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Determinants of unintended pregnancy among women in Nepal

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Abstract

Aim: This study aims to determine the factors influencing unintended pregnancy among married women in Nepal

Methods: This paper reports on data drawn from Nepal Demographic and Health Survey (DHS), 2001 which is a nationally representative sample survey. The analysis is restricted to the currently pregnant women at the time of survey. Logistic regression was used to assess the net effect of several independent variables on unintended pregnancy. The factors leading to unintended pregnancy were also predicted by using some significant variables in the model.

Results: More than two-fifth of the respondents (41%) reported that their current pregnancies were unintended. The results indicate that age, age at first marriage, religion, exposure to radio and knowledge of family planning (FP) methods were key predictors of unintendend pregnancy. Experienc of unintended pregnancy augments along with the women's age. Similarly, increase in age at first marriage reduces the likelihood of unintended pregnancy among women. Those who were exposed to radio were less likely (odds ratio, 0.65) to have unintended pregnancy compared to those who were not. Those women who had higher level of knowledge about FP methods were 40% less likely to experience unintended pregnancy compared to those having lower level of knowledge.

Conclusion:. One of the important factor contributing to high level of maternal and infant mortality is unintended pregnancy. Programs should intend to reduce unintended pregnancy by focusing on all these identified issues so that infant and maternal morbidity and mortality as well as abortion will be decreased and the overall health of the family could be improved.

Key words: Unintended pregnancy, maternal and infant mortality, family planning in Nepal.

Introduction

An unintended pregnancy is a pregnancy that is either mistimed (i.e., they occurred earlier than desired) or unwanted (i.e. they occurred when no children, or no more children were desired) at the time of conception.[1] Unintended pregnancy is a potential hazard for every sexually active woman. It is a worldwide problem that affects women, their families, society and nation. A complex set of social and psychological factor puts women at risk for unintended pregnancy. Abortion is a frequent consequence of unintended pregnancy and, in the developing countries it can result into serious long-term negative health effects including infertility and maternal death.[2]

Women living in every country irrespective of development status have been facing the problem of unintended pregnancy. Over 100 million acts of sexual intercourse take place each day resulting around 1 million conceptions, about 50 percent of which are unplanned and about 25 percent are definitely unwanted.[3] The data suggest that approximately 49% of all pregnancies in the United States[4], 46% in Yamagata Japan[5], 35% in both Iran[6] and Nepal[7] are unintended. Almost all have been occuring due to non-

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use of family planning method or contraception failure. About 50% of all unintended pregnancies in the United States are due to contraceptive failure.[8] Therefore, unintended pregnancy is an issue that must not be ignored. Many pregnant women will want or need to end a pregnancy to avoid risks to their lives and health, psychological trauma, and socioeconomic turmoil.[9]

International Conference on Population and Development (ICPD) held in Cairo in 1994 and Fourth World Conference on Women held in 1995 in Beijing have emphasized women empowerment as a basic tool for a country's overall development and improving the quality of life of the people.[10] ICPD declared that advancing gender and the empowerment of women and the elimination of all kinds of violence against women, and ensuring women's ability to control their own fertility are corner stones of population and development related programs.[11]

In Nepal, the prevalence of unintended pregnancy in the five years preceding the survey is high (35%). Among these, more than one in five births (21%) is unwanted and one in seven (14%) is mistimed.[12] Family planning method failure rate is high in Nepal. A study revealed that 20% of rural and 16% of urban married women aged 15-49 reported method failure as the reason for their unintended pregnancy.[13] Similarly, one research study estimated that during the first year of vasectomy, 1.7% women would become pregnant[14], which leads to the higher unintended pregnancies and abortion. A study conducted at five major hospitals showed that abortion related hospitalization account for 20% to 48% of the total obstetric and gynecological patients.[15] Despite the legalization of abortion laws (March 2002 onwards) in the country, because of the lack of awareness about the law and facility centers, many women still seek abortion cladestinely and most often they consult unskilled or unqualified health workers, resulting in high rates of abortion related morbidity and mortality.[16]

It is hypothesized that women in the vulnerable group (illiterate, living in the rural area, working on agricultural sector), who are not exposed to mass media lead to low knowledge of FP and low utilization of the health services which in turn lead to higher unintended pregnancy.

