Reproductive Health

RESEARCH Open Access

Primary infertility and its association with marital disruptions and having co-wives: evidence from a nationally representative survey in India

Paramita Majumdar[1*], Aparajita Chattopadhyay[2] and Satarupa Ghosh[1]

Abstract

Introduction The inability to conceive a child is an issue that affects millions of women around the world. The aftermath of primary infertility in societies that value parenthood may have far-reaching consequences. India, being a diverse country, may help us explore the association of infertility on selected marriage outcomes with the hypothesis that marriage disruption and multiple co-wives are more prominent among women experiencing primary infertility, especially in northern India.

Methods The study uses secondary cross-sectional data from the fifth round of the National Family Health Survey (NFHS 5, 2019-21). The sample size is 304,497 ever-married women aged between 20 and 40 years who spent at least 5 years since their first marriage. Bivariate analysis and multivariable logistic regressions were used to test the hypotheses.

Results In India, women with primary and secondary infertility are more likely to experience marital disruptions [AOR: 1.61, 1.29 respectively] and have co-wives [AOR: 2.05, 1.17 respectively], compared to those who have given births. The interaction model indicates higher chances of marital disruptions [AOR: 1.85] but lower propensity to have co-wives for primary infertile women in in north [AOR: 0.03], , and west [AOR: 1.82, and AOR: 0.40 respectively] compared to south India.

Conclusions Disruptions in women's marital lives are associated with primary infertility across India. The association is strong in northern and western states compared to the south while infertile women of the south are more likely to have co-wives than the north and west regions. Issues of infertility in the context of marital disruption can be resolved by fertility counselling making infertility care available, accessible and gender-neutral.

Keywords Primary and secondary infertility, Marital disruptions, Divorces, Co-wives, India

*Correspondence:
Paramita Majumdar
prmtmajumdar@gmail.com
[1]International Institute for Population Sciences, Govandi Station Road, Deonar, , Mumbai, Maharashtra 400088, India
[2]Department of Population and Development, International Institute for Population Sciences, Mumbai, India

Introduction

Roughly 1 in 6 adults battle with infertility in their lifetime [1]. Infertility is an issue that extends beyond its medical or demographic implications. In many societies, childbearing is an important component of marriage. An aberration from that role can result in social stigmatization and ostracization, devaluation in households and even divorce [2–5]. Primary infertility, i.e., the inability to bear a child, either due to the inability to conceive or the inability to carry a pregnancy to a live birth, is more serious than secondary infertility, which occurs any time after the first pregnancy [6]. Studies highlight that infertile couples experience added anxiety in their marital relationships. Often, infertility is accompanied by a lack of sexual desire, lack of closeness and marital dissatisfaction [7–9]. However, the experiences of women with primary infertility vary over space. There is a significant difference between the experience of infertility in developing and developed countries [10, 11]. Compared to the developed countries, in developing countries, individuals with infertility tend to live with depths of guilt, shame, worthlessness and depression. Infertility often results in divorces and leads to husbands abandoning their wives, sometimes even remarrying [12]. Women with primary infertility live under the constant threat of being abandoned by their spouses, or they have to accept the remarriage of their husbands and are forced to live with co-wives [12–14]. Studies from the underdeveloped countries of Africa have established that marital instability, such as separation and divorce, is much higher among infertile couples [15]. While, in the developed world, voluntary childlessness is a socially viable option, in many developing contexts even involuntary childlessness is rarely pardoned [6, 16].

Women, in general, bear the greater burden of infertility, particularly in developing countries like India [17]. The literature surrounding infertility in India clearly points out that even though it is merely a physical condition, it may become a life crisis for many couples [18, 19]. Although studies show that primary infertility is on the decline in India [6], the marital challenges faced by primary infertile women have rarely been captured using a nationally representative sample. Evidence suggests that the association between infertility and marital disruption is linked with the existing gender inequality and patriarchal norms. While gender inequality and patriarchy prevail throughout India, the magnitude varies across states and regions [20]. There exists a clear north-south divide where in north India along with parts of west exhibit greater gender inequality in the form of patriarchy compared to south India [21].

