



Predictors of consistent high teenage pregnancies in the Eastern province of Rwanda: Secondary data analysis of the 2014/2015 Rwanda Demographic and Health Survey (RDHS)

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Abstract

Introduction: Teenage pregnancy refers to the occurrence of pregnancy in girls aged between 10-19 years. Worldwide, a high prevalence of teenage pregnancy remains a global public health burden leading to a high morbidity and mortality particularly in developing countries. In Rwanda, findings from the last three RDHS reported a high teenage pregnancy in Eastern Province of Rwanda when compared to other provinces and the city of Kigali. To the best of our knowledge, there is no study that was conducted to determine predictors of consistent high teenage pregnancies in this province. This study, hence, investigated the consistent factors associated with early pregnancies in Eastern Province, Rwanda.

Method: Cross-sectional study was conducted among 2,779 teenagers using the 2014/2015 Rwanda Demographic and Health Survey. Bivariate and multivariate logistic regression models were applied by using the odds ratio and their 95% confidence intervals.

Results: Early pregnancies were significantly associated with multiple factors including low education level (aOR=4.3, 95%CI:1.4-12.7), being aged between 18-19 years (aOR=3.45;95%CI:1.04-11.43,p=0.043) than those aged 15-17years, without using contraceptives, low and middle wealthy category (aOR=5.2,95% CI:1.8-15.2), lower use of medias and women headed households (aOR=0.25, 95%CI:0.1-0.8) than those whose head were males. Further, those who have not heard about HIV and STIs had higher risk to have early pregnancies (aOR=3.9;95%CI:1.16-13.05) than their counterparts. Those who lived with the

partners were almost 3 times more likely to have early pregnancies (aOR=2.7;95%CI:1.3-5.37) than their counterparts.

Conclusion: Factors associated with high teenage pregnancies in Eastern province include low education level, residing in rural area, coming from a poor family, poor access to adolescents sexual and reproductive health information as well as access to condoms and contraceptives in general. Hence, there is need to improve the access to closest schools, reinforce older adolescents (18-19 years) self-confidence in decision making and the availability of condoms and other contraceptives methods for young people in Rwanda. Further, interventions aiming at preventing early pregnancies that affect adolescents' health with consequences on families, communities, and government are fundamental to reduce early pregnancies.

Key words: Adolescent pregnancy; Sexual reproductive health; teenage pregnancy; unwanted pregnancy

Introduction

Adolescent or teenage pregnancy is defined as the occurrence of pregnancy in girls aged 10 to 19 years(1,2)and this is a global burden particularly in low and middle income countries (LMICs) where more than 90% of adolescents pregnancies are found in these countries(2,3). This high pregnancy rate among adolescents in LMICs affects their development and leading in some circumstances to death(4).Particularly, early pregnancies remains a public health challenge in the Sub-Saharan African countries where there a high rate of maternal and child morbidity and mortality (4–6). Recently, the studies showed that about a fifth (18.8%) of adolescents in this African region becomes pregnant and more than 21% of them are found Eastern African sub-region. For instance; early pregnancies is higher in Uganda (25%) than in other counties of the same region. Preceding studies showed that although adolescents aged less than 15years are 5 times more likely to die during pregnancies and childbirth than the women aged more than 19 years, the adolescent girls aged 15-19 years are twice more likely to die (7). World Health Organization demonstrated that the teenage pregnancies are serious health burden that hampers the child development because most of pregnancies are unintended (8). The early pregnancies among adolescents have diverse health effects for adolescent mothers and their newborns. Among the effects, there are multiple pregnancies and childbirth complications that may lead to adolescents' death and/or their newborns (9). Among the complications, previous studies indicated eclampsia, puerperal endometritis, systematic infections, unsafe abortion, preterm labour, intrauterine growth retardation and low birth weight (10,11). In addition to these complications, other studies documented neonatal death and genital fistula and their reproductive health may be affected by unsafe abortion, sexually transmissible infections (STIs) and sexual violence (3,12).

The factors contributing to teenage pregnancies are multifactorial and they vary -(13). Prior studies indicated individual factors based on behavioral problems that make the adolescents in risk of having unwanted pregnancies, socio-cultural factors such as the religion influences, and socio-economic factors (14). Other studies indicated that limited education for the adolescents and early sexual activities are the risk factors of teenage pregnancies (3).

