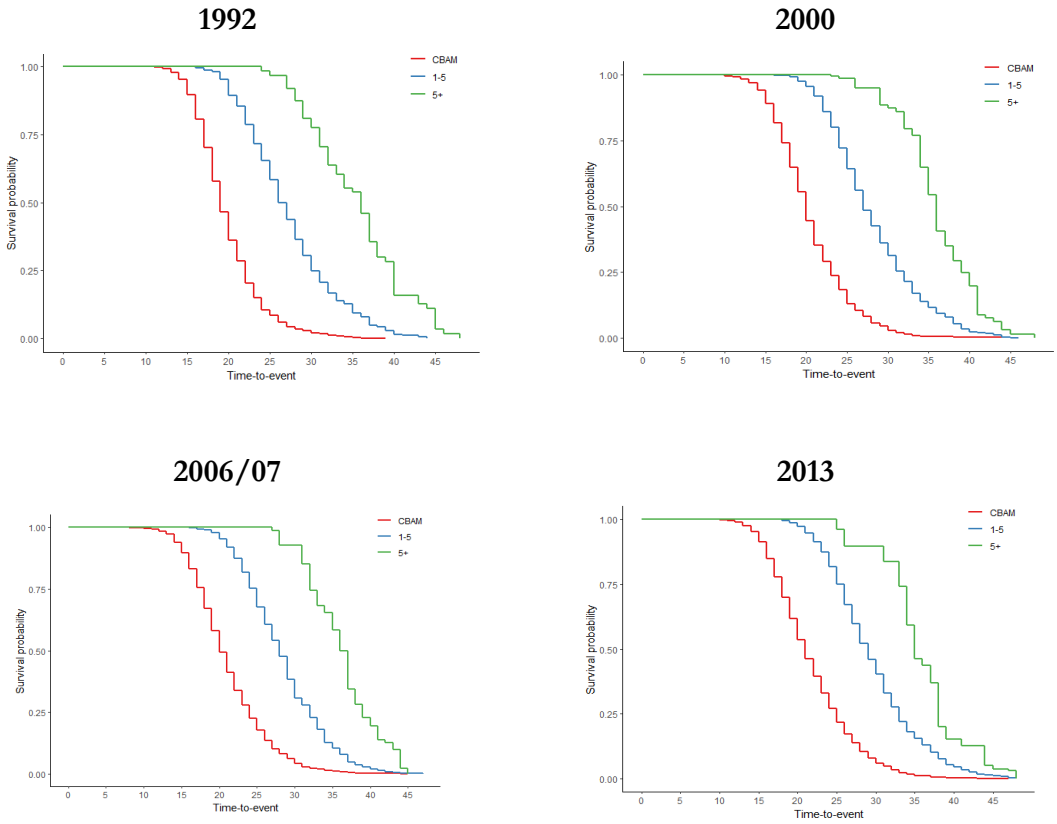


Figure 4.2 Kaplan Meier plots of survival in an un-married state of children before and after marriage, NDHS 1992-2013

Figure 4.2 **Error! Reference source not found.**shows a significant relationship between age at first marriage and children born before marriage. The survival probability of woman who have no children is lower than women who have children, this means that women with no children are at a greater risk of early marriage than women who have had birth.

