What is the impact of husband's education on unintended pregnancies in southern Ethiopia? A cross-sectional study

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Abstract

Background: Unintended pregnancy rates are substantially higher in developing regions, have significant health consequences, and disproportionately affect subgroups with socio-economic disadvantage. We aimed to examine if husband's education is associated with their wife's unintended pregnancy in southern Ethiopia. **Methods:** The data source for this study was from a cross-sectional study on iron-folate supplementation and compliance in Wolaita, South Ethiopia. Data were collected from 627 married pregnant women regarding their husband's educational status, socio-demographic characteristics and if they wanted to become pregnant at the time of survey using an interviewer administered questionnaire. Odds Ratios (ORs) with associated z-tests and 95% confidence intervals and logistic regression analyses were used to identify variables associated with unintended pregnancy. **Results:** The proportion of unintended pregnancy was 20.6% in this study with husband's educational status, age, residence, and using family planning methods predictive of unintended pregnancy (all P-values <0.05). In the multivariable regression analysis, the odds of having unintended pregnancy was 60% lower (adjusted OR (95%CI; 0.4(0.18, 0.9)) when husband's had University or College education compared to no education was after controlling for the age of women (adjusted OR per year older (95%CI); 1.13(1.09, 1.19)) and rural or urban residence (adjusted OR for rural (95%CI); 1.75(0.98, 3.12)) **Conclusion:** Unintended pregnancies were highest for women with less educated husbands in southern Ethiopia. We also found that being older and living in rural area were independently associated with an increased risk of unintended pregnancy. Strategies for addressing the family planning needs of families where husbands have less education should be the subject of future research.

Introduction

Unintended pregnancies are associated with an increased health and economic burden, especially in developing regions [1]. An unintended pregnancy is typically defined as a pregnancy that is either unwanted (the pregnancy was not desired) or mistimed (the pregnancy was earlier than desired). The incorrect use or non-use of effective contraceptives is a major risk factor for unintended pregnancy [2, 3]. It is estimated that 44% of all pregnancies worldwide were unintended for the survey period 2010–14, of which East Africa had the second highest rate [1].

There are several health risks associated with unintended pregnancy for both the mother and the newborn. These include, but are not limited to, abortion, pre-eclampsia, postpartum haemorrhage, maternal death, unintended births [1], and preterm birth [4]. Unintended pregnancies that occur in developing countries are associated with an increased risk of unsafe abortions, which is exacerbated by poor access to appropriate health care [1]. Indeed, almost all (97%) unsafe abortions occur in developing countries, of which Africa has the highest risk of related deaths [5]. In Ethiopia, a national reproductive health strategy aimed at increasing access to and use of family planning services commenced in 2006 [6]. Despite this, 22% of married women reportedly had unmet needs for family planning and 17% of pregnancies were mistimed while 8% were unwanted in 2016 [7]. Approximately 25% of all female deaths due to pregnancy-related causes [7] might have been preventable if more effective family planning

services were widely available and used. Further research of high-risk subgroups and predictors of unintended pregnancy is needed to inform family planning services and policies in both Ethiopia and developing countries in general.

Socioeconomic disadvantage, including limited education, may be an important risk factor for unintended pregnancies [8]. This may be particularly relevant in the typical rural Ethiopian family where the husband is the dominant decision maker on most aspects of life [9, 10]. Dominant decision-making by the husband could impact the reproductive life of women [11]. For instance, one study using demographic and health surveys of 27 Sub-Sahara African countries, including Ethiopia, revealed that women were less likely to make reproductive health related decisions by themselves if married to a husband with no formal education [12]. Another study in Ethiopia showed that women tended to be involved in their own health care decisions, when their husbands' had completed more years of education [10].

While older age, lower maternal education, having an unpaid job, mother's religion, and family size have all been shown to be associated with unintended pregnancy [13–21], the relationship between the husband's education level and the occurrence of unintended pregnancy in Ethiopia is still unclear. Therefore, we aimed to examine the association between husband's education and the rate of wives' unintended pregnancies and whether or not information on husband's education was sufficient to identify high risk groups in South Ethiopia. We hypothesised that lower education status in husbands would be associated with higher rates of unintended pregnancies in their wives.

Method

We present this paper according to guidance from the STROBE Statement for reporting cross-sectional studies [22] and the Journal's formatting requirements.

