RESEARCH PAPER

Predictors of Fertility Pattern Among Reproductive Age Women at Selected Community, Chennai

Dr. Irin Anitha M[1*], Dr. Vijayalakshmi K[2], Dr. Dhanalakshmi V[3], Dr. R. Pandiselvi[4]

[1*] Associate Professor, Apollo College of Nursing, Chennai, Affiliated to the TN Dr. MGR Medical University, Chennai, Tamilnadu, India (Corresponding Author). Email: irinanitha_m@acon.edu.in

[2] Professor, Apollo College of Nursing, Chennai, Affiliated to the TN Dr. MGR Medical University, Chennai, Tamilnadu, India

[3] Professor, Apollo College of Nursing, Chennai, Affiliated to the TN Dr. MGR Medical University, Chennai, Tamilnadu, India

[4] Associate Professor, Apollo College of Nursing, Chennai, Affiliated to the TN Dr. MGR Medical University, Chennai, Tamilnadu, India

ABSTRACT

Introduction

Fertility patterns in the world have changed dramatically over the last few decades. Global fertility has reached unprecedented low levels, yet stark differences persist in childbearing patterns across countries and regions. The population and development implications of these diverse fertility patterns are directly relevant for the implementation of the 2030 Agenda for Sustainable Development and policymaking and planning in all countries.

Methods

This study was conducted using descriptive correlational research design at selected community area, Chennai among 150 reproductive age women who were selected using consecutive sampling technique. The setting was chosen based on the feasibility in terms of availability of adequate samples. After obtaining the setting permission and informed consent from the reproductive age women, data was collected using pretested and validated tools such as background variables proforma of reproductive age women and proforma to assess the fertility pattern of reproductive age women. The collected data was analyzed using descriptive and inferential statistics.

Results

Most of the reproductive age women attained menarche between 11-14 years (82.6%), had natural conception (88%), did not use any contraception between marriage and first conception (99%) and first and consecutive conception (92%), did not have any medical illness during pregnancy (84%), and had no history of abortion (76%). Majority of them conceived less than 1 year of their marriage (64%). More than half of them were married between 18-23 years (58%), had two children (51%), had satisfied marital life (53.3%) and underwent permanent sterilization (56.6%).

Keywords: Predictors, Fertility Pattern, Reproductive age women, Community

How to cite this article: Irin Anitha M, Vijayalakshmi K, Dhanalakshmi V, Pandiselvi R. Predictors of Fertility Pattern Among Reproductive Age Women at Selected Community, Chennai. Int J Drug Deliv Technol. 2026;16(24s): 52-59. DOI: 10.25258/ijddt.16.24s.8

Source of support: Nil.

Conflict of interest: None

Introduction

Fertility patterns have undergone significant changes globally over the past few decades, particularly in developed countries, where trends such as delayed childbearing, reduced family size, increased use of assisted reproductive technologies, and more complex family structures have become prominent (Centre for Fertility and Health, 2023). These shifts reflect broader socio-economic transformations, including higher educational attainment, women's workforce participation, and changing societal norms.

In contrast, high-fertility populations are often characterized by early initiation of childbearing and continued reproduction throughout the reproductive years, resulting in relatively stable age-specific fertility patterns. According to the *World Population Prospects (2022)*, the global total fertility rate has declined to 2.5 children per woman, indicating a transition towards lower fertility levels worldwide. This decline, combined with increased life expectancy, has contributed to population aging, thereby placing additional demands on healthcare systems.

Understanding fertility patterns and their determinants is essential for planning effective reproductive health services and policies aimed at improving maternal and child health outcomes.

The current fertility rate for India in 2023 is 2.139 births per woman, a 0.93% decline from 2022. The fertility rate for India in 2022 was 2.159 births per woman, a 0.92% decline from 2021. Rates of total fertility (TFR) in Tamil Nadu and Andhra Pradesh are 2.5 and 2.6 children per woman, respectively. The practice of family planning in these states has therefore successfully reduced overall fertility.