Teenage pregnancy involves females aged under 18 years and it is an interplay of several factors including social, biological, economic and psychological factors (4,15). Teenage pregnancy has been widely studied, but attention in relation to Africa has been largely limited to its prevalence. Teenage pregnancy occurs in all societies, with considerable variation in magnitude and consequences among different countries and regions(16,17). In each case, a variety of complex socio-economic factors are involved including poverty, communities and families acceptance of child marriage, culture behaviours, gender inequality, sexual violence, lack of education and information among others. Adolescent pregnancy is not only a health issue, but also a human right and development issue. Pregnancy undermines a girl's ability to exercise her rights to education, health and autonomy (18).

Adolescence has been described as a period characterized by rapid physical, cognitive and social changes, including sexual and reproductive maturation; the gradual building up of the capacity to assume adult behaviours and roles involving new responsibilities requiring new knowledge and skills. Studies have shown that Adolescent girls who become pregnant are significantly more likely to be poor than their peers, with poorer nutrition and general health. Adolescent pregnancy and parenting are global issues and a major call for concern. Adolescent pregnancy is noted as a key public health problem with medical, psychological, social, and demographic implications(19). Around 16 million adolescents aged 15 to 19 years, and about one million girls under 15 give birth annually(20). Unintended pregnancy in young people is an international concern that highly affects people and countries' socio-economic welfare. Further, it leads to school dropout for female students and different bio-psycho-social problems(21,22). Also, the high rate of adolescent pregnancies lead to infant abandonment. The later seems to occur mainly among young, single mothers, often under the age of 20 who later face adverse economic, social, and emotional negative consequences(23,24). In the United States of America (USA), 30% of all teen girls who drop-out of school, cited pregnancy as a cause and fewer than 38% of the teen mothers ever earned their high school diploma (25). Also, in the USA, 46% of daily school students report having had sexual intercourse at least once in their lives, among them, 5.9%

before the age of 13, 13.8% having had four or more sexual partners, and 34.2% were had being sexually active in that days (26,27).

A study conducted in Kenya documented that the prevalence of adolescent pregnancies is high in daily schools annually and a third of them are married before their 18th birthday while a third gives birth before their 20th birthday (28). Among the factors indicated, the previous studies indicated low socio-economic status such as living in a poorer home, rural area, and with lower levels of education, relates with early pregnancy as compared to those who lived in urban area, coming from wealthier homes and with higher educational attainment. Also, other studies have found that young people get pregnant as a result of their vulnerability to get accurate and comprehensive knowledge on sexual and reproductive health, as well as free services from the health care providers (29,30). For this reason, countries must invest in the health and education of young people, especially teenage girls and create opportunities for them to boost their health and wellbeing as it is elaborated in the United Nations Convention on the Rights of the Child (31).

Reports in Rwanda indicated that violence against women demonstrate incidences of minors being raped at high rates in Kigali City and in the Eastern Province (47). The RDHS 2015 revealed that teen pregnancies have varying prevalence within the provinces. These disproportionately distributed proportions of early pregnancies are lowest in the Northern Province at 4.5% and highest in the Eastern Province at 10.7% (32). Despite the growing number of teen girl pregnancies, a good number of them still go untraced and unreported because many of them are not yet registered in the civil books (33). According to 2010 RDHS, the prevalence of teenagers who have begun childbearing have decreased from 11% in 1992 to 7% in 2000, and to 4% in 2005 then peaked again to 6% in 2010; represented as Kigali city (6.6%), Southern Province (4.9%), Western Province (5.4%), Northern Province (5.7%), and Eastern Province (7.9%). In 2015, the National Institute of Statistics of Rwanda (NISR), found that the proportion of young women who had begun childbearing varied between 5% in Northern Province to 11% in Eastern province with a national prevalence of 7.3% (34). This therefore warrants that the current study be conducted in order to guide the decisions making to limit youth engagement into unprotected sexual acts causing unplanned pregnancies and understand risk factors associated with unwanted pregnancies among teenagers in the Eastern Province of Rwanda.

Although the adolescent pregnancy remains very crucial for developing and designing appropriate health interventions to reduce this problem among young people, its related high

morbidity and mortality, the small sample size and limited evidence from prior studies are the challenge in identifying the magnitude of the teenage pregnancy in sub-Saharan African countries especially in Eastern African countries where Rwanda is located. Indeed, from the first RDHS, the results indicated that the teenage pregnancies continue increasing instead of reducing as a result of ongoing interventions like community mobilization on teenage pregnancies alert, youth centers construction, sexual education in schools among others and Eastern Province is reported to have a higher prevalence than the other provinces and Kigali City.