4.5.1.3 Survival function by Highest Education Level

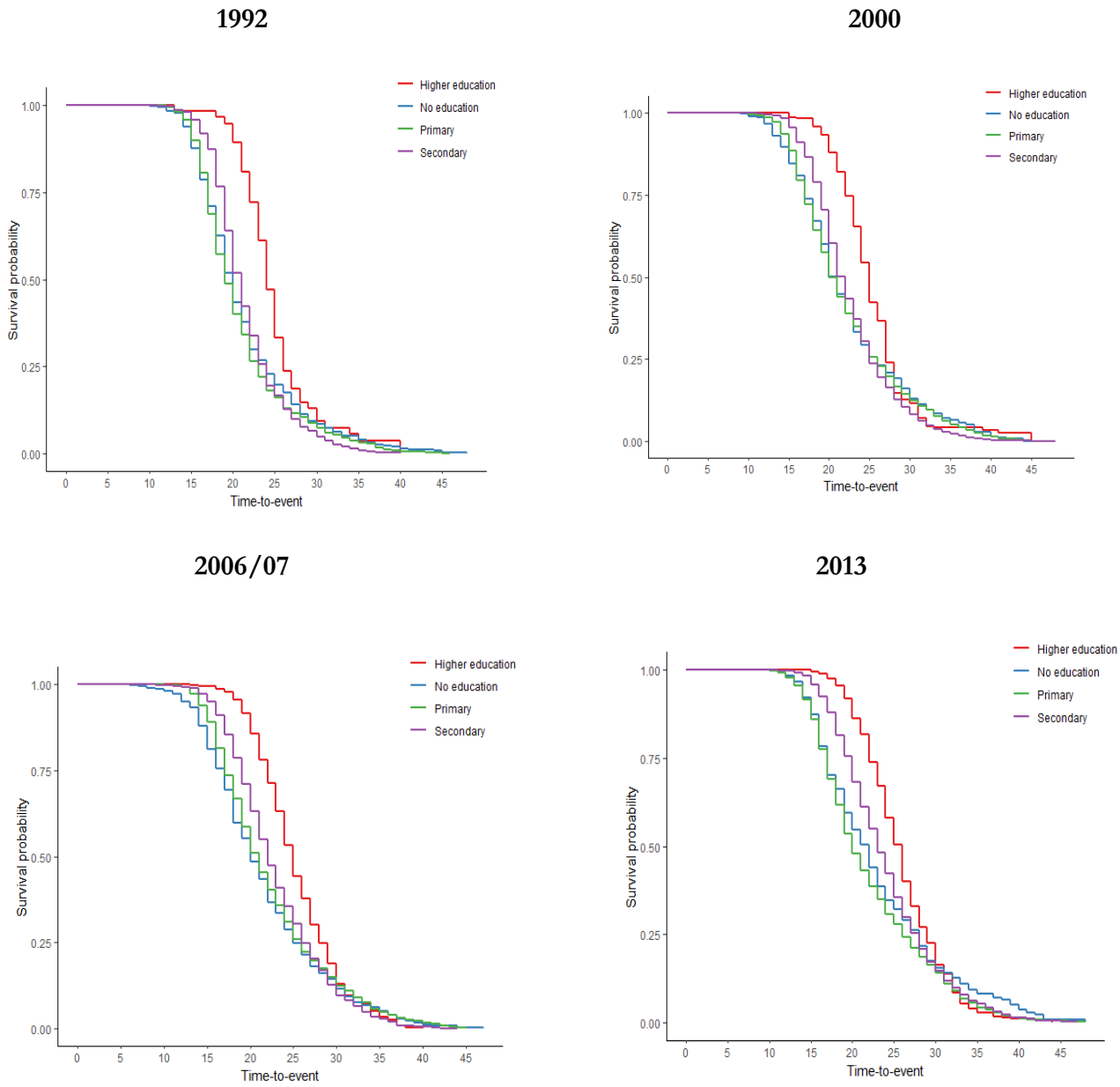


Figure 4.3 Kaplan Meier plots of survival in an un-married state by education level, NDHS 1992-2013

Shown in Figure 4.3 suggests that the probability of age at first marriage differs by educational level for women with higher education and secondary, however age at first marriage does not differ among women with no or primary education. In all four surveys, women with higher education have the lowest risk of getting married until age 30, the graphs indicate that after age 30 there is a low risk of getting married. This concludes that educational level is a significant factor in determining age at first marriage.

