Determinants of Unintended pregnancy among currently pregnant married women in Nepal

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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 (Jain, 1999; Santelli, et al., 2003). 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 can result in serious long-term negative health effects including infertility and maternal death (Klima, 1998).

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 (UNFPA, 1997). The data suggest that approximately 49% of all pregnancies in the United States (Hanshaw, 1998), 46% in Yamagata, Japan (Goto, et al., 2002), 35% in both Iran (Abbasi-shavaji et al., 2004) and Nepal (Ministry of Health (Nepal), New ERA, and ORC Macro, 2002) are unintended. Almost all have been occuring due to non-use of family planning method or contraception failure. About 50% of all unintended pregnancies in the United States are due to contraceptive failure (Forrest, 1994). 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 (Ipas, 2004).

The level of unintended pregnancy can be used as an indicator of the state of women's reproductive health and the degree of autonomy women have in determining whether and when to bear children (Eggleston, 1999). Hence, 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

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tool for a country's overall development and improving the quality of life of the people (Senanayake, 2001). 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 (UNFPA, 1998).

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 (Ministry of Health (Nepal), New ERA, and ORC Macro, 2002). Family planning method failure rate is high. A study found that 20% in rural and 16% in urban married women aged 15-49 reported method failure as the reason for their unintended pregnancy (Tamang, et al., 2002). Similarly, one research study estimated that during the first year of vasectomy, 1.7% women would become pregnant (Nazerali, et al., 2003), which leads to the higher unintended pregnancies and abortion. A study conducted at 5 major hospitals showed that abortion related admissions account for 20% to 48% of the total obstetric and gynecological patients (CREHPA, 1999). Despite the legalization of abortion laws (After March 2002) in the country, 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 (CREHPA 2002).

It is hypothesized that women in the vulnerable group (illiterate, living in the rural area, working on agricultural sector), who have a less autonomy in the family, 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.

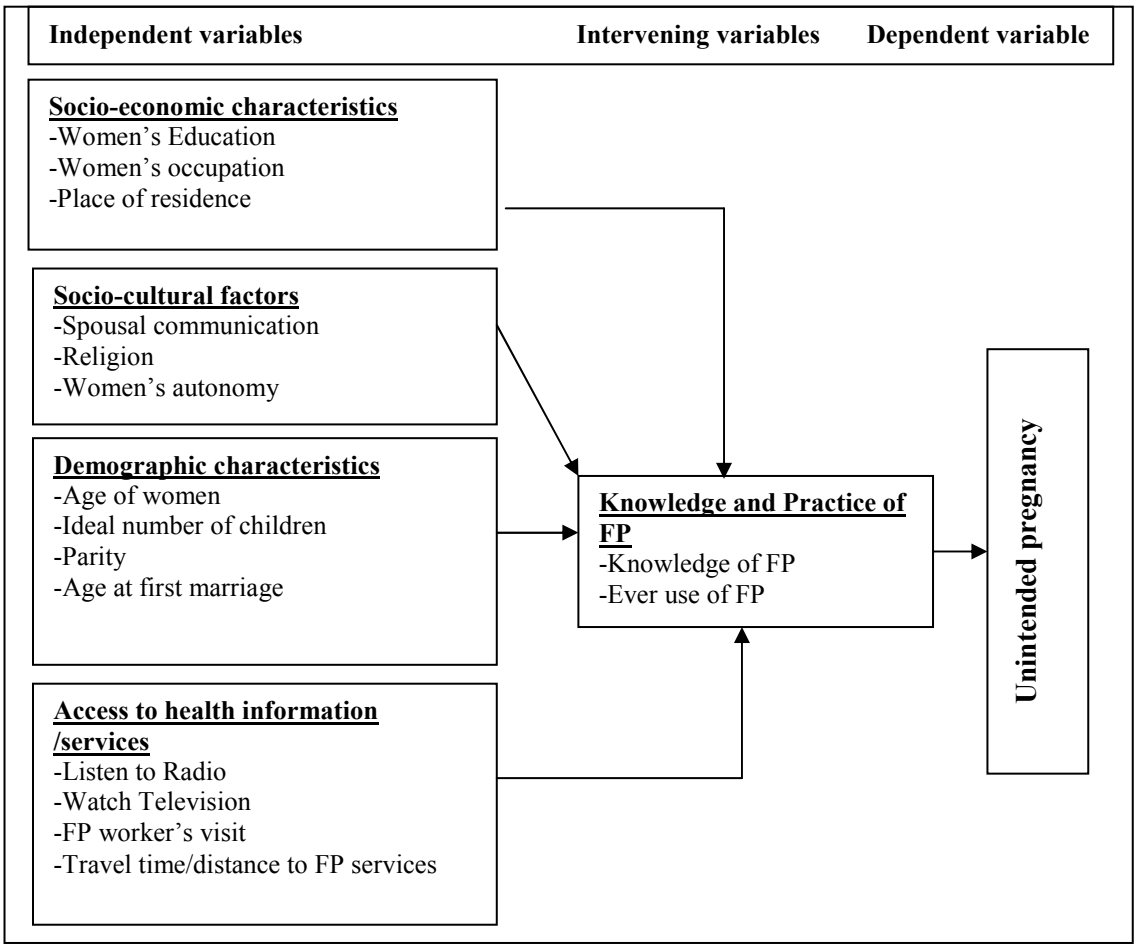
The underlying cause of high prevalence of unintended pregnancy needs further investigation and exploration in order to be better understood and appropriately addressed by the reproductive health programs. It is essential to identify for those who are at the risk of unintended pregnancy and to provide 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 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 very few studies about unintended pregnancy in Nepal, this type of research which focuses on currently pregnant married women has not yet been undertaken in the country.

