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Prevalence and Socio-Demographic Determinants of Unintended Pregnancy among Women Attending Antenatal Clinic in Thyolo District, Malawi

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Abstract

Background: Unintended pregnancies remain a public health problem. Unintended pregnancies continue to be a leading predisposing factor to the high total fertility rate, high maternal and child health morbidity and mortality. Unintended pregnancies lead to unsafe abortion and poor health-seeking behavior, especially among young and poor women. Knowledge of associated factors can help to design and implement appropriate interventions. **Objectives:** This study aimed to determine the prevalence and socio-demographic factors associated with unintended pregnancy among women attending antenatal clinic (ANC) at Thyolo District Hospital in Malawi. **Methodology:** It was a quantitative cross-sectional study. Data was collected through face-to-face interviews with 396 women using a questionnaire. Systematic random sampling was used to recruit study participants. STATA version 13 package was used for univariate descriptive statistics, and logistic regression for bivariate and multivariate data analysis. **Results:** Slightly over half (54%) of women attending the antenatal clinic at Thyolo District Hospital had an unintended pregnancy. Unintended pregnancy was more likely to be reported among women of less than 20 years, education below secondary school level, marriage before 20 years, and polygamous relationships. In addition, families relying on farming alone other than employment or business were more likely to have an unintended pregnancy. Primgravidity and having no living child were also significantly associated with unintended pregnancy. **Conclusion:** Prevalence of unintended pregnancy is a health burden in Thyolo. Strategies to keep the girl child in school and delay marriage could address this challenge. Increasing access to effective contraceptive methods for the youth could mitigate the problem.

Keywords

Unintended Pregnancy, Determinants, Teenage Pregnancy, Mistimed
Pregnancy

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1. Introduction

Unintended pregnancy refers to a pregnancy that is reported to have been either
unwanted (they occurred when no children, or no more children, were desired)
or mistimed (occurred earlier than desired) [1]. In contrast, pregnancies are de-
scribed as intended if they are reported to have happened at the "right time" or
later than desired due to infertility or difficulties in conceiving [2]. Intentions to
conceive are often measured or reported only for pregnancies ending in live
births; pregnancies ending in abortion are generally assumed to have been unin-
tended [3]. Unintended pregnancies and births have adverse effects on maternal
and child health, the economic and social status of the family and the nation,
and the sustainability of the environment [4].

Globally, it is estimated that 40% of all pregnancies are unintended. Unin-
tended pregnancy is equally a challenge in developed countries with the United
States of America registering 45% of all pregnancies as unintended [4]. Studies
show that in Asia the rates of unintended pregnancy are also high ranging from
38% to 40% [5].

The situation is similar in Africa where the rate of unintended pregnancies
ranges from 34% to 44% [6] [7]. East and Central African Regions, however, ac-
count for the highest rates of unintended pregnancies with a slow decline as evi-
denced by the drop-in rate from 59% to 55% between 2008 and 2011 [7]. How-
ever, one study in Kenya found that the rates were as low as 26% [8]. In Malawi,
it is estimated that 59% of all pregnancies are unintended [9].

One of the proven strategies to prevent unintended pregnancy is the effective
use of contraceptives [1] [10]. However, with a decline in the unmet need to 19%
from 37% and the fertility rate from 5.7 to 4.4, the prevalence of unintended
pregnancy in Malawi is still high [9] [11]. This trend suggests that apart from
family planning related factors there are also other contextual individual factors
putting women at risk of unintended pregnancy [6].

Evidence from studies suggests that early sexual debut and early marriages are
perpetuating factors for unintended pregnancy [12] [13]. Adolescents have a
higher risk of unintended pregnancy due to the underdeveloped psychological
abilities of the youth to make meaningful decisions on sexuality [14]. Marriage
at appropriate age seems to offer protection except in a situation where there is
intimate partner violence and polygamous relationship [15] [16].

Furthermore, girl child education and women's economic empowerment dem-
onstrate to be effective tools in the fight against unintended pregnancy [5] [11] [17].

Education does not only enable women to understand health-related informa-
tion, but also it is enabling factor for economic empowerment. Poverty-stricken

women have the risk of exchanging unprotected sex for money exposing them to unintended pregnancy [5] [18]. However, there is no marked variation in rates of prevalence rates based on location. The high incidence rates are reported in urban, rural, developed, or developing nations [4] [8] [19] [20].