4.5.1.4 Survival function by region

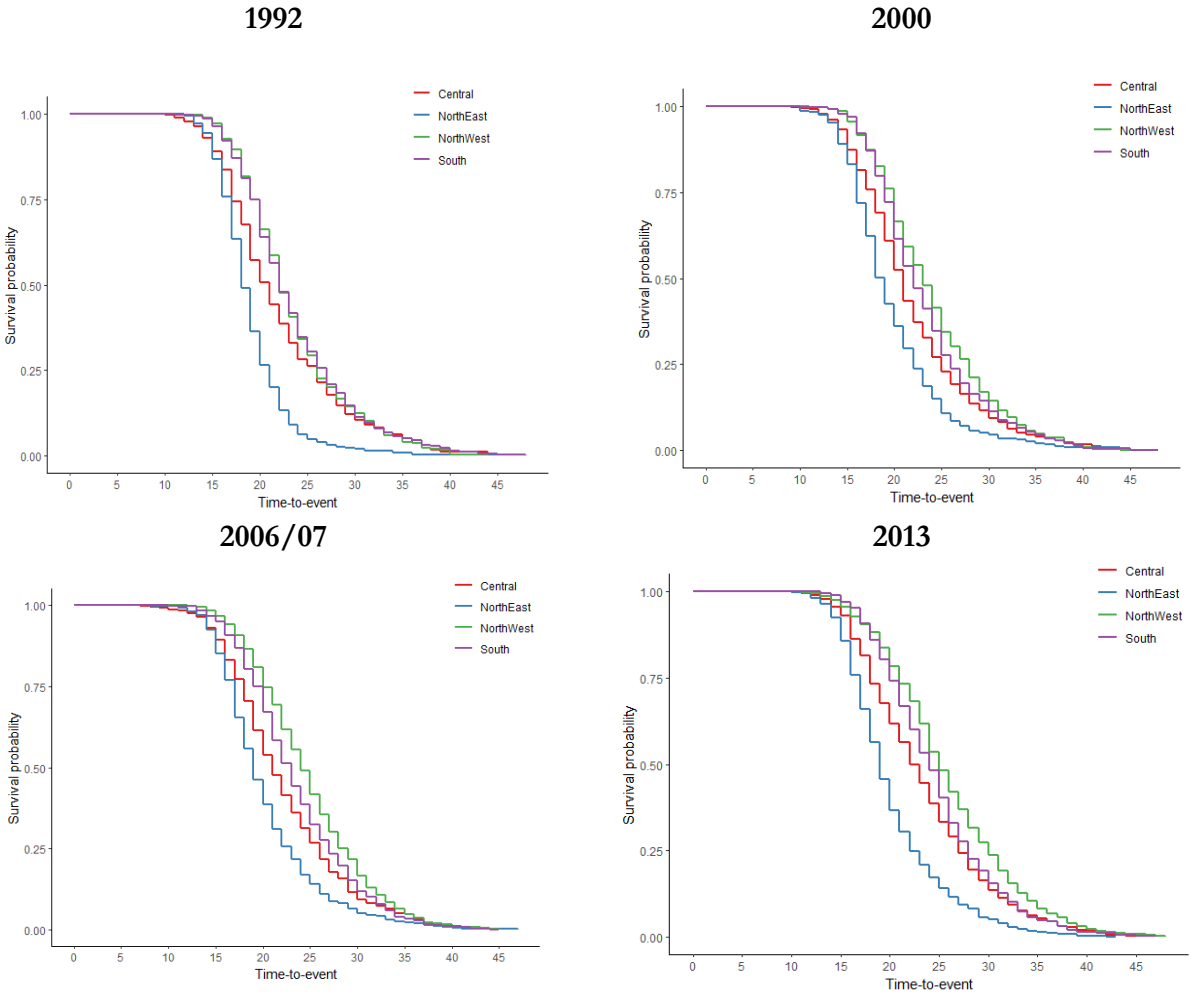


Figure 4.4 Kaplan Meier plots of survival in an un-married state by region, NDHS 1992-2013

The probability of marriage by region is shown in Figure 4.4 for all four surveys. Women from the Northeast region have the highest risk age at first marriage, the figures show that from the 35-39 age group survival probability becomes the same for women in all four regions.