Conceptual framework

For this study, the concept is derived from several theories and studies of the past that have shown the relationship among various causal factors and unintended pregnancy. The conceptual framework is designed to show the influence of independent and intervening variables on unintended pregnancy. The focus is given to the effect of independent variables though intervening variables on dependent variables.

Figure 1. Conceptual Framework



Subject and methods

The study has used the data from the 2001 Nepal Demographic and Health Survey (NDHS, 2001). This cross sectional survey was conducted among married women in the reproductive age (15-49 years). Out of 8,726 interviewed women 751 (8.6%) were currently pregnant women 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. So the total study population of this study is 723. Only currently pregnant women were selected for this study to minimize underreporting unplanned pregnancies. It may reduce recall error as it is related to current situation and not 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. This study represents the country as a whole because the sample population is drawn from the national representative survey.

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 to wait 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.

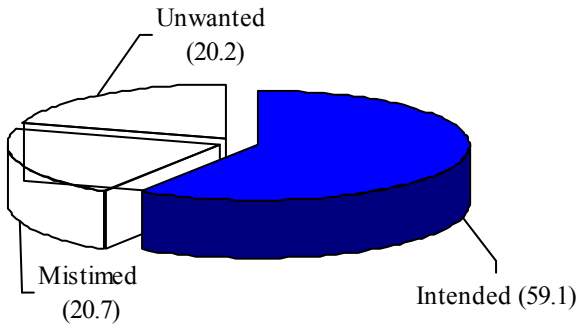
Women's autonomy is a complex phenomenon that can not be completely measured by determining if women have the final say in decisions or not. In this study, women's autonomy is measured by two different variables. Variables are '*decision on own health care seeking behavior*' and '*decision on how to spend money'* respectively. Women were coded as having 'some autonomy' if either they alone or involvement with other had final say about decision related to their own health care or how to spend their own earned money. Women who depended totally on others decision related to the above issues are considered as having 'no autonomy'. Similarly, spousal communication measures respondents' discussion with their husbands regarding family planning matters. Almost all respondents (99.5%) have heard at least one FP method. So knowledge about FP variable is measured by scoring the knowledge of each method. This variable is categorized into two categories. The average number of methods heard was taken as a guide for making these two categories. Score over than average (average score =7.1) was treated as higher level of knowledge and less than average score was treated as lower level of knowledge.

