

Understanding the Contraceptive Behaviour of Urban Karbis, Assam

MOUSUMI NATH MAZUMDER[†]

*Amity Institute of Anthropology, Amity University,
Sector 125, Noida 201303, Uttar Pradesh
E-mail: mnmazumder@amity.edu*

KEYWORDS: Karbi women. Urban area. Kamrup (Metropolitan) district. Assam. Family planning. Contraceptive methods. Birth interval.

ABSTRACT: The present paper aims to comprehend the level of awareness, prevalence of usage and barriers of family planning methods. A cross-sectional study was done among 350 ever married women aged 15-49 years residing in various localities of Kamrup district, Assam. The present findings shows that about 60 percent of Karbi women are aware of family planning methods and have knowledge of oral pills (59.6%), female sterilization (55.9%) and barrier method condom (44%). However, it is observed that the women of all reproductive age-groups had birth interval of less than 18 months which indicates high unmet need. The contraceptive behaviour of Karbi women is low due to poor comprehensive knowledge about modern contraceptives and misconceptions relating to its side effects. A proper education on the benefits of family planning methods and a change in their attitude would improve their health.

INTRODUCTION

The WHO (2010) defined Family Planning as “The practices that allow individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. It is achieved through use of contraceptive methods and the treatment of involuntary infertility. A woman’s ability to space and limit her pregnancies has a direct impact on her health and well-being as well as on the outcome of each pregnancy.” Family planning prevents about one-third of pregnancy-related deaths, as well as 44% of neonatal deaths. This is because timing and spacing of pregnancies – at least 2 years between births – is needed to prevent adverse pregnancy outcomes, including high rates of prematurity and malnutrition and stunting in children. The ability to determine whether or not to become pregnant and how many children to have has long been recognized as a human right (WHO, 2010).

India is the second most populous country of the world after China which occupies 17.5% of the world population in only 2.4% of the global mass. It has a rate of annual population increase of 1.25% (vs. 1.13% in the world), which equates to more than 15 million people per year. If the steady growth of Indian population is not controlled than it is expected to cross the population of China by the year 2050 (Park, 2009). The current culture for Indian women is to complete childbearing within a relatively short window of time and then undergo a sterilization procedure (Smith *et al.*, 2017). India became the first country in the world to initiate the family planning program in 1952 with the goal of lowering fertility and slowing the population growth rate. Though India commenced the Family planning programme still now about 56% of the eligible couples are still unprotected against conception (MoHFW, 2000). One of the main strategy for implementation of family planning programme is the prevention of unwanted pregnancies and to prevent

[†] Assistant Professor

high rate of maternal deaths in India. Maternal deaths could be prevented through family planning because it allows women to delay motherhood, space birth, avoid unintended pregnancies and abortion and stop childbearing when they reached their desired family size (Carl and Mary, 2008). However, it is observed by many scholars that in spite of political commitment from the Central Government funded National Family Planning Programme, the birth rate has not come down as desired (Rao, 2001). Over the last decade the government has failed to control the population growth inspite of implementing various policies and programmes. In 2012 the 'London Summit on Family Planning' was held to concentrate more on family planning programmes globally so that the access to family planning services and knowledge mechanisms reaches to women and girls in the world's poorest countries by 2020 (Family Planning Summit, 2012). As a subsequent action, the Government of India (2000) adopted a new approach, which places a well-defined focus to the family planning efforts under a larger and more comprehensive umbrella of RMNCH+A (Reproductive, Maternal, Newborn and Child Health and Adolescents) program. This paradigm shift was adopted recognizing the need and long-term goal of addressing a target free approach (beyond the simple strategy of achieving population stabilization), under the larger purview of improving maternal and child (and adolescent) health in India (MoHFW, 2000). In 2015, 52.2% of Indian women of reproductive age who are married or live with unmarried partners (in union) use modern contraceptive methods, compared with 36.1% in 1990. In absolute numbers, the number of women using modern contraceptive methods has doubled, from 58 million in 1990, to 124 million in 2015 (UNPD, 2015). According to the report by the United Nations Population Division in 2015 unmet need for contraception in India has remained at approximately 20% for the past decade and has ranged from 13-44% depending on the particular region of India studied (Prusty, 2014; Sulthana *et al.*, 2015, WHO, 2015). The WHO reports an unmet need for family planning for married and in-union women of 12 percent worldwide and notes women in the postpartum state as a group at high risk (WHO, 2015). Reasons for contraceptive nonuse have been found to include lack of knowledge of various methods, opposition to use

by the female or her male partner, and concern for adverse side effects (Sedgh and Hussain, 2014).