Although the National Target of Rwanda is to reduce teenage pregnancy from 7.3% from 2015 to less than 7% by 2020 and then less than 7% by 2024 and the recent reports indicated that this target was achieved, the prevalence of teenage pregnancies in Eastern Province remains higher than the other provinces and the Kigali city. The findings from different analysis of RDHS conducted across the country suggest that magnitude of prior teenage pregnancy in Eastern Province of Rwanda has been much higher than the national average. This study is conducted to identify major associated factors and suggest preventive measures for the policy makers to address this health issue with the purpose to reduce teenage pregnancies in this province from which affecting the national target.

Materials and methods

Research design

In this study, the researcher used a cross-sectional research design with quantitative research approach.

Study population, sample size and sampling technique

The current study utilized the 2014/2015 RDHS data. The survey was applied in all four Rwandan Provinces including Kigali city. The main sampling unit refers to as a cluster, was defined on the basis of Enumeration Areas (EAs) from the census frame done in 2012. The sampling procedure used the 2014/2015 RDHS was a stratified two-stage cluster design. In the first stage, among 492 clusters that were randomly selected only 113 and 379 clusters were selected in urban and rural settings respectively. For the second stage of the section, 26 households were selected in each cluster, by proportionate systematic sampling. Therefore, a total of 12,792 households were included in this survey. Indeed, concerning the selection the participants for the current study, we included all adolescents aged 15-19 years from Eastern Province of Rwanda. Of these, 492 (7.8%) adolescent girls were currently pregnant at the time of the survey, while 6,099(92.2%) were not pregnant. Married or unmarried adolescent girls with

intended pregnancy were excluded in the study. Hence, this study included adolescents who have got unwanted pregnancies at age of 15-19 or were in the period of sexually reproduction at the age of the survey. Only 2,779 teenagers met the inclusion criteria to take a part in this study.

Study variables

Independent variables

Independent variables of this study are many and they were classified into socio-demographic and health related factors. Concerning the socio-demographic characteristics, we included marital status (0= living without a partner, 1=living with a partner), education status (1=secondary or University, 2=primary and no formal education), religion (1=protestant, 2=Catholics, 3=Adventist, 4=Muslim or Jehovah witness or no religion), type of residence (1=urban, 2=rural), household wealth index (1=rich, 2=middle, 3=poor), sex of household head (1=male, 2=female), frequency of using media(0=not at all, 1=less than once a week, 2=at least once a week), presence of males adults during sexual activity (0=no, 1=yes), employment status(0=no employment, 1=managerial, sale, or clerical, 2= farming, 4= services, domestic and manual), frequency for using media (0=not at all, 1=less than once a week, 2=at least once a week). Concerning the health-related variables, we included contraceptives use during the sexual intercourse (0=no, 1=yes), heard about HIV and other STIs (0=no, 1=yes), and use of media channels (0=no, 1=yes).

Dependent variable

The outcome variable of this study was teenage pregnancy status. The teenage pregnancy was defined as being pregnant or not. This variable was categorised as 0=not pregnant and 1=pregnant.

Data analysis

Statistical analysis was performed using STATA version 13.0 for data science to describe proportion for teenage pregnancies in the Eastern Province of Rwanda. Descriptive characteristics of the research participants were measured using the frequency and percentages. For analytical analysis, the bivariate and multiple logistic regressions were computed. Bivariate analyses were used to determine the associated factors of the early pregnancies. Multiple logistic regression models were performed to predict teenage pregnancy using socio-demographic characteristics and health related factors as potential predictor variables. This model used backward stepwise approached and odds ratio with their 95% Confidence intervals to determine factors associated with teenage pregnancies in the Eastern province of Rwanda.

Ethical consideration

Ethical approval for the study was obtained from the University of Rwanda, College of Medicine and Health Sciences, School of Public Health, Department of Community Health. The main author was authorized to use the dataset of 2014-2015 RDHS using the online request at the website of DHS program as the authorization of use the DHS datasets is owned by the DHS program at the <https://dhsprogram.com/methodology/survey/survey-display-468.cfm>.