The underlying cause of high prevalence of unintended pregnancy needs further investigation and exploration in order to be better understood and appropriately addressed by the reproductive health programs. It is essential to identify the cause for those who are at the risk of unintended pregnancy and to provide the service they require. To develop effective strategies for the prevention of unintended pregnancies, it is necessary to understand the factors affecting unintended pregnancies and its consequences. The findings of this study aim to guide reproductive health program planners and policy makers to understand various factors influencing unintended pregnancy and to assist in implementation of the reproductive health program which will decrease unintended pregnancy as well as reduce the risk of maternal and infant morbidity and mortality. Moreover program planners and policy makers can focus in some particular aspects of the program and improve the effectiveness of health services in terms of information on contraceptive methods and access to the services. If unintended pregnancy is reduced, then abortion, maternal morbidity and mortality, infant morbidity and mortality will be decreased, and the overall health of the family can be improved with appropriate birth spacing and family size. Though there are a few studies on unintended pregnancy in Nepal, this type of research which focuses on currently pregnant married women has not yet been undertaken in the country.

Methods

This paper reports on data drawn from Nepal Demographic and Health Survey (DHS), 2001 which is a nationally representative sample survey. This cross sectional survey was conducted among married women in the reproductive age (15-49 years). Out of 8,726 married women interviewed, 751 (8.6%) were currently pregnant at the time of survey. Among these women, 28 respondents were excluded from the analysis due to missing data on intention status for current pregnancy. Only currently pregnant women were selected for this study to minimize underreporting of unplanned pregnancies. It also reduces recall bias as it is related to current pregnancy and not to pregnancy history. If we take children born in the preceding five years or life time, that information may in fact underestimate unplanned childbearing since women may rationalize unplanned births and declare them as planned once they occur.

Pregnancy planning is measured by respondents' perceived desire of current pregnancy at the time of survey. The question was "*At any time you became pregnant, did you want to become pregnant then, did you want to wait until later, or did you not want to have any (more) children at all.* The three allowed options are *wanted then (planned), wanted the pregnancy to happen later (mistimed) and did not want at all (unwanted)*. Those respondents who mentioned their current pregnancy is either mistimed or unwanted were merged and consider as unintended pregnancy and else (planned) is treated as intended pregnancy. Thus, this variable is categorized into two categories: unintended and intended.

Before the multivariate analysis, multicollinearity between the variables was assessed and the least important variables were removed from the logistic model. Since the dependent variable of this study is dichotomous, binary (binomial) logistic regression was chosen to further analyze the data to assess the effect of the independent variable on unintended pregnancy and it was also predicted by using some conceptually important significant variables.

Results

Bivariate analysis

Among the surveyed married women of reproductive age, less than one in ten respondents (8.6% out of 8,726) was currently pregnant at the time of the survey. Percentage of respondents classified by their pregnancy intention of the current pregnancy, showed intended pregnancy (59.1), mistimed (20.7) and unwanted (20.2).

About one-fifth of the respondents mentioned that they wanted their current pregnancy later (mistimed = 21%) and the other one-fifth reported that they did not want their current pregnancy at all (Unwanted=20%). Conclusively, more than two-fifths of the respondents (41%) reported their current pregnancies were unintended.

When stratifying the women in different characteristics, it was found that the percentage of women who have experienced current pregnancy as an unintended varied by different settings. More than two-fifths illiterate women (44%), women who had no job or worked in agricultural sector (42%), and lived in rural area (42%) had higher unintended pregnancy compared to others. In terms of religion, more than half of the non-Hindu women (52%) and only about two-fifths of Hindu women (39%) had reported that their current pregnancy was unintended.

As expected, the percentage of women reporting unintended pregnancies increased with increase in age (31 percent of the women aged less than 25 to 77 percent of the women aged 35 and above). Similarly, women with higher birth order reported higher rate of unintended pregnancy. Women who got married in the early age (before 16 years) have higher rate of unintended pregnancy compared to those who got married at 16 years or later.