Tribal population in India which constitutes 8.2% of the total population of the country are the most socio-economically deprived groups having low literacy and poor economic and living conditions (Basu, 2000). According to the National Family Health Survey (2005-2006), scheduled tribes in India have very high total fertility rate (3.12) and low contraceptive usage than other social groups. The research on barriers to effective family planning in India has been identified which is due to lack of awareness of potential methods (by both providers and the general population), fear of side effects, religion, partner objection, limited access to or utilization of health care facilities, and high cost of contraception (Prusty, 2014; Sulthana *et al.*, 2015; Choudhury *et al.*, 2015; Speizer, 2013; Yadav and Dhillon, 2015). India being the land of myriad languages, religion and ethnics therefore each community have different levels of awareness and acceptance of methods of family planning. Hence, to make any programme successful it is mandatory to have an in depth understanding on the differentials and determinants of fertility and mortality of different communities. Assam is the land of rich ethnic diversities as it comprises of numerous tribal communities such as Bodos, Rabhas, Mising, Karbis, Kukis, Tiwas, Hmars, Dimasas, Deoris, Morans etc. Each of the population group has their own distinct socio-cultural and religious background, which directly or indirectly affects the family planning behavior of the population. Thus the outcome of family planning programme varies from population to population within the same region. India has a modern contraceptive prevalence rate of 52.2% in 2015 (New *et al.*, 2017). The modern contraceptive prevalence ranges from 14.7% for Manipur to 69.8% for Andhra Pradesh. In other words, Manipur has a level of modern contraceptive prevalence similar to the national level in 1975, whereas Andhra Pradesh has a level that India is not even projected to reach by 2035 (Jin *et al.*, 2017). This represents a difference of 55.1 (46.4 - 62.1) percentage points between the lowest and highest prevalence regions, pointing to large disparities (Jin *et al.*, 2017). So, there is an urgent need to understand the factors determining the fertility

and family planning acceptance and practice of different ethnic communities in order to develop suitable programme and make it successful. Although various studies have been taken on different aspects of population, fertility, and family planning, there have been very limited studies carried out among tribes of North East India. Hence, the present study is an attempt to study the knowledge and attitude of contraceptive behavior by the Karbi women residing in an urban locality.

MATERIALS AND METHODS

A cross-sectional study was conducted on the Karbis of Kamrup city among 354 married women of reproductive age-group 15-49 years and having at least one living children aged less than 10 years. Karbis in this city live in different clusters. Hence, a simple random sampling method was used to identify eligible women from Karbi community inhabited in seven different localities (Barbari, Birkuchi, Dhalbama, Japarigog, Kenduguri, Narikalbasti and Pillankata). Both quantitative and qualitative approaches were adopted to collect the data. A semi-structured interview schedule and checklist for observation were developed to collect information on demographic and socio-economic characteristics of the household, fertility history (age at menarche, age at marriage, age at first conception, children ever born), maternal health care behaviour (antenatal and natal care, place of delivery, diet during pregnancy and postpartum period) and knowledge-practice of contraception. The dependent variables were awareness, attitude, practice and preference of contraceptive methods while the independent variables were age, education level, occupation, socio economic status, age at marriage, duration of married life, number of pregnancies, number of living children and birth interval etc. For the qualitative approaches: observations, case study, group discussions, informal chats; were being adopted to collect information about Karbi social life, and rituals during pregnancy and their perceptions on family planning methods. Prior to collection of data consent from community leader (*Gaon Bura*), household head and women members were taken. The quantitative data analyses were done using Statistical Package for Social Sciences (SPSS) and MS-Office Excel.