Findings

The results of the socio-demographic features of the participants indicated that the average age of the participants was 16.86 (SD=1.42). Concerning socio-demographic characteristics, the results indicated that majority (73.7%) of the participants were from rural areas, 65.53% of the participants were from the households headed by males. The findings reported that majority of participants attended secondary or the University (n=1,630, 58.7%). Regarding religion, the majority was catholic (n=1,221, 44%). The analysis showed that 79.92% did not have sexual intercourse before the age of the survey. Regarding the economic status, the majority of respondents (49.8%) was from the richest household. Over the all participants, 2,698 (97.1%) were not living with the partner. Concerning the health status, the results indicated that 99.8% and 97.8% heard about the STIs and did not utilize contraceptives respectively. Results found that 62.79% and 44.09% did never read newspapers (magazines) and watch TV respectively. 68.18% of overall participants listen to radio and more than a half (58.37%) were tested HIV (Table 1).

Table 1: Description of socio-demographic and health characteristics of the participants

Characteristics	Frequency (N=2779)	Percentage (%)
Age of participants		
15-17 years	1743	62.7
18-19 years	1036	37.3
Residence		
Urban	731	26.3
Rural	2,048	73.7
Education		
Secondary /University	1,630	58.7
Primary education and no formal education	1,149	41.3

Religion		
Protestant	1,170	42.2
Catholic	1,221	44
Adventist	299	10.8
Muslim, Jehovah wittiness, no religion	84	3
Sex of household head		
Male	1,821	65.53
Female	958	34.47
Household wealth index(HWI)		
Rich	1384	49.8
Middle	478	17.2
Poor	917	33
Heard about STIs and HIV		
No	341	12.3
Yes	2438	87.7
Contraceptive users		
No	2511	90.3
Yes	268	9.7
Use of social media		
Yes	1416	51
No	1363	49
Frequency of using social media		
At least once a week	1743	62.7
Not at all	767	27.6
Less than once a week	269	9.7

The results from the bivariate logistic analysis indicated and reported that there were significant associations between unwanted pregnancies and multiple factors. Such significant factors were age, education, sex of head of the household, use of media channel, frequency to use social media, heard about STIs and HIV, HWI and use of contraceptives methods during sex. There was significant association between unwanted pregnancies and age of the adolescent, education of the teens, household wealth index, current marital status, frequency of accessing media channels, use media channels, heard about HIV and other STIs, using contraceptives methods during sex and use media ($p=0.02$). Our results found a higher prevalence of early pregnancies among those from rural , those aged 18-19years, those who studied primary schools and those with no formal education, protestants, those whose head of family was male, those who lived with the partner, those who did never use social media in a week (, those whose employment was farming ($n=113$, 59.16%), those who did not use social media, and those who did not use contraceptive methods during sex (**Table 2**).

Table 2: Odds ratio for the factors associated factors of early pregnancies

Variables	N(%)	OR	95% CI		p-value
			Lower bounds	Upper bounds	
Age of participants					
15-17 years	38(19.9)	1			
18-19 years	153(80.1)	2.65	1.92	3.65	<0.01**
Residence					
Urban	53(27.75)	1			
Rural	138(72.25)	0.71	0.39	1.28	0.252
Education					
Secondary/ University	51(26.7)	1			
Primary and no formal education	140(73.3)	3.6	1.24	10.3	0.018*
Religion					
Protestant	96(50.26)	1			
Catholic	71(37.17)	1.38	0.76	2.52	0.293
Adventist	15(7.85)	1.16	0.48	2.79	0.736
Others (Muslim, Jehovah witness, no religion)	9(4.71)	1.14	0.77	1.68	0.504
Sex of household head					
Male	122(63.87)	1			
Female	69(36.13)	0.71	0.5	0.92	0.005*
HWI					
Rich	25(49.1)	1			
Middle	9(17.6)	1.4	0.1.1	2	0.013*
Poor	17(33.3)	3.6	1.2	10.3	0.018*
Current marital status					
Not living with a partner	87(45.6)	1			
Living with a partner	104(54.4)	1.84	1.11	3.1	0.018*
Frequency of using media channels					
At least once a week	11(5.8)	1			
Less than once a week	43(22.5)	1.60	1.03	2.40	0.042*
Not at all	137(71.7)	2.4	1.7	3.53	<0.001**
Heard about other STIs and HIV					
Yes	177(92.7)	1			
No	14(7.3)	2.32	1.1	5.23	0.04*
Employment status					
Clerical, sake and manager	19(9.95)	1			
Farming	113(59.16)	1.41	0.82	2.5	0.221
Domestic and manual	22(11.52)	1.24	0.79	2	0.348
No working	37(19.37)	2.3	0.8	6.41	0.113
Use of contraceptive methods during sex					
Using contraceptives	50(73.82)	1			
Not using contraceptives	141(73.82)	1.94	1.24	3.03	0.003*
Use media channels					

