

Article

Knowledge of safe abortion care services and associated factors among women of Reproductive age working at non-health sector public institutions in Addis Ababa, EthiopiaEndalew Sendo¹, Fekadu Bulti¹, Debela Gela¹, Jembere Deressa^{1,*} and Negalign Dinagle¹¹College of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia

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Background: Health-related knowledge is among the essential factors to enable women to be aware of their rights to seek health services. However, little is known about knowledge of safe abortion care services among women of reproductive age in Ethiopia. The main purpose of the study was to assess knowledge of safe abortion care services and associated factors among women of reproductive age in Addis Ababa, Ethiopia.

Methods: A cross-sectional study was conducted from April-June 2019 among 432 respondents. Bivariate statistics including correlation coefficients, student t-test, one-way analysis of variance, and linear regressions, and multiple linear regression analyses were used. A significant statistical test was determined at a 95% confidence interval and p -value <0.05 .

Results: About 65.5% had heard about safe abortion care services; media being the main source of information for 79.5%. The finding from an independent-sample t-test shows that the place where the respondents grew up ($p < 0.006$), history of past miscarriage, and previous information of abortion care service were significantly associated with the knowledge about safe abortion care services ($p < 0.001$).

Conclusions: Women without prior health experiences and those with rural origin could be targeted for reproductive health information interventions including safe abortion care provision.

Keywords: Women; Knowledge; Non-health sector; Safe abortion; Addis Ababa; Ethiopia

1. Introduction

Abortion is the termination of pregnancy before fetal viability, which is conventionally taken to be less than 28 weeks from the last normal menstrual period (LNMP). If the LNMP is not known, a birth weight of less than 1000gm is considered an abortion [1]. Globally, about 44% of pregnancies are unintended, from which 59% in developed regions of the world and 55% in developing regions end in abortion [2]. In Ethiopia, the prevalence of unintended pregnancy is 27.9% in the east [3] 35% in the south-west [4] and 29.7% in the north [5]. A large proportion of women experiencing unintended pregnancy in Ethiopia often seek termination through unsafe abortion that worsens maternal morbidity and mortality [6-8]. Unsafe abortion is defined by the World Health Organization (WHO) as a procedure for terminating an unintended pregnancy,

carried out either by persons lacking the necessary skills or in an environment that does not conform to minimal medical standards or both [9].

Health-related knowledge is among the essential factors to enable women to be aware of their rights to seek health services [10]. Thus, having correct information about the accessibility and provision of safe abortion care in the community is a key determinant on the pathway to seeking services. A systematic review reported that women's general awareness and knowledge of their country's abortion laws and legal grounds were low, even in countries where the laws were liberal [11].

The absence of accurate knowledge and the fear of violating law create the resultant effect and deter women from seeking health care services [9, 12]. In this regard, Ethiopia liberalized its abortion law in 2005 [13]. In this year, the penal code was amended to permit safe abortion under a much broader set of circumstances, including in the case of rape, incest or fetal impairment; if pregnancy continuation or birth would endanger the health or life of the woman or fetus; if the woman has physical or mental disabilities; and if the woman is a minor who is physically or mentally unprepared for childbirth [14].

Nevertheless, the proportion of women with correct awareness and knowledge of the law change in Ethiopia 5 to 7 years after the legal reform showed no major difference. A qualitative study [15] also revealed that most girls and women are not aware of the new liberalized abortion law [7, 16, 17].

Women's knowledge of the law is only one factor in their being able to obtain appropriate care. Knowledge of health care providers about the national abortion legislation could also be a limiting factor in women's access to safe abortion services [11]. The World Health Organization (WHO) guideline puts the proportion of women and health care providers with the correct knowledge of the legal status of abortion as indicators for measuring access to information about safe abortion [9]. Insufficient distribution of medical supplies and urban-rural disparity can also restrict access to safe abortion care services [18]. Age is also another critical factor in that young women compared to adults are more exposed to unsafe abortion worldwide [19]. Some interventions have been implemented in Ethiopia to increase the knowledge of safe abortion services. For instance, facilities offering safe and comprehensive abortion services have increased from 20% (2008) to 38% (2014) of all facilities in Ethiopia. Unfortunately, these service delivery interventions have not led to a significant reduction in unsafe abortion or related maternal mortality and morbidity [18, 20]. The Ministry of Health has also acknowledged that the revision of abortion laws alone might not ensure the knowledge about safe abortion care services if other factors are not addressed as well [13]. However, little is known about women's knowledge of safe abortion care service and associated factors in Ethiopia. Therefore, this study aimed to assess knowledge of safe abortion care services and associated factors among women of reproductive age working at non-health sector public institutions in Addis Ababa, Ethiopia.