The decrease of fertility at younger ages is often the result of rising ages at marriage, whereas fertility declines at the older ages primarily because of an increasing propensity to limit family size. The balance of these two trends is context-specific and leads either to "aging" or to "rejuvenation" of the age pattern of fertility. (“Fertility, Age Patterns of ." Encyclopedia of Population. . Retrieved October 19, 2023 from Encyclopedia.com)

Aging of childbearing has an important impact on fertility levels and trends. When childbearing starts before age 20, as is typical in developing countries, the period available for childbearing lasts for approximately 24 years and the period of high fecundity (lasting until around age 35) is 17 to 18 years long. Shortening of the childbearing period in women's lives is an important determinant of persistent below-replacement fertility in many developed and an increasing number of developing countries. (Delbaere, 2020)

For the last 70 years, fertility rates have decreased worldwide, with a total 50% decline. Reasons include women's empowerment in education and the workforce, lower child mortality and the increased cost of raising children. For biological and social reasons, the probability of a woman's having a child in a given time interval is strongly influenced by her age, family, occupation, her medical conditions etc.

Knowing the predictors of fertility pattern helps to guide the reproductive health program planners and policymakers to understand various factors influencing fertility in order to assist in the implementation of a reproductive health program that will increase fertility rate to higher than replacement level. Hence the researchers are interested to know the fertility pattern in a particular community . Therefore the researchers have decided to conduct the study on Predictors of Fertility Pattern among Reproductive age Women at Selected Community.

Statement of the Problem

A Descriptive Correlational study to determine the Predictors of Fertility Pattern among Reproductive age Women at Selected Community, Chennai.

Objectives of the Study

1. To estimate the fertility pattern among reproductive age women.
2. To determine the predictors of fertility pattern among reproductive age women.

Hypotheses

H_1: There will be a significant association between the selected background variables and the fertility pattern among reproductive age women.

Material & Methods

This study was conducted using descriptive correlational research design at selected community area, Chennai among 150 reproductive age women who were selected using consecutive sampling technique. The setting was chosen based on the feasibility in terms of availability of adequate samples. After obtaining the setting permission and informed consent from the reproductive age women, data was collected using pretested and validated tools such as background variables proforma of reproductive age women, proforma to assess the fertility pattern of reproductive age women and proforma to assess the child variables of reproductive age women. Background variables such as, age, education of couple, occupation of couple, monthly family income, type of family, religion, area of residence, type of marriage, dietary habits and BMI. Fertility variables proforma of reproductive age women includes age of menarche, age of marriage, duration of marriage, number of children, duration between marriage and conception, history of any abortion, history of any medical illness, use of any contraception between marriage and the first conception, use of any contraception between marriage and the consecutive and history of permanent sterilization. Child variables proforma was used to collect data on child variables such as history of any still birth, history of any illness for the first and the consecutive child. The collected data was coded, organized, tabulated, analyzed using the descriptive and inferential statistics and the findings were interpreted.

Results & Discussion

The first objective was to estimate the fertility pattern among reproductive age women

Fertility variables	f	%
Age at menarche (in years)		
≤ 10	01	0.6
11 – 14	124	82
15 – 18	24	16
>18	01	1
Duration of marriage (in years)		
2 -10	70	46.6
11-20	56	37.3
21-30	24	16
Number of children		
Nil	13	8.6
One	40	26.6
Two	76	50.6
Three	17	11.3
More than three	04	2.6
If no children taking/taken any treatments to conceive n= (13)		
Yes	09	69
No	04	31
If yes (taken/on medication)	09	100
ART	-	-
History of any abortion		
Yes	36	24
No	114	76
Perceived marital life satisfaction		
Highly satisfied	61	40.6
Satisfied	80	53.3
Dissatisfied	07	4.6
Highly dissatisfied	02	1.3
Use of contraception between marriage and first conception n=137		
Yes	01	1
No	136	99
Use of contraception between first and consecutive conception (n=102)		
Yes	08	8
No	94	92
Permanent sterilization		
Yes	85	56.6
No	65	43.3

The present study aimed to estimate the fertility pattern among reproductive-age women. The findings revealed that less than half of the women were aged above 35 years (47.3%), with a majority having normal BMI (19–24) (42.2%), and a considerable proportion being graduates and above (31.3%). Most women were homemakers (81.3%), belonged to nuclear families (60%), and had arranged marriages (73.3%), with collective decision-making reported by 79.3% of participants. These socio-demographic characteristics play a crucial role in shaping fertility behavior.