Yes	89(46.6)	1			
No	102(53.4)	1.6	1.03	2.4	0.041*

OR: Odds ratio; * statistically significant at 0.05; ** Statistically highly significant at 0.01

Abbreviation: **FP:** Family Planning, **CI:** Confidence intervals; **HWI:** Household Wealth Index; **STIs:** Sexually sexual infections; **HIV:** Human Immunodeficiency Virus

The multiple logistic regression models were performed and indicated the factors that increased the likelihood to experience early pregnancies among the teenagers from the Eastern Province. The teenagers aged 18-19 years were 3.45 times more likely to get unwanted pregnancies (aOR=3.45;95%CI:1.04-11.43,p=0.043) when compared to those teenagers aged 15-17 years. Those whose head of their families were females were had less odds to have early pregnancies (aOR=0.25,95%CI:0.1-0.8, p=0.002) when compared to those whose head of the families were males. Regarding wealth index, the teens from middle families (aOR=5,95%CI:1.7-14.3, p=0.003) and poor families (aOR=5.2, 95%CI:1.8-15.2, p=0.002) were significantly more likely to have unintentional pregnancies when compared to those from the rich families. Indeed, the teenagers who heard about HIV and other STIs had greater odds to have unintentional pregnancies (aOR=3.9, 95%CI: 1.16-13.5, p=0.028) when compared to those who did not hear about HIV or other STIs. Results also showed that those who were using contraceptives methods had been prevented to have unwanted pregnancies (aOR=0.64, 95%CI:0.53-0.77, p<0.001). The odds of adolescent pregnancies who did not use media channels had 2.26 likelihoods to have unintentional pregnancies (aOR=2.26; 95%CI:1.25-4.1, p=0.007) when compared to those who did not use media. Those with no formal and primary education were 4.3 times more likely to have early pregnancies (aOR=4.3, 95%CI:1.4-12.7,p=0.009) when compared to those with secondary and university education. Teenagers who lived with the partner had almost 3 times more likely to have early pregnancies (aOR=2.7; 95%CI:1.36-5.37, p=0.005) when compared to those who lived with no partner (Table 3).

Table 3: Multivariate logistic regression model for the factors associated with teenage pregnancies

Variables	N(%)	AOR	95% CI		p-value
			Lower bounds	Upper bounds	
Age of participants					
15-17 years	38(19.9)	1			
18-19 years	153(80.1)	3.45	1.04	11.43	0.043*
Education					
Secondary/ University	51(26.7)	1			
No formal and primary education	140(73.3)	4.3	1.4	12.7	0.009*

Sex of household head

Male	122(63.87)	1			
Female	69(36.13)	0.25	0.1	0.8	0.002*

HWI

Rich	74(38.7)	1			
Middle	36(18.9)	5	1.7	14.3	0.003*
Poor	81(22.4)	5.2	1.8	15.2	0.02*

Marital status currently

Not living with the partner	87(45.6)	1			
Living with a partner	104(54.4)	2.7	1.36	5.37	0.005*

Frequency using media channels

At least once a week	4(2.09)	1			
Not at all	165(86.39)				
Less than once a week	22(11.52)	1.7	0.52	5.59	0.379
		1.59	0.67	3.77	0.297

Heard about STIs and HIV

Yes	177(92.7)	1			
No	14(7.3)	3.9	1.16	13.05	0.028*

Use contraceptive during sex

No contraceptives used	141(73.82)	1			
Using contraceptive methods	50(26.18)	0.64	0.53	0.77	<0.01**

Use media channels

Yes	13(6.8)	1			
No	178(93.2)	2.26	1.25	4.1	0.007*

Notice:

*Statistically significant at 5%, ** Statistically highly significant; **AOR:** Adjusted Odds Ratio; **CI:** Confidence intervals; **STIs:** Sexually transmissible infections; **HWI:** Household Wealth Index; **HIV:** Human Immunodeficiency Virus

Discussion

This study determined the associated factors of early pregnancies focusing on socio-demographic and health factors among the teenagers from the Eastern Province of Rwanda in order to provide appropriate recommendations and inform health strategies and decision making regarding teenagers. It reported significant factors include the age of adolescent, education, sex of the head of the household, use of contraceptive methods, education level, heard about HIV and other STIs, household wealth index, frequency of using media, and using the media were all significantly associated with the unwanted pregnancies. Findings from this study are supported by the previous studies (35–37).