The result shows that the exposure to mass media is negatively associated with the level of unintended pregnancy. About one third of the respondents who were exposed to radio and TV reported that their current pregnancies were unintended (33-35%) while the proportion was more than two-fifths (43-45%) for those who were not exposed to any media. Similarly, access to health services is negatively associated with the proportion of unintended pregnancy. Those respondents who resided near the family planning sources (less than 30 minutes travel distance) reported much lower (38%) unintended pregnancy compared to those who resided far (more than one hour travel distance) from the FP sources (54%). Likewise, the higher the level of knowledge of FP method, the lower the percentage of women reporting the current pregnancy as unintended (34%). Against expectation, those respondents who were visited by family planning (FP) workers in the last 12 months had higher level of unintended pregnancy (54%) compared to those who were not visited by FP worker (40%) (Table 1).

Chi-square test showed that the variables such as age of women, total children ever born are highly associated ($p<.001$) with unintended pregnancy. Similarly literacy status, religion, age at first marriage, radio exposure, travel time to FP sources, and knowledge about FP methods are significant at the level of $p<.01$ and the variable FP workers' visit is significant at the level of $p<.05$ with unintended pregnancy (Table 1).

Multivariate analysis

Since the dependent variable is dichotomous, a binary logistic regression model was used to assess the net effect of each of the independent variables on the dependent variable, while controlling for the other variables in the model. logistic regression was also used to predict the probability of unintended pregnancy for the independent variables which were found to have significant effect and important in the model. After assessing multicollinarity in the variables, it was found that the variables 'age of women' and 'number of children ever born' were highly correlated. So the variable 'number of children ever born' was not entered in the logistic regression model.

In the logistic model, age has positive and statistically significant impact on unintended pregnancy. Similarly, age at first marriage, ideal number of children, and exposure to the radio have negative and statistically significant impact on unintended pregnancy. The results indicate that experience of unintended pregnancy increases along with the age of women. Increases in ideal number of children decreases the likelihood of unintended pregnancy among women. For example, women who have three or more ideal number of children were 32 percent less likely to report their current pregnancy as unintended. Similarly, increase in age at first marriage also reduces the likelihood of unintended pregnancy among women. Those who were exposed to radio are 35 percent less likely to have unintended pregnancy compared to those who were

not exposed. Regarding religion, hindu women were 53 percent less likely to have experience of unintended pregnancy compared to other religion keeping all other variables constant in the model.

Table1. Percentage of currently pregnant married women according to their pregnancy intention by selected characteristics

		Experience of unintended pregnancy			χ^2
		Yes	No	Total Number	
Socio-economic characteristics					
Literacy status	Illiterate	44.4	55.6	486	7.8**
	Literate	34.0	66.0	237	
Occupation	Not working /agriculture	41.8	58.2	671	2.4
	Non agriculture	30.4	69.6	52	
Place of residence	Rural	41.7	58.3	673	1.79
	Urban	31.7	68.3	50	
Religion	Non-Hindu	52.2	47.8	112	7.03**
	Hindu	38.9	61.1	611	
Demographic characteristics					
Age group	15-24	31.3	68.7	415	
	25-34	48.4	51.6	247	54.36***
	35 or more	76.5	23.5	61	
Ideal number of	1-2 children	39.2	60.8	404	2.00
Children#	Three or more	44.4	55.6	303	
Total children	None	20.7	79.3	195	
ever born	One	28.8	71.2	184	99.6***
	Two	48.2	51.8	122	
	Three or more	64.9	35.1	222	
Age at first	Less than 16 years	46.2	53.8	339	7.5**
marriage	16 year or more	36.3	63.7	384	
Access to health information /services					
Radio exposure	No	45.3	54.7	469	10.03**
	Yes	33.0	67.0	254	
Television	No	42.5	57.5	583	2.97
exposure	Yes	34.6	65.4	140	
Travel time to	Up to 30 minutes	38.0	62.0	363	
FP ##	31-60 minutes	45.0	55.0	167	8.17**
	More than one hour	54.1	45.9	91	
FP worker visit	Not visited	39.8	60.2	663	4.77*
	Visited	54.0	46.0	60	
Knowledge and practice of FP					
Knowledge about	Lower	46.4	53.6	411	11.67**
FP	Higher	33.8	66.2	312	
Use of FP method	Never use	39.4	60.6	518	1.8
	Ever use	44.9	55.1	205	
	Total	**41.0**	**59.0**	**723**	

*Note: *=p<.05, **=p<.01 ***=p<.001,*
 # Those respondents who didn't know the sources of FP methods are excluded, ## Travel time is only for those who knew the sources of FP.