Apart from the psychological effects on the mother, unintended pregnancies are associated with unsafe abortions, and preterm births [21]. Unplanned pregnancies are associated with poor health-seeking behaviour. In addition, unintended pregnancy when it occurs amongst adolescents may lead to school drop-out with subsequent economic challenges. Apart from increasing the fertility rate, unintended pregnancies also have a negative impact on country's economy and put a burden on the environment. Thyolo District has a high (5.6) fertility rate and is the second high densely populated in the Southern region [22] [23]. The study therefore aimed to find the prevalence and the socio-demographic factors associated with unintended pregnancy in the district.

2. Methods

2.1. Study Design

The study employed a quantitative cross-sectional design. The design enables the assessment of the prevalence of an outcome and examines the relationship between exposures and outcome at a point in time [11] [24]. In this study, the outcome was unintended pregnancy and the exposures were individual sociodemographic and reproductive factors.

2.2. Study Place

The study was conducted at Thyolo District Hospital in the Southern Region of Malawi. Thyolo District is one of the districts with the highest (5.7) fertility rates in the country [22] [23]. The hospital serves as the referral hospital for 37 health centres but also offers antenatal clinic services every day of the week to the surrounding communities.

2.3. Study Time and Population

The study was conducted from October, 2016 to December, 2016. The study population was pregnant women attending antenatal clinic at Thyolo District Hospital during the study period.

2.4. Inclusion Criteria

The subjects recruited were pregnant women attending antenatal clinic at Thyolo District Hospital between October, 2016 and December, 2016 and had given informed consent.

2.5. Exclusion Criteria

In this study, pregnant women who were unwell and required urgent medical care were excluded. Any woman who had more than one visit to the clinic dur-

ing the data collection period was excluded to prevent the recruitment of the same participant more than once.

2.6. Sampling Size

The Kish Leslie (1965) formula was used to calculate the sample size for both study objectives [25]. Based on previous studies, the proportion of 43% and the level of significance at 5%, a sample size of 378 was obtained [12]. In addition, 5% of the sample was added to mitigate the non-response rate.

2.7. Sampling Technique

The unit of sampling was the individual antenatal woman and a systematic random sampling strategy was used to recruit the women into the study. Systematic random sampling was used to recruit the required sample of 396 [25]. At the antenatal clinic, the clients are given numbers in order of the way they have reported unless the mother has a complication. Such numbers help to order when attending to clients as first come and first to be served unless the woman requires emergency care.

2.8. Data Collection Methods

Data was collected through face-to-face interviews using a structured questionnaire administered by the researcher and trained research assistants. The questionnaire was developed following a review of the literature but also guided by World Health Organization literature on unintended pregnancies [9] [16]. In addition, some items were adapted with permission from the previous study conducted in Malawi [12].

2.9. Measurements

2.9.1. Dependent Variable

The dependent variable in the study was the woman's intention to conceive the pregnancy which she was having and the response was dichotomous either intended or unintended. The dependent variable considered unintended pregnancy if mistimed, unwanted, or reportedly family planning failure. Women who reported to have deliberately stopped family planning to conceive were considered to have intended pregnancy even if they reported to have unintended pregnancy [1] [2].

2.9.2. Independent Variables

There were three main categories of independent variables in the study and these included: socio-demographic factors, reproductive factors, and economic factors.

2.10. Data Management

The data was collected by the researcher and three trained research assistants in face-to-face interviews with the participants. The research assistants were trained on interpersonal communication skills, the method of eliciting responses

from participants and upholding the rights of the subject in the study. During the training, the research assistants were also oriented to the research questionnaire and the method of filling the responses to reduce missing data, biases during data collection and the Hawthorne's effect [26].

The questionnaire and consent forms were translated into the local language of Chichewa and pre-tested at another facility in the same district to assess the validity and the likelihood of the questions to elicit the intended responses [26]. The flow of questions and validity of the items were reviewed and proper adjustments were made to adapt the tool to the local population under study.

During the data collection period, each questionnaire was reviewed at the point of data collection before closing the interview to ensure completeness. The principal investigator who was also involved in data collection periodically reviewed the filled questionnaires by the assistants to monitor and control the procedure.

Data was entered into the SSPS version 21 data set after coding the variables into a numerical representation. Then data was exported to Stata version 13 for analysis.