Area of the Study: Kamrup (Metropolitan) district is one of the four new districts of the State of Assam created after Census, 2001. It was notified as a district in December, 2002 (Notification No. GAG (B) 181/2002/28, dated 13th December, 2002). The Kamrup (Metropolitan) district is one of the most important districts of Assam having the State capital Dispur within its jurisdiction (District Census Handbook (DCHB), 2011). The district has been carved out of the erstwhile Kamrup district. The district headquarter is in Guwahati, which is the biggest city of the North-East India and covers the major portion of the district. However, it may be mentioned that the district is not entirely urban but also comprises of a fairly good share of rural populace (DCHB, 2011). The total population of Kamrup (M) district as per Census 2011 is 1253938. Males comprises 647585 soul while females consist of 606353 soul (DCHB, 2011). Out of the total population of the district, 216927 person falls under rural and 1037011 persons are under urban areas of the district (DCHB, 2011). The percentage of urban population in the district is 82.7 per cent, thus most of the population dwells in the urban areas of the district. The sex-ratio is the number of females per 1000 males in the population. The district has a sex-ratio of 936, as against 958 in the State of Assam (DCHB, 2011). The literacy rate of Kamrup (M) district is 88.7%, of which 92.1% is for males and 85.1% is for females. The percentage of Scheduled Tribe population to total population in the district is only 6 per cent (DCHB, 2011).

Karbis represents one of the prominent indigenous tribes of North-East India, with unique traditions and cultures distinct from other ethnic groups of the region (Bordoloi,'87). The tribes of Assam could be broadly classified under two groups: i) Hill tribes and ii) Plain tribes. The Karbis usually belong to hill tribe and their habitations is found in between the Brahmaputra on the north, the Dhansiri valley on the east and the Kopili and Jamuna valley on the west and the south respectively (Bordoloi,'87). According to 2011 Census the total Karbi population in Assam is 430,452, and constitutes 11.1 per cent of the total tribal population of the State (Census of India, 2011). At present they are found both in hills and plains covering Sibsagar and Golaghat to Nagaon and Kamrup districts of Assam (Bordoloi,'87). The Karbis

strictly follow clan exogamy, and monogamy is the mostly preferred form of marriage. Cross-cousin marriage is a preferential one. Divorce is rather rare in the Karbi society and they do not have the system of bride price. Though the Karbi women enjoy equal status in their society but they are not the vocal arbiters of the society.

RESULTS

It is important to understand the social background characteristic of the Karbi women prior understanding the behavior relating to the use of contraceptive methods. Table 1 represents the characteristics of 354 Karbi sample women aged 15-49 years and having at least a child aged less than 10 years. All the women interviewed were following Hinduism and more than two-third (69%) of them living in nuclear family. The gender gap in level of illiteracy was observed high, 62.0 per cent and 33.2 per cent women and men respectively. Majority (92%) of the women were found not working. The primary occupation of the Karbi men were daily labourers (29%), while some of them are petty businessman (25%), others were found working in government and private sectors which is 21% and 11% respectively, and a mere five per cent of the Karbi men were engaged in agriculture. Thus, 58 per cent of the women reported household income per month less than ₹ 4000/-. The average number of pregnancy was 2.7, and a total 937 pregnancy episodes were observed among 354 Karbi women. Of the total pregnancy episodes 94 per cent ended as live births, followed by abortion and still births 3.4 and 2.3 per cent respectively. The mean children born to the 354 Karbi women was 2.5 and more than two-fifths (43%) of them had three or more children. Only, 23 per cent of the women had one child.

Family Planning and Desired Number of Children

Unlike the rest of the state in India the North eastern states have equal preferences for both son and daughter child. The tribal community considers children to be an asset for the family. However, the concept of large family is gradually declining as they now consider it be a burden to the family. In the present study it was observed that the Karbi family

TABLE 1
Socio-economic and demographic characteristics of Karbi women aged 15-49 years of Kamrup metropolis, Assam