Data from the subsequent rounds of the Indian National Family and Health Survey reveal a decline in polygynous marriage from 1.9% to 1.4% between 2005 and 2021 [22]. Polygyny in general has remained a subject of legal discussion in the country. Although polygyny is banned among Hindus, it still exists among certain sections of Hindus and is also legally allowed among Muslims. Studies have found the prevalence of polygyny is higher in tribal dominated north-east region and the south where cultural factors favour polygyny. Hence, the practice of polygyny exists in India at varying levels across regions, religions and social groups [22, 23]. The existing literature on infertility has majorly focused on the predictors and biomedical causes of infertility and its treatment. This study, however, aims to understand whether marital disruptions and polygyny are associated with the fertility status of women or not. The research posits that primary infertility disrupts marital relations and husbands of such women seek multiple wives; such trends are distinct with a regional pattern, i.e. more in north India compared to the south as a result of the pronounced patriarchal norms in the north.

Methods and materials

Data source

The National Family and Health Survey (NFHS 5) provides information on health and family welfare issues at national and sub-national levels. NFHS 5, covering 724,115 women aged 15–49 years, is used for this research. The data was collected from 28 states and 8 union territories of India. NFHS has a uniform sample design, which is representative at the national, state/union territory, and district level, and is adopted in each round of the NFHS survey [24].

Sample selection

The sample for the study was selected with a series of filtrations. At first, from the initial sample of 724,115 women (aged 15–49 years), 461,108 women aged between 20 and 40 years were selected. Thereafter, widowed or women who never in union were dropped from the sample. In the next step, 310,014 women married for 5 years or more were selected and 5517 cases with missing data on children ever born were dropped. The effective sample size for this study came out to be 304,497 ever-married women aged between 20 and 40 years, married for 5 years or more. The lower and upper age limits were fixed in order to exclude the two extremes – the youngest and the oldest marriage cohorts. The social pressure to bear a child is relatively stronger in these ages compared to their younger or older counterparts.

Description of variables

Outcome variables

The two outcome variables for this study were – *having disrupted marriage* and *having co-wives*. The former referred to incidences of 'divorce', 'separation' and 'desertion' in one's marital life. The latter referred to such cases where the current partner of the respondent has more than one wife (or the respondent has co-wives). For marital disruption, those respondents who reported their current marital status to be either divorced, separated or deserted were coded as 1 (*having disrupted marriage*) and others were coded as 0 (*not having disrupted marriage*). For multiple wives, those respondents who reported having at least one co-wife were coded as 1 (having co-wives), and others were coded as 0 (*otherwise*).

Explanatory variable

The explanatory variable in this study was *fertility status* with two categories – *fertile* and *primary infertile*. The ever-married women, aged between 20 and 40 years, who spent five or more years since their first marriage, currently not pregnant, who never used any method to delay or avoid getting pregnant, who desired for children (wanted to have children) but had no children at the time of survey were coded as '*primary infertile*'. While, the ever-married women, aged between 20 and 40 years, who have spent five or more years since first marriage and were having at least one child at the time of survey were coded as '*fertile*'.

To test the robustness of our findings on primary infertility, a sensitivity analysis was conducted using the definition of secondary infertility. Secondary infertility was defined as ever-married women aged 20–40 years, married for at least five years, who had experienced at least one live birth, were not currently pregnant, and expressed a desire for additional children. We re-estimated our models for marital disruption and co-wives using this alternative group to examine whether the association between fertility status and marital outcomes remained consistent when infertility was defined more broadly.

Control variables

The control variables were divided under the following heads – respondent's characteristics - age group (20–29 and 30–40), education level (having higher education or otherwise), current work status (working and not working), media exposure (yes and no), morbidity status (any morbidity–diabetes/hypertension/chronic respiratory disease/thyroid disorder/heart disease/cancer/kidney disease or no morbidity) and contraception need (unmet need, no unmet need), spouse's characteristics - husband's work status (working or not) and education level (educated or not, household characteristics - wealth quintile (poorest to richest), religion (Hindu, Muslim and Others), social groups - Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Classes (OBC) and Others, and community characteristics - place of residence (urban or rural) and region (north, central, east, north east, west and south).