4.5.1.5 Survival function by age at first birth by age group

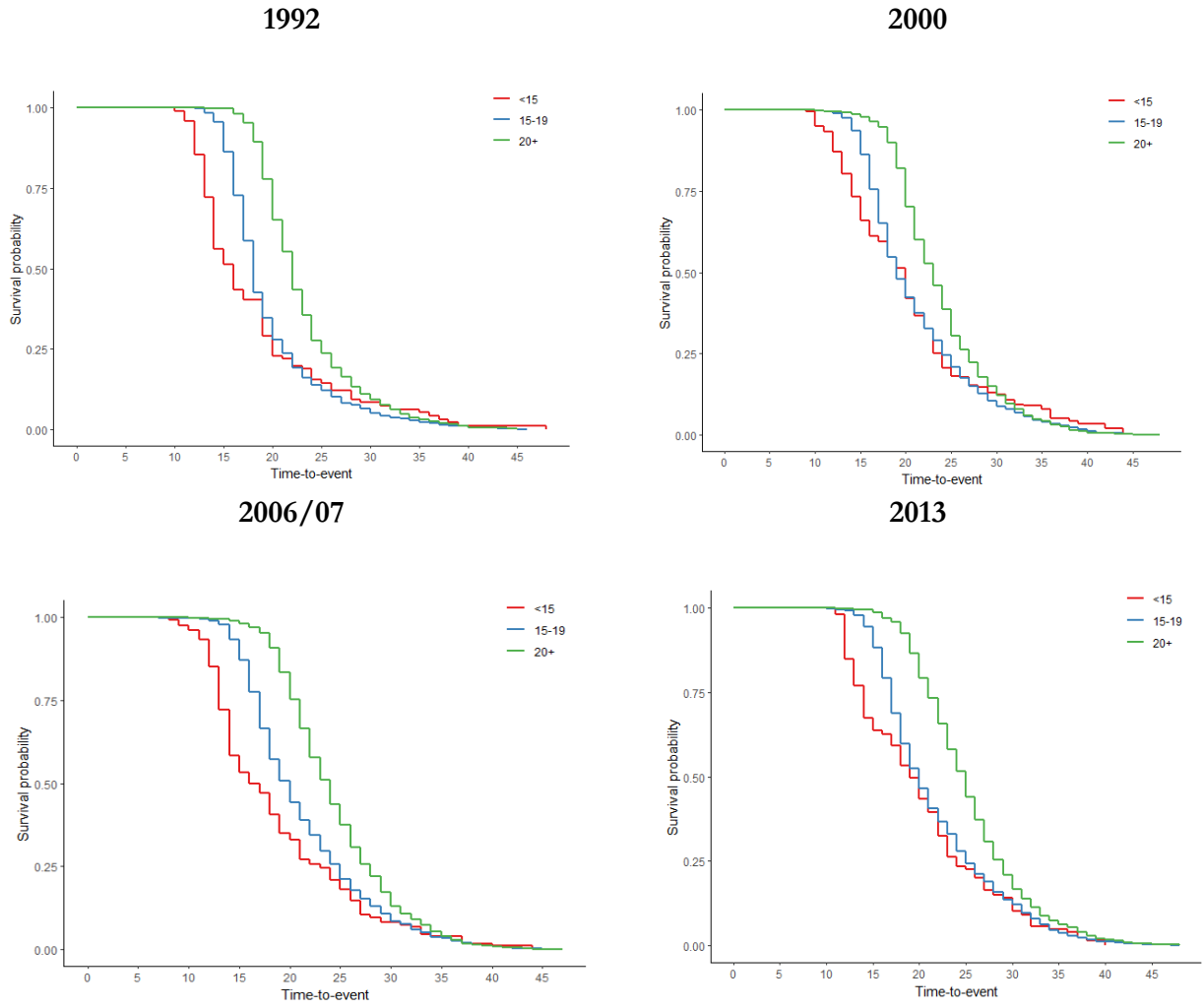


Figure 4.5 Kaplan Meier plots of survival in an un-married state by grouped age at first birth, NDHS 1992-2013

Figure 4.5 show that women who have births in the 20 and above age groups have a higher probability of survival of age at first marriage than their counterparts who had first births at less than 15 years. This is only up until the age of 30, after this, the survival of age at first marriage becomes the same for women who had their first births at age 15 and those that had at 20 years or older.

