



Factors Associated With Safe Motherhood Practices Among Adolescents In Rwamagana District, Rwanda.

A Mixed Method Cross Sectional Study

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Abstract

Introduction: Safe motherhood practice refers to the fact of all women be given the needed care to be safe and healthy during their pregnancy and childbirth, it is the amongst health priorities in Rwanda and the rate of adolescent mothers aged 15-19 is lower in resorting to safe motherhood practices compared to the existing rates of mothers aged 15-49 taken together. This study was done in order to determine level of safe motherhood practices among adolescent mothers in Rwamagana District and to determine demographic and socioeconomic factors associated with it.

Methods: Cross-sectional design with both quantitative and qualitative approaches was used to collect data from a target population of adolescents who are gathered in cooperatives have given birth in all health centers of Rwamagana District. The sample size was calculated using the Yamane Formula and the calculation gave 245 as the number of individuals of the sample. To collect data from respondents, the researcher used the questionnaires and five focused groups. Obtained data were firstly edited, coded and presented in tables and figures. Their analysis and interpretation were done using a descriptive statistic, bivariate (Chi-square test with $\alpha=0.05$) and multiple logistic regression (95% CI and AOR) were carried out to measure the relationship between variables and the strength of association respectively and statistical packages for social sciences (SPSS v22.0) and Atlas TI version 7 was used.

Results: The findings revealed that 29.4% of the respondents were considered as having a high level of safe motherhood practices while 70.6% were considered as having a low level of safe motherhood practices. Bivariate analysis showed that living with her parents presented a positive relationship with safe motherhood practices with 58.9%, $X^2=30.528$, $p<0.001$; Also, using less than one hour to go to the nearest health center, having done the secondary education and having access to social media presented a positive relationship with safe motherhood practices with different odds. Multivariate analysis demonstrated the same results as using less than one hour to go to health center was five times more likely associated with safe motherhood practices with AOR

5.545 95% CI (11.360-2.707), $p \leq 0.001$ and having access to social media were four times more likely associated to safe motherhood practice, AOR 4.522 95% CI (8.356-2.447), $p \leq 0.001$.

Conclusion: Therefore, government should put in place programs that help adolescent mothers to study about reproductive health and right and the assistance in resuming schooling and the emphasis on family planning activities among adolescent mothers as it was found that 29.4% have low level of safe motherhood practice is caused by lack of information in adolescents.

Key words: Adolescent, safe motherhood

Introduction

According to the United Nations Funds for Population Activities (UNFPA), worldwide 92% of pregnant mothers' practices ANC services, 90% receive delivery care services in appropriate health facilities and 66% receive PNC services especially from health facilities that helped them while giving birth. However, according to UNFPA, these rates diminish if the concerned mothers are adolescents. Only, 87% of pregnant adolescent mothers use ANC services, 82% receive delivery care services in appropriate health facilities and 68% receive PNC services (UNFPA, 2022).

Contrary to that worldwide situation, Africa is the continent where safe motherhood is the lowest in the world. 85% of pregnant mothers use ANC services, 88% receive delivery care in appropriate health facilities and 56% receive PNC services especially from health facilities that helped them while giving birth. In the same order of ideas, if we consider only adolescent mothers, 79% of pregnant adolescent mothers use ANC services, 81% receive delivery care in appropriate health facilities and 53% receive PNC services (UNFPA, 2022).

In Rwanda, based on the findings of the 2019-2020 Demographic and Health Survey (DHS), Indicate that 98% of women aged 15-49 who have began childbearing benefited from the services of antenatal care (ANC) from a recognized health provider during their periods of pregnancy. If we consider only adolescent mothers aged 15-19, the rate falls to 88%. Also, 94% of live births were held in a health facility. 94% of births have been assisted by a skilled health worker in general while for adolescent mothers aged 15-19, the rate falls to 87%. Among women having given birth in the 2 years prior to the survey, 69.9% benefited services of postnatal check while for adolescent mothers aged 15-19, the rate falls to 62% receiving PNC and 65% of infants receiving postnatal check (NISR, 2021).