Socio-economic and demographic characteristics	N	%
<i>Type of household</i>		
Nuclear	244	68.9
Joint	110	31.1
<i>Women's level of educational</i>		
Illiterate	220	62.2
Primary	46	13.1
Secondary and above	87	24.7
<i>Level of husband's education</i>		
Illiterate	118	33.2
Primary	31	8.8
Secondary	158	44.6
Higher	47	13.3
<i>Occupation of women</i>		
Housewife	324	91.5
Work for cash	30	8.5
<i>Occupation of husband</i>		
Service at government sector	76	21.4
Service at private sector	38	10.8
Business	88	24.9
Labour	102	28.9
Agriculture	18	5.1
Others	29	8.2
<i>Income</i>		
₹ 3000-3999	174	58
₹ 4000-4999	100	33.3
₹ 5000+	26	8.6
<i>Mean income (± SD)</i>	300	3505.5 (±649.7)
<i>Demographic characteristics</i>		
Average number of pregnancies	354	2.7
<i>Pregnancy outcome¹</i>		
Live births	883	94.2
Still births	22	2.3
Abortion	32	3.4
<i>Number of children ever born</i>		
1	82	23.2
2	119	33.6
3+	153	43.2
<i>Mean children ever born</i>	354	2.5

prefers a small family because in a city it is hard to survive with a large family where the prices are always at a rise.

From Table 2 it was observed that more than half (52%) of the women were married at the age-group of 15-19 years. Even, 12 per cent of the women were married prior to their 15th year of age followed by 24 per cent women in 20-24 years and only, 13 per cent of the women were married after their 25th birthday. The mean age at marriage was 17 years (±4.4 yrs).

Hence, 53 per cent of the women conceived first time at the age of 15-19 years followed by 33 per cent aged 20-24 years, and three per cent aged above 30 years. The mean age at first conception of the Karbi women was found to be 18.2 years (± 3.9 yrs). The mean children born to the 354 Karbi women was 2.5 and more than two-fifths (43%) of them had three or more children. Only, 23 per cent of the women had only one child. The mean birth-to-birth interval of the study population was 2.1 years. Only, 17 per cent and 13 per cent of the women had three and more than four years birth-to-birth intervals. The NFHS report 2015-16 of Assam also shows similar findings as Total Fertility Rate (children per woman) is 2.2.

TABLE 2

Distribution of determinants of fertility among Karbi women aged 15-49 years of Kamrup metropolis, Assam

Determinants of fertility	N	%
Age at marriage (in years)		
10-14	41	11.6
15-19	183	51.7
20-24	84	23.7
25-29	42	11.9
30-24	4	1.1
Mean age at marriage (\pm SD)	354	17.0 (± 4.4)
Age at first conception (in years)		
10-14	0	0.0
15-19	188	53.1
20-24	118	33.3
25-29	39	11.1
30-24	9	2.5
Mean age at first conception (\pm SD)	354	18.2 (± 3.9)
Desire for children		
1	82	23.2
2	119	33.6
3	153	43.2
Mean children ever born	354	2.5
Birth interval		
One	83	29.6
Two	113	40.4
Three	48	17.1
Four and above	36	12.9
Mean birth interval	354	2.1

The findings from Table 3 shows that the Karbi women have shorter birth intervals of less than 18 months in all age-groups thereby imposing pregnancy complications and abortions among the women of younger generation (< 25). Those women who are having more than three children have opined that they are confident they won't have children as they can't

bear expenses of more children. Moreover large families involves a lot of expense and difficult to provide two square meals a day. It is observed that Karbi women gets married at an early age i.e. 15-19 years, so they have higher fertility which increases unmet need for family planning.

TABLE 3

Distribution of child birth interval on the basis of age-groups among Karbi women

Age-groups (in years)	One Year	Two Year	Three Year	Four Year
20-24	—	14 (87.5%)	2 (12.5%)	—
25-29	4 (8.65%)*	26 (56.5%)	13 (28.2%)	3 (6.5%)
30-34	12 (22.2%)	23 (50%)	11 (20.3%)	8 (14.8%)
35-39	20 (31.7%)	18 (28.5%)	8 (12.6%)	17 (26.9%)
40-44	20 (40.8%)	16 (32.6%)	7 (14.2%)	6 (12.2%)
45-49	27 (51.9%)	16 (30.7%)	7 (13.4%)	2 (3.8%)
Total	83	113	48	36

*Figures in parenthesis indicate percentages

Knowledge and Use of Contraceptives Family Planning Methods

The provision of contraceptive information is fundamental to the ability of women to make informed choices about reproductive health decisions. In the present study it was observed that the awareness about family planning methods is widespread among the Karbi women with 60 per cent of the women have knowledge of at least one method of family planning. The latest AHS report (AHS, 2012-2013) provides that the knowledge of family planning methods among Karbi women currently in use of family planning in Kamrup district is 79.0 per cent, of which 78.8% in rural areas and 79.2% in urban areas.