Those women who had higher level (more than average score) of knowledge about contraceptives were 40 percent less likely to experience unintended pregnancy compared to those who have lower level of knowledge (less than average score) about contraceptives (Table 2).

Predicted probability for unintended pregnancy

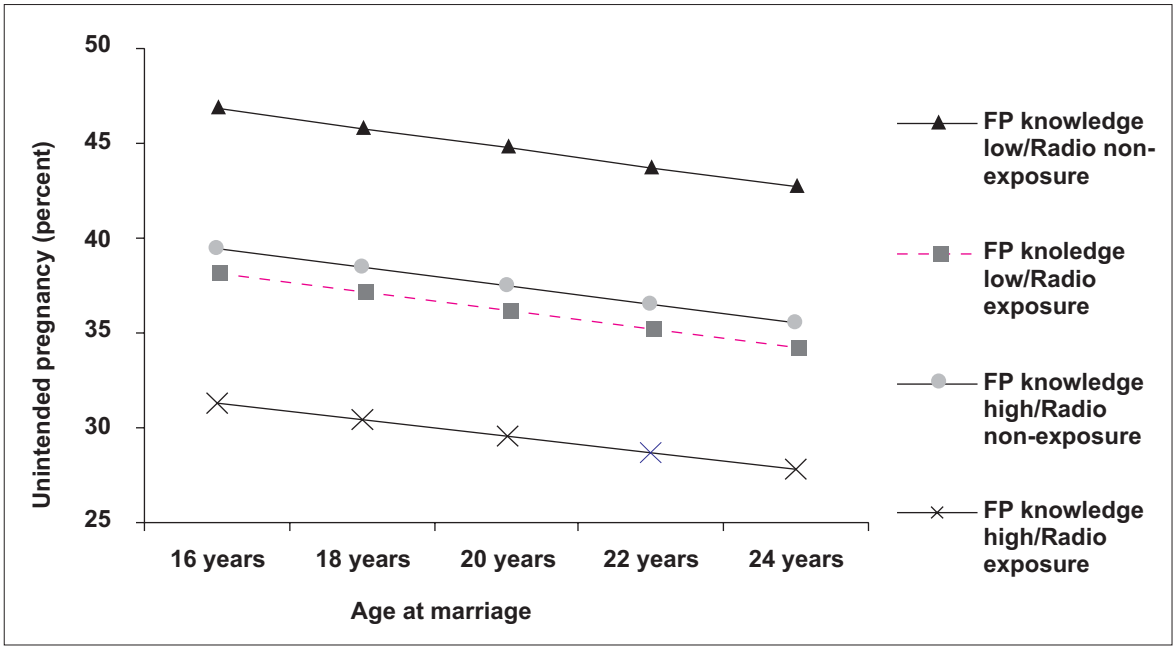
Predicted probabilities are calculated for selected variables that were statistically significant and conceptually important in the logistic regression model. For unintended pregnancy, predicted probabilities are estimated from the variables: FP knowledge, radio exposure and age at first marriage. These three variables are put in a separate logistic regression analysis in order to examine their effects on unintended pregnancy. The calculations are shown below.

Logit (probability of unintended pregnancy) = 0.210+ (-0.359) (X1) + (-0.301) (X2) + (-0.021) (X3)
Where,
X1 is the Radio exposure
X1=1, if women exposed to radio
X1=0, if women are not exposed to radio
X2 is the Family planning knowledge
X2=1, if women have higher level of knowledge (more than average score) about family planning methods
X2=0 if women have lower level of knowledge (less than average score) of family planning methods
X3 is the age at first marriage (ranging from average age at marriage 16 years to 24 years)

From the predicted probabilities figure, we can easily observe that the impact of age at first marriage on unintended pregnancy. The probability of experience of unintended pregnancy decreases as the age at first marriage of women increases. However, there are differences in the predicted probability on the radio exposure and FP knowledge level. Among women whose age at first marriage is 16 years, those who had a lower level of knowledge about family planning and who were not exposed to radio have higher level of unintended pregnancy i.e. 46.9 percent $[1 / 1 + e^{-[0.210 + (-0.359)\ (0) + (-0.301)\ (0) + (-0.021)\ (16)]} = 0.4685]^{*}$.