According to the annual report of health Unit in Rwamagana District, 95% of women aged 15-49 received ANC services and only 86% received the same services for adolescent mothers aged 15-19. Also, 91% of births were assisted by a skilled provider and this rate falls to 89% if we consider only adolescent mothers aged 15-19. Concerning PNC, 67% received a postnatal check in the first 2 days after birth and this rate falls to 58% if we consider only adolescent mothers aged 15-19 (Rwamagana District, 2021).

Therefore, it is for this reason that I choose to carry out this study in order to analyze the factors

associated with safe motherhood practices among adolescents in Rwamagana District in the Eastern Province of Rwanda.

Materials and methods

The research was done in 5 cooperatives gathering adolescent mothers for the promotion of Reproductive Health and Right knowledge in Rwamagana District which is located in Eastern Province of Rwanda.

The researcher used a cross-sectional research design with both quantitative and qualitative approaches. the target population of this study focused on adolescents who have given birth in all the health centers of Rwamagana District since January 2018 up to December. According to the 2021 annual report of the district, they gathered 634 adolescent mothers (Rwamagana District, 2021).

To reach the respondents, the researcher organized a meeting in each cooperative, in collaboration with their representatives and use that occasion to conduct different activities.

The Sample size was calculated by using Yamane's formula at a confidence interval of 95% and margin of error of 5% and calculations gave 245 respondents.

The questionnaires were used as the leading instrument of collecting quantitative data. The type of questionnaire that was used in this study is multiple choice questionnaires. It is structured in three sections where Section A concerns Socio demographic factors, Section B concerns Socioeconomic factors and Section C concerns Safe motherhood practices. Instructions as how to answer the questions were provided to facilitate respondents to give appropriate answers for all research questions and to collect qualitative data, the researcher used focus group discussion which enabled the researcher to obtain verbal responses which were used to supplement the information extracted from the questionnaires and were analyzed to arrive at reliable findings

To analyze data, the researcher used a descriptive statistic where percentages or frequencies were computed and the results were further presented in tables and figures. In addition, the treatment of information related to the relationship between variables was done based on the result provided by SPSS through the measure of the relationship between independent and dependent variables. On this issue, logistic regression analysis was used. The researcher used descriptive statistic in which she emphasized on bivariate and multiple logistic regression to test the significant factor vis-à-vis safe motherhood practices. The level of significance was set at $P\text{-value} = 0.05$ and certainty level = 95%. Qualitative data were analyzed using Atlas TI version 7. They were entered into a compilation sheet and main themes were highlighted. The themes were presented as narratives.

Results

Level of safe motherhood practices among adolescents in Rwamagana District

The researcher asked a set of questions about the current use of safe motherhood services. Table 1 depicted the respondents' views on each asked item.

Table 1. Level of safe motherhood practices among adolescents in Rwamagana District

Variables	Frequency	Percentage
Number of ANC visits:		
Less than 4 visits	163	66.5
4 visits and more	82	33.5
N	245	
Source of advice of going for ANC		
CHW	123	50.2
Partner	67	27.3
Relatives	55	22.4
n	245	
Delivered at Health center/Hospital		
Yes	212	86.5
No	33	13.5
n	245	
PNC visits (At least 2)		
Yes	85	34.7
No	160	65.3
n	245	
Source of advice of going for PNC		
CHW	68	80.0
Partner	11	17.9
Relatives	6	9.8
n	85	
STD/HIV/AIDS Test		
Yes	177	72.2
No	68	27.8
n	245	
Received FP services		
Yes	161	65.7
No	84	34.3
n	245	
Methods used		
Implant	74	46.0
IUD	45	28.0
Injection	15	9.3
Oral contraceptive	13	8.1
Condom	14	8.7
n	161	

Source: Primary data, 2023

The findings of this study as depicted in table 1 concerning the level of safe motherhood practices among adolescents in Rwamagana District, 66.5% performed less than 4 ANC visits and 33.5%

performed more than 4 visits; About 50.2% were advised by the CHW to go for ANC visit; about 86.5% delivered at health center/hospital; about 34.7% performed at least two PNC visits while 65.3% did not go there or went there only once; 80% of those who went for PNC services were advised by the CHW; about 72.2% were tested for STD/HIV/AIDS in the period before and after delivery and 65.7% received FP services in the period before and after delivery. Among those who received FP services, 46% used implant as FP method.