Statistical analysis

The prevalence of marital disruption and having co-wives among ever-married women aged 20–40 years by fertility status were explored through bivariate analysis. The association between variables were determined using multivariable logistic regression, and interaction terms were introduced to explore regional differences.

Results

Marital disruptions and co-wives by fertility status

In India, around 3 percent of women who were infertile reported disrupted marriages, while 1 percent of fertile women experienced such an incidence. Similarly, when about 1 percent of women who were fertile reported having co-wives, it was 3 percent for women who experienced infertility. North and west India had the highest percentage of primary infertile women with marital disruptions (about 4 percent); less than 1 percent of primary infertile women reported marital disruptions in north east India (0.67%). Barring north-east India, in all the other regions, marital disruptions were found to be higher among the primary infertile women compared to their fertile counterparts. In north-east India, the percentage of primary infertile women with co-wives was the highest, about 6 percent; followed by 5 percent in East India. While in north India, the lowest prevalence of having co-wives was observed among women, irrespective of their fertility status.There is a significant difference in the prevalence of marital disruptions between primary infertile and fertile women in some states, i.e., Himachal Pradesh (2.56% and 0.70%), Punjab (4.14% and 1.23%), Rajasthan (5.49% and 0.66%), Madhya Pradesh (6.67% and 0.75% respectively), Nagaland (18.52% and 2.12% respectively), Jharkhand (4.63% and 0.55% respectively) and Gujarat (9.58% and 0.99% respectively). A considerable difference can be observed between the percentage of primary infertile women with co-wives and that of fertile women in states like Himachal Pradesh (2.37% and 0.32%), Punjab (2.13% and 0.52%), Chhattisgarh (5.18% and 1.86%) and Mizoram (17.86% and 3.40%) (Table 1).

Fertility status and its association with disrupted marriages and having co-wives among ever married women aged 20–40 years

Fertility status of women showed a strong relation with marital disruptions. Women with primary infertility were

Table 1 Percentages of ever married women (aged 20–40 years) with marital disruptions and co-wives by their fertility status, India and states/UTs, 2019-21

Regions	States/UTs	Having Disrupted Marriages (%)		Having Co-wives (%)	
		Primary Infertile	Fertile	Primary Infertile	Fertile
India		3.1	1.16	2.8	1.21
North	*Jammu and Kashmir*	1.38	0.33	0.69	0.30
	Himachal Pradesh	2.56	0.70	2.37	0.32
	Punjab	4.14	1.23	2.13	0.52
	Uttarakhand	0.51	0.51	0.00	0.83
	Haryana	0.58	0.72	0.69	0.28
	Rajasthan	5.49	0.66	0.70	0.53
	Chandigarh	0.00	0.90	0.00	0.34
	NCT of Delhi	2.71	1.20	1.10	0.51
	Ladakh	0.00	0.27	0.00	1.20
	Total (North)	3.94	0.79	1.02	0.49
Central	*Uttar Pradesh*	1.92	0.63	1.77	0.79
	Madhya Pradesh	6.67	0.75	2.29	1.05
	Chhattisgarh	2.61	1.39	5.18	1.86
	Total (Central)	3.16	0.73	2.38	0.96
North East	*Sikkim*	0.00	1.88	4.09	3.26
	Arunachal Pradesh	0.00	1.30	0.00	3.30
	Nagaland	18.52	2.12	0.00	0.95
	Manipur	5.55	2.55	0.00	1.96
	Mizoram	4.06	9.49	17.86	3.40
	Tripura	2.48	2.09	10.13	1.17
	Meghalaya	5.83	5.50	0.00	4.80
	Assam	0.00	1.24	5.96	2.19
	Total (North East)	0.67	1.79	6.08	2.27
East	*Bihar*	2.58	0.57	3.45	1.27
	West Bengal	4.16	1.33	5.96	1.45
	Jharkhand	4.63	0.55	3.96	2.01
	Odisha	0.00	1.33	4.92	1.94
	Total (East)	2.83	0.95	4.55	1.51
West	*Gujarat*	9.58	0.99	0.30	0.37
	Maharashtra	1.16	1.83	1.76	1.21
	Goa	0.00	0.55	0.00	0.18
	Dadra and Nagar Haveli and Daman and Diu	7.17	1.67	0.00	0.56
	Total (West)	3.81	1.55	1.28	0.93
South	*Andhra Pradesh*	3.03	1.91	3.03	1.72
	Karnataka	2.54	1.62	3.23	1.99
	Kerala	0.60	1.49	1.83	0.49
	Tamil Nadu	3.21	1.97	2.46	1.34
	Telangana	2.94	1.87	4.25	2.31
	Andaman & Nicobar Islands	0.00	1.44	0.00	0.47
	Puducherry	11.04	2.72	0.00	1.93
	Lakshadweep	0.00	0.49	0.00	0.24
	Total (South)	2.76	1.80	2.99	1.62