2.11. Data Analysis

Data set cleaning was performed using STATA through the identification of wild codes and outliers to correct mistakes made during data entry. Outliers and wild codes were followed in the questionnaire to make appropriate decisions. Analysis of data was conducted using STATA version 13 computer package for descriptive, bivariate and multivariate analysis.

At the bivariate level of analysis, the association between dependent and independent variables was established using Chi-square and binary regression. Strength of association was determined using odd ratios and a 95% confidence interval. A *P*-value of less than 0.05 was considered to be statistically significant.

At the multi-variate level, a logistic regression model was employed to assess the net effect of several independent significant variables on unintended pregnancy and variables with a *P*-value of less than 0.05 were again considered significant.

2.12. Ethical Considerations

Ethical approval to do the study was sought from Makerere University School of Health Sciences Institutional Review Board (MakSH-IRB) with reference number SHSREC-2015-029 and the National Commission for Science and Technology of Malawi (NCST) with reference number NCST/RTT/2/6. Finally, approval was also obtained from Thyolo District Hospital's Ethical Committees. In addition, a written informed consent was obtained from the study participants. Women who were below the legal adult age of 18 were recruited after getting an ethical assent from them.

While some of the adolescents had emancipated themselves through marriage

below the legal age of 18. In general, the world health organization recommends that the parents have no veto ethical powers over adolescents' decisions to access care and participate in reproductive health research [27]. Though the adolescents as minors were involved, a well-designed research on reproductive health involving adolescents was necessary in order to enhance scientific knowledge specific to these individuals [27].

Enrolment in the study was voluntary and patients had the right to withdraw at any time during the study. Participants were informed that there was no direct benefit from this study. Interviews were conducted in a secluded room away from other clients. Confidentiality was observed by using codes on the questionnaire instead of names.

The data set was secured with a code and information during the study was made accessible only to persons directly involved in the study. The questionnaires were kept safely in a closed cabinet to avoid unauthorized access. Anonymity was further observed by reporting the research findings as grouped data and not for the specific individual woman.

3. Results

3.1. Demographic Characteristics

The study recruited a total of 396 pregnant women. The population was generally youthful with the majority (63%) below the age of 25 years and the mean age of the participants was 23.2 years (SD 5.9). The participants were mainly from the rural setting and a little over half (60%) were educated up to the primary level. The majority (85%) of subjects were married and most (69%) of the subjects were reported to have married before their Twentieth birthday (Table 1).

Table 1. Demographic characteristics of participants.

Characteristics	Frequency (n = 396)	Percentage
Age		
<20 years	127	32.1
20 - 24	124	31.3
≥25	145	36.6
Tribe		
Yao	67	16.9
Lomwe	303	76.5
Others	26	6.6
Religion		
Muslim	68	17.2
Catholic	99	25.0
CCAP	93	23.5
SDA	81	20.5
Others	55	13.9

Continued

Residence		
Urban	87	22.0
Rural	309	78.0
Marital status		
Single	58	14.6
Married/Cohabiting	338	85.4
Age at marriage (years)		
>20	275	81.4
<20	63	18.6
Level of education		
Primary	240	60.6
Secondary	129	32.6
Tertiary/college	27	6.8

CCAP means Church of Central Africa Presbyterian.

3.2. Economic Characteristics

Most (53.7%) of the spouses of the married participants had secondary education. Economically, most (67.7%) of families were living below 1$ per day. Very few women (6.6%) had salaried employment. The main source of income for a larger proportion (60%) of participants was farming. Slightly more than half (51.6%) of the spouses of the participants were employed (Table 2).

3.3. Reproductive Characteristics

The majority of the women 189 (48%) were prim-gravida, 178 (45%) were gravida 2 - 4, and 29 (7.3%) were gravidae five and above. Half of the women had not carried a pregnancy to term. A significant proportion of 171 (43.2%) was para one to three, and 27 (6.8%) had delivered more than 3 times. Most women 205 (52%) had no living child, while 174 (43%) had one to three children, and, 17 (4%) had four children and above. Amongst women who had children, 46 (24%) had a boy or only boys only, 58 (30.2%) had a girl or girls only while 88 (45.8%) had both a girl and a boy child or children.

3.4. Prevalence of Unintended Pregnancy

In the study, 54% of pregnant women were reported to have unintended pregnancies (Figure 1). Furthermore, a proportion of 163 (76%) of unintended pregnancies were observed among the women residing in rural parts of the district compared to those 52 (24%) from the peri-urban area (Figure 1).

