
# TO USE OR NOT TO USE: A MIXED METHODS STUDY EXPLORING FACTORS INFLUENCING MODERN CONTRACEPTIVE USE IN INFORMAL SETTLEMENTS OF MUMBAI

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**Abstract**

Persistently high unmet need of family planning in India points to the significance of understanding women's perspective on use and non-use of modern contraceptive methods and factors that influence their decision. This study used a mixed methods approach including a cross-sectional survey and in-depth interviews of married women of reproductive age living in informal settlements of Mumbai to assess the determinants of modern contraceptive use and factors influencing decision to use or not use. Of 1407 women, 1070 (76%) were using modern contraceptives and women's age, education, parity, socio-economic status and exposure to family planning intervention were the main determinants. Twenty-two interviews of both users and non-users suggested that their decision on contraceptive use was influenced by belief on self-control, fear of side effects, spousal/family support and counselling by frontline workers. Poor contraceptive awareness before marriage coupled with pressure of childbearing resulted in early, less spaced and unplanned pregnancies even among current users. We recommend spousal communication and strengthening of sexual and reproductive health component of adolescent health programs to improve family planning awareness among young people. Finally, increasing women's age of marriage and formal education will also improve contraceptive uptake.

**Background**

Family planning is a cross-sectoral intervention vital to achieve sustainable developmental goals (SDG) and to bring transformational benefits such as good health and well-being to families, communities and countries [1]. The target 3.7 of SDG 3 and the target 5.6 of SDG 5 specifically focus on access to the sexual and reproductive health services and reproductive rights of women [2]. Family Planning (FP) 2020 initiative also advocates for the rights of the individuals to decide the number and timing of the children for themselves by giving them full information and improving access to contraceptives. [3] India's commitment to achieve FP 2020 goals have driven country's efforts to expand the reach and coverage of its family planning services through various measures like integrating family planning with reproductive, maternal, newborn, child and adolescent health strategy, rolling out new contraceptives, service provision at all levels, increasing investments and media campaigns to create awareness and generate demand [4].

It is well known that contraceptive usage prevents unintended and unplanned pregnancies [5, 6], and averts maternal deaths [7]. Between 1990 and 2005, over 1 million maternal deaths were averted because the fertility rate in developing countries declined [8]. In 2019, of 1.9 billion women of reproductive age (15-49 years) worldwide, 842 million (44%) were using modern methods of contraception, 80 million (4%) were using traditional methods and 190 million (10%) wanted to avoid pregnancy but were not using any contraceptive [9].

India has made great progress in improving the modern contraceptive prevalence rate (CPR) from 36.1% in 1990 to 52.2% in 2015 but heterogeneity across states has also been reported [10]. Recent National Family Health Survey-5 (2019-2020) data for state of Maharashtra (where this study is located) showed marginal improvement (62.6% to 63.8%) in CPR from the previous survey (2015-2016) but unmet need has remained almost stagnant (9.7% to 9.6%) [11].

Studies from urban informal settlements from different parts of India have suggested that unmet need for family planning in these areas is high and requires our attention to fulfil the reproductive health needs especially of people living in slums [12, 13, 14]. Rapid urbanization – population growth rate in the last decade in urban areas (31.8%) exceeded the growth rate in rural areas (12.1%) [15] This resulted in the proliferation of slums identified with lack of basic services, substandard housing on hazardous locations, unhealthy living conditions, poverty and social exclusion [16]. Maharashtra, one of the most urbanized states in the country with 45% of population living in urban areas, also has the highest proportion (18.1%) of people living in slums [16]. People living in slums are highly vulnerable to diseases and injuries due to poor living conditions and lack of access to health services [17].

Women living in slums are also susceptible to sexually transmitted and reproductive tract infections [18, 19]. They practice less family planning and are most likely to use terminal methods of family planning instead of spacing methods [20, 21]. For these women mere availability of modern contraceptives does not ensure timely and appropriate use because several other factors also influence contraceptive uptake. Studies suggest that factors associated with use of modern contraceptives are age [22-24], education [25-27], employment status [28, 29], living in urban areas [24, 30, 31], and parity [24, 38].

Studies have identified various barriers to the use of contraceptives such as fear of side effects [32-35], lack of information, bias and misconceptions [34, 36] family or husband's opposition [34, 36] gender inequality [32, 36], lack of access to quality services [34, 38] and religious concerns [34, 35]. These barriers solely or in combinations can affect the uptake of modern contraceptives resulting in high unmet need for family planning. Considering the trend of population growth in urban areas, it is crucial to improve access to voluntary and quality family planning services to vulnerable section of women residing in urban informal settlements. For that it is imperative to understand their perspective and determining factors which influence their decisions on family planning methods.