4.5.1.6 Survival analysis by age at first sex by age group

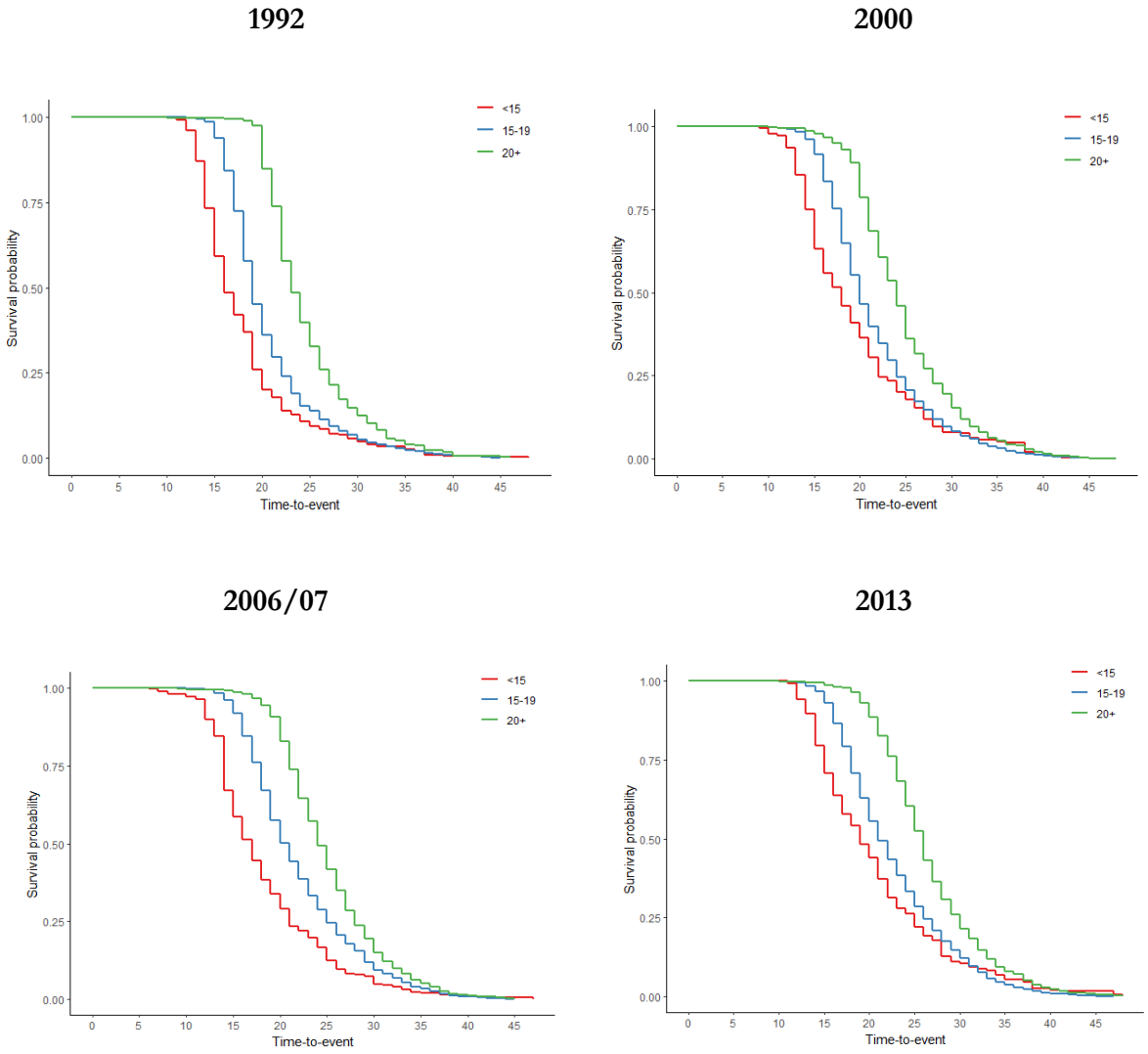


Figure 4.6 Kaplan Meier plots of survival in an un-married state of grouped age at first sexual encounter, NDHS 1992-2013

Figure 4.6, shows that women who had initiated sexual relations before the age of 15 were at a much higher risk of early age at first marriage and women who initiated sexual relations at the age of 20 and above had a higher probability of later marriage, this as well changes at the age of 30, the survival probability of age at first marriage becomes uniform.

4.5.2 Cox Proportional Hazard Model

The Cox Proportional Hazard model was used to examine the factors associated with timing of age at first marriage between 1992 and 2013 for women from 25-49 age group as results from the previous sections indicated selection effects in the younger age groups.

The first step in the Cox Proportional Hazard Regression model, as a precursor to forward modelling, was to fit each covariate fitted against the dependent variable (age at first marriage). The aim was to investigate the effect the independent variables had on the dependent variable (age at first marriage), after this was established, the insignificant covariates were not included in the following steps. Models were fitted separately to the data from each survey.

The second step implemented forward stepwise model building to determine the set of variables associated with the risk of marriage. The covariates that showed to be significant were then added to the model one by one to assess their significance and to assess the relationship between each other. Multiple models with various covariates combinations were run to assess the best model using the Wald test.

This exercise revealed that age, education, age at first birth, age at sex and children born before marriage consistently provided the best model, Covariates that have significant effect on survival of age at first marriage have *p*-values which are less than $\alpha=0.05$ and confidence intervals that do not include 1.

Table 4.14 presents the hazards ratios and confidence intervals at 95 per cent to describe the extent of changes in the significance of these factors over time and interpret their average effect on the timing of age at first marriage. The variables highlighted in red are the significant variables and we observe the following:

Table 4.14 Cox proportional data Regression model

	1992				2000				2006				2013			
Variable	*HR*	*P value*	*lower .95*	*upper .95*	*HR*	*P value*	*lower .95*	*upper .95*	*HR*	*P value*	*lower .95*	*upper .95*	*HR*	*P value*	*lower .95*	*upper .95*
Current Age (ref 25-																
30-34	0.7569	0.0001	0.6605	0.8672	0.7553	0.0004	0.6459	0.8831	0.6559	0.0000	0.5846	0.7359	0.5821	0.0000	0.5197	0.6521
35-39	0.7092	0.0003	0.5888	0.8542	0.5750	0.0000	0.4837	0.6835	0.5579	0.0000	0.4844	0.6425	0.5370	0.0000	0.4749	0.6073
40-44	0.6073	0.0000	0.4919	0.7496	0.6636	0.0000	0.5562	0.7916	0.4908	0.0000	0.4224	0.5702	0.4101	0.0000	0.3484	0.4826
45-49	0.5294	0.0000	0.4055	0.6910	0.4181	0.0000	0.3387	0.5160	0.4431	0.0000	0.3599	0.5456	0.3688	0.0000	0.3108	0.4376
Education level (ref Higher education)																
No	1.6183	0.0008	1.2205	2.1456	1.5833	0.0066	1.1368	2.2052	1.9011	0.0000	1.4816	2.4393	1.9659	0.0000	1.5319	2.5227
Primary	1.7234	0.0000	1.3307	2.2320	1.7984	0.0001	1.3447	2.4051	2.0385	0.0000	1.7133	2.4255	2.3052	0.0000	1.9434	2.7344
Secondary	1.3690	0.0140	1.0657	1.7584	1.4242	0.0103	1.0869	1.8662	1.3934	0.0000	1.2060	1.6100	1.4813	0.0000	1.2860	1.7062
Region (ref Central)																
Northeast	1.5501	0.0003	1.2220	1.9662	0.9840	0.8947	0.7752	1.2491	1.0075	0.9292	0.8544	1.1880	1.2050	0.0141	1.0384	1.3985
Northwest	1.1829	0.1113	0.9620	1.4544	0.8486	0.0416	0.7247	0.9937	0.8389	0.0225	0.7214	0.9755	0.9202	0.2563	0.7970	1.0623
South	0.9523	0.6374	0.7770	1.1671	0.9889	0.8905	0.8439	1.1589	0.9146	0.2012	0.7977	1.0488	0.9469	0.4205	0.8292	1.0813
Age at first Birth (ref<15)																
15-19	0.5643	0.0360	0.3306	0.9633	0.9122	0.7689	0.4939	1.6844	0.3082	0.0000	0.2178	0.4362	0.7427	0.1848	0.4785	1.1528
20+	0.2287	0.0000	0.1296	0.4036	0.3461	0.0011	0.1833	0.6534	0.1282	0.0000	0.0907	0.1812	0.2878	0.0000	0.1836	0.4511
Age at first Sex (ref <15)																
15-19	0.7881	0.1078	0.5895	1.0535	0.8760	0.4324	0.6295	1.2190	0.9873	0.9290	0.7461	1.3065	0.8832	0.3047	0.6968	1.1196
20+	0.5347	0.0002	0.3867	0.7393	0.5961	0.0034	0.4216	0.8428	0.7275	0.0339	0.5422	0.9761	0.6226	0.0004	0.4790	0.8092
Children born before marriage																
NCBBM	0.5294	0.0000	0.4867	0.5758	0.4810	0.0000	0.4497	0.5144	0.4686	0.0000	0.4402	0.4990	0.4511	0.0000	0.4247	0.4792