3.5. Factors Associated with Unintended Pregnancy

There was a significant association between age of the participant and unintended

Table 2. Family economic status.

Characteristics	Frequency	Percentage
Employment status (n = 396)		
Yes	26	6.6
No	370	93.4
Source of income (n = 396)		
Salaried employment	26	6.5
Business	133	33.6
Subsistence farming	237	59.9
Monthly income in $ (n = 396)		
<30$	268	67.7
30 - 60$	102	25.7
>60$	26	6.6
Spouse employment status (n = 338)*		
Employed	174	51.6
Unemployed	163	48.4
spouse source of income (n = 338)*		
employment	173	51.0
Business	126	37.4
Subsistence farming	39	11.6

Employment included jobs in tea and coffee estates, professional job, and craft industry * one participant did not respond.
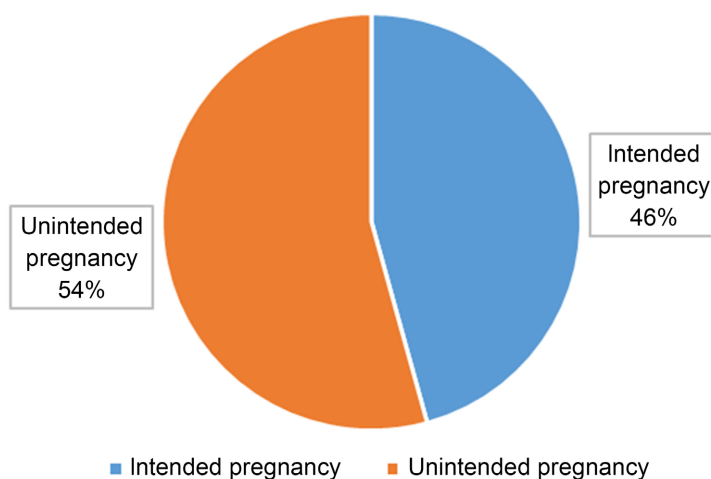
Figure 1. Prevalence of Unintended pregnancy.

pregnancy. Teenage mothers had a higher proportion 90 (42%) of all unintended pregnancies. Women below the age of 20 were 70 percent more likely to report unintended pregnancy compared to the women who were of age between 20 and 24 years (COR 0.30; 95% CI, 0.16 - 0.50) (Table 3).

Table 3. Results of bivariate and multivariate analysis of independent variables.

Characteristics	Intended (n = 181)	Unintended pregnancy (n = 215)	COR (95% CI)	P-value	AOR 95% CI	P-value
Age (years)						
<20	37 (20)	90 (42)	1		1	
20 - 24	72 (40)	52 (24)	0.30 (0.16 - 0.50)	<0.001*	0.62 (0.30 - 1.28)	0.196
25 - 35	72 (40)	73 (34)	0.42 (0.25 - 0.69)	0.001*	0.83 (0.32 - 2.20)	0.710
Marital status						
Single	3 (2)	55 (26)	1			
Married	178 (98)	160 (74)	0.04 (0.02 - 0.16)	<0.001*	-	-
Age at marriage (yrs.)						
15- 19	133 (75)	142 (89)	1		1	
20 - 24	45 (25)	18 (11)	0.37 (0.21 - 0.68)	0.001*	0.41 (0.20 - 0.82)	0.012*
Type of marriage						
Monogamous	174 (98)	146 (91)	1		1	
Polygamous	4 (2)	14 (9)	4.17 (1.34 - 12.9)	0.013*	3.5 (1.08 - 11.36)	0.037*
Education level						
Primary	95 (52)	145 (67)	1		1	
Secondary	69 (38)	60 (28)	0.57 (0.36 - 0.88)	0.011*	0.53 (0.31 - 0.89)	0.017*
Tertiary/university	17 (9)	10 (5)	0.38 (0.17 - 0.88	0.023*	0.46 (0.17 - 1.24)	0.125
Alcohol use						
Yes	3 (2)	12 (6)	3.51 (0.97 - 12.6)	0.055		
No	178 (98)	203 (94)	1			
Gravidity						
Prime gravida	67 (37)	122 (57)	1		1	
Gravida 2 - 4	107 (59)	71 (33)	0.36 (0.23 - 0.56)	<0.001*	0.24 (0.05 - 1.31)	0.100
Gravida ≥ 5	7 (4)	22 (10)	1.73 (0.70 - 4.25)	0.235*	0.15 (0.01 - 1.68)	0.124
Parity						
0	73 (40)	125 (58)	1		1	
1-3	102 (56)	69 (32)	0.40 (0.25 - 0.60)	<0.001*	0.57 (0.03 - 9.38)	0.694
≥4	6 (3)	21 (10)	2.04 (0.79 - 5.30)	0.141	2.05 (0.08 - 51.3)	0.662
Living children						
0	79 (43)	126 (59)	1		1	
1-4	100 (55)	74 (34)	0.46 (0.31 - 0.70)	<0.001*	4.62 (0.48 - 4.58)	0.186
≥5	2 (1)	15 (7)	4.70 (1.05 - 21.11)	0.043*	23.15 (1.39 - 38.87)	0.029*