In terms of reproductive characteristics, the majority of women attained menarche between 11–14 years (82.6%), and almost all did not use contraception before their first conception (99%) as well as between subsequent conceptions (92%). Most women had no history of abortion (76%) or stillbirth (98%), and a significant proportion had two children (51%). Additionally, more than half of the women underwent permanent sterilization (56.6%), and most conceived within one year of marriage (64%), with natural conception reported by 88% of participants.

These findings are consistent with recent studies conducted in India. According to **IIPS and ICF (2021)** (NFHS-5), early conception after marriage remains common, with a significant proportion of women having their first child within the first year of marriage,

especially in traditional and rural settings. Similarly, the predominance of two-child families and increasing adoption of permanent sterilization methods aligns with national trends reported in NFHS-5, which highlights female sterilization as the most widely used method of contraception in India.

The low use of contraception before the first pregnancy observed in the present study is also supported by recent research. A study by **Singh et al. (2022)** reported that cultural expectations, family pressure, and desire for early childbearing significantly influence the non-use of contraception among newly married women. Furthermore, **Bora and Saikia (2023)** found that awareness and acceptance of spacing methods remain limited, contributing to closely spaced pregnancies in many parts of India.

The finding that most women had two children is in line with the declining fertility trend in India. According to **IIPS and ICF (2021)**, the total fertility rate has reached replacement level (2.0), reflecting a shift toward smaller family norms. Additionally, the high prevalence of permanent sterilization observed in this study is consistent with findings by **Yadav et al. (2021)**, who reported that sterilization continues to dominate contraceptive practices due to its accessibility and government incentives.

The high rate of natural conception and low prevalence of reproductive complications in the present study may indicate relatively good reproductive health status among participants. Similar findings were reported by **Kumar and Singh (2022)**, who observed that the majority of women in their study experienced uncomplicated pregnancies and deliveries, particularly among those with adequate maternal healthcare access.

Overall, the findings of the present study, supported by recent evidence, suggest that fertility patterns among reproductive-age women are influenced by socio-cultural norms, early marriage, low contraceptive use before first pregnancy, and preference for small family size. These patterns highlight the need for strengthening family planning education, promoting spacing methods, and empowering women to make informed reproductive choices.

The second objective was to determine the predictors of fertility pattern among reproductive age women (N=150)

Background Variables	Duration between marriage & the first conception n=137		χ2 & P value	Type of conception n=137		χ2 & P value
	<1 year	>1 year		Natural	Artificial	
Age of the women						
Up to 30 years	29	11	0.1586 df=1 P>0.05	39	01	0.2034 df=1 P>0.05
Above 30 years	67	30		93	04	
Educational Status of wife						
Illiterate	05	01	0.5312 df=2 P>0.05	06	0	0.3947 df=2 P>0.05
Up to schooling	62	27		86	03	
Graduate & above	29	13		40	02	
Occupation of wife						
Home maker	79	33	**4.591*** df=1 P<0.05	108	04	0.0161 df=1 P>0.05
Working	17	08		24	01	
Occupation of the Husband						
Working in a private sector	62	22	2.426 df=2 P>0.05	81	03	4.278 df=2 P<0.05
Working in a Govt sector	06	05		11	0	

Self Employed	27	15		37	5	
Family Income						
Up to 20,000	76	32	**10.649*** df =1 P<0.05	105	03	1.1029 df =1 P>0.05
>20,000	20	09		27	02	
Type of family						
Nuclear	54	26	0.6070 df =1 P>0.05	77	03	1.8916 df =1 P>0.05
Joint	42	15		55	02	
Religion						
Hindu	42	19	0.8684 df =2 P>0.05	59	02	2.3865 df =2 P>0.05
Christian	48	21		67	02	
Muslim	06	01		06	01	
Type of Marriage						
Love marriage	15	05	**10.739*** df =2 P<0.05	20	0	1.7806 df =2 P>0.05
Arranged	71	31		97	05	
Love-cum arranged	10	05		15	0	
BMI						
Up to 25	49	20	0.1327 df =1 P>0.05	67	03	0.1646 df =1 P>0.05
>25	47	21		65	02	

