A Binary Logistic Regression Model to Identify the Factors Associated with Unmet Need for Family Planning Among Married Women

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ABSTRACT

Background: Unplanned pregnancy related to unmet need is a worldwide problem that affects society and bad impact on health of the women. Contraceptive use has increased in the recent years in the developing countries like India, has the desire for smaller families, however, millions of women, more than 150 million women want to delay or avoid pregnancy but are not using any type of contraception, these women are considered to have unmet need for family planning.

Aim and Objectives: Factors which are associated with unmet need for family planning among married women and test binary logistic regression model

Methods: 1200 married women in the age group of 15-49 years were selected randomly from Kalaburagi from which 600 from urban and 600 from rural areas by using multistage sampling and data analyzed by using SPSS software

Results: Estimated odds ratio and higher odds of having unmet need for family planning for various factors are estimated and test of significance at p<0.05.

Conclusion: We found, Age, Education of married women, Education of husband, Family Income, Ideal age for marriage having higher odds ratios indicate higher unmet need and logistic regression model is quite useful model for estimating unmet need for family planning.

Key word: Unmet need, Met need, Family planning, odds ratio, married women (MW)

INTRODUCTION

Population as a human resource is vital for development of a nation. Combined with material resources and money, population represents as the wealth of nations. However beyond a desirable level, growth of population is likely to work as a deterrent to the socio-economic development of a country. Many of the developing countries including India have faced this problem of over population coming in the way of faster growth of the economy. The problem of over population is being witnessed at global and national levels.

13 percent of currently married women between the ages of 15-49 years in India have an unmet need for contraception[1]. 16.1 percent of MW in Karnataka and 6.9 percent MW in Gulbarga[2, 3]. Unwanted pregnancy related to unmet need is a worldwide problem that affects society and bad impact on health of the women. Contraceptive use has increased in the recent years in the developing countries like India, has the desire for smaller families, however, millions of women, more than 150 million women want to delay or avoid pregnancy but are not using any type of contraception, these women are considered to have unmet need for family planning.

The population of Gulbarga district was 25,66,326 (as per 2011 census) . The male population of the district is 13,01,755 and female population is 12,64,571[4]. The district population growth rate over the decade 2001-2011 was 18.01% and sex ratio 971 per 1000 male which is slightly above the state sex ratio and well above the national sex ratio. Literacy rate of the district is 64.85%. Maximum number of population of Gulbarga district are living in rural areas. Kalaburagi district is one of the most backward districts in Karnataka state and this position has remained unchanged over the last fifty years. Taking all these points into consideration we made an effort to fit a binomial logistic model to find the association of various factors in related to unmet need for family planning among married women.

METHODS

The study was conducted in the year 2016 to 2018 after approval from the doctoral committee of Gulbarga University, Kalaburagi. The pre-tested questionnaire was used, the purpose of the study was fully explained to the participants and data was collected after the participant's consents. 1200 married women in the age group of 15-49 years were selected randomly from all the seven talukas of Kalaburagi district. Out of this 600 urban study participants were selected randomly from the wards out of 55 wards after applying multistage sampling technique. Similarly in rural areas, randomly villages are selected and 600 study participants were selected by multistage sampling procedure. Currently pregnant married women were excluded from both urban and rural areas. The need for family planning is the dependent variable. For analysis purpose, the need for family planning is grouped as 0 if unmet need=1 and 0 if met need and considered here as dichotomous response variable. Apart from response variable, the data set on independent variables is obtained by structured questionnaire and interview method.

In logistic model, we consider situations where the response variable is a categorical random variable, attaining only two possible outcomes called binary or dichotomous. This difference between logistic and linear regression is reflected both in the choice of a parametric model and in the assumptions.[5,6] The unmet and met need for family planning of woman is considered as dichotomized response variables. Since the response variables are dichotomous (i.e. they have only two possible outcomes), it is inappropriate to assume that they are normally distributed. Thus, the data cannot be analyzed using the traditional linear regression methods. It is convenient to denote one of the outcomes of response as unmet and met need.[7]

It is standard practice to let the Y (need for family planning) to be a two independent binary / dichotomous response variables, which defined as

$$Y \text{ (Need for family planning)} = \int_{0,if\ Y\ (Met\ need)=0}^{1,if\ Y(unmet\ need)>0} .$$

To explores the relationship between a set of covariates i.e. $X' = (X_1, X_2 \ldots X_p)$ and the presence or absence of response variable in the study.