COR for crude odds ratios and AOR for adjusted odds ratios, *statistically significant results, $P < 0.05$.

Single women were 96% more likely to report having unintended pregnancy compared to married women (COR = 0.04, 95% CI, 0.02 - 0.16). The age at

which the woman got married was also found to be significant, women who got married before 20 years were 2.7 times more likely to have unintended pregnancy compared to those who got married above the age of twenty (COR = 0.37, 95% CI, 0.21 - 0.68). After adjusting for marital status, type of marriage, level of education, gravidity and parity and the number of living children, age at marriage was significantly associated with unintended pregnancy (AOR 0.41; 95% CI, 0.20 - 0.82) (Table 3).

Comparatively, the women in polygamous relationships were four times more likely to report unintended pregnancy than those in monogamous relationships (COR = 4.2; 95% CI, 1.34 - 12.9). After adjusting for age, education level, gravidity, parity and number of living children, women in polygamous relationships were 3.5 times more likely to report unintended pregnancy than women in monogamous relationships (AOR 3.5; 95%, 1.08 - 11.36).

In relation to reproductive characteristics of the women, the Primigravidas were 3 times more likely to report unintended pregnancy than women of gravida 2 - 4 (COR = 0.36; 95% CI, 0.23 - 0.56). The education level of the woman was another socio-demographic factor that remained a significant predictor of unintended pregnancy (AOR 0.53; 95% CI, 0.31 - 0.89) (Table 4).

Table 4. Association economic factors and unintended pregnancy.

Characteristics	Intended pregnancy (n = 181)	Unintended pregnancy (n = 215)	COR (95% CI)	*P*-value	AOR 95% CI	*P*-Value
Employment status						
Yes	19 (11)	7 (3)	0.29 (0.12 - 0.70)	**0.006***	0.41 (0.15 - 1.12)	0.082
No	162 (89)	208 (97)	1		1	
Occupation						
Salaried employed	20 (11)	6 (3)	1			
Business	66 (36)	67 (31)	3.38 (1.28 - 8.96)	**0.014***	-	-
Subsistence farmer	95 (53)	142 (66)	4.98 (1.93 - 12.86)	**0.001***		
Monthly income						
<30$	112 (62)	156 (73)	1		1	
31 - 60$	51 (28)	51 (24)	0.72 (0.45 - 1.13)	0.156	1.27 (0.78 - 2.12)	0.324
>60$	18 (10)	8 (4)	0.32 (0.13 - 0.76)	**0.010***	0.89 (0.34 - 2.36)	0.830
Partner employed						
Yes	99 (56)	75 (47)	0.70 (0.45 - 1.07)	0.097		
No	78 (44)	85 (53)	1			
Partner's occupation						
Business	69 (39)	57 (36)	1			
Farmer (subsistence)	10 (6)	29 (18)	3.51 (1.58 - 7.81)	**0.002***	-	-
Salaried employed	98 (55)	74 (46)	0.91 (0.58 - 1.45)	0.704		

MK 50,000 equivalents to almost US 30 dollars at the time of study, COR for crude odds ratios and AOR for adjusted odds ratios, *statistically significant results, *P* < 0.05, Note that the - (spaces), is not omitted but dropped.

There was a significant association between the age of the participant and unintended pregnancy. Teenage mothers had a higher proportion of 90 (42%) of all unintended pregnancies. Women below the age of 20 were 70 percent more likely to report unintended pregnancy compared to the women who were of age between 20 and 24 years (COR 0.30; 95% CI, 0.16 - 0.50).