Given the context, this study examines the level of contraceptive use and its determinants among women in the age group of 15-49 residing in informal settlements of Mumbai. Apart from quantitative analysis, perspective of women on use and non-use of modern contraceptive methods and factors that influence their decision was sought through in-depth interviews. We believe that findings from this study could provide inputs to develop strategies to improve voluntary uptake of family planning services in the study settings.

**Program Description**

The Society for Nutrition, Education and Health Action (SNEHA) is a non-profit organization working in informal settlements of Mumbai. From year 2016 to 2020, SNEHA implemented the Healthy Cities Project in P-North ward, in the northwestern suburbs of Mumbai, which has one of the poorest human development indexes in Mumbai [39].

The project addressed reproductive, maternal, child health and nutrition issues using an integrated life cycle approach among married women of reproductive age (15-49 years) and children aged 0-6 years. Family planning intervention was a vital part of the project and key to achieving project outcomes related to reproductive, maternal and child health. Family planning intervention activities included: regular home visits to provide information on family planning methods particularly modern contraceptives, counselling to negate myths and misconceptions regarding use of modern contraceptives and its side effects, collaborating with public health systems for service provision in terms of distributing condoms and pills, appropriate referrals and helping women in reaching hospitals for uptake of contraceptives. Regular group meetings with women for information sharing, participatory learning and community events were held to create a conducive environment for women to discuss family planning needs.

**Methods**

We used cross-sectional study design to examine contraceptive prevalence and its determinants among married women of reproductive age. We also used qualitative research methods to further understand the women's beliefs, perceptions and factors which influence their decisions related to the use or non-use of modern contraceptive methods

**Cross-Sectional Study Design**

***Data Source:*** We used data from the project's endline survey conducted between January and March 2020. Intervention area covered approximately 14,000 households. The project team numbered all households, which was used to draw a random sample of respondents. Sample size of 1500 was calculated taking prevalence of wasting among children aged 0-6 years into account. The list of randomly selected households was given to field investigators for conducting the interviews. Apart from socio-economic and demographic information, the survey questionnaire also included questions on maternal and reproductive health (parity, birth history, antenatal, delivery and postnatal care and family planning), child health (feeding habits, immunization, morbidity and nutritional status) and uptake of health services from government and private providers including non-governmental organizations (NGOs).

***Data Analysis:*** Contraceptive Prevalence Rate (CPR) was calculated by assessing the percentage of married women of reproductive age (15-49 years) who were using or whose partner were using any modern contraceptive method at the time of survey out of eligible married women of reproductive age (15-49 years). Factors associated with

contraceptive use among married women of reproductive age were explored using multilevel logistic regression models. As a dependent variable, we categorized use of modern contraceptives as "1" and non-use of modern contraceptives as "0". Independent variables were chosen based on literature related to the determinants of use of modern contraceptives and field experience.

The final model included women's age, education, employment status, religion, parity, duration of residence in Mumbai, husband's education, uptake of family planning services from an NGO or public health system, number of household members and asset index quartile as independent variables. Respondent was considered employed if engaged in either formal or informal activity. We collected data on household assets and wealth was described by asset scores. Principal component analysis was used to derive weight for scores and create an asset index which was divided into quartiles; poor, quartile 2, quartile 3 and least poor [40]. For each explanatory variable, the crude odds ratio was presented along with the adjusted odds ratio and 95% confidence intervals (CI). All statistical analysis was conducted in STATA 12.0 (StataCorp, College Station, TX).

**Qualitative Study Design**

The primary source of data was in-depth interviews (IDIs) with 22 women conducted during intervention period (August 2017 to December 2017). Of 22 women, 13 were users and 9 were non-users of modern contraceptives.

***Participant selection:*** For the study, we defined a woman who was using or whose partner was using any modern method of contraception at the time of interview as a "user" and a woman who was not using or whose partner was not using any modern method of contraception at the time of interview as a "non-user". After initial interactions with women in the intervention area, we found that many women considered traditional methods such as withdrawal and safe period as effective methods of family planning. For the purpose of the study, participants were clearly asked, "Which method of family planning are you using?" and then categorized as a user or a non-user.

We purposively selected women aged 30 years or less for IDIs to get insights about the process of decision making related to contraceptive use after marriage. We also took help of project's frontline workers in identifying diverse set of participants including those who were reluctant to use contraceptives, had discontinued use of contraceptives or had become a user recently. This helped us gather rich data to understand the women's perspective and to comprehend possible strategies to address the existing barriers to contraceptive use, at family, community and organizational level.