To categorize the level of safe motherhood practices, according to the UNICEF's model (2018), were considered as having low level of safe motherhood practices, the respondents who performed at least 4 Antenatal care (ANC) visits, delivered at health center or hospital (Obstetric and Newborn Care), performed at least two Postnatal care (PNC) visits, obtained Family planning services before or after pregnancy and tested for STD/HIV/AIDS. However, as post abortion care concerns those who have aborted; this component is not applicable to the present study. The high level of safe motherhood practices concerns those who have used all the five components of safe motherhood pillars and the low level of safe motherhood practices concerns those who used less than five components of safe motherhood pillars. Figure 1 displays information related to the level of safe motherhood practices among adolescent mothers of Rwamagana District.

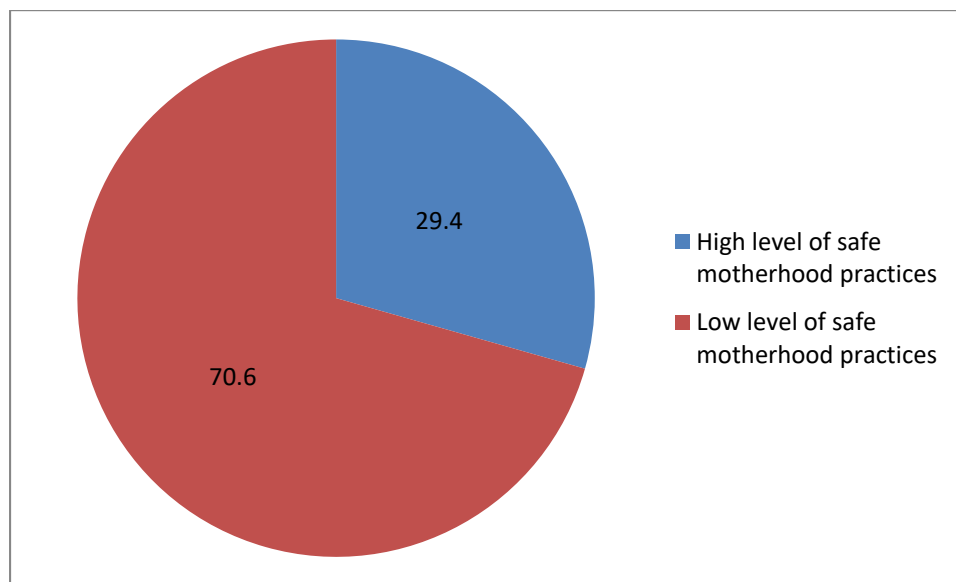


Figure 1 Level of safe motherhood practices among adolescent mothers of Rwamagana District

The findings summarized in Figure 1 show that 29.4% of the respondents were considered as having a high level of safe motherhood practices while 70.6% were considered as having a low level of safe motherhood practices.

Socio-demographic factors associated with safe motherhood practices among adolescent mothers of Rwamagana District

Table 2. Bivariate analysis of socio demographic factors related to safe motherhood practices among adolescent mothers of Rwamagana District

Particulars	Safe motherhood		Chi-square	P-value
	No n(%)	Yes n(%)		
Age			0.030	0.863
Less than 16 years	82 (70.1)	35 (29.9)		
16 and more	91 (71.1)	37 (28.9)		
Number of children			3.268	0.071
1	153(68.9%)	69 (31.1)		
2	20 (87)	3 (13)		
Age at first birth			0.597	0.442
Less than 16	117(72.2)	45 (27.8)		
16 and more	56 (67.5)	27 (32.5)		
Live with:			30.528	0.001
Alone	96 (79.3)	25 (20.7)		
Relatives	54 (79.4)	14 (20.6)		
Parents	23 (41.1)	33 (58.9)		
Distance to health center:			26.547	0.001
Less than 1 hour	47 (51.6)	44 (48.4)		
1-2 hours	49 (76.6)	15 (23.4)		
More than 3 hours	77 (85.6)	13 (14.4)		
Religion			3.425	0.142
Catholic	70 (75.3)	23 (24.7)		
Protestant	61 (68.5)	28 (31.5)		
Muslim	29 (72.5)	11 (27.5)		
Other	13 (56.5)	10 (43.5)		
Kind of place of residence			44.957	0.001
Urban	26 (38.8)	41 (61.2)		
Rural	147(82.6)	31 (17.4)		
Access to social medial			25.075	0.001
Yes	69 (56.1)	54 (43.9)		
No	104 (85.2)	18 (14.8)		
n	245			