Study design

We used a cross-sectional study design that was part of a survey conducted to assess the adherence to recommended Iron-Folic Acid intake and its predictors among pregnant women attending antenatal care (ANC) in Wolaita, southern Ethiopia [23]. Interviewer-administered questionnaires were used for data collection.

Study setting and participants

The study was conducted from October to November 2015 in eight health centers that are located in three Woredas (districts) and two administrative towns in Wolaita Zone, southern Ethiopia. Wolaita is located 327 km south of Addis Ababa—the capital city. Pregnant women who visited the health centers were eligible for this study. The number of pregnant women to recruit from each health center was allocated

proportionally to the number of pregnant women who attended in the month prior to data collection. The study participants were recruited after their ANC consultation using a systematic random sampling procedure. The data collector approached every second pregnant woman at the completion of their ANC service, provided them with information about the study purpose and invited their participation. A total of 662 pregnant women were invited to participate in the survey of which 647(97.7%) provided full or partial responses. In the current study, only married pregnant women who had complete data (n = 627) were included.

Variables

Outcome

Unintended pregnancy is defined as a negative answer to the question “Do you want to be pregnant?”. Response options were ‘yes’ or ‘no’.

Predictor

Participants were asked to select the best description of their husband’s educational status from the categories (no formal education, at least some primary, at least some secondary or at least some College and University).

Socio-demographic characteristics were age in years, religion (Protestant, Orthodox, Catholic and Muslim), residence (urban/rural), income sources (respondent has her own source of income: yes/no), and main source of household income (farming/working for a wage/ self-employed excluding farming).

Reproductive health related characteristics were ever use of family planning (yes/no) and family planning use at the time of conception (yes/no).

Data collection methods

A structured, interviewer-administered and pretested questionnaire was used to collect all data.

Statistical analysis

We describe our sample of pregnant women in southern Ethiopia using frequency counts and percentages for categorical variables and mean and standard deviation for age. The small number of data records that had missing values were excluded.

The relationships between unintended pregnancy and each of the predictor variables were summarised using odds ratios (ORs) and associated 95% confidence intervals. For each OR we tested for evidence of association using z-tests. We gave preference to larger categories when choosing the reference categories for the odds ratios.

There were strong associations between predictor variables. For example, education was associated with residence. Using logistic regression and clinical knowledge we searched for a combination of predictor variables, which included husband's education, which best explained the risk of unintended pregnancy. We sought combinations which returned the highest goodness of fit of the model as shown through likelihood ratio statistics. The resulting models are presented using adjusted ORs and associated 95% confidence intervals. All data were entered into Epi Info (TM) 3.5.4 (Centers for Disease Control and Prevention) and exported to SPSS version 21 (IBM® SPSS® Statistics, IBM Corp, New York) for statistical analysis.

Sample size estimation

As the data were collected for a different purpose (iron-folic acid) there is no a priori sample size calculation for unintended pregnancies. Given that 129 of 627 had an unintended pregnancy, we have, for example, 80% power to detect a difference of 20% versus 32% unintended pregnancies between groups as statistically significant:

Result

A total of 627 pregnant married women were included in the analysis. Characteristics of study participants are summarised in the 'Total' column of Table 1. Overall, 129(20.6%) women reported the current pregnancy was unintended. Of rural participants, 79(28.2%) ever users and 59(37.8%) while using family planning methods had unintended pregnancy.

The numbers of women with and without unintended pregnancies are shown as counts and percentages in Table 1 with differences summarised using odds ratios. Among the 129 women with unintended pregnancies, 31(24%) had husbands with no formal education. The mean (standard deviation) age was 29.9(5.2) years, only 7(5.4%) were college or university educated and 22(17.1%) residents of urban areas. Univariate analysis was carried out to identify independent variables that were associated with unintended pregnancy. Women who were married to college or university educated men had 80% decreased odds of having unintended pregnancy (Unadjusted OR (95%CI); 0.2(0.09, 0.42)) relative to those whose husbands had not formal education. Moreover, women who had secondary education only had 69% decreased odds of unintended pregnancy (Unadjusted OR (95%CI); 0.31(0.18, 0.55)) relative to those with no formal education. In contrast, women who were older, were more likely to have unintended pregnancies (Unadjusted OR (95%CI); 1.14(1.09, 1.19).

Having established that husband's education was a strong predictor of unintended pregnancy, we also checked whether or not it provided sufficient information for describing high risk groups.