2. Materials and Methods

Study area

This study was conducted in Addis Ababa, the capital city of Ethiopia. The city is subdivided into 10 sub-cities and 116 'Weredas' – the smallest administrative unit of the city [21]. The city has 14 Bureaus or institutions and 38 executive organs and higher education institutions [22]. From these 9 are health-related offices or institutions. There are 6 public hospitals and 53 health centers run by the Addis Ababa City Government [21]. This study involved 5 non-health sector public institutions run by the Addis Ababa City Administration. These are the Women and Children Affairs Bureau, Fire and Emergency Prevention and Rescue agency, Education Bureau, Road, and Transport Bureau, and Addis Ababa City Construction Bureau.

Study design and population

An institution-based cross-sectional study was conducted from April-June 2019. The source population of this study was women in the reproductive age group (18- 49yrs) and who reside in Addis Ababa city. Thus, all reproductive-age women (18- 49yrs) who work in the non-health sector public institutions under the jurisdiction of the Addis Ababa City Administration were the target population of this study. Women with the following characteristics were included in this study: being of reproductive age (18- 49yrs), working in a non-health sector public institution, and willingness to participate in the study. The exclusion criterion was being on sick leave or annual leave.

Sample size and sampling technique

The sample size for this study was calculated using an online calculator using the statistical assumptions of the 95% confidence limit, 80% power, and 0.2 effect sizes for student t-test. The minimum sample size required for the two-tailed hypothesis was 393. After including a 10% non-response rate the final sample size was 432 for this study.

This study included 5 non-health sector public institutions run by the Addis Ababa City Administration in the sampling frame. Out of a cluster of 13 non-health sector institutions, the Women and Children Affairs Bureau, Fire and Emergency Prevention and Rescue Agency, Education Bureau, Road, and Transport Bureau, and Addis Ababa City Construction Bureau were randomly selected for the study. Using a proportional allocation to the size approach 432, reproductive-age women were randomly selected from the 5 non-health sector public institutions. The total number of reproductive-age women in the participating institutions was 759, including 324 women from Women and Children Affairs Bureau (Sample =168), 83 women from Fire and Emergency Prevention and Rescue Agency (Sample =43), 170 women from Education Bureau (Sample=88), 64 women from Road and Transport Bureau (Sample=33), and 118 women from Addis Ababa City Construction Bureau (Sample=61).

Data Collection Methods and Procedures

Data was collected using a self-administered structured questionnaire adapted from other studies.[23] The questionnaire consisted of six socio-demographic items, 11 reproductive health characteristics items, and 15 knowledge of safe abortion care service items. A bilingual expert backtranslated to English by another bilingual expert to ensure meaning equivalence between the two language versions translated the questionnaire from English to Amharic. The Amharic version questionnaire was pretested on 5% of the study sample in institutions not selected for the parent study before the actual data collection. Four data collectors and 2 supervisors were recruited from outside selected public institutions. The data collectors and supervisors were trained for 5 working days by the research team. Additional hands-on training on how to ensure data completeness, crosschecking, and take corrective actions was given to the data collectors and supervisors during the pilot study. Based on the findings of the pilot study, revisions were made to improve the clarity and flow of the instrument.

Measurement

Safe abortion in this study refers to abortion that is done with a method recommended by WHO (i.e. medical abortion, vacuum aspiration, or dilatation and evacuation), is appropriate to the pregnancy duration, and is provided by a trained health-care provider [9]. In our study knowledge about safe abortion services address illegality of abortion, available abortion methods, and sources of abortion services. A 15-item knowledge questionnaire was used to assess the women's knowledge of safe abortion care adapted from other studies

[23]. Respondents were asked to give responses to each item with Yes/No response options. The total score was computed out of 100 which ranged from 0 to 100. A higher score indicated having more knowledge.

In this study, a post-abortion complication refers to women who developed any of these symptoms following the current abortion experience: Incomplete abortion, sepsis, intra-abdominal pain, haemorrhage, and/or infertility.

In this study, previous abortion information refers to women's access to safe and legal abortion care services based on predetermined conditions in Ethiopia.