***p<0.001, **p<0.01, *p<0.05, p> >0.05

Current age of respondents at time of survey

The effect of current age on the timing of age at first marriage was assessed by comparing the risk between women aged 25-49 by 5-year age groups. The results indicated that relative to women from the 25-29 age group, the risk of marriage decreases as women get older in all 4 surveys. In 1992, relative to women from 25–29 age group, the hazard of getting married is 34 per cent less likely for women in the 30-34 age group, while in 2013, 49 per cent less likely for the same age group. Comparing the 25-29 age group with the 45-49 age group, in 1992 women were 47 per cent less likely to get married while in 2013, in the same age group 63 per cent less likely to get married. Overall, an increase in the 25-29 age group was negatively associated with age at first marriage, this indicates age is a significant factor in determining age at first marriage, across the years there is an increase in delaying of age at marriage among the age groups.

Education level

The variable level of education was used to compare the risk of early marriage to women with no education, primary or secondary education, women with higher education was used as the refence category. Overall, having no education, primary or secondary education translated to have a higher hazard of getting married compared to women with higher education for all 4 surveys. On average women with no education, primary, secondary education were 1.6, 1.7 and 1.4 times more likely to get married than their higher educated counter parts in 1992 respectively. In 2013, women with no education were approximately 2 times more likely, while women with primary education were 2.3 times more like to get married while those with secondary education were 1.5 times more likely to get married compared to their counter parts with higher education. The table as well indicates that women with primary education showed an upward trend of being more likely to get married than their counterparts. Education has proved to be a significant factor in delaying age at marriage.

Region

The variable region had the Central region as the reference category, in all four surveys, the South was insignificant. With reference to the Central region, the hazard of women from the Northeast region were 1.6 times more at risk of early marriage in 1992, while in 2013, this decreased to 1.2 times more at risk. In the year 2000 the hazard of women from the Northwest region were 16 per cent less likely to get married relative to those

from the Central region. In the year 2006/7 and 2013, compared to women from central region, women from the Northwest region had a lower hazard of getting married of 16 and 17 per cent respectively. Across the years the regions showed a trend that was high in 1992 and went low in 2000-2006/7 and went slight high again in 2013.

Age at first Birth

Postponing motherhood and marriage past adolescent years proved to be strongly significant and positively associated with the timing of marriage in all surveys. Overall, relative to women who give birth 15 years or younger, women who have their first birth at age 20 year or older have a lower risk of early age at marriage. Women who gave birth at 20 years or older were 78 per cent in 1992, 67 per cent in 2000, 88 per cent in 2006/7 and 77 per cent less likely to get married compared to their counterparts who gave birth at 15 years or younger.

Age at 1st sexual contact

The effect of age at first sexual contact on age at first marriage was examined by comparing women who initiated sexual contact before age 15 years to those who initiated sexual contact between 15-19 years and those women who initiated sexual contact after 20 years of age. Overall initiating sexual contact after 20 years was strongly significant, this means women who had delayed sexual activity were less risk of or early marriage. In 2013, compared to women who initiated sexual intercourse at less than 15 years, women aged 15-19 were only at 3 per cent less at risk.