A two-step process was followed to select variables for the final predictive model. First, starting with husband's education, we checked which other variables maintained independent associations with unintended pregnancy. Including age of mother with husband's education statistically significantly improved prediction of unintended pregnancy ($p < 0.001$) as did residence ($p = 0.025$) and family planning use at conception period ($p = 0.003$) (See Supplementary Table 1, Additional File 1). As age of mother appeared to be the strongest independent predictor, we retained it in the model. Next, for the model containing husband's education and age of mother, we checked if the other two variables were also independent predictors (See Supplementary Table 2, Additional File 1). Each showed evidence of improving the model individually, but adding both was not warranted. The three models that added to the relationship between husband's education and unintended pregnancy are summarised in Table 2. Model 3 for example, suggests being married to a husband with at least some college and university education was associated with a 60% reduction in unintended pregnancy (adjusted OR (95%CI); 0.4(0.18, 0.9)) after controlling for the fact that older women (adjusted OR per year of age (95%CI); 1.13(1.09, 1.19)) and rural residents (adjusted OR (95%CI); 1.75(0.98, 3.12)) are more likely to have unintended pregnancies.

Discussion

This is the first study on the impact of husband's education on their wife's unintended pregnancy in southern Ethiopia, to our knowledge. We found that the prevalence of unintended pregnancy was 20.6% in married women who were attending antenatal care. This rate of unintended pregnancy is higher than what had been reported for Northwest Ethiopia (13.7%) [24] and lower than for South Ethiopia (31.6 %) [25] and some parts of Oromia (41.5%, 27.9%, 27.1%, and 35%) [26–29]{Tsegaye, 2018 #2}. Similarly, our observed unintended pregnancy rate in southern Ethiopia is lower than what has been reported in East Africa regions (11.2%) and among some developed regions (4.5%) of the world in 2010–14 [1]. The heterogeneity in unintended pregnancy rates could have resulted from differences in societal norms and cultural factors between countries.

We found that unintended pregnancy was most common for lowest husband's education level, confirming our study's hypothesis. Being married to college or university educated men was associated with 60% decreased odds of having an unintended pregnancy after correcting for age of women and rural or urban residence. Similar findings have been shown in Jimma, Ethiopia where women having husbands who cannot read or write were 14 times more likely to have unintended pregnancy than their educated peers [30]. This finding is in contrast to previous research in high-income countries such as the United States [31] suggesting that Ethiopia may have unique cultural norms and values that may increase the risk of unintended pregnancy. For instance, the use of contraceptives among women who did not use any family planning method is typically made by the husband according to the Ethiopia health and demographic survey [7]. Other research shows that Ethiopian women with poorly educated husbands, whom typically report having no autonomy, are three times more likely to have unintended pregnancies

than those with highly educated husbands [26]. Conversely, women in high-income countries with supportive partners are more likely to use contraceptives effectively than those with unsupportive partners [32]. This suggests that women with less educated and unsupportive husbands may have specific family planning needs which are not currently being addressed.

Age of mother was strongly associated with unintended pregnancy over and above the effect of husband's education. This is consistent with some studies conducted in Ethiopia where women older than 35 or 40 were two or four times more likely to have unintended pregnancy than younger women [24, 26, 27]. Similarly, older age was also a predictor of unintended pregnancy in studies in Malawi [33] and Nepal [13]. This could be related to a decrease use of contraceptive as age of women increases [34]. Whereas studies in Kenya [18], Brazil [35], and Canada [36] found higher rates of unintended pregnancies in younger women. Another study conducted in USA did not show any association between age and unintended pregnancy [31].

Both residence and family planning use around conception were marginally associated with unintended pregnancy after controlling for the effect of husband's education and age of mother. This could be related with poor use of family planning services in the rural area of the present study. Seventy-nine (28.2%) of rural participants who ever used family planning had unintended pregnancy compared to 11(11.8%) of urban residents who ever used family planning. Moreover, 59(37.8%) rural residents got pregnant while using family planning methods compared to only 7(9%) urban residents. Similarly, to a study in northern Ethiopia reveals women living in rural areas were more likely to have unintended pregnancy (adjusted OR (95%CI); 2.6(1.5, 4.6)) [14]. Moreover, a study conducted on married women, also in Southern Ethiopia, indicates urban residents were more likely to decide on the use of modern contraceptives compared to the rural residents [11].

Limitations

We acknowledge several study limitation and potential risk of bias. We analysed data from participants with complete information and used a cross sectional survey. All data collections were by self-report and were collected from women who attended the health institution, which might not be representative of the general population.