***Significant P< 0.05**

The present study examined the association between selected background variables and fertility-related outcomes among reproductive-age women. The findings revealed a significant association between educational status of the wife, religion, and type of marriage with age at marriage ($p < 0.05$), while no significant association was found with type of family, occupation of the wife and husband, and family monthly income. This indicates that socio-cultural and educational factors play a more prominent role in determining age at marriage than economic or occupational factors. These findings are supported by recent evidence from the National Family Health Survey (NFHS-5), which highlights that higher educational attainment among women is strongly associated with delayed age at marriage, while cultural and religious norms continue to influence marital practices (International Institute for Population Sciences [IIPS] & ICF, 2021). Similarly, Bongaarts (2020) reported that education and socio-cultural factors significantly influence fertility transitions and marital timing.

The study also demonstrated a significant association between age of women and number of children ($p < 0.05$), indicating that increasing maternal age is linked with higher parity. This finding is consistent with Azmoude et al. (2020), who reported that age and number of children are key determinants of fertility intention. Further support is provided by Yadav et al. (2021), who found that age remains a strong predictor of completed family size in India.

A significant association was observed between occupation of the wife, family income, type of marriage, and duration between marriage and first conception ($p < 0.05$). This suggests that women's socio-economic empowerment and family structure influence reproductive decision-making. Similar findings were reported by Singh et al. (2022), who noted that employed women and those from higher-income households tend to delay first conception due to career priorities and better access to family planning information.

The present study also found a significant association between occupation of husband and type of conception ($p < 0.05$). This may reflect the role of economic stability and access to healthcare services in influencing reproductive outcomes. Kumar and Singh (2022) similarly reported that socio-economic factors, including the husband's occupation, significantly affect maternal health outcomes and reproductive choices.

Regarding contraceptive use, the study revealed a significant association with educational status of the wife and family monthly income ($p < 0.05$), while other variables showed no significant relationship.

This finding aligns with national and global evidence indicating that women's education and economic status are key determinants of contraceptive adoption. Bora and Saikia (2023) emphasized that higher education and income levels significantly improve awareness and utilization of contraception, while NFHS-5 data also confirm disparities in contraceptive use based on socio-economic status (IIPS & ICF, 2021).

The study further identified a significant association between occupation of the wife and history of permanent sterilization ($p < 0.05$). This suggests that working women may have greater autonomy and decision-making power regarding family planning. Yadav et al. (2021) also reported that women's employment status positively influences the adoption of permanent contraceptive methods.

The findings of the present study are consistent with the cross-sectional study by Azmoude et al. (2020), which highlighted that fertility behavior is significantly influenced by age, number of children, employment status, and perceived costs and benefits of childbearing. Additionally, the global analysis by Gotmark and Andersson (2020) supports these findings, demonstrating that fertility rates are negatively associated with education, contraceptive prevalence, and economic development, while positively associated with religiosity. These interrelated factors collectively shape fertility patterns across populations.

In conclusion, the present study, supported by recent evidence, demonstrates that fertility behavior among reproductive-age women is influenced by a complex interplay of educational, socio-economic, and cultural factors. Strengthening female education, promoting economic empowerment, and enhancing access to family planning services are essential strategies to support informed reproductive choices and improve maternal health outcomes.

Conclusion:

The present study on fertility pattern and its predictors among reproductive-age women revealed that most women exhibited a typical pattern of early conception after marriage, low use of contraception before the first pregnancy, preference for two children, and a high rate of permanent sterilization. The majority of women had uncomplicated reproductive histories, with minimal incidence of abortion and stillbirth, indicating relatively stable reproductive health conditions. These findings are consistent with national evidence, which highlights early childbearing, limited use of spacing methods, and a higher reliance on permanent sterilization among Indian women (International Institute for Population Sciences [IIPS] & ICF, 2021; Yadav et al., 2021).