Source: Primary data, 2023

The findings of this study showed that the adolescent mother living with her parents presented a positive relationship with safe motherhood with 58.9%, $X^2=30.528$, $p<0.001$; Also, the adolescent mother using less than one hour to go to the nearest health center presented a positive relationship with safe motherhood with 48.4.7%, $X^2=26.547$, $p<0.001$. The adolescent mother living in urban area presented a positive relationship with safe motherhood with 61.2%, $X^2=44.957$, $p<0.001$ and the adolescent mother having access to social media presented a positive relationship with safe

motherhood with 43.9%, $X^2=25.075$, $p<0.001$. The relationship of age of the respondents, number of their children, their age at first birth and religion was not statistically significant towards safe motherhood as their P-value is greater than 0.05.

Socioeconomic factors associated with safe motherhood practices among adolescent mothers of Rwamagana District

Table 3. Bivariate analysis of socioeconomic factors associated with safe motherhood practices among adolescent mothers of Rwamagana District

Particulars	Safe motherhood		Chi-square	P-value
	No n(%)	Yes n(%)		
Education level:			33.407	0.001
No formal education	34 (97.1)	1 (2.9)		
Primary level	90 (78.9)	24 (21.1)		
Secondary level	49 (51)	47 (49)		
Occupation:			0.091	0.971
No job	83 (70.3)	35 (29.7)		
Skilled job	39 (72.2)	15 (27.8)		
Unskilled job	51 (69.9)	22 (30.1)		
Ubudehe Category:			3.866	0.034
Category 1 and 2	103 (75.7)	33 (24.3)		
Category 2 and 4	70 (64.2)	39 (35.8)		
n	245			

Source: Primary data, 2023

The findings of this study showed that the relationship of two factors (Education level and Ubudehe category) towards safe motherhood practices, were statistically significant with $p<0.05$. The adolescent mother having done the secondary education presented a positive relationship with safe motherhood practices with 49%, $X^2=33.407$, $p<0.001$. Also, the adolescent mother being recorded in category 3 & 4 of Ubudehe category (Not poor) presented a positive relationship with safe motherhood practices with 35.8%, $X^2=3.866$, $p<0.034$. The relationship of occupation was not statistically significant towards safe motherhood practices as its P-value is greater than 0.05.

Also, the researcher determined the multivariate analysis which depicted the strength of association between safe motherhood practices among adolescent mothers of Rwamagana District and the factors that have been found statistically related to it. The findings were displayed in Table 6 below:

Table 4. Multivariable analysis of factors associated to safe motherhood practices among adolescent mothers of Rwamagana District

Particulars	AOR	95% C. I		P-value
		Lower	Upper	

Live with:				
Parents	6.127	2.374	8.322	0.001
Relatives	4.722	1.354	5.349	0.001
Alone	Ref.			
Distance to health center:				
Less than 1 hour	5.545	2.707	11.360	0.001
1-2 hours	1.813	0.795	4.136	0.157
More than 3 hours	Ref.			
Education level:				
Secondary level	3.311	2.425	7.125	0.001
Primary level	2.277	2.147	6.321	0.002
No formal education	Ref.			
Ubudehe category:				
Category 3 and 4	2.144	0.855	2.331	0.049
Category 1 and 2	Ref.			
Kind of place of residence				
Urban	7.478	4.000	13.980	0.001
Rural	Ref.			
Access to social media				
Yes	4.522	2.447	8.356	0.001
No	Ref.			