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

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 .Figure 2 shows the intentions of the women about their current pregnancy. 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%). More than two-fifths of the respondents (41%) reported their current pregnancies were unintended. As stated earlier, unintended pregnancy is defined as mistimed and unwanted pregnancy.

Figure 2 Percentage of respondents classified by their pregnancy intention



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 variables. 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. Not as expected, women who discussed about family planning method with their husbands (47%), who had autonomy on their own health care and how to spend their earned money had more unintended pregnancy (50%) compared to their counterparts. In terms of religion, more than half of the non-Hindu women (52%) and only 39 percent of Hindu women had reported that their current pregnancy was unintended.

Table 1 Percentage of the currently pregnant respondents having unintended pregnancy by Selected socio-economic, cultural, demographic characteristics

			Unintended	Total Number	χ^2
Socio-economic characteristics	**Literacy status**	Illiterate	44.4	486	7.8**
		Literate	34.0	237	
	Occupation	Not working /agriculture	41.8	671	2.4
		Non agriculture	30.4	52	
	Place of residence	Rural	41.7	673	1.79
		Urban	31.7	50	
Socio-culture characteristics	**Spousal communication**	Not discussed	36.6	421	7.78**
		Discussed	47.1	302	
	Religion	Non-Hindu	52.2	112	7.03**
		Hindu	38.9	611	
	Women's autonomy	No autonomy	38.7	571	
		Some autonomy	49.7	152	5.9*
Demographic characteristics	**Age group**	15-24	31.3	415	
		25-34	48.4	247	54.36***
		35 or more	76.5	61	
	Ideal number of Children#	1-2 children	39.2	404	2.00
		Three or more	44.4	303	
	Total children ever born	None	20.7	195	
		One	28.8	184	99.6***
		Two	48.2	122	
		Three or more	64.9	222	
	Age at first marriage	Less than 16 years	46.2	339	7.5**
		16 year or more	36.3	384	
Access to health information /services	**Radio exposure**	No	45.3	469	10.03**
		Yes	33.0	254	
	Television exposure	No	42.5	583	2.97
		Yes	34.6	140	
	Travel time to FP ##	Up to 30 minutes	38.0	363	
		31-60 minutes	45.0	167	8.17**
		More than one hour	54.1	91	
	FP worker visited	Not visited	39.8	663	4.77*
		Visited	54.0	60	
Knowledge and practice of FP	**Knowledge about FP**	Lower	46.4	411	11.67**
		Higher	33.8	312	
	Use of FP method	Never use	39.4	518	1.8
		Ever use	44.9	205	
		Total	41.0	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

As expected, as age increases the percentage of women reporting unintended pregnancies increased (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 ages (before 16 years) have higher rate of unintended pregnancy compared to those who got married at 16 years and later.

The result shows that the increase in exposure to mass media decreases 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 decreases 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 number of FP method heard, the lower the percentage of women reporting the current pregnancy as an unintended (34%). Against expectation, those respondents who were visited by Family Planning workers in the last 12 months had higher level of unintended pregnancy (54%) compared to those who were not visited by FP worker (40%).

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, spousal communication, religion, age at first marriage, radio exposure, travel time to FP sources, and knowledge about FP methods are significant in the level of $p<.01$ and other two variables women's autonomy and FP workers' visit are significant in the lebel of $p<.05$ with unintended pregnancy

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 and intervening 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 and intervening variables which were found to have significant effect and conceptually 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 'children ever born' was not entered in the logistic regression model.

Three models had been used in the analysis. The first model contained the individual factors such as demographic characteristics, socio-economic factors, access to health information/services and unintended pregnancy. In the second model, socio-cultural factors were added. In the third model, intervening variables were also added and the effect of intervening variables and independent variables on unintended pregnancy was observed.