2.72 times more likely [AOR: 2.72, 95% CI: 2.29,3.21, p-value < 0.001] to experience disruptions in their marital lives compared to those who were not infertile. The regional pictures of infertility and marital disruptions varied. While, in general, the women of the south were twice [AOR: 2.21, 95% CI: 1.97,2.49, p-value < 0.001]more likely to experience marital disruptions compared to the north (see Appendix), the interaction between region

Table 2 Odds ratios from logistic regression analysis assessing the relationship between fertility status, marital disruptions and having co-wives, for women aged 20-40 years, India, 2019-21

Characteristics	Having Disrupted Marriage		Having Co-wives	
	AOR	95% CI	AOR	95% CI
Fertility Status				
Fertile	**Ref**		**Ref**	
Primary Infertile	2.72***	[2.29,3.21]	2.71***	[2.31,3.19]

Respondent's characteristics – age, education level, work status, media exposure, morbidity status, need for contraception; spousal characteristics (only for having co-wives) – work status, education; householdcharacteristics – wealth quintile, religion, social group and community characteristics – place ofresidence, were controlled for (Tables 2 and 3). See appendix (Table 2) for more details. Ref refers to the reference category

***p<0.001

Table 3 Odds ratios from logistic regression analysis assessing the relationship between regions, marital disruptions and having co-wives, among women aged 20-40 years with primary infertility, India, 2019-21

Characteristics	Having Disrupted Marriage		Having Co-wives	
	AOR	95% CI	AOR	95% CI
Region X Fertility Status				
South X Primary Infertile	**Ref**		**Ref**	
North X Primary Infertile	1.85*	[1.08,3.15]	0.30**	[0.14,0.64]
Central X Primary Infertile	1.17	[0.71,1.91]	0.75	[0.47,1.22]
East X Primary Infertile	0.78	[0.43,1.42]	0.75	[0.45,1.26]
North East X Primary Infertile	0.95	[0.42,2.18]	0.97	[0.51,1.86]
West X Primary Infertile	1.82*	[1.03,3.25]	0.40*	[0.18,0.88]

Respondent's characteristics – age, education level, work status, media exposure, morbidity status, need for contraception; spousal characteristics (only for having co-wives) – work status, education; household characteristics – wealth quintile, religion, social group and community characteristics – place of residence, were controlled for (Tables 2 and 3). See appendix (Table 2) for more details. Ref refers to the reference category.

*$p<0.05$

**$p<0.01$

and fertility status showed otherwise. The study found that compared to the primary infertile women of the south, those of north India [AOR: 1.85, 95% CI: 1.08,3.15, p-value < 0.05] and west India [AOR: 1.82, 95% CI: 1.03,3.25, p-value < 0.05] were almost twice more likely to experience marital disruptions. Regression analysis further showed that the fertility status of women had a significant relationship with women having co-wives, in an adjusted model. The respondents having primary infertility were 2.71 times more likely [AOR: 2.71, 95% CI: 2.31,3.19, p-value < 0.001] to have co-wives compared to fertile women. Compared to the primary infertile women of south India, those of the north [AOR: 0.30, 95% CI: 0.14,0.64, p-value < 0.01] and the west [AOR: 0.40, 95% CI: 0.18,0.88, p-value < 0.05] were less likely to have co-wives (Tables 2 and 3).