Source: Primary data, 2023

The findings of this study as shown in Table 6, demonstrated that adolescent mother living with her parents was 6 times more likely to use safe motherhood practices compared to those living alone with AOR6.127 95% CI (8.322-2.374), $p < 0.001$. Also, using less than one hour to go to health center was five times more likely associated with safe motherhood practices with AOR5.545 95% CI (11.360-2.707), $p = 0.001$. The adolescent mother having done the secondary education was three times more likely than having done no formal education associated to safe motherhood practices with AOR 3.311 95% CI (7.125-2.425), $p = 0.001$. Also, being recorded in category 3&4 of Ubudehe category (Rich) was twice more likely associated to safe motherhood practices, AOR 2.144 95% CI (2.331-0.855), $p = 0.049$. Adolescent mothers living in urban area were seven times more likely than those living in rural area associated to safe motherhood practices, AOR7.478 95% CI (13.980-4.000), $p = 0.001$ and adolescent mother who have access to social media were four times more likely associated to safe motherhood practices, AOR4.522 95% CI (8.356-2.447), $p = 0.001$.

Themes

The themes were obtained based on the information needed to support the findings of quantitative data. The themes that emerged in this study were: challenges faced by adolescent mothers while they participate in different safe motherhood programs; the level of participation of adolescent mothers in the program of STD/HIV/AIDS control and Family Planning in the period before and

after pregnancy; consequences of not attending programs settled to help women and babies to have good life and action that should be done to ensure safe motherhood practices for adolescent mothers.

Challenges faced by adolescent mothers while they participate in different safe motherhood programs

Most FGD participants reported a lot of challenges faced by adolescent mothers while they participate in different safe motherhood programs in Rwamagana District. Other FGD participants confirmed the same situation where they affirmed that the existing challenges were common to adolescent mothers. Also, some other participants reported many challenges encountered by adolescent mothers while participating in different safe motherhood programs especially the frustration of finding themselves pregnant against their will.

“.....a young girl who becomes pregnant often wants to hide her pregnancy so that her classmates do not know that she is pregnant. This means that they cannot easily go to the health center for antenatal care or follow-up on her pregnancy because she does not want anyone to know that she is pregnant”

19-year-old, FGD participant

Participants acknowledged that many of those challenges are related to their situation of having had unwanted pregnancies, living without husbands and being still considered as children. A majority had information about friends who were refused some services or were welcomed last based on their situation and others reported they had a history of friends who encountered such problems. The common reason given as the basis of those challenges was that the pregnancy was unplanned.

“Adolescent mothers are welcomed last because they do not have husbands and they do not have documents proving the father of their child. This situation frustrates them and suddenly, they want to carry their pregnancy underground”.

-18-year-old, FGD participant

Using triangulation, it was found that the obtained results corroborate what was found using quantitative approach because 29.4% of the respondents were considered as having a high level of safe motherhood practices while 70.6% were considered as having a low level of safe motherhood practices (Figure 1) which means that there are so many challenges discouraging adolescent mothers to use safe motherhood services.

Level of participation of adolescent mothers in the program of STD/HIV/AIDS control and Family Planning in the period before and after pregnancy

In addition to the challenges faced by adolescent mothers while they participate in different safe motherhood programs, other FGD participants reported that the level of participation of adolescent mothers in the program of STD/HIV/AIDS control and Family Planning in the period before and after pregnancy is low even if some of them considered those programs as important.

“..... adolescent mothers don't participate in these programs like mature moms do because they don't want the public to know they're pregnant. However, these programs are important because they allow adolescent mothers to know their HIV status and give their babies the chance not to be infected by their mothers”.

18-years-old FGD participant

Also, other FGD participants recognized the importance of family planning methods but affirmed not to have been able to use such methods because of their situation of single mothers.

“..... I confirm that family planning methods are useful in preventing unwanted pregnancies but it would not be easy for me to use them because I am not married. Therefore, if I use such FP methods I would be considered as someone with habitudes of having sex. I don't want to be considered in that kind of woman”.

17-year-old, FGD participant

Using triangulation, it was found that the obtained results corroborate those found using quantitative approach because 29.4% of the respondents were considered as having a high level of safe motherhood practices while 70.6% were considered as having a low level of safe motherhood practices.

Consequences of not attending programs settled to help women and babies to have good life

Besides the low level of participating in safe motherhood programs, FDG participants highlighted the main consequences of not attending such programs. Some of the consequences evoked include paying 100% of the health care invoice, increased maternal and infant mortality rates and fistula.