RESULTS

The unmet need for family planning of MW belongs to >=31 years of age is higher (45.72%) as compared to <=30 years (32.04%). The estimated odds ratio of age is (OR=1.79, 95%). The married woman belongs to >=31 years of age have significant and higher odds of having unmet needed for family planning. The non-Hindu married woman is higher unmet need (40.34%) as compared to Hindu MW (36.59%). The estimated odds ratio of religion is (OR=1.17). The non-Hindu MW have higher odds of having unmet need for family planning the literate MW is higher unmet need (53.74%) as compared to illiterate MW (27.61%). The estimated odds ratio of literate MW is (OR=0.33). Literate MW is higher (52.94%) as compared to unmet need for family planning of illiterate MW (31.81%). The estimated odds ratio of Education of husband of MW is (OR=0.41). The unmet need for family planning of employed MW is higher (37.57%) as compared to unmet need for family planning of unemployed MW (30.77%). The estimated odds ratio of Occupations of MW is (OR=1.35). It means that, the employed married woman have higher odds of having unmet need for family planning as compared to unemployed MW. The unmet need for family planning of unemployed husbands of MW is higher (56.25%) as compared to unmet need for family planning of employed husbands of MW (37.25%). The estimated odds ratio of occupations of husbands of MW is (OR=0.46).

The estimated odds ratio of family income is (OR=1.56). It means that, the married woman belongs to higher income group have higher odds of having unmet need for family planning as compared to married woman belongs to lower income group. The estimated odds ratio of family income is (OR=1.56). It means that, the married woman belongs to higher income group have higher odds of having unmet need for family planning as compared to married woman belongs to lower income group. The unmet need for family planning of MW living in nuclear family is higher (37.98%) as compared to unmet need for family planning of MW living joint family is (33.33%). The estimated odds ratio of Type of family is (OR=0.82).

Table 1: Various factors Associate to unmet need for family planning among MW

Parameters (n=1200)	Unmet need (%)	Met need (%)	P-value	Unadjusted OR (n=1200)	95% CI
Age groups					
<=30	231 (32.04)	490 (67.96)	0.0001*	1.79	1.41 - 2.3
>=31	219 (45.72)	260 (54.28)			
Total	450 (37.5)	750 (62.5)			
Religion					0.89 - 1.5
Hindu	333 (36.59)	577 (63.41)	0.251	1.17	
Non-Hindu	117 (40.34)	173 (59.66)			
Total	450 (37.5)	750 (62.5)			
Education of MW					
Literates	244 (53.74)	210 (46.26)	0.0001*	0.33	0.26 - 0.4
Illiterates	206 (27.61)	540 (72.39)			
Total	450 (37.5)	750 (62.5)			
Education of husband					
Literates	171 (52.94)	152 (47.06)	0.0001*	0.41	0.32 - 0.5
Illiterates	279 (31.81)	598 (68.19)			
Total	450 (37.5)	750 (62.5)			
Occupations of MW					
Unemployed	4 (30.77)	9 (69.23)	0.614	1.35	0.41 - 4.4
Employed	446 (37.57)	741 (62.43)			
Total	450 (37.5)	750 (62.5)			
Occupations of husband					
Unemployed	9 (56.25)	7 (43.75)	0.119	0.46	0.17 - 1.3
Employed	441 (37.25)	743 (62.75)			
Total	450 (37.5)	750 (62.5)			
Family size					
<=2	24 (34.29)	46 (65.71)	0.567	1.16	0.7 - 1.9
>=3	426 (37.7)	704 (62.3)			
Total	450 (37.5)	750 (62.5)			
Family Income					
>=10000	73 (29.55)	174 (70.45)	0.0040*	1.56	1.15 - 2.1
<=10001	377 (39.56)	576 (60.44)			
Total	450 (37.5)	750 (62.5)			
Type of Family					
Nuclear family	409 (37.98)	668 (62.02)	0.314	0.82	0.55 - 1.2
Joint family	41 (33.33)	82 (66.67)			
Total	450 (37.5)	750 (62.5)			
Ideal age for marriage					
15-18yrs	284 (34.18)	547 (65.82)	0.0001*	1.58	1.23 - 2
19+yrs	166 (44.99)	203 (55.01)			
Total	450 (37.5)	750 (62.5)			
Status of Pregnancy					
No pregnancy	15 (30)	35 (70)			
Pregnancy	435 (37.83)	715 (62.17)	0.263	1.42	0.77 - 2.6
Total	450 (37.5)	750 (62.5)			
Number of living children					
No children	28 (33.33)	56 (66.67)	0.413	1.22	0.76 - 1.9
Children	422 (37.81)	694 (62.19)			
Total	450 (37.5)	750 (62.5)			
Have abortion					
No	398 (37.9)	652 (62.1)	0.444	0.87	0.61 - 1.2
Yes	52 (34.67)	98 (65.33)			
Total	450 (37.5)	750 (62.5)			
Infant death					
No	416 (37.55)	692 (62.45)	0.911	0.98	0.63 - 1.5
Yes	34 (36.96)	58 (63.04)			
Total	450 (37.5)	750 (62.5)			