Number of children born before marriage

For every 1 child a woman has, the probability of marriage decreases by 48 per cent in 1992, in 2000 it decreased by 52 per cent, while in 2006, 53 per cent and by 55 per cent in 2013.

4.6 SUMMARY OF FNDINGS

This chapter focused on the findings of age at first marriage obtained using the Bivariate, Kaplan Meier methods and Cox proportional hazard regression.

The results revealed slight decrease in the proportions married women across all age groups, and as women's ages increases, women are more likely to have a child before they get married, this indicates presence of premarital fertility. Whereas SMAM indicated that the average number of years spent single by a Namibian woman is 28 years. Age at first sexual activity, age at first birth, region, and educational level were significant factors in explaining the timing of marriage, number of children born before

marriage. Poor education background was associated with a greater risk of early marriage, especially not having any education or primary education. Early sexual activity also had a strong significant association to age at first marriage, engaging in sexual activities below 15 years of age had the greatest risk to early marriage. There is a significant positive association between delaying sexual activities after age 20 and delaying age at first marriage. With an increase in respondents age, there was a lower risk in age at first marriage, women aged 30-34 years were more than 60 per cent at less risk than their younger counterparts. Delaying motherhood past the age of 20 proved to be strongly associated with later age at marriage, on the other hand having a child between the ages 15-19 did not prove to be a strongly associated with the timing of marriage. The Northeast region which comprised of the Kavango, and Caprivi/Zambezi regions had the highest risk of early marriage compared to the other regions; the reasons were beyond this study.

Chapter 5 will provide a comprehensive understanding of these findings and future areas of research recommendations.

5 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This section presents a discussion on the findings from the analysis on age at first marriage in Namibia from the previous chapter, connecting it to Chapter Two with reviewed theories on age at first marriage and ends with recommendations for future research.

5.2 DISCUSSION

Age at first marriage is socio-demographic research topic where not much attention was given in sub-Saharan Africa. This research aimed to update and extend the current literature of age at first marriage by examining whether the age at first marriage has changed over time in Namibia since the offset of increasing ages at marriage globally. The following objectives were set out:

- To assess trends of age at first marriage in Namibia between 1992, 2000, 2006 and 2013
- To determine the age at first marriage across different social demographic characteristics
- To determine factors associated with age at first marriage

The study has observed a significant increase in the age at first marriage among Namibian women over the years 1992 to 2013. These finding align with sub-Saharan Africa indicating a delay in marriage age, especially in developing regions undergoing modernization processes. Comparisons with other studies, such as Garenne (2004) and Pazvakawambwa, Kazembe, and Indongo (2014) confirm that Namibia follows Southern Africa's marital trends, which are different from sub-Saharan Africa, with its own unique socio-economic setting.

Possible reasons for this trend could be due to socio-economic development, urbanization, and increased access to education and employment opportunities, having in mind colonialism and apartheid. As Namibia transitions towards a more modernized society, traditional norms regarding marriage may be shifting, allowing women more autonomy in their decisions regarding marriage timing. The influence of modernization on individual choices and societal norms regarding marriage warrants further investigation to fully understand its implications.

The study identified several key factors influencing age at first marriage among Namibian women, including age, education level, age at first birth, age at first sexual activity, and number of children born before marriage. These findings are consistent with existing literature on age at first marriage, highlighting the significance of socio-demographic characteristics in shaping marriage timing. Comparisons with previous studies, such as Pauli (2019), Shemeikka, Notkola, and Siiskonen (2005), and Pazvakawambwa, Kazembe, and Indongo (2014), corroborate the importance of these factors across different contexts within Namibia and sub-Saharan Africa.

Nevertheless, further investigations should dive deeper into these findings, by exploring potential interactions between variables and contextual factors influencing marriage decisions. For example, while education is seen as a significant determinant of marriage timing, discrepancies between studies regarding the effect of educational attainment on marriage delay highlight the need for further investigation. The role of female agency, as indicated by educational attainment, in delaying marriage warrants consideration in the context of evolving gender dynamics and socio-cultural norms in Namibia.

Furthermore, the influence of regional disparities on marriage timing suggests the presence of contextual factors shaping marriage norms and practices. Future research should explore the underlying mechanisms driving these regional differences and their implications for policy interventions aimed at promoting delayed marriage and empowering women in decision-making processes.

With the available data, the following theories were used to explain the results observed in this study. The theories consisted of the job search and marriage theory, the theory of female agency, the modernization theory and theory of culture.