“..... when you did not come for the ANC follow-up, you will not be easily welcomed during the delivery. This puts the adolescent mother at risk of delivering at home for fear of being blamed. Even when she is accepted, she will have to pay 100% of the healthcare bill while the others are covered by the community health insurance”.

16-year-old, FGD participant

Also, other FGD participants highlighted other serious consequences as one of the adolescent mothers told the researcher:

“..... an adolescent girl who was pregnant wanted to hide her pregnancy and she did not participate in the various ANC sessions. She had serious difficulties related to her pregnancy which culminated in fistula as consequences”.

17-year-old, FGD participant

This means that some of the adolescent mothers' experience severe consequences related to their failure to participate in different ANC sessions.

Using triangulation, it was found that if adolescent mothers did not come for the ANC follow-up, they will not be easily welcomed during the delivery. This puts them at risk of delivering at home

for fear of being blamed. Even when they are accepted, they will have to pay 100% of the healthcare bill while the others are covered by the community health insurance. This situation corroborates those found using quantitative approach because it was found that adolescent mother being recorded in category 3&4 of Ubudehe category (Rich) was twice more likely associated to safe motherhood practices, AOR 2.144 95% CI (2.331-0.855), $p \leq 0.049$.

Action to be done to ensure safe motherhood for adolescent mothers

There are a lot of actions that should be done to ensure safe motherhood for adolescent mothers. In sum, the solutions include the creation of reproductive health clubs, the assistance in resuming schooling and the emphasis on family planning activities among adolescent mothers.

“..... to ensure safe motherhood for adolescent mothers, they should be brought together in clubs where they can discuss reproductive health issues. They could also be assisted in their desire to resume their schooling they had interrupted because of the pregnancy.”

16-year-old, FGD participant

On this issue, the researcher obtained other information related to the possible actions that could be done to improve safe motherhood practices for adolescent mothers.

“..... family planning needs to be emphasized so that the misfortune that caused adolescent girls to be pregnant cannot be repeated.”

18-year-old, FGD participant.

Using triangulation, it was found that the participants' desire to be helped to resume their education they had interrupted because of the pregnancy corroborates those found using quantitative approach because it was found that the adolescent mother having done the secondary education was three times more likely than having done no formal education associated to safe motherhood practices with AOR 3.311 95% CI (7.125-2.425), $p < 0.001$.

DISCUSSION

This study findings on the level of safe motherhood practices among adolescents in Rwamagana District revealed that 29.4% of the respondents were considered as having a high level of safe motherhood practices while 70.6% were considered as having a low level of safe motherhood practices. These results are lower compared to those found by Wang et al. (2017) in their study on levels and trends in the use of maternal health services in Bangladesh. According to these authors, 37% of adolescent mothers use safe motherhood services while 63% do not use all the recommended services. The reason for this difference may be found in the difference of the median age at first birth for women which is lower in Bangladesh compared to Rwanda. As they normally begin giving birth at an early age, they have few problems in adhering to the procedures related to safe motherhood practices.

Concerning ANC, the findings showed that 66.5% performed less than 4 ANC visits and 33.5% performed more than 4 visits. These results were reported to be higher compared to the results

obtained by Vogel et al. (2018) on their Antenatal care packages with reduced visits and perinatal mortality among adolescent mothers in the World. In that study, it was shown a dissimilarity of safe motherhood practices among adolescent mothers based on continents, regions and countries. However, in general, 84% of adolescent mothers received ANC at least once, 41% received two ANC and 26% received all the recommended ANC services the reason for this discrepancy in the two studies might be due to differences in culture or place of residence of the two target populations. Vogel et al. conducted their study in different countries and in some bid cities while the present study was conducted in Rwamagana District which is at 90% populated by rural villagers.

Also, the present study found that 86.5% delivered at health center/hospital. These results were reported as similar to results of Wang et al. (2017) on their study on the levels and trends in the use of maternal health services in developing countries using the case of Bangladesh. According to these authors, delivering at appropriate health facility coverage is 88% in Bangladesh. The reason for this similarity can be found in the accrued campaign done to sensitize the population worldwide to use health facilities while the time of delivery approach. Even in developing countries the rates remain high in matters of delivering in health facilities.

