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Abstract

Background: Worldwide 20 million unsafe abortions took place each year as a result of unintended pregnancies, with 95% of these performed in developing countries. Ethiopia ranks fifth in the number of maternal deaths in the world and about two third of these deaths are due to unsafe abortions. The aim of this study was to determine the prevalence of pregnancy termination and associated factors among women of reproductive age group in Ethiopia using 2011 Ethiopian Demography and Health Survey.

Methods: A secondary data was used to determine the prevalence of pregnancy termination and associated factors among women of reproductive age group in Ethiopia. Women in the age group of 15-49 years who had terminated pregnancy five years preceding the survey were included. The data were cleaned, coded and analyzed using Stata version 12. Multiple logistic regressions were used to identify factors associated with termination of pregnancy. Presence of confounders and interaction effects was investigated by computing relative changes on β coefficients at a cutoff point 15%.

Results: The prevalence of termination of pregnancy was 9% among reproductive age group women in Ethiopia. Maternal media exposure (AOR=1.29, 95% CI: 1.16, 1.43), age of women (AOR=1.08, 95% CI: 1.02, 1.15), contraceptive non-user (AOR=1.43, 95% CI: 1.22, 1.67) and occupational status of the husband (AOR=1.77, 95% CI: 1.29, 2.42) were positively associated factors with termination of pregnancy.

Conclusion: Considerable proportion of women practiced termination of pregnancy. Maternal mass media exposure, contraceptive use, women occupation, marital status, age of women and husband occupation were the main factors for pregnancy termination. Emphasis needs to be given on access to family planning, mass media exposure, health education on consequences of early marriage and creating job opportunities.

Keywords: Pregnancy termination; Ethiopia demography; Health survey; Reproductive age group

Introduction

Globally, unsafe abortions are estimated to be between 21 million and 22 million in 2008 [1]. There were around 210 million pregnancies in 2008 and among these pregnancies one in ten ends in an unsafe abortion in the globe [1]. Every year about 19-20 million abortions are done by individuals without the necessary skills. Almost all unsafe abortions (97%) are in developing countries and more than a million complications occurred every year as a result of unsafe abortion [2]. These complications include: hemorrhage, sepsis, peritonitis and trauma to the cervix, vagina, uterus and abdominal organs. High proportions of women (20-50%) who have unsafe abortions are hospitalized for complications [2].

In Africa about 5.5 million unsafe abortions occur each year, from world’s maternal deaths due to unsafe abortion accounts almost half [3]. Globally, an estimated 358,000 maternal deaths occurred in 2008, a 34% decline in developed world, developing countries continued to account for 99% of the deaths. Among developing regions, sub-Saharan Africa had the highest maternal mortality at 640 maternal deaths per 100,000 live births in 2008 [4]. Ethiopia has the fifth highest number of maternal deaths in the world and about a two third of these deaths are the result of unsafe abortions [4].

An estimated number of eight million women annually experience complications that need medical treatment, but only five million receive care [5]. It may also lead to hemorrhage, infection and death, particularly in settings where there is poor access to hospital and medical care. When infection spreads upwards through the genital tract, causing damage to the fallopian tubes and pelvic inflammatory disease may develop. This condition causes pain and discomfort and if left untreated, can result in chronic pelvic pain and secondary infertility [5].

Reports from other areas revealed that women over the world are highly to have a pregnancy termination when faced with an unplanned pregnancy [6]. Abortion laws vary significantly across the world in different countries, with some countries prohibition abortion entirely, some allowing abortion only to save the life of the mother and others allowing abortion with no restrictions related to reason [7].

Worldwide, 60% of women of reproductive age group (15-44) live in countries where abortion is broadly legal [8]. In many developing

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countries in which abortion is legally restricted. Legalization of termination of pregnancy by Ethiopian government is one of the measures that promotes safe abortion service and reduces maternal mortality [9-11]. Ethiopia’s legal rule pertaining to abortion has been changing through time. In 2004, Ethiopia has endorsed a new Criminal Code that has totally reversed the highly restrictive position of previous laws on abortion [12].

Before May 2005, Ethiopia had restrictive laws on abortion. Termination of pregnancy was allowed only if two physicians, one being a specialist in the alleged medical condition, agreed that continuing with the current pregnancy would threaten the life of the pregnant woman. As of May 2005, the laws on abortion have been revised to include four legal grounds in which abortion can be made available: rape and incest, lethal congenital malformation, physical health and mental health: Federal Democratic Republic of Ethiopia [12,13].