5.2.1 The job search and marriage theory

The job search theory is applied to marriage which states that there is a strong relationship between marriage timing and the issues faced with assortative mating. Lesthaeghe, Kaufmann and Meekers (1986) state that as partner selection has become a matter of personal choice, when women have free will on the decision of timing of marriage and childbearing, they are most likely to delay these events as they are searching for a suitable partner which takes time. This free will was evident with the decrease in proportions of married women and the general decrease in the proportions of women who have children premarital or not. This free will has given women the

choice of rather just having their children and not pursuing marriage, hence the declines in married women, this was evident in Namibia as women from Fransfontein and North of the country all preferred not to get married but instead have many children to have economic security (Pauli, 2019; Shemeikka, Notkola and Siiskonen, 2005). This theory was instrumental in guiding the research to understand why women in Namibia preferred to delay marriage for as long as they can.

5.2.2 The theory of female agency

The female agency theory states that the gap between men and women at the time of marriage, where the younger partner (which is commonly women) have less power and say in a relationship, this is determined by the average ages these women marry. These women don't always get to choose their partners as they are usually determined and negotiated by their parents. This theory postulates that when women are empowered, they were more likely to delay their age at first marriage. Education levels are also used as means to measure female empowerment. The findings validate the explanatory power of this theory which proves that early marriage was associated with poor education backgrounds, and only women who had tertiary educational background was a strong significant indicator in marriage delay. These findings are however not corroborated by Pazvakawambwa, Kazembe and Indongo (2014) which showed that there was no significant difference in the timing of age at first marriage between women with secondary and tertiary until 2006, however with 2013 NDHS data there was a significant difference.

Work status and occupation is also used to measure female empowerment, this study did not find any link between age at first marriage and occupation or work status, this was consistent with Pazvakawambwa, Indongo and Kazembe (2013), this could also be because most of the respondents that took part in the surveys were not employed. However, Hertrich (2017) explains that only the type of profession that requires women to remain in school longer influences delaying marriage.

5.2.3 Modernization theory and culture

States that socio economic development affects age at first marriage. Such as a women's educational attainment and occupational experience causes structural shifts in family organisations, this theory focuses on migration to urban areas and labour force participation, which none of them had a significant effect on women in Namibia, the

effect of the migration labour system in Namibia was common among men, this study did not find a significant relationship between delaying marriage. The variable region had Northeast women being at the highest risk in early marriage, this study however has not covered the scope of the culture theory and future studies should delve deeper in this aspect.

5.3 CONCLUSION

The aim of this research was to assess age of first marriage in Namibia by looking at past trends and updating factors associated with it. With these findings, age at first marriage has steadily increased in Namibia and argue that there has been a change in significant factors in explaining age at first marriage. The findings suggest a relationship between early marriage and region, as this research established a need for women's empowerment in terms of job creation and opportunities to raise the age at first marriage in the North-eastern region. To reduce early marriage, the promotion of tertiary education and providing professional jobs will cause a delay and allow more females to get married at a more "matured" age.

This research has also realised that the relationship between childbearing, sexual activity debut and education when explaining age at first marriage is unquestionable, early sexual initiation and childbearing is very evident in Namibia.

Without including variables that capture ethnicity, religion, and wealth status, we have not really found root causes of how Namibian regions determine age at first marriage, due to the reason of differing cultural norms, traditional beliefs, moral values, and their economic statuses. To conclude these variables shed insight to age at first marriage, although not totally exhausted in explaining at first marriage, several variables were consistently significant.

5.4 LIMITATIONS OF STUDY

There is a general issue with the data used in this study: many of the variables used to reflect the status of the respondent at the time of data collection and may not be the same status at the time of some prior event of interest (e.g., at the time of marriage). For example, they only ask what the current marital status of the respondent is, they do not inquire where the respondents previously lived before marriage. To sum up, one cannot exactly determine the respective residences and education of the women at the age they got married. The data also could have presence of recall bias when respondents respond to the questionnaire about time-to-age at first marriage, another thing was the data presented could have had selection bias where most of the respondents were having the same characteristics and not be representative of the whole country.

5.5 RECOMMENDATIONS

In this study, we considered various characteristics of women to analyse their effects on time-to-age at first marriage among women aged 15–49 in Namibia by using the Cox proportional hazard model.

This study has implications for policies and programs that seek to promote the status of women in Namibia. Tailored programs that look at increasing women's age at first marriage should be promoted to target the regions that have the lowest age at marriage, lowest age at sexual debut and adolescent and young mothers, by looking at the factors presented such as education. We have established that for more women to attain female agency, women should remain in school up until tertiary, this provides these women with professions that will have them effectively participate in the market economy, women staying in school for a longer period in turns delays age at marriage.

Programs that give women access to information to avoid early sexual debut could as well in turn delay age at first marriage, women from poor educational backgrounds from the regions with the hight adolescent pregnancies as these will be the least developed regions. This research should be part of a continuation of studies that focus on age at first marriage determinants and consequences in the country.

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