Data processing and analysis procedures

After data collection, filled questionnaires were coded, checked, cleaned, and entered into Epi-data version 4.4 software, then exported to SPSS version 24.0 for analysis. Incomplete and inconsistent data were excluded from the analysis. Data analysis involved descriptive statistics, including frequency, percentage, mean and standard deviations. Bivariate analysis using correlation coefficients, independent-sample t-test, and one-way analysis of variance (ANOVA) was conducted to assess factors associated with knowledge of safe abortion care services. Statistical significance was set at 5%. Multiple linear regression analysis was used to identify variables independently predicting knowledge of safe abortion care services. Multi-categorical independent variables were dummy coded before entering into the models. To avoid issues associated with multicollinearity, we checked to see if (a) the condition index was < 3 , (b) that the variance inflation factors (VIF) were < 5 , and (c) tolerance was > 0.2 .

Ethics Approval

The Institutional Review Board of the College of Health Sciences at Addis Ababa University (IRB no. 011/18/allied on 10 February 2019) approved the study procedures. A letter of the permission was obtained from the Addis Ababa Health Bureau which also wrote a letter of cooperation to all selected public institutions. Participants were informed that their participation was voluntary and that they could withdraw from the study at any time if they wish to do so and this would not affect any service that they will get from the institution. All the information given by the respondents has been used for research purpose only. Participants' privacy and confidentiality of the information were maintained by the declaration of Helsinki.

3. Results

Socio-demographic characteristics of the respondents

A total of 432 women participated in this study with a 100% response rate. The age of study respondents ranged from 18 to 48 years, with a mean age of 28.5 ± 5.4 years. More than half (55.8%) of the respondents were married, more than three-fourth (81.5%) of them were followers of the orthodox Christian religion, about 39.0% of them had diploma educational level, and the majority (79.9%) of them grew up in urban areas (Table 1).

Table 1: Socio-demographic characteristics of women's knowledge about safe abortion care services at selected non-health public institutions in Ethiopia, 2019 (n=432).

Variable	Frequency (n)	Percept (%)
Mean age (Range; SD)	29.51(18-48;5.4)	
Marital status		
Single	163	37.7
Married	241	55.8
Others*	28	6.5
Educational status		
Pre-university school	85	20.0
Diploma	166	39.0
Degree and above	175	41.1
Religion		
Orthodox	352	81.5
Protestant	60	13.9
Others**	20	4.6
Place grew up		
Urban	345	79.9
Rural	87	20.1

*Widowed and divorced ** Muslim & Catholic

Reproductive health characteristics and exposure to abortion information of the respondents

Two third (n=260, 60.2%) of the respondents reported that they had pregnancy (i.e. which reached viability) at least once before; among which 39.2% were primigravida and 42.3% were primipara (**Figure 1**).