***Data Collection:*** The IDIs were conducted using semi-structured interview guide. The guide explored topics related to perception about family planning and modern contraceptives in addition to factors which motivate or challenge the use of modern contraceptives among users and non-users. The interview guide was prepared in English and

translated to Hindi. Interviews were conducted in Hindi and were audio recorded. Interviews were conducted by trained qualitative researcher along with two assistants who helped in recording and taking notes during the interview. Due to the sensitivity of the topic, interviews were held either at participant's house or at the intervention centre depending on the participant's wish and convenience.

***Data Analysis:*** Qualitative data from interviews was translated and transcribed verbatim into English, and pseudonymized. After going through the initial few transcripts, we affixed the preliminary codes and developed a coding index. Data was collated into groups identified by codes which allowed us to assess the main points that reappeared throughout the data. Patterns among codes were identified and were sorted to form main themes. We revisited data to ensure accurate representation of data by the finalized themes. Initial data analysis suggested that data could be organized into the Socio-Ecological framework of behaviour change. This framework shows that decision to use contraceptives is influenced by the complex interplay of factors at different levels: Individual (women), Interpersonal (spouse/family), Organizational (health systems) and Environmental (social/cultural context and religious beliefs) [41].

**Ethical Considerations**

The Institutional Ethics Committee, the Bandra Holy Family Hospital & Medical Research Centre, Mumbai approved the program's proposal, intervention protocol and evaluation design. All respondents gave their written informed consent before participation in quantitative surveys and qualitative interviews. We explained purpose of the study to all participants in detail, in Hindi.

**Results**

**Cross-Sectional Survey Results**

Out of the 1407 women surveyed, 1070 (76%) were using modern contraceptives at the time of survey. Table 1 shows that among 1070 users, proportion of women was the highest in the following categories: women more than 30 years of age (39.6%), with secondary education (62%), husband with secondary education (62.6%), living in Mumbai for more than 10 years (63.8%) years, with a family of 5 or less members (61.2%).

**Table 1: Socio-economic and demographic characteristics of married women of reproductive age (15-49 years) in urban informal settlements of Mumbai**

| | Contraceptive user (N= 1070) | Contraceptive non-user (N= 337) |
|---|---|---|
| **Age** | | |
| <= 25 years | 273 (25.5%) | 107 (31.7%) |
| 26-30 years | 373 (34.9%) | 95 (28.2%) |
| >30 years | 424 (39.6%) | 135 (40.1%) |
| **Education** | | |
| No formal schooling | 167 (15.6%) | 55 (16.3%) |
| Primary | 38 (3.5%) | 10 (2.9%) |
| Secondary | 663 (62%) | 198 (58.8%) |
| Higher education | 202 (18.9%) | 74 (22%) |
| **Employment status** | | |
| No | 886 (82.8%) | 288 (85.5%) |
| Yes | 184 (17.2%) | 49 (14.5%) |
| **Religion** | | |
| Muslim | 914 (85.4%) | 281 (83.4%) |
| Hindu | 137 (12.8%) | 51 (15.1%) |
| Others | 19 (1.8%) | 5 (1.5%) |
| **Parity** | | |
| 0 or <=2 | 580 (54.2%) | 245 (72.7%) |
| 3 or more | 490 (45.8%) | 92 (27.3%) |
| **Duration of residence in Mumbai** | | |
| <=5 years | 213 (19.9%) | 78 (23.1%) |
| 6 to 10 years | 174 (16.3%) | 43 (12.8%) |
| >10 years | 683 (63.8%) | 216 (64.1%) |
| **Husband's education** | | |
| No formal schooling | 163 (15.2%) | 55 (16.3%) |
| Primary | 49 (4.6%) | 10 (2.9%) |
| Secondary | 670 (62.6%) | 198 (58.8%) |
| Higher education | 188 (17.6%) | 74 (21.9%) |
| **Uptake of family services from an NGOs or public health system** | | |
| No services availed | 106 (9.9%) | 92 (27.3%) |
| Only NGOs services availed | 399 (37.3%) | 204 (60.5%) |
| Both NGOs and public health system services availed | 565 (52.8%) | 41(12.2%) |
| **Number of household members** | | |
| Less or equal to 5 | 655 (61.2%) | 221 (65.6%) |
| More than 5 | 415 (38.8%) | 116 (34.4%) |
| **Wealth index** | | |
| Poorest | 270 (25.2%) | 88 (26.1%) |
| Quartile 2 | 257 (24.0%) | 80 (23.7%) |
| Quartile 3 | 263 (24.6%) | 101 (29.9%) |
| Least Poor | 280 (26.2%) | 68 (20.2%) |

Table 2 suggests that women in the age group of 26-30 years [AOR 1.58, 95% CI 1.08-2.32], with secondary education [AOR 1.51, 95% CI 1.01-2.26] or higher education [AOR 1.66, 95% CI 0.99-2.76] and with three or more children [AOR 2.75, 95% CI 1.91-3.94] had higher odds of using modern contraceptives in comparison to young women with no schooling and with two or less children. Women who received family planning services from NGOs [AOR 1.80, 95% CI 1.27-2.57] and from both NGOs and public health system [AOR 14.8, 95% CI 9.39-23.35] had higher odds of using modern contraceptives compared to women who have not availed any family planning services. Women belonging to the least poor category had the higher odds [AOR 1.74, 95% CI 1.10-2.75] of using modern contraceptives compare to the women in poorer category.