Of the women with same age at first marriage (i.e. 16 years), those who had higher level of knowledge about family planning methods and also higher exposure to the radio have 15.6 percent (46.9-31.3) lower probability of having an unintended pregnancy than those who have lower level of knowledge about family planning and no exposure of radio. It means that radio exposure and knowledge about family planning methods play a great role to decrease unintended pregnancy. Similarly, among women whose age at first marriage is 24 years, those who have higher knowledge about FP and radio exposure have only 27.8 percent $[1 / 1 + e^{-[0.210 + (-0.359)\ (1) + (-0.301)\ (1) + (-0.021)\ (24)]} = 0.2781]$ probability of having unintended pregnancy.

Fig 1. Predicted probability of unintended pregnancy by age at marriage, FP knowledge and radio exposure



* *Prob (event)* = $e^{z} / 1 + e^{z}$ *or* $1 / 1 + e^{-z}$, *where* $z = B_0 + B_1 X_1 + B_2 X_2 + \ldots\ldots B_p X_p$, *and* e *is the base of the natural logarithms*

Table 2. Estimated odds ratios and 95% confidence Interval (CI) for having unintended pregnancy among currently pregnant married women by selected predictors

Selected predictors	Odds ratios	CI
Demographic characteristics		
Age group		
15-24 (ref)		
25-34	1.82**	1.25-2.65
35-49	8.76***	4.17-18.39
Ideal number of children		
1-2 children (ref)		
Three or more	0.68*	0.46-0.98
Age at first marriage		
Less than 16 years (ref)		
16 year or more	0.66*	0.61-0.94
Socio-economic characteristics		
Literacy		
Illiterate (ref.)		
Literate	1.23	0.81-1.87
Occupation		
Not working/Agriculture (ref.)		
Non-agriculture	0.62	0.30-1.28
Place of residence		
Urban (ref.)		
Rural	0.97	0.54-1.75
Religion		
Non-Hindu (ref.)		
Hindu	0.47**	0.29-0.77
Access to health information/ services		
Listens to radio		
No (ref.)		
Yes	0.65*	0.45-0.94
Watches television		
No (ref.)		
Yes	0.90	0.55-1.46
FP worker visit		
Not Visited (ref.)		
Visited	1.36	0.75-2.47
Travel Time		
Up to 30 minutes (ref.)		
31-60 minutes	1.13	0.73-1.70
More than one hour	1.34	0.78-2.31
Knowledge and practice of FP		
Knowledge of FP		
Lower (ref.)		
Higher	0.60**	0.41-0.88
Ever use of FP		
No (ref.)		
Yes	1.04	0.69-1.56
Intercept	1.45	
-2 log likelihood	842.29	
Cox & Snell R square	0.134	

*Note *=p<.05, **=p<.01 ***=p<.001, ref= reference category*

Discussion

Despite the introduction of family planning and safe motherhood program, the maternal mortality rate in Nepal is still very high. Unsafe abortion which is a consequence of unintended pregnancy is one of the reasons for such a high maternal mortality rate. Many studies including the present study showed that unintended pregnancy is common among Nepalese women. It indicates that there is strong need of family planning program and more mass media exposure. The result of this study suggests that all women, regardless of age, socioeconomic, or socio-cultural status, would benefit from increased efforts to ensure that pregnancies are intended.

The multivariate analysis supported many of the findings of the bivariate analysis and indicated a different pattern of effect for few other variables. In the multivariate analysis, age of women, ideal number of children, age at first marriage, radio exposure, religion and knowledge about contraceptives were found to have statistically significant influence on unintended pregnancy.

This study has shown that the higher the age of women, the higher the probability of having current pregnancy as unintended. The effect of age remained the same in logistic regression analysis. Similarly, we found significant negative relationship between age at first marriage and unintended pregnancy. One of the reasons could be early marriage leads to earlier initiation of sexual intercourse, which exposes women to an extended period when they are at risk of getting pregnant and is thus related to a higher likelihood of experiencing unintended pregnancy. The other reason could be that women who marry early may have limited access to services or may experience difficulty in practicing contraception due to lack of decision making power.