Table 4 Sensitivity analysis - Odds ratios from logistic regression analysis assessing the relationship between secondary infertility status, marital disruptions and having co-wives, among women aged 20-40 years, India, 2019-21

Characteristics	Having Disrupted Marriage		Having Co-wives	
	AOR	95% CI	AOR	95% CI
Fertility Status				
Others	**Ref**		**Ref**	
Secondary Infertile	1.29**	[1.10,1.53]	1.17*	[1.03,1.34]

Respondent's characteristics – age, education level, work status, media exposure, morbidity status, need for contraception; spousal characteristics (only for having co-wives) – work status, education; household characteristics – wealth quintile, religion, social group and community characteristics – place of residence, were controlled for. Ref refers to the reference category.

*$p<0.05$

**$p<0.01$

As a robustness check, we re-estimated our models using the definition of infertility that captured women with secondary infertility. The findings were consistent with primary infertility . The sensitivity analysis confirmed that infertility, whether defined as primary or secondary, remains significantly associated with adverse marital outcomes such as marital disruption and the presence of co-wives (Table 4).

Discussion

The study aimed to examine the association of fertility status (fertile vis-à-vis primary infertile) with marital disruptions and co-wives, using data from the latest round of NFHS (2019-21). The findings reveal that marital disruptions in India are more common among women having primary infertility compared to others having at least one birth. Even after controlling confounding factors such as women's age, education, health, unmet need for contraception and other socio-cultural characteristics, infertility status remains a significant predictor of marital disruptions. Additionally, women with primary infertility are more likely to have co-wives than their fertile counterparts.

The findings underscore the significant association between primary infertility and adverse marital outcomes in India, highlighting the need for further study to explore the social dynamics. These outcomes, namely marital disruptions and having co-wives, are not uniform across the country but are shaped by underlying regional, cultural, and institutional factors. In northern

and western states, where patriarchy is deeply rooted, infertility is highly stigmatized and thus, primary infertile women are more likely to face adverse marital outcomes such as divorce or separation. Conversely, in southern and tribal dominant northeastern states, where practices such as polygyny are more culturally tolerated, primary infertile women may remain in the marriage but face the burden of co-wife arrangements. These findings reflect region-specific expressions of gender inequality and social pressure surrounding childbearing.

The study shows that marital disruptions were the highest among primary infertile women in north India compared to other regions. Particularly, the northern states of Himachal Pradesh, Punjab, Rajasthan, Madhya Pradesh, Nagaland, Jharkhand and Gujarat show a large difference in the prevalence of marital disruptions between primary infertile and fertile women where infertile women experience high marital disruptions compared to fertile women . Supporting this finding, a qualitative study conducted on selected states of north and central India found that infertility creates emotional and financial distress which often end up breaking marriages [25]. In terms of having co-wives, in some of the hilly and tribal dominated states, the percentage primary infertile women with co-wives is considerably higher than that of fertile women. Existing literature in India backs these findings, i.e. infertile women are often found in polygynous marriages in resource poor settings [26]. In India, polygyny is widely practised among Scheduled Tribes and is prevalent in the tribal dominated states of north east, east and central India [23].