Single women were 96% more likely to report having unintended pregnancy compared to married women (COR = 0.04, 95% CI, 0.02 - 0.16). The age at which the woman got married was also found to be significant, women who got married before 20 years were 2.7 times more likely to have unintended pregnancy compared to those who got married above the age of twenty (COR = 0.37, 95% CI, 0.21 - 0.68). After adjusting for marital status, type of marriage, level of education, gravidity and parity and the number of living children, age at marriage was significantly associated with unintended pregnancy (AOR 0.41; 95% CI, 0.20 - 0.82).

The study found that pregnant women who were employed or whose partner was employed were less likely to have unintended pregnancies (Table 4). Furthermore, the families who earned at least half a dollar per day were less likely to report unintended pregnancies (Table 4).

4. Discussion

The research aim was to assess the prevalence and correlates of unintended pregnancy among antenatal women. The study found that 54% of pregnant women attending the antenatal clinic had unintended pregnancies (Figure 1). Furthermore, the study established that the key factors associated with unintended pregnancy were; Age of below 20 years, level of education, marrying at the age of below 20 years, single mothers or those in polygamous families (Table 3). In addition, first-time mothers or those without any living child were more likely to have unintended pregnancies (Table 3). The study also established that a woman with low social economic status was more likely to have intended pregnancy (Table 4).

The prevalence of women with unintended pregnancy among women attending antenatal clinic in Thyolo District was higher (54%) than that of the national prevalence rate of 43% [28]. Pamauleni & Adebowale, however, extracted the data from the MDHS report thus explaining the difference [12]. It is surprising to note that the prevalence of unintended pregnancy was high compared to that (44%) found by Hall *et al.* (2016) in Mchinji District Malawi [11]. Generally, the community-based survey is expected to report high rates of unintended pregnancy than facility-based studies. This is the case because most women with unintended pregnancies also have poor health-seeking behaviour [19]. However, the variation can be explained in terms of the difference in location and measuring instruments.

The study findings further suggest that a woman with pregnancy before the age of twenty is more likely (COR 0.30; 95% CI, 0.16 - 0.50) to have unintended

(Table 3). The results are consistent with those of Kaphagawani in which it was found that 76% of all teenage pregnancies were unintended [12]. This association has been attributed to the underdeveloped psychological abilities of the youth to make meaningful decisions, peer pressure and incapacitation to negotiate for condom use [14].

Furthermore, the study reveals that women who are either married before the age of 20 years or are in polygamous marriages are more likely to have unintended pregnancies (Table 3). This result should be interpreted with caution as the definition of marriage in the study referred to either legal or cohabitation. This finding is consistent with those of Septiarum *et al.*, who found that teenagers permitted into marriage were 2.8 times more likely to have unintended pregnancies [13]. It should be noted, however, that in Malawi about 47% of all women marry before their 18th birthday [9].

Comparatively, the women who had only up to primary level of education were 1.8 times more likely to have unintended pregnancy compared to those who had attained a secondary level (AOR 0.53; 95% CI; 0.31 - 0.89). The results, similar to those of Hall *et al.* (2017) found in Mchinji, Malawi show that education protects from unintended pregnancy [11]. However, it contradicts those found in Nairobi, Kenya by Ikamari *et al* where level of education was not significant [8]. The difference in findings may well be explained in setting as Nairobi is a city location while Thyolo is largely a rural area.

The study also found that women who were single were 96% more likely to have unintended pregnancies (COR 0.04; 95% CI, 0.02 - 0.16). This finding is consistent with earlier findings by Ikamari *et al.* (2013) who found the prevalence of 62% among unmarried women and Kaphagawani (2017) who reported a prevalence of 90% and a significant association ($P \leq 0.001$) between marital status and unintended pregnancy [8] [12]. There is a need, however, to explore factors perpetuating unintended pregnancy among women in polygamous relationships [28]

Reproductive characteristics of the woman also showed to be related with unintended pregnancy. In this study most (64%) of women who were having their first pregnancy had unintended pregnancy (*P*-value < 0.001). In addition, prim gravidas were 3.0 times more likely to report unintended pregnancy (COR 0.36; 95% CI, 0.23 - 0.56) than women who were gravida two to four.

It was observed, however, that the prevalence of unintended pregnancy appeared to increase after the fourth pregnancy. These findings slightly differ from those found in Kamal, Ikamari and Palamuleni where the prevalence of unintended pregnancy progressively increased with the birth order [8] [28].