Based on findings, the protective factors against early pregnancies included age of the teens, heard about the HIV and other STIs, HWI, use of contraceptives, use of media channels, and sex of the head of the household. Our results are in congruence with preceding studies including the studies conducted in sub-Saharan African countries(38–40). Our results revealed that the contraceptive users were less likely to be pregnant compared to those who were not using contraceptives while doing the sexual intercourse. Studies have shown the importance of providing teenagers with sexual and reproductive health information in preventing teen pregnancy. However, teens' access to sexual and reproductive health services is limited. These findings are cooperating with the prior studies that showed an increase of teenage pregnancy among non-users of contraceptives(41–45). Definitely, lower socio-economic status were the risk factors of early pregnancies, it was noticed in this study that teenagers from the middle and rich families were less likely to have early pregnancies as a way to ensure greater security for their better future life. The pregnancies in poor families decimated teenagers lives and they are higher in poor families given that these families also are in low socio-economic category. Further, most of the time they have lower awareness of the use of contraceptives and how to prevent unwanted pregnancies. Although this study's findings are in line with some of prior studies (46), other studies contradicted these results and indicated that adolescents from the families that are in a high wealth category have a greater odds to get earlier pregnancies (47).

Furthermore, preceding studies argued that access to information through mass media channels like newspaper, radio, and television were associated with teenage pregnancies(35,37). These literatures are in similar vein with the results from our studies that revealed that odds of adolescent pregnancies decreased among those who accessed media when compared to those who did not use media. These results occurred because the social media or media channels helped the adolescents to get knowledge about preventive measures of sexual reproductive health problems including early pregnancies, HIV and other STIs that may decimate their quality of life. Our results are collaborated with the previous studies conducted not only in developed countries (48,49)but also in developing countries including sub-Saharan African countries such as in Tanzania where the prior studies conveyed that effective utilization of mass media is one of the primordial ways to provide accurate information about STIs and SRH problems for promoting their health by taking accurate decision that prevent their life from harmful behaviors (50).

The results of this study indicated that teenagers who were aged 18-19 years were more likely to have early pregnancies when compared to teenagers aged 15-17 years. The odds of unintentional pregnancies are higher in those aged 18-19 years because most of the times they think that they are independent and they want to decide themselves without parental supervision or advice. This age category (18-19 years) is a transition to adulthood and sometimes those aged 18-19 years live separately from their parents. These results are supported by prior studies conducted in sub-Saharan African countries such as in Tanzania(51), Ethiopia(45), South Africa (46,52), Kenya (53), Cameroun (1), and Uganda (4,39). In concur with the prior studies that indicated unemployed, extreme poverty, having greater sexually permissive attitudes and not using contraceptives or condoms are the major risk factors of early pregnancies, our findings indicated that the teenagers who used contraceptives and those from the richest households were less likely to have early pregnancies compared to their counterparts.

The results confirmed that the adolescents who lived in rural areas had a greater risk to have early pregnancies than the adolescents in urban areas. This greater risk may be explained by the lack of formal education opportunities, poverty, and poor accessibility to SRH services such as utilization of contraceptives, HIV test, and test for other STIs (37,51,54). The results revealed that residing in rural area is the risk factor for early pregnancy where the adolescents from rural areas were almost 4 times at greater risk to have teenage pregnancies when compared to the adolescents from urban areas. Participants who had primary and no formal education had higher likelihood to have teenage pregnancies compared to those with secondary or University education. These results are in line with the preceding studies (40,41). In accordance with the prior studies, the adolescents who lived with no partner were at greater likelihood to have unintended pregnancies when compared to the adolescents who lived with partner (52,55). Indeed, our results revealed that the adolescents from the households whose head was females were less likely to have unintended pregnancies compared to their counterpart. This is because the maternal education prevents the teenagers to have unintended pregnancies compared to the paternal education for their children aged 10-19 years. Our results are supported by the prior studies that indicated that females-headed households had a lower risk to have unwanted pregnancies (35).