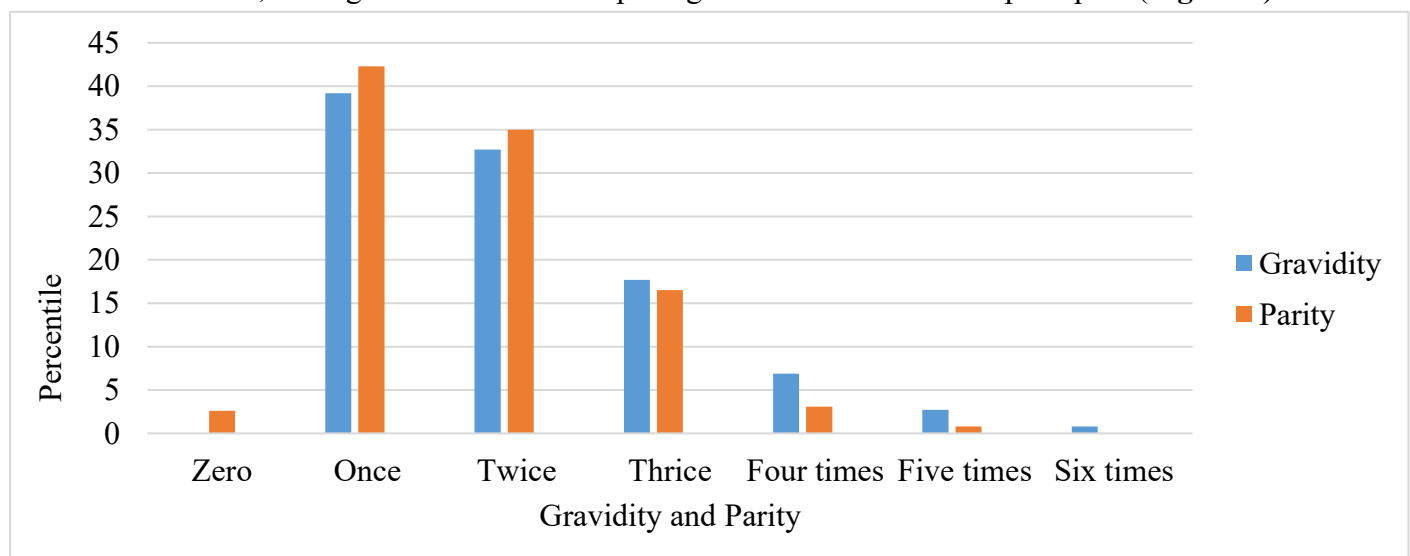


Figure 1: Status of gravidity and parity of women's knowledge about safe abortion care services at selected non-health public institutions in Addis Ababa, Ethiopia, 2019 (n=432).

Seventy-eight (18.1%) respondents had a history of previous miscarriage; among these, the majority (74.4%) said that the miscarriage had been spontaneous. More than 2/3 of the study respondents (n=283, 65.5%) had heard about abortion care services and media was their main source of information (79.5%), followed by peers, books, and internet sources, respectively. Nearly half of the abortion care seekers (46.2%) were treated at public health institutions; followed by private clinics (35.9%) and by traditional methods (6.4%), respectively. However, 11.5% of the study respondents reported that they didn't get any abortion care service. About three fourth of the study respondents (74.4%) reported that they didn't face any complication following an abortion. Of the study respondents who had abortions, more than one fourth (n=20, 25.6%) of them reported that they suffered post-abortion complications (i.e. women who developed any of these symptoms: Incomplete abortion, sepsis, intra-abdominal pain, hemorrhage, and/or infertility). Among those who developed post-abortion complications, the majority (n=15, 75%) of them faced hemorrhage (**Figure 2**).