In the first model, age has positive and statistically significant impact on unintended pregnancy. Similarly, ideal number of children, age at first marriage and listen to the radio have negative and statistically significant impact on unintended pregnancy. The results indicate that for every one year increase in women's age, the odds of women experiencing unintended pregnancy increase by 11 percent [(1-OR)*100] by keeping effect of other individual variables constant in the model. In term of ideal number of children, the likelihood of reporting unintended pregnancy decreases by 24 percent for every unit increase in one ideal number of children. Similarly, increase in every one year of age at first marriage reduces 6 percent of the likelihood of unintended pregnancy among women. Regarding mass media exposure, those who were exposed to radio are 40 percent less likely to have unintended pregnancy compared to those who were not exposed.

All these four variables retained their significance even after inclusion of cultural factors in the model 2. The reduction on the odd ratio of age, ideal number of children, age at first marriage, radio exposure variables after inclusion of socio-cultural factors (spousal communication, religion and women's autonomy) indicated that the socio-cultural factors were also important predictors of unintended pregnancy. Model 2 further explained that the women who discussed family planning matter to their husbands were 1.5 times more likely to have unintended pregnancy compared to those who did not discuss FP issues with their husbands. Regarding religion, Hindu women were 52 percent less likely to have experience of unintended pregnancy compared to other religion keeping all other variables constant in the model.

Model 3 presents the final results after adding intervening variables. Even after inclusion of the knowledge and ever practice of contraceptive variables in model 3, the four individual and two socio-cultural variables were still statistically significant. Furthermore of the two intervening variables, only knowledge about contraception had statistically significant effect on experience of unintended pregnancy. Those women who had higher level (more than average score) of knowledge about contraceptives are 40 percent less likely to experience unintended pregnancy compared to those who have lower level of knowledge (less than average score) about family planning methods (Table 2).

Table 2 Logistic regression results for unintended pregnancy

		Odds ratios		
		Model I	Model II	Model III
Demographic characteristics	**Age** (in years)	1.112***	1.106***	1.105***
	Ideal number of children (number)	0.761*	0.751*	0.725**
	Age at first marriage (in years)	0.937*	0.926**	0.929*
Socio-economic characteristics	**Literacy**			
	Illiterate (Ref)			
	Literate	1.221	1.212	1.336
	Occupation			
	Not working/Agriculture (Ref)			
	Non-agriculture	0.708	0.587	0.580
	Place of residence			
	Urban (Ref)			
	Rural	0.981	0.963	0.984
Access to health information/ services	***Listens to radio***			
	No (Ref)			
	Yes	0.603**	0.583**	0.628*
	Watches television			
	No (Ref)			
	Yes	0.930	0.954	0.959
	FP worker visit			
	Not Visited (Ref)			
	Visited	1.385	1.199	1.274
	Travel Time			
	Up to 30 minutes (Ref)			
	31-60 minutes	1.200	1.159	1.110
	More than one hour	1.549	1.460	1.344
	No response	0.665	0.699	0.607
Socio-culture factors	**Spousal communication**			
	Not discussed (Ref)			
	Discussed		1.529*	1.633**
	Religion			
	Non-Hindu (Ref)			
	Hindu		0.482**	0.468**
	Women autonomy			
	No autonomy (Ref)			
	Some autonomy		1.305	1.374
Knowledge and practice of FP	***Knowledge of FP***			
	Lower (ref)			
	Higher			0.600**
	Ever use of FP			
	No (Ref)			
	Yes			0.994
	Intercept	0.091	0.717	0.908
	-2 log likelihood	868.124	852.027	844.900
	Model Chi-Square	74.526***	90.623***	97.750***
	Degree of freedom	12	15	17
	Cox & Snell R square	0.102	0.122	0.131