Different factors were identified with pregnancy termination in previous studies. Sexual violence and interruption of family planning services are among underlying factors for maternal deaths and illness [14]. In addition to this great variations of socio-economic and demographic variables of termination of pregnancy in care seeking women. Even though the above facts, pregnancy termination remains a major problem affecting significant number of women in reproductive age group. Therefore, this study was important to determine prevalence and factors associated with pregnancy termination among women of reproductive age groups in Ethiopia using data obtained from EDHS 2011.

Methods and Materials

Study design and setting

The 2011 Ethiopia Demography and Health Survey (EDHS) used a community-based cross-sectional study throughout the country and in this study no particular design was employed rather data collected was further analyzed to determine the prevalence and associated factors with termination of pregnancy among women of reproductive age group in Ethiopia.

The study was conducted in Ethiopia. Ethiopia is the oldest independent and second most populous country in Africa. It has a unique cultural heritage with a diverse population mix of ethnicity and religion. It is located in the North Eastern part of Africa, also known as the Horn of Africa. It borders six countries- Eritrea, Djibouti, Somalia, Kenya, South Sudan and the Sudan [15]. Projections from the 2007 population and housing census estimate the total population for the year 2015 to be 90 million [16].

Source population

The source population included all reproductive age group women (15-49 years) within the last five years prior to the data collection period and included in the 2011 EDHS.

Study population

All reproductive age group Women (15-49 years) who had terminated pregnancy five years preceding the survey in the 2011 EDHS.

Sample size determination and sampling procedure

In the 2011 EDHS, representative samples of 17,385 eligible women were identified for individual interview. Complete interviews were conducted for 16,515 women in their, yielding a response rate of 95%.

The sample size for this specific study was drawn from all reproductive age group women where completed interview was conducted and all women were included for this research.

The 2011 EDHS used a stratified sampling procedure in two stages using the 2007 population and housing census (PHC) as a frame. Stratification was achieved by separating each region into urban and rural areas. In the first step clusters were selected from the list of census enumeration areas. The sample included 624 enumeration areas, 187 in urban and 437 in rural areas. In the second stage a complete list of households in each selected cluster was carried out and households were selected by systematic sampling. The EDHS sampling procedure was used for this study.

Data collection tool

The source of data for this specific research question was the 2011EDHS conducted throughout the country in September 2010. The 2011 EDHS tool has three components: the household questionnaire, the woman's questionnaire and the man's questionnaire. These questionnaires were adapted from model survey instruments developed for the MEASURE DHS project to reflect the population and health issues relevant to Ethiopia. The data for prevalence of pregnancy termination and associated factors was taken from woman's questionnaire. The variables reviewed to be important for this specific research were collected from the SPSS filling data received from http://www.measuredhs.com and these data were transferred into a Stata Software version 12.

Data quality and management

The quality of the data was maintained by checking its completeness, cleaning the missing values by running frequencies and some of the variables were re-coded into the same variable like age of the mother at birth.

Data processing and analysis

After data filled in SPSS by the central statistical agency was downloaded from measuredhs.com and each important variable was extracted and exported to Stata software version 12 for analysis. Frequency, percentage and descriptive summaries were used to describe the study variable using univariate analysis. Logistic regression was carried out to identify factors associated with knowledge of obstetric danger signs. Independent variables found to be significant in the simple binary logistic regression analysis at a cut-off point of p-value<0.25 with 95% confidence interval were included in the multiple binary logistic regression models [17].

In the multiple binary logistic regression model the effect of each independent variable on the termination of pregnancy were assessed by controlling for the possible confounders using a stepwise backward logistic analysis.

Adjusted odds ratios with their 95% confidence intervals and p-value of less than 0.05 were considered to have significant association between the outcome and the explanatory variables.

Presence of possible confounders and interaction effects were investigated by computing relative changes on b coefficients at a cutoff point 15% [18]. Occurrence of multicollinearity was checked for the final model with cut off point mean of variation inflation factor (VIF) less than five [19]. The model fitness was checked using Hosmer and Lemeshow [20].
Ethical consideration

For this study ethical clearance was sought from the ethical review Board of Hawassa University, College of Health Sciences with approval and supporting letter. Then the EDHS 2011 data was obtained and used with the prior permission of the Central Statistical Agency of Ethiopia. After that, downloading of dataset was done by using the accessed website at www.measuredhs.com on request with the help of ICF International after registering in the website (http://www.measuredhs.com).