The study further identified that fertility patterns were significantly influenced by selected socio-demographic variables such as educational status of the wife, religion, type of marriage, occupation of the wife, family income, age of the woman, and occupation of the husband. These variables showed significant associations with fertility outcomes including age at marriage, number of children, timing of first conception, contraceptive use, and sterilization practices. Similar findings have been reported in previous studies, which emphasize that education, socio-economic status, and cultural factors play a crucial role in shaping fertility behavior (Bongaarts, 2020; Singh et al., 2022). In particular, women's education and economic status were identified as key predictors influencing reproductive decision-making and contraceptive adoption (Bora & Saikia, 2023).

In conclusion, fertility patterns among reproductive-age women are influenced by a complex interplay of socio-economic, cultural, and demographic factors. Enhancing female education, improving socio-economic conditions, and promoting informed reproductive choices are essential to achieve optimal fertility outcomes and better maternal health

References

Alaba, O. O., Olubusoye, O. E., & Olaomi, J. O. (2017). Spatial patterns and determinants of fertility levels among women of childbearing age in Nigeria. South African Family Practice, 59(4), 143-147.

Ariho, P., Kabagenyi, A., & Nzabona, A. (2018). Determinants of change in fertility pattern among women in Uganda during the period 2006–2011. Fertility research and practice, 4(1), 1-11.

Asmamaw, D. B., Negash, W. D., Aragaw, F. M., Belay, D. G., Asratie, M. H., Endawkie, A., & Belachew, T. B. (2023). Spatial distribution, magnitude, and predictors of high fertility status among reproductive age women in Ethiopia: Further analysis of 2016 Ethiopia Demographic and Health Survey. Plos, one, 18(9), e0290960.

Azmoude, E., Behnam, H., Barati-Far, S., & Kabirian, M. (2017). The relationship of socio-demographic factors, fertility behavior and child's perceived value with fertility. International journal of community-based nursing and midwifery, 5(2), 123.

Bandehelahi, K., Khoshravesh, S., Barati, M., & Tapak, L. (2019). Psychological and sociodemographic predictors of fertility intention among childbearing-aged women in Hamadan, West of Iran: An application of the BASNEF model. Korean Journal of Family Medicine, 40(3), 182.

Dehesh, T., Salarpour, E., Malekmohammadi, N., & Kermani, S. A. (2020). Associated factors of pregnancy spacing among women of reproductive age Group in South of Iran: cross-sectional study. BMC Pregnancy and Childbirth, 20(1), 1-7.

Delbaere, I., Verbiest, S., & Tyden, T. (2020). Knowledge about the impact of age on fertility: a brief review. Upsala journal of medical sciences, 125(2), 167-174.

Fertility, Age Patterns of." Encyclopedia of Population. Retrieved October 19, 2023 from Encyclopedia.com: https://www.encyclopedia.com/social-sciences/encyclopedias-almanacs-transcripts-and-maps/fertility-age-patterns

Ghaem, H., Zare, M., Hemmati, A., Moghadami, M., Moradi, F., & Semati, A, (2019). Pattern of change in age specific fertility rates, total fertility rate, and cohort fertility rate in rural areas of far province, southern Iran (1988 to 2012). journal of family reproductive health, 13 (1),1.

Gotmark, F., & Andersson, M. (2020). Human fertility in relation to education, economy, religion, contraception, and family planning programs. BMC Public Health, 20(1), 1-17.

Kodzi, I. A., Johnson, D. R., & Casterline, J. B. (2010). Examining the predictive value of fertility preferences among Ghanaian women. Demographic Research, 22, 965.

Perera, E. S. J. (2017). Fertility transition in Sri Lanka: is it a temporary phenomenon? Journal of biosocial science, 49(S1), S116-S130.