Regional factors are found to be playing a significant role in the marital lives of women with primary infertility in India. In general, women in south India are more likely to experience marital disruptions in the form of divorce, separation or desertion compared to other parts of India. Yet, in comparison to south, the primary infertile women of north and west India are more likely to experience marital disruptions as revealed in this study. Previous studies have hinted that in several states of north India, women with infertility,especially primary infertility, often face systemic and societal stigmatization, marital instability, abuse and are targeted for their 'role failure' [13, 25]. In contrast, primary infertile women in south India are at the greatest risk of having co-wives. Although, literatures are limited, existing studies suggest that in some societies agreeing to remain with co-wives can be a necessary step for maintaining the marriage relationship [27]. Women with infertility are often expected to get their husbands remarry, in order produce a family heir. This becomes a way of putting an end to the household and social adversities faced due to infertility [13, 28]. An study conducted on the southern state of Andhra Pradesh reveals childlessness is viewed negatively by in-laws and often the husbands are pressurized for a second marriage [29]. However, the association between primary infertility and having co-wives is stronger in south Indian states than in the north. Existing literature suggests that in north India infertility is highly stigmatized and women face consequences of this role failure in their marital lives [25] while in the states of south India, polygyny or multiple marriages among men are common [23].

Certain limitations are hereby addressed. Firstly, 'primary fertility' does not carry a standard definition, which makes it very difficult to generate comparable estimates. Secondly, with the cross-sectional nature of the data, it is not possible to follow a cohort and establish a causal relationship between primary infertility and marital disruption. Additionally, it is possible that some women who are biologically infertile may still be using contraceptive methods, for reasons unrelated to pregnancy prevention. Notwithstanding these limitations, this study makes an important contribution by highlighting the association between infertility and adverse marital outcomes; however, future research drawing on both primary and secondary data is required to build stronger evidence and guide effective policy recommendations.

Conclusion

This study explored the role of primary infertility in the marital status of Indian women in terms of having disrupted marriages and having co-wives. A significant association of primary infertility with marital disruption and having co-wives is evident in India. The regional variation in the effect of infertility highlights the importance of a broader socio-cultural climate on the marital lives of women. The findings call for integration of infertility related counselling within the framework of reproductive and child health programmes. The ASHAs and ANMs can be trained to identify and counsel infertile couples. There is a need for fertility counselling at the time of marriage in order to ensure that infertility do not end up in broken marriages. Couple counselling can help dispelling myths about infertility and reduce isolation and stress experienced by infertile women. There is also a need for raising awareness about the causes of infertility and gendersensitization so that women are not disproportionately victimized for childlessness . Strong systemic support coupled with gender sensitive counselling can help in mitigating the marital plight of women with primary infertility.

Appendix

Multivariable logistic regression showing the association between fertility status, marital disruptions and having co-wives, among women aged 20-40 years, India, 2019-21

Characteristics		Having Disrupted Marriage		Having Co-wives	
		AOR	95% CI	AOR	95% CI
Respondent's Characteristics	**Fertility Status**				
	Fertile	**Ref**		**Ref**	
	Primary Infertile	2.72***	[2.29,3.21]	2.71***	[2.31,3.19]
	Age Group				
	20-29	**Ref**		**Ref**	
	30-40	0.96	[0.90,1.03]	1.62***	[1.51,1.74]
	Highest Education Level				
	Less Educated[$]	**Ref**		**Ref**	
	Having Higher Education	1.20**	[1.06,1.36]	0.30***	[0.24,0.38]
	Current Work Status				
	Working	**Ref**		**Ref**	
	Not working	0.60***	[0.53,0.67]	0.67***	[0.57,0.78]
	Media Exposure				
	Not Exposed	**Ref**		**Ref**	
	Exposed	1.11*	[1.02,1.21]	0.93*	[0.87,1.00]
	Morbidity Status				
	Morbid	Ref		**Ref**	
	Not Morbid	0.81***	[0.73,0.90]	0.77***	[0.70,0.85]
	Need for Contraception				
	Unmet Need	**Ref**		**Ref**	
	No Unmet Need	0.002***	[0.00,0.02]	1.33***	[1.20,1.47]
Characteristics of Spouse	**Husband's Work Status**				
	Working	----	----	**Ref**	
	Not Working	----	----	0.82*	[0.70,0.97]
	Husband's Education				
	Educated	----	----	**Ref**	
	Not Educated	----	----	1.59***	[1.34,1.88]
Household Characteristics	**Wealth Quintile**				
	Poorest	**Ref**		**Ref**	
	Poorer	0.86**	[0.78,0.95]	0.75***	[0.69,0.82]
	Middle	0.69***	[0.62,0.77]	0.67***	[0.61,0.73]
	Richer	0.52***	[0.46,0.59]	0.49***	[0.44,0.56]
	Richest	0.39***	[0.33,0.45]	0.39***	[0.33,0.46]
	Religion				
	Hindu	**Ref**		**Ref**	
	Muslim	1.29***	[1.16,1.44]	1.48***	[1.35,1.64]
	Others[$$]	1.99***	[1.80,2.21]	1.22***	[1.09,1.35]
	Social Group[$$$]				
	SC	**Ref**		**Ref**	
	ST	0.97	[0.87,1.09]	1.41***	[1.28,1.56]
	OBC	0.82***	[0.75,0.90]	0.85***	[0.78,0.93]
	Others	0.77***	[0.69,0.86]	0.88*	[0.79,0.98]