Results

Socio demographic and economic characteristics

A total of 16,515 women were participated in this analysis. The minimum and the maximum age of the study participants were 15 and 49 years, respectively. The mean age of the study subjects was 27.69 years (± 9.21, standard deviation (SD)). Six thousand eight hundred fifty seven 6,857 (41.52%) of study participants were found in the age group of 15 to 24 years.

Almost half, 6,995 (42.36%) of the respondents were Orthodox Christian followers by religion. Of the total study participants 10204 (61.79%) were married with average number of children 2.31 (± 2.44, (SD) (Table 1).

Concerning education status, half, 8,278 (50.12%) of women did not attend formal education 1,927 (15.92%) of their partners/husbands attended secondary and above school. Almost one in two women 8370 (50.68%) had their own occupation and 11,743 (97.03%) of their counterpart/husband were employed. Eleven thousand one hundred eight six, 11186 (67.73%) study participants were living in rural areas.

More than three among five, 10412 (63.05%) of women related with distance from health facility told that a big problem. Almost two among five, 5974 (36.17%) of women were not exposed with television and radio information regarding termination of pregnancy (Table 1).

Reproductive history

From 16515, study subjects, more than three-fourth 5,843 (85.21%) of the study participants were in the age group of 15-24 years old during their first current pregnancy. From 16515, study participants, more than half 3451 (65.26%) of women had history of two or above current pregnancy. Of 1,266 (16.31%) of study participants delivered their child in a health facility. Three hundred thirty eight 338 (4.37%) and 1,703 (22.02%) of the study participants had their first and fourth and above ANC visits during their pregnancy period, respectively (Table 1).

Prevalence of pregnancy termination

The overall prevalence of pregnancy termination among reproductive age group women was 9% (95% CI: 0.040, 0.139). The highest pregnancy termination was found in Ethiopian Somali region (14.66%) and the lowest pregnancy termination was in Afar regional state, Ethiopia (6.20%) (Figure 1).

Predictors of pregnancy termination

In the multivariate analysis women occupation, husband occupation, media exposure, marital status, birth order, contraceptive use, age of mothers, ever heard of family planning, number of children and age at last birth were significantly associated with pregnancy termination.

The probability of having pregnancy termination was 24% (AOR=1.24, 95% CI: 1.09, 1.41) and more likely to occur among employed women and 77% (AOR=1.77, 95% CI: 1.29, 2.42) less likely to occur among husbands compared with those who did not have occupation.

Media exposure, ever heard of family planning and contraceptive use among reproductive age group women were identified as significantly associated factors with pregnancy termination. Women who had media exposure (television and radio) 23% (AOR=1.23, 95% CI: 1.04, 1.47) higher odds of pregnancy termination in relation with no media exposure.

Figure 1: Proportion of pregnancy termination among of reproductive age group by region using the 2011 Ethiopia demographic and health survey, 2016.

[Graph showing regional differences in pregnancy termination rates]
women with no media exposure. The odds of pregnancy termination was 19% (AOR=1.19, 95% CI: 1.03, 1.38) higher among women who ever heard of family planning who did not heard of family planning. The probability of pregnancy termination was 43% (AOR=1.43, 95% CI: 1.22, 1.67) more likely to occur among women who used contraceptive.

Other important factors were birth order, number of children and age of mothers. The odds of pregnancy termination was 51% (AOR=1.51, 95% CI: 1.04, 2.21) more likely to occur among women who had second and third birth compared with women with first birth order. Women who had three and above children were 56% more likely to have pregnancy termination in relation with women with one child (AOR=0.65, 95% CI: 0.45, 0.93). Women in the age group 35 and above years old were 3 times (AOR=3.09, 95% CI: 2.36, 4.05) more likely