The present findings in Table 4 show that about 40 per cent of Karbi women have no awareness on any method of contraception. The remaining 60 per cent who are aware of family planning methods have knowledge of oral pills (59.6%), female sterilization (55.9%) and barrier method condom (44%). Among the user of contraceptive method in the past or present 35.2 per cent of them had oral pills, 27.4 per cent condom, and 20.6 per cent copper-t. The source of knowledge about various contraceptives methods were derived mostly from mass media (25%) followed by *aganwadi* workers (23%) and their neighbours (20%). It is observed that Karbi women' husbands

are also aware of contraceptive methods and share their knowledge with them (19%). Earlier, the village *dais* have an important role in the life of a pregnant women so at times their views regarding the use of contraceptive methods were also given due consideration.

TABLE 4
Knowledge of contraceptive methods among the Karbi population of Kamrup

	N	%
Awareness of any contraceptive methods		
Not aware	141	39.8
Having awareness about contraceptive methods (n=213)*	213	60.2
<i>Knowledge of different contraceptive methods (n=213)*</i>		
Male sterilization	51	14.4
Female sterilization	198	55.9
IUD	95	26.8
Condom	156	44
Oral pills	211	59.6
Rhythm	20	5.6
Withdrawal	3	8.4
Any traditional methods	10	2.8
Contraceptives used/ Currently using (n=213)		
Pills	75	35.2
Condom	58	27.4
Copper T	44	20.6
IUD	20	9.4
Female sterilization	10	4.6
Traditional methods	6	2.8
Main source of knowledge (n=213)		
Radio/T.V.	54	25.4
PHC/Aganwadi workers	50	23.4
Neighbours and relatives	44	20.7
Husband	42	19.7
Village <i>dai</i>	23	10.8

* Multiple response taken

Barriers to Using Contraceptives

The unmet need for family planning is a crucial indicator for assessing the future demand for family planning services/supplies. The main reason for unmet of family planning shown in Table 5 is caused due to lack of knowledge about contraceptive method (42.7%), while some other consider that they are afraid of using temporary family planning method (37.4%). About 9.7% of women disclosed that use of contraceptive methods were opposed by their husband or family members as for them children are blessings of God. A small percentage, that is 5.8% of women,

considered family planning measures were not convenient to use.

TABLE 5
Barriers to using contraceptives

Barriers to using contraceptive methods (n=225)*	N	%
Lack of awareness	96	42.7
Fear of side effects	84	37.3
Opposition of partner/family members	22	9.7
Inconvenient to use	13	5.8
Other	10	4.5

* Multiple response taken

DISCUSSION

A very limited literature is available about the behavior of contraceptives among the Karbis residing in Kamrup metropolis. Therefore, the focus of the present paper was to comprehend the prevalence of contraceptive among the Karbis residing in an urban area. The Karbi women are mostly illiterate which makes them vulnerable to low contraceptive usage. It was observed that there is a non-significant association between the awareness of contraceptive methods with respect to the utilization of family planning methods as only 40% of the Karbi women are currently using or have used contraceptive methods. Similar findings were also observed by (Basu, Kapoor and Basu, 2004) among two different tribal population groups, namely Santal and Lodhas from West Bengal where the knowledge about contraceptive method was found to be universal among both the tribes but due to low education level and unemployment the respondents had poor attitude towards family welfare method. In the present study it was found that best known methods of contraception for unmet need is oral pills (35.2%) and condom 27.4%. Similar findings were also observed by (Renjhen *et al.*, 2008) among women of Sikkim where among the contraceptive user 37.9% of them had oral pills and 31% the barrier method (condom). Another finding by Srivastava *et al.* (2005) in Kanpur showed that the best-known method of contraception was condoms (88.78%) followed by IUCD (77.07%) and OCP (72.19%). It is observed that Karbi women have shorter birth spacing between two children that is less than 18 months which indicates low contraceptive usage and high unmet in spacing and limiting. Similar

findings among women in Mana district, South West Ethiopia shows that low use of family planning methods, illiteracy in women and large number of living children had led them to high prevalence of unintended pregnancies and shorter birth intervals which poses serious health risks to mother and infants (Dibaba, 2010).