Characteristics		Having Disrupted Marriage		Having Co-wives	
		AOR	95% CI	AOR	95% CI
Community Characteristics	**Place of Residence**				
	Urban	**Ref**		**Ref**	
	Rural	0.56***	[0.51,0.60]	1.03	[0.94,1.13]
	Region				
	North	**Ref**		**Ref**	
	Central	0.97	[0.85,1.11]	1.77***	[1.55,2.03]
	East	0.92	[0.80,1.06]	2.32***	[2.03,2.65]
	North East	1.97***	[1.74,2.24]	2.72***	[2.37,3.12]
	West	1.76***	[1.54,2.01]	1.39***	[1.18,1.65]
	South	2.21***	[1.97,2.49]	3.55***	[3.11,4.05]
		R^2= 0.06		R^2= 0.05	

[$] Includes not educated/having primary/secondary education

[$$] Includes Christians/Sikhs/Buddhists/Jains/Jewish/Parsi/Others

[$$$] SC stands for Scheduled Caste, ST for Scheduled Tribes and OBC for Other Backward Classes

*p<0.05

**p<0.01

***p<0.001

Acknowledgements
Not applicable.

Authors' contributions
PM conceptualized, analyzed, interpreted the findings and prepared the manuscript. AC contributed in conceptualization and preparing the draft of the manuscript. SG contributed in analysis.

Funding
This research received no specific grant from any funding agency, commercial entity or not-for-profit organization.

Data availability
The dataset supporting the conclusions of this article is available in the official website of DHS, [https://dhsprogram.com/Data/].

Declarations

Ethics approval and consent to participate
Ethical approval was not required for the study since it is based on secondary dataset publicly available at DHS Program website. For the survey, ethical clearance was obtained by International Institute for Population Sciences (IIPS), the nodal agency for NFHS.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Received: 20 November 2024 / Accepted: 27 August 2025
Published online: 17 October 2025