Concerning PNC services, the present study found that 34.7% performed at least two PNC visits while 65.3% did not go there or went there only once. These results are lower compared to the ones found by Tangcharoensathien et al. (2015) in their study on accelerating health equity in safe motherhood services among adolescent mothers: the key role of universal health coverage in the Sustainable Development Goals in Nepal. According to the findings of that study, the coverage of PNC is at 44% compared to 78% of coverage among mature mothers. The reason of this dissimilarity may be due to the difference in the level of living between the rwandan and nepalese adolescent mothers.

Concerning the factors associated to safe motherhood practices, the present study found no difference between the use of safe motherhood practices between adolescent mothers who have one child and those who have two children. These findings differ from those found by Kibali et al in 2014 entitled “Levels and determinants of teenage pregnancies in the DRC”. In this study, the authors found that primiparous use health facilities much more than multiparas with (AOR=1.589). It is likely that primiparous are more worried about their condition while multiparous are confident thanks to the experience accumulated in the past. Also, this study found no difference in using safe motherhood services between adolescent aged less or more than 16 years old. Contrary to the previous idea, some studies indicate that young women are the ones who use maternity services less because, due to lack of experience, they may be unaware of the symptoms of pregnancy and therefore they will have late recourse to the first prenatal consultation. Similarly, unplanned pregnancies, i.e., those whose occurrence is considered untimely, reduce the chances of medical treatment with (AOR=2.175) (Kibali et al., 2014).

Concerning wealth category, the present study found that adolescent mother being recorded in category 3&4 of ubudehe category (Rich) was twice more likely associated to safe motherhood, AOR 2.144 95% CI (2.331-0.855), $p <= 0.049$. The same findings were highlighted in a study conducted by Evina in 2018 entitled “Fruitful life of adolescent girls in urban Cameroon”.

According to that study, the attitudes of the adolescent girl towards safe motherhood are largely shaped by the means at her disposal to satisfy her basic needs. The effect of the standard of living of the parents (or of the household of residence) manifests itself at three levels: Firstly, the parents or guardians have the means to meet the needs of their daughter, this will determine their authority over the adolescent or their attitude towards safe motherhood; Secondly, the standard of living of the parents determines their aptitude to make profit from a framework being able to enable him to reach statutes other than traditional (by the schooling) and the social support which the teenager can have for the knowledge and the follow up of safe motherhood services including ANC, giving birth at health facilities and PNC; Third, the means at her disposal will influence the degree of the adolescent's commitment to sexual relations (Evina, 2018). Based on the results of Evina's study, in Cameroon, adolescents from the richest families are those with the highest use of safe motherhood services (AOR=2.83) (Evina, 2018). These similarities could be explained by the same level of living between the households in Rwanda and Cameroun.

Also, on the same problematic, Rwenge conducted in 2019 a study entitled "Factors associated with adolescent motherhood in sub-Saharan Africa" in which he showed that the ability of an adolescent girl from poor families is lower compared to those from richer family with AOR=3.22. Still in the same context, the same author underlined the influence of household standard of living on the occurrence of giving birth at health facilities. From his analyses, he concluded that poor women have lowest chances of using health facilities while giving birth with AOR=0.42 based on the expensiveness of these services. Poor adolescent girls prefer to use traditional methods which are cheaper for them. Furthermore, he pointed out that adolescent girls from poor and middle households are twice or more likely to use safe motherhood services when they are pregnant than their counterparts from rich households. Therefore, poverty of the households in which the adolescent girls live constitute a de facto motive for risky motherhood in case of unwanted and/or early pregnancies/births (Rwenge, 2019).

Concerning the level of education, this study found that the adolescent mother having done the secondary education was three times more likely than having done no formal education associated to safe motherhood with AOR 3.311 95% CI (7.125-2.425), $p < 0.001$. The same results were found by UNFPA in its study conducted in various African countries. That study showed that the proportion of adolescent girls who use safe motherhood services in Burundi when they are pregnant increases with the education level (AOR=1.99); while in Gabon and Ghana, the effect of the level of education on adolescent use of safe motherhood services is not very significant (AOR=1.24). This seems to indicate that the use of safe motherhood services by adolescents does not always decline with the improvement in the level of education (UNFPA, 2020).