In the present study the main cause for not using contraception was lack of knowledge (40%) followed by fear of side effects (29%). A study conducted in tribal area of Maharashtra revealed that main cause for not using contraception was fear of side effect (36.3%) followed by lack of awareness (24.4%) (Patil *et al.*, 2010). The Karbi women have good knowledge of family planning methods which is mainly due to government initiative to spread awareness in the last three decades through massive campaign about the benefits of the use of contraceptives for a healthy family. In the present paper it was observed that role of mass media (25.6%) and constant involvement of the health workers (23.4%) have contributed much in generating awareness about the family planning. The study finding shows that Karbi women have shorter birth spacing between two children that is less than 18 months which increase their risk of maternal mortality. Therefore family planning counseling and services is essential to reduce unintended pregnancies and short birth intervals.

CONCLUSION

The present study highlights that although the knowledge of at least one contraceptive method is universal among the Karbis but utilization was low because of different barriers to the use of contraceptives. Shorter birth interval has led to the increase in unmet need for family planning. Therefore educating women and their respective husbands about proper use and benefits of modern contraceptives would enhance the contraceptive prevalence rate among the Karbi community. Urbanization and assimilation with non-tribal communities also had an impact in their fertility level and contraceptive behavior.

LIMITATION

There were certain limitations while conducting the research. Firstly while collecting data few women felt shy and hesitate to answer the questions due to

sensitive subjects. Secondly the sample size was small as it consists of only a few of the dominant localities in the urban area for the present study.

ACKNOWLEDGEMENTS

First I would like to thanks the Karbi women of Guahati city who had given their time and generous support to complete the study. I acknowledge my sincere gratitude to my guide Prof. Birinchi K. Medhi for providing guidance and critical inputs. Above all I thank my parents and the Almighty for abundant blessings that they bestowed to complete the study.

REFERENCES CITED

- AHS 2012-2013. Annual Health Survey Report 2012-2013. *Annual Health Survey Bulletin, Assam, 2012-13*. Ministry of Home Affairs, Government of India: New Delhi.
- B asu, S. K. 2000. Dimensions of tribal health in India. *Health and Population, Perspectives and Issues*, 23(2): 61-70.
- Basu, S., A. K. Kapoor and S. K. Basu 2004. Knowledge, attitude and practice of family planning among tribals. *J. Family Welfare*, 50: 24-30.
- Bordoloi, B. N. 1987. *Tribes of Assam*, Part III. Assam Institute of Research for Tribals and Scheduled Castes: Guwahati.
- Carl, H. and M. K. Mary 2008. *World Population Data Sheet*. Population Reference Bureau: Washington DC.
- Census of India 2011. *Census of India, 2011. Scheduled Tribes*. Office of the Registrar General & Census Commissioner, India. Ministry of Home Affairs. Government of India: New Delhi.
- Choudhary, D., R. Pal, N. Goel, I. S. Speizer, L. Calhoun, T. Hoke and R. Sengupta 2015. Awareness and practice patterns of family planning methods among antenatal women in Indian community: Are we hitting the bull's eye? *Biomedical Journal*, 38(4): 356-358.
- Dibaba, Yohannes 2010. Child spacing and fertility planning behavior among women in Mana District, Jimma Zone, South West Ethiopia. *Ethiop. J. Health Sci.*, 2010:83-90.
- District Census Handbook (DCHB) 2011. *District Census Handbook: Kamrup Metropolitan. Census of India 2011, Series 19, Part XII B*. Office of the Registrar General: New Delhi.
- Family Planning Summit 2012. *Family Planning Summit Overview, Zero Draft, 1-7*. London Summit: London.
- Government of India 2000. *Annual Report, 1998-1999, and 1999-2000*. Ministry of Health and Family Welfare, Government of India: New Delhi.
- Jin, R. N., C. Nimah J. Stover, Y. Gupta and L. Alkema 2017. Levels and trends in contraceptive prevalence, unmet need, and demand for family planning for 29 States and Union Territories in India: A modelling study using the Family Planning Estimation Tool. *Lancet Global Health*, 2017: 350-358.