<table>
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<th>Characteristics</th>
<th>Category</th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
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<td>Big problem</td>
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<td>Place of residence</td>
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<td>5329</td>
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<td>Rural</td>
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<td>3-5 pregnancy</td>
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<td>6 and above pregnancy</td>
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<td>Average number of children in house holds</td>
<td>2.31 (± 2.44, SD)</td>
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<td>Place of delivery</td>
<td>Health facility</td>
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<td>Home</td>
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<td>Non-user</td>
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<td></td>
<td>User</td>
<td>2,961</td>
<td>17.93</td>
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<td>Maternal age group (year)</td>
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<td>41.52</td>
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<td></td>
<td>25-34 years</td>
<td>5,288</td>
<td>32.02</td>
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<tr>
<td></td>
<td>&gt;=35 year</td>
<td>4,370</td>
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<td>Number of children</td>
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<td></td>
<td>Have two children</td>
<td>2,042</td>
<td>19.01</td>
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<tr>
<td></td>
<td>Have three and above children</td>
<td>6487</td>
<td>60.38</td>
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<tr>
<td>Average Maternal age in years</td>
<td>Mean ± SD=27.9 ± 9.21</td>
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<tr>
<td></td>
<td>No ANC visit</td>
<td>4,266</td>
<td>55.15</td>
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<tr>
<td>Number of ANC visit</td>
<td>ANC 1st visit</td>
<td>338</td>
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<td>ANC 2nd visit</td>
<td>527</td>
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<td>ANC 3rd visit</td>
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<td>ANC 4th and above visit</td>
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<td>15-27 years</td>
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<td>28-49 years</td>
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<td>2,015</td>
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<td>2nd and 3rd birth</td>
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<td>29.75</td>
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<tr>
<td></td>
<td>4th and 5th birth</td>
<td>2,409</td>
<td>22.11</td>
</tr>
<tr>
<td></td>
<td>6th and above birth</td>
<td>3,230</td>
<td>29.64</td>
</tr>
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</table>

Table 1: Socio-demographic and economic characteristics of study population using 2011 EDHS, 2016.
Variables | Termination of pregnancy | COR (95%CI) | AOR (95%CI)
--- | --- | --- | ---
Women occupation | No | Yes | 1.28*** (1.15, 1.43) | 1.24*** (1.09, 1.41)
Employed | 7565 | 805 | 1.28*** (1.15, 1.43) | 1.24*** (1.09, 1.41)
Unemployed | 303 | 56 | 0.70* (0.52, 0.94) | 1.77*** (1.29, 2.42)
Distance from health facility | Not a big problem | 5630 | 473 | 1 | 1
A big problem | 9457 | 955 | 1.20** (1.07, 1.35) | 1.08 (0.89, 1.30)
Husband occupation | Unemployed | 303 | 56 | 0.70* (0.52, 0.94) | 1.77*** (1.29, 2.42)
Employed | 10395 | 1348 | 1 | 1
Exposure to TV or radio | No exposure to TV and radio | 5457 | 517 | 1 | 1
A big problem | 4435 | 464 | 1.10* (1.97, 1.26) | 1.24*** (1.06, 1.43)
Media Exposure | Exposure to both TV and radio | 5195 | 447 | 0.91 (0.79, 1.04) | 1.23* (1.04, 1.47)
Marital status | Single | 6093 | 218 | 1 | 1
A big problem | 10111 | 1021 | 3.76*** (3.24, 4.36) | 1.52*** (1.26, 1.83)
Transport access to get medical care | Not a big problem | 4976 | 407 | 1 | 1
A big problem | 9457 | 955 | 1.20** (1.07, 1.35) | 1.08 (0.89, 1.30)
Birth order | 1st birth | 1847 | 168 | 1 | 1
A big problem | 2886 | 356 | 1.36** (1.12, 1.64) | 1.51* (1.04, 2.21)
Fourth and fifth birth | 2108 | 301 | 1.56*** (1.29, 1.92) | 1.44 (0.95, 2.12)
Six and above birth | 2758 | 472 | 1.88*** (1.56, 2.26) | 1.35 (0.87, 2.10)
Contraceptive use | Non-user | 12400 | 1154 | 1 | 1
User | 2687 | 274 | 0.91 (0.79, 1.05) | 1.43*** (1.22, 1.67)
Age of mother (years) | 15-24 | 6680 | 177 | 1 | 1
25-34 | 4746 | 542 | 4.31*** (3.62, 5.13) | 2*** (1.58, 2.53)
>=35 | 3661 | 709 | 7.31*** (6.17, 8.65) | 3.09*** (2.36, 4.05)
Ever heard family planning | No | 9,969 | 915 | 1 | 1
A big problem | 5,118 | 513 | 1.09 (0.97, 1.22) | 1.19** (1.03, 1.38)
Number of children | Have one child | 2,019 | 196 | 1 | 1
Have two children | 1825 | 217 | 1.22 (0.99, 1.50) | 0.71 (0.49, 1.02)
Have three and above children | 5,630 | 857 | 1.56*** (1.33, 1.84) | 0.65* (0.45, 0.93)
Age at last birth (years) | 15-27 years | 5,273 | 532 | 1 | 1
28-49 years | 4326 | 765 | 1.75*** (1.55, 1.97) | 1.22* (1.02, 1.46)

Table 2: Multivariate analysis of factors associated with termination of pregnancy among women of reproductive age group in Ethiopia, 2016.

to encounter pregnancy termination compared with those in the age group 15-24 years old.