Note *=p<.05, **=p<.01 ***=p<.001

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

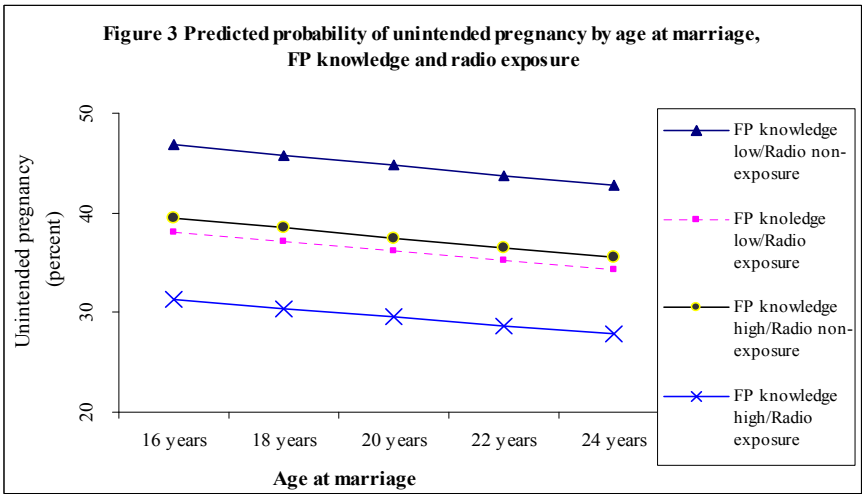
X2 is the Family planning knowledge

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. In the 16 years age at first marriage, those women who had a lower level of knowledge about



family planning and who were not radio exposure have higher level of unintended pregnancy i.e. 46.9 percent $[1 / 1 + e^{-[0.210 + (-0.359)\,(0) + (-0.301)\,(0) + (-0.021)\,(16)]} = 0.4685]^{*}$.

In the same age at marriage (i.e. 16 years), women who had higher level of knowledge about family planning methods and also exposure to the radio have 15.6 percent lower (46.9-31.3) unintended pregnancy than those who have lower level of knowledge about family planning and non-exposure of radio. It means that radio exposure and knowledge about family planning methods play a great role to decrease unintended pregnancy. Similarly, at the 24 years of age at marriage, women who have higher knowledge about FP and radio exposure, these women 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.

Discussion

Despite the introduction of family planning and safe motherhood program, the maternal mortality rate in Nepal is 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 present study showed that unintended pregnancy is common in Nepalese women. It indicates that the higher demand 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 some of the findings of the bivariate analysis and indicated a different pattern of effect for a few other variables. In the multivariate analysis, age of women, ideal number of children, age at first marriage, radio exposure, spousal communication, 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 an unintended. It is similar to the study conducted in currently married pregnant women in Iran (Abbasi-Shivazi, 2004) and all women of reproductive age in Nigeria (Okonofua et al., 1999) and Nepal (MOH, 2001).

A contradictory result was observed from the logistic regression regarding the influence of ideal number of children on an unintended pregnancy. In the multivariate analysis, ideal number of children was

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* 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

negatively associated with unintended pregnancy indicating that those women who desired more children were less likely to experience unintended pregnancy. One reason could be more people (93%) 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.

Similar to the study in Japan (Goto, et al., 2002), we found significant negative relationship between age at first marriage and unintended pregnancy in Nepal. 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 the women who have married early may have limited access to services or may experience particular difficulty in practicing contraception.

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 do not have regular access. It means mass media has played an important role to reduce unintended pregnancy because it gives wider range of knowledge (Flora & Maibach, 1990; Oni & McCarthy, 1990) and leads to adopt contraception and sensitizes couple about the family norms so that they have low parity and low unintended pregnancy (Westoff & Rodriguez, 1995; Odimegwu, 1999).

Both bivariate and multivariate analyses of this sample failed to support the hypothesis regarding spousal communication as a determinant of unintended pregnancy. Women who had discussed about family planning in the last 12 months with their husbands had higher level of unintended pregnancy. It could be due to a patriarchal and male dominated Nepalese society. Women's perception that their husbands oppose family planning is a dominant factor for discouraging contraceptive practice in Nepal (Stash, 1999). If a husband would like to have a big family, then a woman had to follow his wish. Unintended pregnancy was more common in Non-Hindu women compare to Hindu women. One of the reasons could be the Hindu women are likely to accept pregnancy as "Given by God" or "Treasure of the Family". The other reason might be due to considerable proportion (38%) of Muslim women among Non-Hindu category. Islam restricts women's activities in ways that other religions do not (Caldwell, 1986).

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 is found in Ecuador as well (Eggleton, 1999).