*p<0.05

The MW group having unmet need for family planningfelt the 19+yrs is an ideal age of the women for marriage is higher (44.99%) as compared to unmet need for family planning of MW felt the 15-18yrs is an ideal age of the women for marriage is (34.18%). The estimated odds ratio of ideal age of the women for marriage is (OR=1.58). It means that, the felt the 19+yrs is an ideal age of

the women for marriage has higher odds of having unmet need for family planning as compared to MW felt the 15-18yrs is an ideal age of the women for marriage.

The unmet need for family planning of MW with pregnancy is higher (37.83%) as compared to unmet need for family planning of MW no pregnancy is (30.00%). The estimated odds ratio of status of pregnancy is (OR=1.42). It means that, the MW with pregnancy have higher odds of having unmet need for family planning as compared to MW with no pregnancy. the unmet need for family planning of MW with living children is higher (37.81%) as compared to unmet need for family planning of MW have no living children is (33.33%). The estimated odds ratio of number of living children is (OR=1.22). It means that, the MW with children have higher odds of having unmet need for family planning as compared to MW with have no living children. the unmet need for family planning of MW with no experience of abortion is higher (37.90%) as compared to unmet need for family planning of MW have an experience of abortion is (34.67%). The estimated odds ratio of status of abortion is (OR=0.87). It means that, the MW with no experience of abortion have higher odds of having unmet need for family planning as compared to MW with has experience of abortion. the unmet need for family planning of MW with an experience of infant death is smaller (36.96%) as compared to unmet need for family planning of MW have no experience of infant death is (37.55%). The estimated odds ratio of experience of infant death is (OR=0.98).

DISCUSSION

The Unmet need for family planning among married women in India was 13% and the unmet need for contraception in Karnataka was 10.4% (NFHS-4). In This study the unmet need for contraception was 37.1%, similar study done by Rasheed et al from Uttar Pradesh, Chaudhary et al from Rajasthan and Rajkumari et al from Manipur reported the unmet need for family planning as 25.9%, 31.15% and 23.9% respectively [8,9,10] and Malini M. Bhattathiry et al[11] and Rajaat Vohra et al [12], Reported the unmet need for family planning as 39% and 35% respectively. Literate MW is higher (52.94%) as compared to unmet need for family planning of illiterate MW (31.81%) and significant association between educational status of the married women. A study done by Patil SS et al [13] found that significant association between educational status of the married women with unmet need for family planning. The non-Hindu married woman is higher unmet need (40.34%) as compared to Hindu MW (36.59%). By Rabiul Ansary et al [14]

found that Muslim and other religion are 2.53 and 2.39 times more likely to be unmet need than hindu religion. Unmet need for family planning married women belongs to >=31 years of age is (45.72%) higher unmet need as compared to <=30 years (32.04%), similar type of study done by V.S. Tapare et al [15] from Maharastra, Unmet need was significantly high amongst the women with lower and older age group 29.08% . The unmet need for family planning of MW belongs to higher income group is higher (39.56%) as compared to unmet need for family planning of MW belongs to lower income group is (29.55%). Above 19 years is an ideal age of the women for marriage is higher (44.99%) as compared to unmet need for family planning of MW felt the 15-18 years is an ideal age of the women for marriage is (34.18%) was found to be statistically significant. We tested binary logistic regression model, estimated odds ratio and higher odds of having unmet need for family planning for various factors which are associated to unmet need for family planning. The model is quite useful model for estimating unmet need for family planning.

CONCLUSION

In this study we found that, various socio-demographic factors, Age, Education of married women, Education of husband, Family Income, Ideal age for marriage having higher odds ratios i.e. married woman belongs to >=31 years of age have significant and higher odds, Literate MW is higher odds as compare to illiterate married women, the married woman belongs to higher income group have higher odds of having unmet need for family planning as compared to married woman belongs to lower income group and above 19 years is an ideal age for marriage has higher odds of having unmet need for family planning as compared to 15-18 years and also logistic regression model is quite useful model for estimating various factors associated with unmet need for family planning. The reducing unmet need is important for helping couples achieve their reproductive goals and for preventing unintended pregnancies. The study should be done in a longitudinal perspective.

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