**Table 2: Factors associated with use of modern contraceptive methods by married women of reproductive age (15-49 years) in urban informal settlements of Mumbai**

| | Crude odds ratio (95% CI) | Adjusted odds ratio (95% CI) |
|---|---|---|
| **Age** | | |
| <= 25 years | 1 | 1 |
| 26-30 years | 1.53(1.12, 2.11)** | 1.58(1.08, 2.32)* |
| >30 years | 1.23(0.91, 1.65) | 1.30(0.86, 1.98) |
| **Education** | | |
| No formal schooling | 1 | 1 |
| Primary | 1.59(0.72, 3.48) | 1.36(0.57, 3.22) |
| Secondary | 1.31(0.94, 1.83) | 1.51(1.01, 2.26)* |
| Higher education | 1.01(0.68, 1.50) | 1.66(0.99, 2.76)* |
| **Employment status** | | |
| No | 1 | 1 |
| Yes | 1.22(0.86, 1.71) | 1.10(0.74, 1.63) |
| **Religion** | | |
| Muslim | 1 | 1 |
| Hindu | 0.82(0.58, 1.16) | 1.07(0.72, 1.58) |
| **Parity** | | |
| 0 or <=2 | 1 | 1 |
| 3 or more | 2.24(1.72, 2.94)*** | 2.75(1.91, 3.94)*** |
| **Duration of residence in Mumbai** | | |
| <=5 years | 1 | 1 |
| 6 to 10 years | 1.48(0.97, 2.26) | 1.07(0.65, 1.75) |
| >10 years | 1.15(0.85, 1.56) | 0.83(0.56, 1.22) |

| | | |
|---|---|---|
| **Husband's education** | | |
| No formal schooling | 1 | 1 |
| Primary | 1.65(0.78, 3.48) | 1.42(0.63, 3.24) |
| Secondary | 1.14(0.80, 1.61) | 0.99(0.66, 1.49) |
| Higher education | 0.85(0.57, 1.28) | 0.69(0.41, 1.15) |
| **Uptake of family services from an NGOs or public health system** | | |
| No services availed | 1 | 1 |
| Only NGOs services availed | 1.69(1.22, 2.35)*** | 1.80(1.27, 2.57)*** |
| Both NGOs and public health system services availed | 11.96(7.83, 18.24)*** | 14.8(9.39, 23.35)*** |
| **Number of household members** | | |
| Less or equal to 5 | 1 | 1 |
| More than 5 | 1.20(0.93, 1.55) | 0.79(0.57, 1.09) |
| **Wealth index** | | |
| Poorest | 1 | 1 |
| Quartile 2 | 1.04(0.73, 1.48) | 1.11(0.74, 1.67) |
| Quartile 3 | 0.84(0.60, 1.18) | 0.92(0.61, 1.38) |
| Least Poor | 1.34(0.93, 1.91) | 1.74(1.10, 2.75)* |

***"Statistical significance is calculated using mixed effects logistic regression models: * p value: ≤0.05; * * p value: ≤0.01; *** p value: ≤0.001"***

**Qualitative Study Results**

We compared findings from users and non-users at each level of socio-ecological model, to have better understanding of women's perception related to modern contraceptives, influencers and barriers to the use of modern contraceptives in urban informal settlements. Table 3 presents the demographic characteristics of participants of qualitative study.

**Table 3: Demographic characteristics of participant of qualitative study from intervention area**

| **Demographic characteristics** | **N=22** |
|---|---|
| **Age** | |
| <=20 Years | 1 |
| 21 to 25 Years | 7 |
| 26 to 30 Years | 14 |

| | |
|---|---|
| **Education** | |
| No formal schooling | 7 |
| Primary | 0 |
| Secondary | 13 |
| Higher | 2 |
| **Religion** | |
| Muslim | 17 |
| Hindu | 5 |
| **Employment status** | |
| No work | 16 |
| Informal work | 6 |
| **Number of children** | |
| 1 to 2 | 12 |
| 3 or more | 10 |
| **Use of modern contraceptive** | |
| User | 13 |
| Non-user | 9 |

**Individual Level**

***Knowledge, perception, beliefs about modern contraceptives***

All the participants were aware of the modern contraceptives and they mentioned methods like condom, pills, Copper-T (intra uterine device, IUD), *antara* (injectable) and female sterilization during interviews. They shared their views regarding importance of family planning- a better future of their children and families. The cost of education and upbringing of children was the main reason for realizing the need of family planning.