Regarding religion, the results revealed no significant association with religion. Our results are contrary to the previous studies that indicated the odds in greater in catholic than other religion affiliations (35). Additionally, the participants who heard about HIV and tested HIV had greater

odds to have unwanted pregnancies when compared to the participants who did not hear about HIV or tested HIV respectively, but those who heard about STIs were less likely to have unwanted pregnancies. Our results indicated that those who were using contraceptives methods had lower odds to have unwanted pregnancies. These results are relevant because adolescents have the freedom to decide about contraceptive methods, and men are engaged in education programs which effectively improve attitudes and behaviors regarding a reduction of SRH problems. Although our findings challenge the previous studies(56), they are in congruence with prior studies (37,57). Our analysis showed the odds of getting pregnant was lower for those using contraceptives than those who did not. These results are not in accordance with prior studies (37,39). While pregnancy cannot be used as a protective factor to future pregnancy, the evidence suggested that providing information of contraceptives to teenagers at early age is important. In addition, while improving access to contraceptives among teenagers is proven to be effective in addressing unwanted pregnancies, many teenagers still do not have access to a consistent source of contraceptives(5,6,11). In concur with prior studies (57,58), our results revealed that the teenagers with no formal and/or primary educations had greater likelihoods to experience early pregnancies than those teenagers with secondary and university education. When compared educational levels of the adolescents from Eastern Province, these adolescents are from the families with low socio-demographic and economic income and a majority of them had lower education levels. Indeed, they did not think that they could become pregnant and this result in SRH. Our results are also incongruous to prior studies that revealed that unintended pregnancies were more common among those adolescents who had higher education particularly those with secondary educations when compared to those with primary education (57).

Strengths and limitations

This study had some strength. First, the current study used standardized dataset that is publicly available. Secondly, the results from this study presented new knowledge that constituted the factors to be addressed by the policy makers for reducing the rate of unwanted pregnancies in Eastern Province of Rwanda. Thus, although, various health strategies and health interventions to promote SRH are available countryside, there is a need to evaluate them for understanding their impact and effectiveness in order to scale up new health strategies and strengthened the current ones. In addition to the strengths, this study encountered multiple limitations that need to be addressed. First, the study was conducted in a sole Province among four provinces in addition to Kigali city, Rwanda. This might not supported the researcher to generalize to the general

population countryside. Second, the findings from this study provided diverse associated factors but did not report all the risk factors since the study design was cross-sectional design. Therefore, there is a need to conduct the longitudinal study design for determining the risk factors of early pregnancies. Third, teenage pregnancies were self-reported and it was possible that women did not disclose pregnancies that resulted in termination. This may have caused under-reporting of teenage pregnancies. Fourth, because the study used secondary analysis using RDHS dataset, all potential risk factors of unwanted pregnancies were not investigated. Fifth, some factors or confounders of unwanted pregnancies were not collected in the RDHS.

Conclusion

This study highlighted the consistent predictors of teenage pregnancies in a certain province of Rwanda. It found that low education, age of first sex, household wealth status, contraceptive use were significantly related to teenage pregnancy. This means that guiding the teenage on safe sexual behaviours through parental or guardian assistance in reproductive health issues as well as childhood development programs, might assist to limit teenage pregnancies in the Eastern Province of Rwanda. This study highlighted that when designing programs and policies to address teenage pregnancy, policy makers should consider programs to keep girls in schools, at least up to secondary level. Furthermore, SRH programs should not only emphasize abstinence since teenager may still be involved involuntarily in sexual activities. Ensuring that teenagers have access to reproductive health information can help them to make informed choices. Improving their access to arrange of reliable contraceptive methods and services at early age should be encouraged.

Acknowledgements

The principal author appreciates the guidance and support of the University of Rwanda lecturers. I want to express my heartfelt thanks, particularly to my supervisor, Ass. Prof. Aline Umubyeyi, as well as to everyone else who contributed to the completion and value of this work.

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Funding: There was no financial support provided for conducting this study.

Competing interests: This study declared no competing interests.

Availability of data and materials

Dataset was shared.

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