- MoHFW 2000. Centre for Health Informatics (CHI) of the National Health Portal (NHP). Ministry of Health and Family Welfare (MoHFW), Government of India: New Delhi.
- National Family Health Survey (NFHS) 2005-2006. *National Family Health Survey (NFHS-3) 2005-06. India. Volume I, p. 24.* International Institute for Population Sciences (IIPS) and Macro International. 2007. IIPS: Mumbai.
- New, J. R., C. Nimah, J. Stover, Y. Gupta and L. Alkema 2017. Levels and trends in contraceptive prevalence, unmet need, and demand for family planning for 29 States and Union Territories in India: A modelling study using the Family Planning Estimation Tool. *Lancet Global Health*, 5: 350-358.
- Park, K. Parks 2009. *Textbook of Preventive & Social Medicine*. 22th edition, p. 443. M/s Banarasidas Bhanat Publishers: Jabalpur.
- Patil, Sapna S., Abdul K. Rashid and K. A. Narayan 2010. Unmet needs for contraception in married women in a tribal area of India, *Malaysian Journal of Public Health Medicine*, 10(2): 44-51.
- Prusty, R. K. 2014. Use of contraceptives and unmet need for family planning among tribal women in India and selected hilly states. *Journal of Health, Population and Nutrition*, 32(2): 342-355.
- Rao, J. A. 2001. A holistic approach to population control in India. *Journal of Bio Science*, 26: 421-423.
- Reddy, R., K. C. Permarajan, K. A. Narayan and A. K. Mishra 2003. Rapid appraisal of knowledge, attitude and practices related to family planning methods among men within five years of married life. *Indian J. Prev. Soc. Med.*, 34:62-67.
- Renjhen, Prachi, Gupta Shuva Das, Barua Ankur, Jaju Shipra and Khati Binita 2008. A study of knowledge, attitude and practice of family planning among the women of reproductive age group in Sikkim. *J. Obstet. Gynecol. India*, 58(1): 63-67.
- Sedgh, G. and R. Hussain 2014. Reasons for contraceptive non use among women having unmet need for contraception in developing countries. *Studies in Family Planning*, 45(2):151-169.
- Smith, E., S. U. Charantimath, F. Susan , K. Matthew Wilson and K. Hoffman 2017. Family planning in Southern India: A survey of women's attitudes. *Health Care for Women International*, 38(10): 1022-1033.
- Speizer, I. 2013. Measurement of unmet need for family planning: Longitudinal analysis of the impact of fertility desires on subsequent childbearing behaviors among urban women from Uttar Pradesh, India. *Contraception*, 88: 553-560.
- Srivastava, R., D. K. Srivastava and R. Jina 2005. Contraceptive knowledge attitude and practice (KAP) survey. *J. Obstet. Gynecol. India*, 55 (6):546-550.
- Sulthana, B., H. D. Shewade, B. Sunderamurthy, K. Manoharan and M. Subramanian 2015. Unmet need for contraception among married women in an urban area of Puducherry, India. *Indian Journal of Medical Research*, 141(1):115-118.
- UNPD 2015. United Nations Population Division (UNPD). Department of Economic and Social Affairs. *World Contraceptive Use 2015 (POP/ DB/CP/Rev2015)*.2015. <http://www.un.org/en/development/desa/population/publications/dataset/contraception/wcu2015.shtml> (accessed on January 8, 2017).
- WHO 2010. *ABC's of Family Planning*, OpEd for Globe and Mail. http://www.who.int/pmnch/media/mnchnews/2010/dshaw_abc_familyplanning.pdf
- WHO 2015. Unmet need for family planning. World Health Organization, 2015. Retrieved
- From https://www.who.int/reproductivehealth/topics/family_planning/unmet_need_fp/en/
- Yadav, D. and P. Dhillon 2015. Assessing the impact of family planning advice on unmet need and contraceptive use among currently married women in Uttar Pradesh, India. *PLoS ONE*, 10(3).