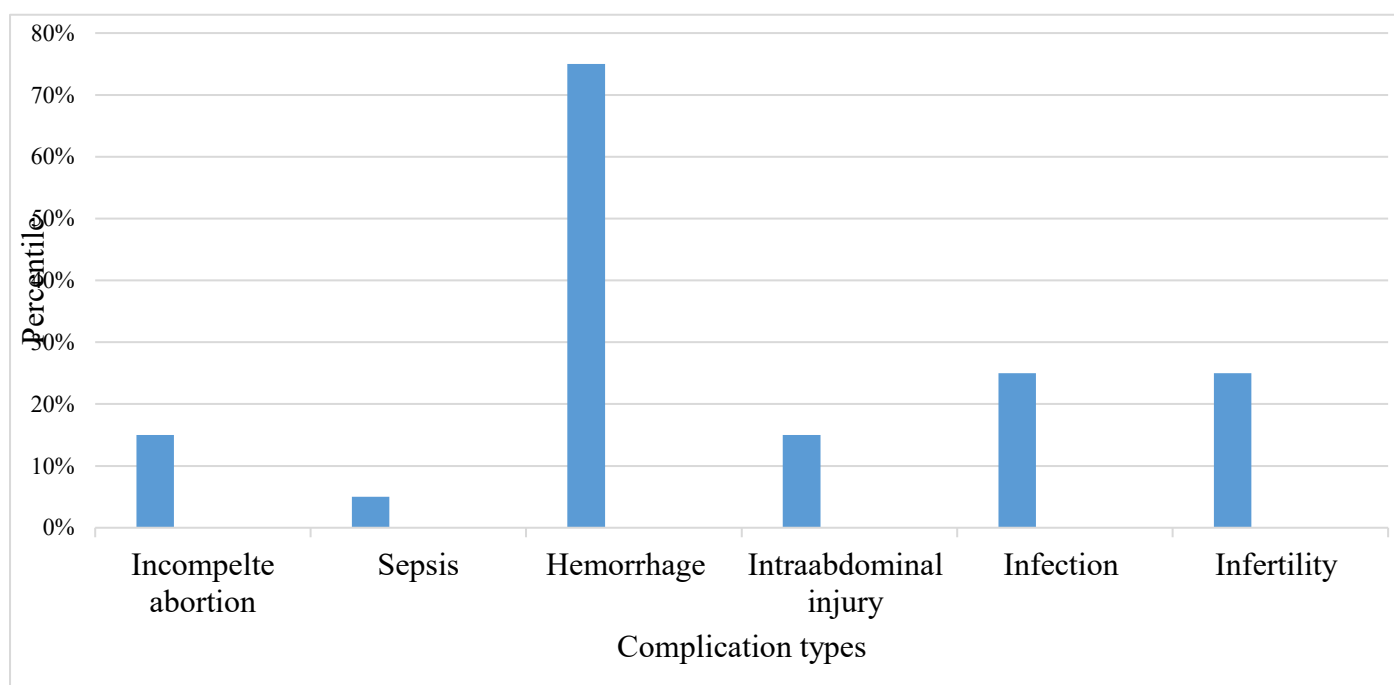


Figure 2: Depicts abortion complication types faced by women's knowledge about safe abortion care services at selected non-health public institutions in Addis Ababa, Ethiopia, 2019 (n=432).

Factors associated with the respondents' knowledge of safe abortion care services

The finding from an independent-sample t-test in (**Table 2**) shows that the place where the respondents grew up ($p < 0.006$), history of past miscarriage, and previous information of abortion care service were significantly associated with the knowledge of abortion care services ($p < 0.001$).

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the difference in the respondents' knowledge of safe abortion care service based on marital status categories. Respondents were divided into three marital status c (Group 1: single; Group 2: married; Group 3: others). There was a statistically significant difference at the $p < 0.05$ level in total knowledge scores for the three marital groups: $F(2, 429) = 4.6$, $p = 0.042$. Despite reaching statistical significance, the actual difference in mean scores between the groups was quite small. The effect size, calculated using eta squared, was 0.015. However,

posthoc comparisons using the Tukey HSD test indicated that the mean score among all groups did not differ significantly from each other.

Furthermore, the univariate linear regression model revealed that there is a significant positive relationship between the knowledge score of the respondents and the number of deliveries. Accordingly, we were 95% confident that for every additional number of deliveries, the knowledge score increases somewhere between 0.043 and 0.78.

Table 2: Factors associated with women's knowledge about safe abortion services at selected nonhealth public institutions in Ethiopia 2019(n=432).

Variable	Category	N %	t-test	p-value
Place of grew up	Urban	79.9	-2.78	0.006
	Rural	20.1		
History of Pregnancy	Yes	60.2	0.84	0.401
	No	39.8		
History of Miscarriage	Yes	18.1	3.67	<0.001
	No	81.9		
Previous abortion information	Yes	65.5	4.21	<0.001
	No	34.5		
After complication	Yes	4.62	1.27	0.21
	No	95.38		

Predictors of the respondents' knowledge of safe abortion care services

Multiple linear regressions were performed to explore factors that can predict women's knowledge of safe abortion care services (**Table 3**). R square statistic in the model explains 20.5% of the variance in the knowledge score. Variables that made an independent contribution in explaining the knowledge level were the number of deliveries, the place grew up, having previous information about abortion care, and having a previous miscarriage with the number of deliveries recording a higher standardized beta value (0.385).

Table 3: Factors predicting women's knowledge of safe abortion care services at selected non-health public institutions in Ethiopia, 2019 (n=432).

Variables	Beta (standardized)	p-value	Confidence interval		Collinearity statistics		
			Lower	Upper	Tolerance	VIF	
Age	0.005	0.523	-0.070	0.076	0.650	1.537	216
Number of pregnancies	-0.357	0.940	-1.530	-0.307	0.219	4.574	217
Number of deliveries	0.385	0.003	0.517	1.877	0.259	3.858	218
Place of grew up	-0.172	0.001	-2.011	-0.414	0.967	1.035	219
Previous information	0.188	0.003	0.451	1.787	0.982	1.018	220
Previous history of miscarriage	0.258	0.001	0.827	2.359	0.802	1.247	221
							222
							223
							224
							225
							226

Abbreviation: Variance Inflation Factors(VIF)

4. Discussion

The current study finds that prior health experiences correlate positively with knowledge of safe abortion care services in the study setting. In this study, most women reported that they knew that safe abortion is available in their locality and legal for many indications including when pregnancy is life threatening or the pregnant woman's life is otherwise endangered, and they also knew where and how to obtain safe abortion care service when required.

Women's knowledge of the law is only one factor in their being able to obtain appropriate care. Knowledge of safe abortion services, providing women with information on the legal context and methods to allow access to such information assist in decreasing the chances that a woman will seek unsafe abortion services and consequently decreasing her likelihood of suffering from abortion-related morbidity or mortality[[11](#), [18](#)].