References

1. 1 in 6 people globally affected by infertility: WHO. World Health Organization. 2023. https://www.who.int/news/item/04-04-2023-1-in-6-people-globally-affected-by-infertility. Accessed 5 Jul 2024.
2. Cousineau TM, Domar AD. Psychological impact of infertility. Best Pract Res Clin Obstet Gynaecol. 2007;21:293–308.
3. Greil AL, Slauson-Blevins K, McQuillan J. The experience of infertility: a review of recent literature. Sociol Health Illn. 2010;32:140–62.
4. Jisha PR, Thomas I. Quality of life and infertility: influence of gender, years of marital life, resilience, and anxiety. Psychol Stud Mysore. 2016;61:159–69.
5. Shea O, Rutstein, Iqbal H. Shah. Infecundity, infertility, and childlessness in developing countries. 2004.
6. Kundu S, Ali B, Dhillon P. Surging trends of infertility and its behavioural determinants in India. PLoS ONE. 2023;18:e0289096.
7. Chachamovich J, Chachamovich E, Fleck MP, Cordova FP, Knauth D, Passos E. Congruence of quality of life among infertile men and women: findings from a couple-based study. Hum Reprod. 2009;24:2151–7.
8. Dourou P, Gourounti K, Lykeridou A, Gaitanou K, Petrogiannis N, Sarantaki A. Quality of life among couples with a fertility related diagnosis. Clin Pract. 2023;13:251–63.
9. Peterson BD, Newton CR, Rosen KH. Examining congruence between partners' perceived infertility-related stress and its relationship to marital adjustment and depression in infertile couples. Fam Process. 2003;42:59–70.
10. Hasanpoor-Azghdy SB, Simbar M, Vedadhir A. The emotional-psychological consequences of infertility among infertile women seeking treatment: results of a qualitative study. Iran J Reprod Med. 2014;12:131–8.
11. Dyer SJ. I99 psychological and social aspects of infertility in developing countries. Int J Gynecol Obstet. 2009;107:S25-26.
12. Papreen N, Sharma A, Sabin K, Begum L, Ahsan SK, Baqui AH. Living with infertility: experiences among urban slum populations in Bangladesh. Reprod Health Matters. 2000;8:33–44.
13. Sheoran P, Sarin J. Infertility in india: social, religion and cultural influence. Int J Reprod Contracept Obstet Gynecol. 2015; 4:1783–8.
14. Mumtaz Z, Shahid U, Levay A. Understanding the impact of gendered roles on the experiences of infertility amongst men and women in Punjab. Reprod Health. 2013;10:3.
15. Ofosu-Budu D, Hanninen V. Living as an infertile woman: the case of Southern and Northern Ghana. Reprod Health. 2020;17:69.
16. Shayesteh-Parto F, Hasanpoor-Azghady SB, Arefi S, Amiri-Farahani L. Infertility-related stress and its relationship with emotional divorce among Iranian infertile people. BMC Psychiatry. 2023;23:666.
17. Singh S, Prasad A. A study on psycho-social consequences of infertility in rural area. Int J Clin Obstet Gynecol. 2019;3:86–8.
18. Sharma A, Mahajan C, Saraswathy KN, Puri M, Babu N. Struggling with primary infertility: psychological well-being and associated factors in North Indian women. J Anthropol Surv India. 2022;71:68–83.
19. Singh BP, Shukla U. Inability to conceive and treatment-seeking behaviour in Uttar Pradesh state in India. Can Stud Popul. 2015;42:1-12
20. Singh A, Kumar K, McDougal L, Chokhandre PK, Singh AK, Upadhyay AK, et al. Patriarchy, fertility and excess female child mortality in India. Spat Demogr. 2025;13:1.
21. Singh A, Chokhandre P, Singh AK, Barker KM, Kumar K, McDougal L, et al. Development of the India patriarchy index: validation and testing of temporal and spatial patterning. Soc Indic Res. 2022;159:351–77.

22. Kumari N, Ram R. Socio-economic and demographic determinants of polygynous marriages in India: multilevel analysis of nationally representative survey, 2019-21. Sex Cult. 2025;29:1174–92.
23. Sahoo H, Nagarajan R, Mandal C. Polygyny in India: Levels and Differentials. 2022.
24. IIPS & ICF. National Family Health Survey (NFHS-5), 2019-21. India; 2021.
25. Sharma S, Sharma R, Manani P, Prasad IV. Infertility among married women in Northern India: a qualitative study of coping strategies and social stigmas. Int J Womens Health Reprod Sci. 2024;12:33–41.
26. Dierickx S, Coene G, Jarju B, Longman C. Women with infertility complying with and resisting polygyny: an explorative qualitative study in urban Gambia. Reprod Health. 2019;16:103.
27. Tabi MM, Doster C, Cheney T. A qualitative study of women in polygynous marriages. Int Nurs Rev. 2010;57:121–7.
28. Bawadi H, Al-Hamdan Z, Clark C, Hall-Clifford R, Hamadneh J, Al-Sharu E. Infertile Jordanian women's self-perception about societal violence: an interpretative phenomenological study. Int J Womens Health. 2024;16:593–603.
29. Unisa S. Childlessness in Andhra Pradesh, India: treatment-seeking and consequences. Reprod Health Matters. 1999;7:54–64.

Publisher's Note