*"There is price rise in everything including education; it is a big problem. If we have more children, we won't be able to give them good upbringing. Sending them to good schools, giving them good food and cloths; we won't be able to do anything if there are more children. That is why I don't want more children." (User, 26 years)*

*"It's troublesome to have a lot of kids. We are responsible to provide better care, quality education and good life to our kids. We need to be a small family, as having lot of kids will not allow us to have proper standard of living. We may not be able to focus on all the children. We will not be able to provide quality education; possibly few of them (children) might not even get education." (Non-user, 22 years)*

Users and non-users both had similar views about the importance of family planning but had differing views about the necessity of modern contraceptives for family planning. Users believed that modern contraceptives were important to attain the desired benefits of family planning which were good health, planned pregnancies, limiting the number of children and desired spacing between pregnancies.

*"I told my husband that I need some gap between pregnancies. I need to be comfortable and confident that I am able to take care of the second child. I used Copper-T (IUD) to have that gap. I conceived my second baby when I was comfortable." (User, 24 years)*

Non-user women could be divided in two categories; (1) women who believed that modern contraceptives were not required for family planning. Non-users in this category, though aware of modern contraceptives had strong belief that it was not the only way to achieve the benefits of family planning like limiting number of children and spacing between them. They believed that it can be achieved by means of self-control and other traditional methods. When asked about the risks of unwanted pregnancies, they shared that chances of getting pregnant were less likely as they know their limitations and can control themselves. They shared that withdrawal is a better, hassle free method as it only requires mutual understanding between husband and wife. *(See Box 1 for an illustrative case).*

**Box 1: Case of a non-user who was confident of controlling fertility by means of self- control and traditional methods**

A 22-year woman lived in a nuclear family near her parent's place. She got married at the age of 17 and did not use any contraception. She had her first child at the age of 19 and conceived her second child after 10 months of the birth of her first child. She was comfortable with withdrawal method and did not want to use any modern contraceptives fearing side effects.
*"We use the simplest way and we trust each other. I am very sure that nothing would happen in the course of our love and excitement. We both are mature and understand our limits."*

She was confident that there were no risks in using traditional methods and believed in self-control.
*"It's same, I am able to control now, similarly I will control forever. I need to control just for a few more years. My mom also controlled and it applies to me as well. After certain age, periods stop and it is obvious that I will not get pregnant. Simple, I just need to be careful for next 8-10 years... That is it.*

(2) Non-users in this category believed in use of modern contraceptives to achieve benefits of family planning. They wanted to use but were not able to due to various reasons like fear of side effects, husband or family's disapproval. They indicated fear of unwanted pregnancy and their desire to avoid it.

***Fear of Side Effects***

Both users and non-users had concerns related to side effects of modern contraceptives some of which were based on their personal experience and rest was the perception built due to widespread misconceptions in the community. *(See Box 2 for an illustrative case)*.

**Box 2: Case of a single mother of four children who regretted late use of modern contraceptives due to fear of side effects**

A 28 years old woman lived near her mother-in-law. She got married at the age of seventeen, conceived immediately and delivered her first child after one year of marriage. She was aware about modern contraceptives but was not sure about using any of them, due to fear of side effects. She had a bad relationship with her husband, as he was unfaithful to her. In next 10 years she conceived four more times resulting in three live births and one induced abortion. After the birth of her fourth child, she opted for sterilization. Her husband abandoned her and her children. She shared that she was needlessly scared and would have benefitted if she had used contraceptives earlier.

*"I was scared of using contraceptives. Few say that it (Copper-T) moves up, that's the reason I didn't use. Medicines are also available but I never took any, some said that it gives trouble. But then it is all uneducated talks, we had never used it so no one had any knowledge."*

Of the nine non-users, three had discontinued use of modern contraceptives after experiencing side effects and the remaining six did not try using modern contraceptives due to the fear of side effects.

*"I don't use Copper-T (IUD) anymore. Using that I had heavy bleeding during periods. My hands, legs and back pained a lot. I was having so many problems. That is why I don't use Copper-T." (Non-user, 28 years)*

*"I feel scared of using contraceptives. It is said that if it (IUD) does not suit you it goes up in the body. Then something will happen and will have to take it out. That is why I don't use it. Aunty living in front of our house says it goes up, gets stuck and gets infected. That scared me, that is why I have not used it yet." (Non-user, 20 years)*

Some user experienced side effects but did not give up and switched to other methods after inquiring about the choices available with their healthcare providers or frontline workers.