While these findings and previous studies demonstrate that being married is a protective factor [11]. However, this finding should be considered with caution as the larger proportion of 275 (81.4%) of the population had married before the age of 20 years. The clinical implications of the finding are that while marriage before 20 years confers some protection from unintended pregnancy, teenage pregnancy is associated with maternal morbidity and mortality [27] [29].

5. Conclusion and Implications

The study sought to find out the prevalence and socio-demographic determinants of unintended pregnancy. Slightly over half (54%) of pregnancies attending antenatal clinic in Thyolo have unintended pregnancies. Getting pregnant before the age of 20 years is highly associated with unintended pregnancy. Furthermore, polygamous relationships suggest an increase in the risk of unintended pregnancy. Intervention to promote girl-child education, and access to family planning services especially for adolescents would prevent this problem. Further studies are needed to explore the specific factors associated with unintended pregnancy among women in polygamous relationships.

Study Limitations

This was a health facility-based study and has the potential to miss other women who had unintended pregnancies. A community-based study needs to be conducted to collect representative data from women who have unintended pregnancies and poor health-seeking behaviour. In addition, this paper is part of a larger study, hence it addresses only the socio-economic factors that are associated with unintended pregnancy.

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Availability of Data

Evidence of ethical approval and datasets for the study is available from the corresponding author upon reasonable request.

Authors' Contributions

Dennis Gwesere was involved in conceptualization, designing of the research and manuscript preparation.

Charles Osingada guided clarity of the research project and data analysis.

Mariam Namitebi played a supervisory role in concept, design and guidance on the manuscript.

Ethics Approval and Consent to Participate

This study was conducted under approval by institutional review boards at Ma-

kerere Univerity and Malawi National Health Science Research. Further, the Thyolo District Hospital gave approval of the study and written consent was taken from all participants.

Conflicts of Interest

The authors declare that they have no competing interest.

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Questionnaire

ID No: ☐☐☐   Date of Evaluation: _____/_____/_____

                                    Day/Month/Year

Interviewer Initials: ☐☐☐   Start Time: End Time:

A. Socio-demographic Information

1.	What is your age (Years)	
2.	What is your Tribe?	1. Yao 2. Lomwe 3. Chewa 4. Ngoni 5. Tumbuka 6. Others (specify)………………………
3.	What is your Religion?	1. Muslim………………………….. 2. Catholic……………………...…… 3. Protestant…………………...…… 4. Seventh-day Adventist……………. 5. Anglican…………………..….. 6. Others (specify)………………….
4.	How would you descried your residence in context of urbanization	1. Rural 2. Urban
5.	What is your marital status	1. Single………………….. (go to 9) 2. Married/cohabiting……. (go to 6) 3. Divorced………………. (go to 9) 4. Separated ……………… (go to 9) 5. Widowed………………... (go to 9)
6.	At what age did you get married?	
7.	What type of marriage are you in?	1. Monogamy 2. Polygamy
8.	How old is your (sexual) partner	
9.	What is your highest level of Education?	1. None 2. Primary 3. Secondary 4. Tertiary/University
10.	(If in a union or marriage) what is the level of education of your partner?	1. Has never attended formal education 2. Primary 3. Secondary 4. Tertiary/University
11	Is this your first pregnancy?	1. Yes……….. (skip 12, 13 & 14) 2. No…………. (go to 12, 13, 14)
12.	How many pregnancies have you had including the current one?	
13.	How many children do you have?	

Continued

14.	What are the sex of the children	1. Boy(s) 2. Girl(s) 3. Boy(s) and girls
15.	Do you take alcohol?	1. Yes 2. No
16.	Does your partner take alcohol	1. Yes 2. No
	ECONOMIC FACTORS	
17.	Are you employed	1. Yes 2. No
18	What is your occupation?	1. Professional ………………. (specify) 2. Business 3. Farmer (subsistence) 4. farmer (commercial) 5. Housewife 6. Labour (in tea estate) 7. Craft or trades man like carpentry 8. Domestic work 9. Other (specify)……………. ……………………………………
19.	What is your level of income per month (Participant)	
20	Is your partners employed?	1. Yes 2. No
21.	What is the occupation of for your spouse or partner?	1. Professional ………………. (specify) 2. Business 3. Farmer (subsistence) 4. farmer (commercial) 5. Labour (in tea estate) 6. Craft or trades man like carpentry 7. Domestic work 8. Other (specify) ……………………………………
	B. Intentions to become pregnant	
22.	Did you intend to get the current pregnancy now?	1. YES 2. No