Similarly, the results state that majority of the respondents had heard about safe abortion care services; media being the main source of information. However, there seems to be a gap towards providing correct information to this target population on the legal status of abortion (i.e. abortion is permitted under predetermined conditions) through mainstream media including state television and radio in Ethiopia. The provision of correct information is a key determinant on the pathway to safe abortion. The absence of accurate knowledge and the fear of violating the law creates a disturbing effect and deter women from seeking health care services [[9](#), [12](#)].

A systematic review conducted by Assifi and colleagues in 2016 reported that women's correct general awareness and knowledge of the legal status was less than 50% in nine studies. In six studies, knowledge of legalization/liberalization ranged between 32.3%-68.2%. Correct knowledge of abortion on the grounds of rape ranged from 12.8%-98%, while in the case of incest, ranged from 9.8%- 64.5%. Abortion on the grounds of fetal impairment and gestational limits, varied widely from 7%-94% and 0%-89.5%, respectively [[11](#)].

Our study finding related to media as the source of information corroborates with that of the previous studies reported from the other parts of Ethiopia [[24-26](#)]. This implies that most of the women who work in the non-health sector public institutions might use media as a source of health information. This implies that it is more likely that they access media for many reasons and through that, they get exposed to health information. Therefore, media including state media should be considered as an important channel to reach women with no prior experiences in public institutions with health information aimed at improving their knowledge of safe abortion care in their area. Technology-based health interventions may provide a means to reach these women with information about all reproductive health care services including the legal status and availability of safe abortion care in their setting. The government should show concerns regarding technology as a means to deliver health information and interventions on safe abortion care.

The present study also identified that women with previous experience of childbirth, having information about abortion care, and those women who had an abortion experience before possess more knowledge of safe abortion care services in their area. Our findings regarding the history of miscarriage and previous information about abortion care are in line with the findings reported from previous studies conducted in other settings [[6](#), [27](#), [28](#)]. Previous studies have [[29](#), [30](#)] also shown similar findings concerning the positive relationships between the number of childbirth and knowledge of safe abortion care services. All these factors can be summed as prior health-related experiences that influence women's knowledge of post-abortion care. When

seen from another angle, this implies that women who have no prior maternal health experiences may not be as knowledgeable as those who had such experiences. In today's Internet environment, health information is easily accessible. For instance, communication through social media has created a positive output on information dissemination in every aspect of life, including health. One of the social media functions is to support development by empowering the public in taking care of their health and welfare [31]. It is thus indispensable to develop an effective communication model for distributing information on adolescent and youth reproductive health information including safe abortion care. With the rapid growth in the number of health reproductive information portals in social media, the conditions are crafting a high selectivity on the right and correct information needed for the women and young girls based on the particular condition in each region. Therefore, health promotion programs focusing on creating awareness about safe abortion care need to target women who had no prior maternal health experiences through technology-based health interventions as stated hitherto. This will help them seek safe abortion services in their community at the time of their need and prevent morbidity and mortality.

Substantiating with the general theories of urban-rural disparities in health [32, 33], our study found that the place where the women grew up significantly influences their knowledge of safe abortion care services in their community. Our study finding designated that women of rural origin (even after she has moved from a rural area to an urban one) had less knowledge of safe abortion care services in their community. Previous studies from other low-income settings had also reported that rural women compared to urban were less knowledgeable about reproductive health in general and in abortion care in particular [6, 34-36]. Given health-related knowledge is one of the key social determinants of health [37], the rural-urban disparity in women's knowledge of safe abortion care is an alarming bell to pay attention to women of rural origin in maternal health promotion programs. The fact that women of rural origin who currently live in a big city have poor knowledge of safe abortion care services in their community may also imply how this knowledge is considerably low among the women population in the larger rural areas. This is also an important issue that needs to be addressed in future research and interventions.

5. Conclusions

This study provides insight into women's knowledge of abortion care services, within the setting that is underexplored earlier. This study found that woman's knowledge of safe abortion care services was influenced by different factors in the non-health sector public institutions in Addis Ababa, Ethiopia. These include prior maternal health experience including a history of miscarriage, previous awareness of abortion, and a number of deliveries. The rural-urban disparity in the knowledge of safe abortion care services is also an important finding of our study. Therefore, special emphasis needs to be given to women without prior maternal health experiences and to those from the rural origin to raise their knowledge concerning safe abortion care services.

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Informed Consent Statement: “Written informed consent has been obtained from the patients.

Data Availability Statement: All data generated or analyzed during this study were included in the published article.

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