In this study, there was no significant association between the experience of unintended pregnancy and women's education as in Japan (Goto, 2002), and occupation like the study found in Iran (Abbasi-Shavazi et al., 2004). In Japan, most of the women are educated and they prefer not to have children or to have less children compare to other Asian countries. So there is no significant difference in the experience of unintended pregnancy among different educational level of Japanese women. In case of Nepal, the literacy rate of women is very low and huge numbers 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 better life of women.

Similarly, contrary to the hypothesis, women's autonomy has no significant association with unintended pregnancy. This is because in a patriarchal society, women are often given less opportunity to be self-supporting and have to depend on the male relatives for their survival (Mason & Tej, 1987) and the possibility that women who earned cash are associated with households of low economic status and the job itself was a low status job.

Although statistically not significant, women who have the exposure to TV and lived near the health facilities had lower unintended pregnancy than women do in the comparison group. Ever used of family planning method has significant relationship with intended pregnancy status of women in many literature, however, the results from this study is not similar with usual results. 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 perception about contraception is important factor, which affects contraceptive use. Similarly, misconception leads to discontinuation and decreases the use of contraception and increases the level of unintended pregnancy (Senanayake, 2001). Thus it can be argued that misconception about FP methods exists among the Nepalese women. High FP method failure among married women in the reproductive age is also prevalent in Nepal (Tamang, et al., 2002). 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 in the delayed age at marriage with radio exposure and have a higher 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.

Based on some theories and empirical evidences, it is hypothesized that the knowledge and practice on family planning act as an intervening variables with unintended pregnancy. From the logistic models it can be observed that the variables which are significant in the first and second model also retained the significance when we introduced intervening variables. It implies that the relationship of these variables do not go through intervening variables with unintended pregnancy. Thus we can conclude that these variables have direct effect on unintended pregnancy and our sample failed to support the hypothesis that knowledge and ever used of FP act as an intervening variables in the case of Nepal. We can conclude that the age of women and spousal communication have direct positive influence on unintended pregnancy. Furthermore ideal number of children, age at first marriage, religion (Hindu), radio exposure and FP knowledge have direct negative influence on 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 who are at the risk of unintended pregnancy and helps thus the 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 the program focuses on reducing unintended pregnancy and trying to make 100 percent intended pregnancy, the program 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, ideal number of children, women's age at first marriage, radio exposure, spousal communication, religion and knowledge of family planning methods were the 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 strategy 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 message. Mass media gives wider range of knowledge and leads to adopt contraception and sensitize couple about the family norms. It will be better if these programs use local dialects to reach the target population
- Despite the legal provision of marriage, early marriage is more 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.
- It is observed from the result that older women are more likely to experience unintended pregnancy so the program should target these women who have already completed their fertility desire.
- Although not significant in logistic model, it was found from the bivariate analysis that those who visited by FP workers and who ever used FP had higher level of unintended pregnancy. So the program should focus on monitoring and evaluation of FP workers' work as well as availability and accessibility of FP methods and quality of family planning program.
- Spousal communication has positive effect on unintended pregnancy. So the program should emphasize the importance of male involvement in family planning, particularly in areas with deep-rooted patriarchal culture. So that misconception of husband towards family planning methods can be changed. Improving inter-spousal communication as well as women empowerment to persuade their husbands to use FP method and small family norm could be another strategy to influence unintended pregnancy.
- More information is needed about contraception and its proper use, as well as better access to contraceptive services. So family planning program should aim 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.

Suggestions for further research

The results point out the need for further research in several areas. Such as:

- The conventional ways of measuring intention of pregnancies are probably inadequate and may give under estimate the level of unintended pregnancy. So these measurement need to be refined to be more relevant to different social and cultural setting.
- The information about the proportion of unintended pregnancy which caused by non use of contraception, contraceptive failure or inconsistent or inaccurate use would be more important for policy makers and program planners to develop strategy. The data source of the present study could not cover this type of information.
- Information on women's feeling about pregnancy may change throughout the gestation period so qualitative approach is suitable to catch such issues.
- This study has shown the positive effect of spousal communication on unintended pregnancy. Further research is needed to determine the exact nature and pattern of this relationship.

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