Also, this study found that Adolescent mothers living in urban area were seven times more likely than those living in rural area associated to safe motherhood practices, AOR 7.478 95% CI (13.980-4.000), $p < 0.001$. These results are similar to the results of Akibu et al. (2018) conducted in Ethiopia, specifically in Northern Shoa. They found that postnatal care prevalence among adolescent mothers is 28.4% in rural area and 66.3% in urban area of the concerned District (Akibu M, et al., 2018). These similarities may be explained by the difference in living conditions between rural and urban populations both in Rwanda and Ethiopia.

Concerning social media, this study found that adolescent mother who have access to social media were four times more likely associated to safe motherhood practices, AOR 4.522 95% CI (8.356-2.447), $p \leq 0.001$. On the same point of view, Togarepi et al. (2018) found that in Zimbabwe, 75% of adolescent mothers received ANC services; 84% give birth in health facilities and 56% received PNC services, but, also, the situation differ from adolescent mothers exposed to mass media and those who have no access to mass media with AOR=2.36 in favour of those who are exposed to mass media (Togarepi et al., 2018). The explanation given is that mass media constitute (like radio, TV, different social media platforms including WhatsApp, Facebook, etc.) a significant factor of social knowledge and are able to impact the behavior of adolescent mothers. Being always connected to mass media offer more chances of following what other people do in their lifestyle. That is why adolescent mothers who are connected to different social media platforms have increased chances of being informed on different services offered in the framework of safe motherhood (Togarepi et al., 2018).

Concerning qualitative data, the results of the present study revealed that the level of participation of adolescent mothers in different safe motherhood programs is low and there are so many challenges handicapping adolescent mothers to participate in those programs especially the frustration of finding themselves pregnant against their will. When they were asked to judge the level of participation of adolescent mothers in the program of STD/HIV/AIDS control and Family Planning in the period before and after pregnancy or even if they consider those programs as important, the results showed that the level of adolescent participation is low compared to mature mothers even if those programs are considered as important.

Concerning possible consequences of not attending programs settled to help women and babies to have good life, the participants were asked to give their experience or experience of their friends and the results revealed serious consequences of not attending safe motherhood programs. This means that some of the adolescent mothers experience severe consequences related to their failure to participate in different ANC sessions.

Concerning what should be done to ensure safe motherhood for adolescent mothers, the participants were asked to give the possible solutions. In sum, the solutions include the creation of reproductive health clubs, the assistance in resuming schooling and the emphasis on family planning activities. These findings are the same as those found by Rwege in 2019. The reason for this similarity may be due to the common poverty observed among households in underdeveloped countries especially in Africa and the same level of cultural beliefs and socioeconomic status.

At the end, this study has some strength and limitations; the researcher obtained primary results from the raw opinions of adolescent mother in Rwamagana District. This is one of the strengths recorded on the field. However, the findings of the study are based on self-report. Self-report has been documented or linked to social desirability bias. Nevertheless, the information that was provided by the respondents allowed the researcher to obtain the information necessary to identify the factors associated with safe motherhood practices among teenage mothers in Rwamagana District.

Conclusion

, this study revealed that 29.4% of the respondents were considered as having a high level of safe motherhood practices while 70.6% were considered as having a low level of safe motherhood practices. Also, having done secondary education, being recorded in category 3 & 4 of Ubudehe category (Not poor), living in urban area and having access to social media, living with her parents and using less than one hour to go to health center was more likely associated to safe motherhood practices with different odds. Compared to the situation of mothers in general, adolescent mothers have a lower level of safe motherhood practices, in Rwamagana District, 95% of women aged 15-49 receive ANC services, 91% of births were assisted by a skilled health provider and 67% received a postnatal check in the first 2 days after birth.

Limitations of the study

of this study are based on self-reports of practices by the participants. The extent to which this is true may not be known since self-reports have been reported to suffer from some degree of biases and in addition, this study faced the difficulty related to the adolescent mothers failing to respect the arrangements made with the researcher due to different socioeconomic problems they face. To overcome this limitation, some discussion sessions were rescheduled for another time. Also, the researcher faced the problem of some adolescent mothers failing to disclose some information which may be seen as confidential for them. To remedy this problem, some participants were given the opportunity of answering the questionnaire alone with no help of the researcher.

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