*"Tai (frontline worker) suggested me to use Copper-T. She said that it would be very useful and will make me tension free for the next ten years, but it didn't work well for me. I had continuous stomach pain, so I removed it. Now I am using antara (injectable). It's been two months now." (User, 30 years).*

**Interpersonal Level**

***Spousal awareness and communication***

Spousal awareness and communication constituted an important factor that influenced the uptake of modern contraceptives. The husband usually took decisions regarding family planning and woman sought approval of husband before uptake of any contraceptive. Financial dependency of women on their husbands diminished their ability to decide for themselves. Husbands with awareness of benefits of modern contraceptives initiated the conversation with their wives, which helped in uptake of contraceptives. Four users shared that they discussed family planning and using contraceptives just after their marriage that helped them in both limiting and maintaining space between children. Among other nine current users, early pregnancies and less spacing between children made them realize the benefits of modern contraceptives. These users reported having conversations with their husbands regarding the desire to use contraception which helped them seek information and adopting a method of their choice.

*"My husband uses the method. He said it himself, that we do not need more children now. He said that we should use this (condom) to stop having more children and I also agreed with him." (User, 26 years)*

Non-users shared that they didn't have a conversation regarding family planning with their husbands. *(See Box 3 for an illustrative case).*

**Box 3: Case of a non-user with poor spousal communication related to family planning and contraceptives**

A 20-year-old woman lives in a nuclear family. She got married at age of 16 years, conceived four times resulting in two live births, one miscarriage and one induced abortion. She didn't want any more children. After the abortion she went to the health facility for IUD insertion but as she was severely anaemic, she was told to come later. She was scared of unwanted pregnancy so took condoms from frontline workers to give to her husband but was unable to do so. She could not gather the courage to talk about it to her husband as she had never talked about family planning and felt ashamed.
*"I was feeling shy so I kept them in the cupboard, didn't even show them (condoms) to my husband."*

Few non-users said that they tried talking about using modern contraceptives but their husbands were worried about side effects and did not allow them to use these methods.

*"He never told me anything about it (contraception). I had a word with him once regarding Copper T, but he did not allow its use saying let it be the way it is." (Non-user, 21 years)*

Two participants, one user and one non-user reported that their husbands refused to use condoms saying it was to be used only for safe sex and not for birth control. According to them condoms were not required with their regular partner.

*"I told him (husband) about condom but he said I don't need it. He said that I am not going to see any other woman, so why do I need it." (Non-user, 29 years)*

*"He (husband) said, I have never done any bad work so how would I know about it (contraception). I did not know that I will have to use it with my own wife." (User, 30 years)*

***Family Support***

Findings suggest that elder women in the family were the main source of information for women who used contraceptives. They counselled women about the benefits of modern contraceptives mostly after the birth of their first child. These women were the role models for the users as they shared their knowledge and experience of using contraceptives. It helped women to overcome the shame and anxiety associated with the use of any method of family planning and shaped their beliefs about the benefits of contraceptives. Users shared that their mother or

mother-in-law sought information from frontline workers and shared it with them. They had also accompanied women to hospitals for uptake of modern contraceptives.

*"Yes, she (mother-in-law) said that if you use this (Copper-T) you won't get pregnant. When you don't want a child use it and when you want child then remove it." (User, 28 years)*

*"After her (first child) my mother suggested Copper- T. She knew beforehand, she herself has used it. She had this knowledge." (User, 24 years)*

In the case of non-users, they did not get any support from family members. Families did not allow women to use contraceptives until they have achieved the desired family size.

*"She (mother-in-law) heard and said there is no need to use Copper T. She said, you just have one child so hold on for some time and have one or two more children." (Non-user, 21 years)*

**Organizational**

***Counselling and moral support***

Most of the women shared that they were advised about use of contraceptives by health staff. However, not in all cases advice from professionals resulted in immediate uptake due to widespread misconception and fear of side effects in the community. Few current users said that frontline workers who visited them helped in negating their fears about modern contraceptives. As indicated by one user woman:

*"Girls from the organization came and they showed us videos on their tablets. They explained that Copper-T will not go up in the stomach as it's in the uterus and there is no space left; it may bend but will not go up in the body. They gave us this information quite frankly. They suggested that it will be a good option or we can also choose operation." (User, 29 years)*

Frontline workers provided moral support to women for uptake of contraception right from giving information, filling forms and accompanying them to the hospital. In case of any side effects, women trusted them for advice and help.