On the other hand, marital status and age of mothers at birth were also determined to be independent factors with termination of pregnancy. Married women and women who had their last birth in the age group 28-49 years old were 52% (AOR=1.52, 95% CI: 1.26, 1.83) and 22% (AOR=1.22, 95% CI: 1.02, 1.46) more likely to have pregnancy termination compared with single mothers and who gave their last birth in the age group 15-27 years old, respectively (Table 2).

**Discussion**

In this study, it was revealed that the overall prevalence of pregnancy termination was 9%. This finding is incongruent with the studies conducted in: Batu Town, Ethiopia (25.6%) and Kampala, Uganda (24%) [21,22]. The lower prevalence of pregnancy termination in this study might be due to unwillingness of women to report having had a pregnancy termination during the Ethiopia Demography and Health Survey or is a secret public health problem affecting the reproductive health outcome status of women.

Significant association was observed concerning women and husband occupation. It was figured out that pregnancy termination was less likely to occur among women whose husband had occupation to generate income. This finding is in line with done in Volta region, Ghana [23]. This might happen because husbands who had occupation would have a positive attitude in avoiding pregnancy termination by increasing household income and economic status of the family and as a result women might get frequent health institution contact for antenatal care, delivery and health information about consequences of pregnancy termination.
On the contrary, employed women were more likely to have pregnancy termination perhaps may be employed women had their own income and they could afford to pay for safe abortion services.

In the present study, mass media exposure was found to be significantly associated with pregnancy termination. This study is against with the study conducted in Ethiopia [24]. This might be due to women with frequent mass media exposure would have access to information where to get the services. Finding from current study revealed age of women was observed to be significant with pregnancy termination. This finding is in line with studies conducted in northwest Ethiopia in 2005 and Ethiopia in 2014 [21-23]. The similarity might be due to the same socio-economic status of study participants. On the other hand studies done in southern Ethiopia 2011, in Tigray, Ethiopia, 2015 and Tigray Northern Ethiopia, 2010 were found to be against the current finding [24-26]. In sub-Saharan Africa, women under age 25 accounts for 60% of all unsafe abortions [27]. This was probably the high number of termination of pregnancy in particular unsafe abortion among youth globally; women age 15 to 19 are less likely to use modern contraception than women ages 20-24 and it might be also due to low level of reproductive health knowledge and access to family planning services for the fore mentioned age groups (15-19 year) compared with older age women [28].

The present study also revealed that user of contraceptives had higher odds of pregnancy termination than contraceptive non-user. This finding was against with studies conducted in Ethiopia in 2014 and Adigrat Zonal Hospital, Tigray, North Ethiopia in 2010 [21,22,29]. This might be due to there is a gap between being knowledgeable about contraceptive utilization or in that contraceptive misuse or poor knowledge are the main cause for unsafe abortion.

In the current study, birth order was found to be significantly associated with pregnancy termination. Possible explanation may be because women who had several children would have the tendency not to have additional children so they may tend to avoid unwanted pregnancies by inducing their current pregnancy. The other reason might be due to women still lack the self-rule to make decisions about their pregnancy intention. As is the case with many other areas of reproductive health, husbands appear to be the primary decision-makers with consider to pregnancy [30,31].

In the present study, women age at last birth was found to be significantly associated with pregnancy termination. Women whose age group of 28-49 years had 75% higher odds of pregnancy termination as compared with women age group of 15-27 years. This finding is agreed with study conducted in [32]. Which might be due to the fact that women in this age group usually have attained their desired number of children and hence, less likely to use method of contraception to prevent the pregnancy.

**Limitation of Study**

This study was used cross-sectional study design which can't determine causality that means temporal sequence between exposure and disease can't be established. Recall bias due to pregnancy termination of women by report of women may under/over report the termination of pregnancy because women may not remember that took.

**Conclusion**

The prevalence of pregnancy termination was 9%. Maternal occupation and husband occupation, age of mothers, marital status, birth order, contraceptive use and media exposure, ever heard of family planning were found to be independent factors with termination of pregnancy.

Income generating activities needs to be given emphasis since it has substantial significant in reducing termination of pregnancy among women of reproductive age group. Emphasis needs to be given for women in the age group 35-49 and 25-34. Awareness creation on avoiding termination of pregnancy using mass media requires attention so that it will have a substantial contribution in the reduction of maternal and child mortality.

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