Conclusion

To our knowledge, our study is the first to show that unintended pregnancies were highest for women with less educated husbands in southern Ethiopia. We also found that being older and living in rural area were independently associated with an increased risk of unintended pregnancy. Strategies for addressing the family planning needs of families where husbands have less education should be the subject of future research. We believe that our findings provide useful information to policy makers in developing family planning interventions.

List Of Abbreviations

ANC - Antenatal care

STROBE - Strengthening the Reporting of Observational studies in Epidemiology

ORs - Odds Ratios

Declarations

Ethics approval and consent to participate-The study protocol was approved by Wolaita Sodo University, College of Health Sciences Ethical review committee. Participant consent was obtained orally before the interview.

Availability of data and material-The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests- The authors declare that they have no competing interests.

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Authors' contributions-CNS and TGH: Conceived and conducted the research. PPF and CNS conducted the statistical analysis. EA: led the conceptualization and writing of the manuscript. All authors read and approved the final manuscript.

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Tables

Table 1: Characteristics of the study sample and unadjusted odds ratios associated with unintended pregnancy

Variables		Total Freq (%)	Unintended pregnancy Freq (%)		Unadjusted OR (95%CI)
		n=627	No (n=498)	Yes (n=129)	
Age		26.9(5.5)	26.1(5.3)	29.9(5.2)	1.14(1.09, 1.19) ***
Educational status	No Formal Education	262 (41.8)	181(36.3)	81(62.8)	1
	Primary	157(25.0)	133(26.7)	24(18.6)	0.4(0.2, 0.67) ***
	Secondary	139(22.2)	122(24.5)	17(13.2)	0.31(0.18, 0.55) ***
	College and University	69(11.0)	62(12.4)	7(5.4)	0.25(0.11, 0.56) **
Residence	Rural	417(66.5)	310(62.2)	107(82.9)	2.95 (1.80, 4.83) ***
	Urban	210(33.5)	188(37.8)	22(17.1)	1
Husband's education	No Formal Education	94(15)	63(12.7)	31(24.0)	1
	Primary	235(37.5)	170(34.1)	65(50.4)	0.77(0.46, 1.3)
	Secondary	175(27.9)	153(30.7)	22(17.1)	0.29(0.16, 0.54) ***
	College and University	123(19.6)	112(22.5)	11(8.5)	0.2(0.09, 0.42) ***
Respondent's Income	Does not have her own source of income	270(43.1)	205(41.2)	65(50.4)	1
	Has her own source of income	357(56.9)	293(58.8)	64(49.6)	0.69(0.45, 1.06)
Household main source of income	Farming	342(54.5)	249(50.0)	93(72.1)	1
	Employment	125(19.9)	113(22.7)	12(9.3)	0.28(0.15, 0.54) ***
	Small Business (Self-employment)	160(25.5)	136(27.3)	24(18.6)	0.47(0.28, 0.76) **
Ever used family planning	No	254(40.5)	215(43.2)	39(30.2)	1
	Yes	373(59.5)	283(56.8)	90(69.8)	1.75(1.16, 2.66) **
Family planning use at the time of conception	No	393(62.5)	330(66.3)	63(48.8)	1
	Yes	234(37.3)	168(33.7)	66(51.2)	2.06 (1.39, 3.05) ***

*P < .05 **P< .01 ***P< .001

Table 2: Multivariable models

Variables		Model 1	Model 2	Model 3
		Adjusted OR (95%CI)	Adjusted OR (95%CI)	Adjusted OR (95%CI)
Age		1.12(1.07, 1.17) ***	1.11(1.06, 1.16) ***	1.13(1.09, 1.19) ***
Husband's education	No Formal Education	1	1	1
	Primary	1.09(0.63, 1.88)	1.08(0.63, 1.88)	1.09(0.63, 1.90)
	Secondary	0.6(0.3, 1.18)	0.62(0.31, 1.24)	0.66(0.33, 1.33)
	College and University	0.36(0.17, 0.81) *	0.36(0.17, 0.82) *	0.4(0.18, 0.9) *
Family planning use at conception period	No		1	
	Yes		1.56(1.03, 2.36) *	
Residence	Rural			1.75(0.98, 3.12)
	Urban			1
		-2 Log likelihood= 574.83, n=627 Pseudo R ² =0.09	-2 Log likelihood= 570.46, n=627 Pseudo R ² =0.10	-2 Log likelihood= 571.11 n=627 Pseudo R ² =0.10

*P < .05 **P< .01 ***P< .001

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