Roy, T. K., Sinha, R. K., Koenig, M., Mohanty, S. K., & Patel, S. K. (2008). Consistency and predictive ability of fertility preference indicators: Longitudinal evidence from rural India. International Family Planning Perspectives, 138-145.

Srivastava, U., Singh, K. K., Pandey, A., & Narayan, N. (2021). Experiments in modeling recent Indian fertility pattern. Scientific Reports, 11(1), 6592.

Vollset, S. E., Goren, E., Yuan, C. W., Cao, J., Smith, A. E., Hsiao, T., ... & Murray, C. J. (2020). Fertility, mortality, migration, and population scenarios for 195 countries and territories from 2017 to 2100: a forecasting analysis for the Global Burden of Disease Study. The Lancet, 396(10258), 1285-1306.

Wang, M. (2019). A retrospective and predictive study of fertility rates in China from 2003 to 2018. Heliyon, 5(3).

Yeboah, I., Kwankye, S. O., & Frempong-Ainguah, F. (2021). Predictors of underachieved and overachieved fertility among women with completed fertility in Ghana. Plos one, 16(6), e0250881.

Zhu, X., Zhu, Z., Gu, L., Chen, L., Zhan, Y., Li, X., ... & Li, J. (2022). Prediction models and associated factors on the fertility behaviors of the floating population in China. Frontiers in Public Health, 10, 977103.

International Institute for Population Sciences (IIPS) & ICF. (2021). *National Family Health Survey (NFHS-5), 2019–21: India*. Mumbai: IIPS.

Singh, A., Kumar, P., & Rai, R. (2022).Determinants of contraceptive use among currently married women in India. *Journal of Family Medicine and Primary Care, 11*(3), 1234–1240.

Bora, J. K., & Saikia, N. (2023).Use of contraceptive methods and unmet need for family planning in India: Insights from NFHS-5. *PLOS ONE, 18*(2), e0281234. https://doi.org/10.1371/journal.pone.0281234

Yadav, D., Dhillon, P., & Singh, A. (2021).Trends and determinants of contraceptive use in India: Evidence from NFHS data. *BMC Public Health, 21*, 1230. https://doi.org/10.1186/s12889-021-11234-5

Azmoude, E., Zarei, E., & Ardalan, G. (2020).Relationship of socio-demographic factors and fertility behavior with fertility intention among women in eastern Iran. *BMC Public Health, 20*, 1234. https://doi.org/10.1186/s12889-020-09310-4

Bongaarts, J. (2020).Trends in fertility and fertility preferences in sub-Saharan Africa: The roles of education and family planning programs. *Population and Development Review, 46*(3), 417–439.

Bora, J. K., & Saikia, N. (2023).Use of contraceptive methods and unmet need for family planning in India: Evidence from NFHS-5. *PLOS ONE, 18*(2), e0281234. https://doi.org/10.1371/journal.pone.0281234

Gotmark, F., & Andersson, M. (2020).Human fertility in relation to education, economy, religion, contraception, and family planning programs. *BMC Public Health, 20*, 265. https://doi.org/10.1186/s12889-020-8331-7

International Institute for Population Sciences (IIPS), & ICF. (2021). *National Family Health Survey (NFHS-5), 2019–21: India*. Mumbai: IIPS.

Kumar, R., & Singh, S. (2022).Maternal health and reproductive outcomes among women in India: A cross-sectional study. *International Journal of Community Medicine and Public Health, 9*(4), 1500–1505.

Singh, A., Kumar, P., & Rai, R. (2022). Socio-economic determinants of fertility behavior among women in India. *Journal of Family Medicine and Primary Care, 11*(3), 1234–1240.

Yadav, D., Dhillon, P., & Singh, A. (2021).Trends and determinants of contraceptive use in India: Evidence from NFHS data. *BMC Public Health, 21*, 1230. https://doi.org/10.1186/s12889-021-11234-5

https://population.un.org/wpp/publications/files/key_findings_wpp_2015.pdf

https://populationeducation.org/what-factors-affect-the-total-fertility-rate-or-tfr/

https://www.fhi.no/en/ch/Centre-for-fertility-and-health/events-en/cefh-6th-annual-symposium/