*"I faced so many problems in going and putting Copper-T the first time. My mother had to go to the health post (Primary health care unit) a number of times. Next time with them (frontline workers), my work happened easily." (User, 24 years)*

**Environmental**

***Social and cultural context***

Findings suggest that women usually entered marriage at young age and with no or incomplete information about family planning and contraceptives. *(See Box 4 for an illustrative case).*

**Box 4: Case of a user who wanted to use modern contraceptives just after marriage but had no information about it.**

A 23-years old woman lived with her husband and her mother-in-law lived nearby. She got married at the age of 19 and came to Mumbai after her marriage. She did not want kids immediately as she wanted to be with her husband and get settled in a new place. She didn't know that one can get pregnant just after marriage. She conceived after one month of her marriage. She did not want the child at that moment and thought of abortion but she had no one to seek advice. Fearing the complications, she continued with the pregnancy. *"Yes, if someone had brought it (abortion medicine) to me, I would have taken but if something (complications) would have happened, everybody would have shouted at me."*

After the birth of her first child she asked her husband to bring some contraceptives. He agreed but didn't get any. When her first child was 8-month-old, she conceived again. She sought advice from frontline worker and took condoms for her husband. She shared that had she known about contraceptives earlier, they would have lived leisurely.

Families' expectation of a child just after marriage and pressure of completing the family forced women to postpone use of contraceptives. Users and non-users both shared the fear they had of not getting pregnant at all, which restricted/delayed the uptake of contraceptives. Women reported continuing with the unwanted pregnancies due to fear of not getting pregnant later.

*"I always felt that because of my weight I would never become a mother. I didn't want kids immediately but my mother said, "what if you can't get pregnant later. It would be difficult, so better you continue with this pregnancy." (Non-user, 22 years)*

Family planning was seen as a taboo subject. They feared that seeking information or discussing it openly might result in labelling them as a "woman with bad morals". One user who had recently come to reside in the community from another state shared her concerns.

*"I tell people that I don't know about it (contraceptives), because then they will wonder that how I know about these things." (User, 27 years)*

Women preferred the covert use of contraceptives. IUDs were preferred as it does not require hospital stay and can be administered secretly. It also gave protection against unwanted pregnancies for three or more years.

"No*, nobody will allow operation. For Copper-T, I can go alone and put it but for operation, I cannot go alone. Everyone will get to know about it then." (User, 30 years)*

***Religious Beliefs***

Users and non-users both considered childbirth as the will of the God. Muslim non-users compared using contraceptives to the *gunah* (sin) and shared that one should not interfere with the God's blessings by using any method. Some Muslim users who were using temporary contraceptives like pills and IUDs said that the methods which do not stop childbirth permanently were acceptable. However, sterilization was not allowed by their religion and was considered a *gunah*.

*"God is responsible for whatever happens. If I get pregnant it is good and if not then nothing. It's all about almighty Allah; he is the one to give me the blessings." (Non-user, 22 years)*

*"Not all other kind of operations but this operation (sterilization) is gunah. In this you are killing a child that is why it's a gunah. When we will die then all kids you have destroyed or have stopped after operation will be standing and they will catch us. That is why I think that operation should not be done." (Non-user, 28 years)*

On the contrary, a user who had undergone sterilization shared that any method which prevents unintended pregnancies was better than using nothing. According to her frequent abortions were g*unah*.

*"I have talked to so many people* and I *believe that operation is better than frequently conceiving and then aborting. It is killing a living soul and also results in bad health of women. This is more of a "gunah". So this operation is better, when you don't want any further children then have the operation." (User, 27 years)*
*(Table 4 will come here)*

**Discussion**

Our study contributes to comprehensive understanding of factors influencing women's decision regarding the use of contraceptives in urban informal settlements of Mumbai. Findings indicate that women's age, education, number of children, receiving family planning services from NGOs or public health system and better socio-economic background were associated with the use of modern contraceptives. We found that women in the age group of 26-30 years and women with three or more children were using modern contraceptives which can be attributed to the fact that uptake of modern contraceptives was mostly considered after achieving desired family size. Most of the current users in our sample used modern contraceptives after experiencing unplanned and unintended pregnancies. It is known that information related to reproductive rights and contraceptive choices is the foremost requirement to empower individuals to take their reproductive health decisions. [42] Our findings highlighted the lack of awareness related to family planning and modern contraceptives among women at the time of their marriage. Societal or family pressure of starting a family immediately after marriage also delayed the use of contraceptives by women.