The results showed that those who have had regular access to mass media (radio) were less likely to report unintended pregnancy compared to those who did not have regular access. It means mass media has played an important role to reduce unintended pregnancy because it gives wider range of knowledge [17] and leads to use of contraception and sensitizes couple about the family norms so that they have low parity and low unintended pregnancy.[18]

Although not significant in bivariate anlsyis, the unexpected result from the logistic regression relates to ideal number of children as a determinant of unintended pregnancy. In the bivariate analysis, women who had more children had higher unintended pregnancy, yet when demographic, socio-economic were controlled, those women who had more children had lower odds of experiencing unintended pregnancy compared to those who had fewer children. One reason could be that almost all women (93%) in the sample live in rural areas and rural women perceive greater benefit from having more children. Hence our sample reflected that the decline in desired family size in Nepal resulted in increased exposure to the risk of having unintended pregnancy.

We hypothesized that women who have higher knowledge about contraceptives (more than average) are less likely to experience unintended pregnancy. Our result supports the hypothesis that if a woman has higher knowledge of methods, she is more likely to be aware of the benefits of those method which in turn will motivate her to use the methods and less likely to have unintended pregnancy. The similar result was found in study conducted in Ecuador as well.[19]

In this study, there was significant association between the literacy status and unintended pregnancy in bivariate analysis but no significant association in multivariate analysis after controlling other demographic, socio-economic and other variables. Literacy rate of women is very low and majority of women do not have more than primary level education and other social cultural factors strongly influence intended pregnancy status; hence education is not statistically significant. However, it should not be concluded that education is not significantly related to intended pregnancy status and thus we should not ignore the importance of education for the empowerment of women, and for the better life of women.

Although statistically not significant, women who have the exposure to TV and lived near the health facilities had lower unintended pregnancy than their counterparts. Ever use of family planning method has significant relationship with intended pregnancy status of women as found in many literature, however, the results from this study do not comply with the previous findings. The reasons were identified as the complexity of using contraceptive or lack of methods choice, method failure and the financial barriers to effective contraceptive methods. It was seen that the individual or community's perception about contraception is important factor, which affects contraceptive use. Similarly, misconception leads to discontinuation and reduces use of contraception and increases the level of unintended pregnancy.[20] Thus it can be argued that misconception about FP methods exists among Nepalese women. High FP method failure among married women in the reproductive age is also prevalent in Nepal.[21] However it does not imply that FP use is not an important determinant of unintended pregnancy

among married pregnant women in Nepal, it rather reflects the situation that the variable 'FP ever used' acts indirectly on unintended pregnancy in this study.

From the predicted probability it is clearly seen that women with delayed age at marriage, with radio exposure and with high knowledge about FP methods have very low probabilities for unintended pregnancy. This demonstrates that FP knowledge, radio exposure and age at first marriage play a vital role to reduce unintended pregnancy.

This study has found out the underlying cause of high prevalence of unintended pregnancy which helps in order to be better understood and appropriately addressed by the reproductive health programs. This study has also identified those who are at the risk of unintended pregnancy and thus helps program planners and policy makers to focus on some particular identified aspects of the program and improve the effectiveness of health services in term of information on contraceptive methods and access to the services. If programs are aimed at reducing unintended pregnancy, it should focus on all these identified issues so that abortion, maternal morbidity and mortality, infant morbidity and mortality will decrease and the overall health status of the family can be improved with appropriate birth spacing and family size.

In conclusion, no single factor accounted for the high rates of unintended pregnancy; many factors were associated in this regard. Among them, this study has found that age of women, women's age at first marriage, radio exposure, religion and knowledge of family planning methods are strong predictors of unintended pregnancy. In short, it can be concluded that to reduce unintended pregnancy, family planning and reproductive health services need to provide widespread information on effective contraceptive use and their access.

Recommendations

We have proposed some policy recommendations based on the findings of the present study that could be useful in developing strategies to reduce unintended pregnancy among married women of the reproductive age in Nepal.

- More emphasis is needed on mass media messages, especially through radio, addressing the advantages of small family size and family planning methods. It will be better if these programs use local dialects to reach the target population.
- Despite the legal provision of marriage, early marriage is still common in the country. So program should focus on creating awareness about marriage law, disadvantage of early marriage and marriage law should be strictly implemented.
- More information is needed on contraception and its proper use, as well as better access to contraceptive services. So family planning program should put an effort to raise awareness through information, education and communication (IEC) program about effective use as well as to reduce the unmet need with particular attention in the country. The role of quality of care in improving women's ability to achieve their reproductive goal is another important aspect. So it should be given special attention.

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