In our context, we found that spousal awareness and communication was an important factor which influenced the use of contraceptives. Husbands with better awareness regarding modern contraceptives either adopted contraception methods themselves or conversed with their wives openly about family planning. The finding reverberates with other studies suggesting mutual discussion about family planning between spouses lead to uptake of one or other form of methods and significantly lowers unmet need [43, 44].

Our quantitative data did not show any significant association between religion and use of modern contraceptives, but qualitative findings indicated that religion was an important phenomenon when women discussed family size and choice of contraceptives. Women justified their family planning behaviour of use or non-use of modern contraceptives based on their beliefs shaped by their own interpretation of religious texts like other studies [45, 46]. Quantitative data did not show any significant relation between uses of modern contraceptives with employment status, it may be due to the data of informal work done at home with insignificant amount of earning which may not influence the family's socio-economic position which was significantly associated with the use of modern contraceptives.

We also found that women preferred traditional methods for family planning due to a fear of side effects of modern contraceptives, even though some of them had never experienced any side effect. Findings indicated that door to door counselling and frank conversations by the project's frontline workers helped in dismantling the misconceptions as women felt confident and were able to decide about using modern contraceptives regardless of their husband's and families wishes. This finding reverberates with other studies suggesting that provision of information by providers on side effects, assistance with method selection, and better counselling were associated with a likelihood of significant increase in use of modern contraceptives. [47, 48].

Limitation of the study is that we used data from a cross-sectional survey which indicated association only and not the causal linkages. Another limitation is that we did not include unmarried, widowed and divorced women in study as focus of the study was only married women of reproductive age.

**Conclusion and recommendations**

Table 4 presents the key learning for family planning programs from our study. Based on our findings, we recommend increasing the women's age at marriage and continued promotion of women's formal education. Family planning awareness programs should disseminate the information about reproductive health rights along with the available choices of contraceptives. Husband as the primary earner and decision maker in a family should be involved in the family planning awareness and counselling sessions to improve spousal communication related to contraceptives use. Frontline workers can be equipped with contraception related Information, Education and Communication (IEC) tools and counselling skills. Community volunteers or role models can be identified for better

outreach in the community. Family planning programs can build capacity of these volunteers to negate widespread misconceptions about modern contraceptives in the community. We also recommend strengthening of sexual and reproductive health component of Government's Adolescent Health Programs specifically giving information about reproductive health rights and modern contraceptives. The ecosystem of open and frank discussion around contraceptives will pave the way for making informed and timely decision by men and women which will have a long-lasting impact on their lives as an individual and as a part of the community.

**Table 4: Factors influencing woman's decision to use modern contraceptives and recommendations to the family planning programs**

| Levels of Socio-ecological Model | Factors influencing woman's decision to use contraceptives | Recommendations |
|---|---|---|
| **Individual (Woman)** | ***Knowledge, perception, beliefs about modern contraceptives***<br>-Women were aware about modern contraceptives but not all thought modern methods were essential for spacing between children<br>***Fear of Side Effects***<br>-Women's perception related to the side effects of modern contraceptives was the major deterrent to use, which was either based on the personal experience or hearsay<br><br>-Some non-users practiced traditional methods like withdrawal believing it to be a better method free from any side effects | -Promote women's education and awareness related to family planning and modern contraceptives benefits<br><br>- Negate myths and misconception related to modern contraceptives and advise available choices of contraceptives, in case of side effects<br><br>-Explain risk of unintended pregnancies and available choices of modern contraceptives |
| **Interpersonal (Spouse and Family)** | ***Spousal awareness and communication***<br>-Spousal awareness or communication helped in early uptake of contraceptives resulting in better spacing between children and limiting their number | -Involve husbands through planned parenthood and couple counselling sessions<br><br>-Identify role models in |

| | | |
|---|---|---|
| | ***Family Support***<br>-Women got support of family members in form of getting information and accompanying them to the hospitals for contraceptive uptake | families or communities for eliminating misconceptions related to modern contraceptives |
| **Organizational (Health Systems)** | ***Counselling and moral support***<br>-Mere suggestion of use did not lead to uptake of contraceptives. Women needed detailed information, proper counselling and support or follow up in case of any side effects | -Equip frontline workers with better IEC tools related to modern contraceptives<br><br>-Build counselling skills of frontline workers |
| **Environmental (Social and Cultural)** | ***Social and cultural context***<br>-Taboo associated with family planning lead to misinformation about contraceptives at the time of marriage which delayed contraceptive use<br>-Social norm of early child bearing and completing family restricted or delayed use of contraceptive<br>***Religious Beliefs***<br>-Influenced the choice of contraceptives | -Promote adolescent sexual and reproductive health education and awareness related to reproductive health rights<br><br>-Approach community/religious leaders for better outreach |

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