



Gendered Patterns and Societal Drivers of Living Kidney Donation in North India

Abstract

Background: The status of women in society has been fluid throughout history, experiencing periods of power and subordination. This study examines the donor profile in kidney transplants and explores how women's social status influences their role as donors. **Materials and Methods:** The research was conducted at a tertiary care teaching hospital in North India, using a mixed-methods approach. Data from all live kidney donor records between 2013 and 2022 were analyzed, focusing on age, biological sex (male/female), donor-recipient relationships, and state of residence. In-depth semi-structured interviews were conducted with 92 randomly selected female donors (10% of the total) to explore their motivations and sociocultural contexts. Data were analyzed using descriptive statistics and thematic content analysis. **Results:** Among 1,171 kidney transplants, 79% of donors were female. The average age of female donors was 44 years, compared to 49.4 years of male donors. In terms of the donor-recipient relationship, donating women were predominantly mothers (50.1%) and wives (35.6%). Among men, fathers were predominant at 53.7%. Interviews with female donors revealed an average of 38 years, with approximately 50% undergraduates and 75% aware of organ donation and its associated risks. Motivations cited for female donors included perceived inferior position in society (51.8%), economic dependence (33.2%), and altruism (15%). **Conclusion:** The high number of female donors in India can be linked to women's social status. This finding correlates with India's lower sex ratio and female literacy rate, as reported in the 2011 census. Addressing these disparities is crucial for promoting gender equity in organ donation.

Keywords: Donor profile, Organ transplants, Social status

Introduction

Organ donation is a critical aspect of modern healthcare, offering life-saving opportunities for patients with end-stage organ failure. Globally, the shortage of organ donors remains a significant challenge, with the demand far exceeding the available supply.¹ India sees a particularly pronounced disparity, with a complex interplay of sociocultural, economic, and psychological factors influencing organ donation rates.²

Given that the deceased donor program is relatively weak in most parts of India, living donors remain the predominant source of organs. One of the most striking aspects is the gender disparity observed among living donors. Women comprise a disproportionately large percentage of living organ donors in India, particularly in the case of kidney transplantation.³ This imbalance raises important questions about the underlying factors contributing

to this phenomenon and its implications for both donors and recipients.

The reasons behind this gender disparity are multifaceted and deeply rooted in societal norms and economic realities. Research has suggested that perceived inferior position in society, non-earning or dependent status, and cultural expectations of self-sacrifice play significant roles in higher rates of organ donation.⁴ Conversely, men are more likely to be recipients, further highlighting the complex gender dynamics at play in the organ donation process.⁵

Religious beliefs, misconceptions, and fears around organ trafficking remain key barriers to organ donation in India.^{6,7} Education and employment levels also influence attitudes, with higher education often linked to greater acceptance.⁸ Recent research has also highlighted the importance of family dynamics in organ donation decisions, particularly in the context of living-related donations. The role of mothers and wives

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as primary donors within families reflects broader societal expectations and gender roles.⁹

Sex and gender considerations are vital to equitable transplant practices. With transgender medicine introducing factors like hormonal therapy and anatomical variation, transplant research must move beyond binary models. In countries like India, where donation patterns reflect deep-rooted social inequities, adopting inclusive, gender-responsive frameworks is essential for ethical and effective kidney transplantation.¹⁰ This study examines gender disparities in organ donation in India, drawing on both biological sex data and sociocultural insights to understand the sociocultural, economic, and psychological societal factors that contribute to these imbalances and to propose potential interventions to promote gender-equitable participation in organ donation.

Materials and Methods

We adopted a mixed-methods approach, combining retrospective quantitative analysis with qualitative in-depth interviews to comprehensively explore gender disparities in live kidney donation. A record-based study was conducted on live kidney transplants over 10 years (2013–2022) at AIIMS, New Delhi, a teaching hospital in North India. Quantitative data, including donor and recipient demographics, such as biological sex (male/female), age, donor-recipient relationship, and state of origin of donors, were extracted from hospital records. For the qualitative component, semi-structured in-depth telephonic interviews were conducted with 10% of the female donors (n = 92), selected randomly, to explore the motivations and sociocultural factors influencing their decision to donate. While hospital records reflected biological sex, the interviews captured gendered experiences, including social roles, expectations, and power dynamics that shaped donor behaviour. The interview guide was pilot-tested and covered themes such as awareness, family influence, employment status, autonomy in decision-making, and perceived societal roles.

Quantitative data were analyzed using SPSS version 24. Descriptive statistics (frequency, percentage, mean, and standard deviation) were computed. Comparative analysis was performed using the Chi-square test for categorical variables and the independent t-test for continuous variables. Statistical significance was set at $p < 0.05$.

Results

Quantitative analysis

Of 1,171 live kidney transplants, 79% of donors were female (n = 925), whereas 81.46% of recipients were male (n = 955), showing statistically significant disparities in sex ($p < 0.05$) [Table 1]. The average age of female donors was 44 years, compared to 49.4 years among males. Most female donors were from Delhi (26.7%), Uttar Pradesh

(22.7%), and Bihar (18.6%). In terms of relationship to the recipient, mothers (50.1%), wives (35.6%), and sisters (7.5%) were the most common donors. Among men, fathers (54.5%), brothers (17.9%), and husbands (14.7%) predominated. This distribution suggests that familial roles influence donation patterns differently for men and women.

Qualitative analysis

To explore the underlying reasons for the high proportion of donating women, 92 randomly selected female donors (a 10% sample) were interviewed via in-depth, semi-structured telephonic interviews.

Demographics of Interviewees

The average age of female donors interviewed was 38 years, with 60% being undergraduates and only 15.17% being employed. The majority (78%) lived in joint families. Most participants (75%) were aware of organ donation and its associated risks. These findings reflect a donor group with limited economic independence, embedded in traditional family structures, setting the stage for gender based thematic exploration. Figure 1 shows self-reported reasons for kidney donation by female donors.

Theme 1: Sociocultural Conditioning and Perceived Subordinate Status

A majority (51.8%) of participants reported that their donation decision was influenced by societal norms that position women as secondary to men. Donations were often viewed not as a voluntary medical act, but as a moral obligation tied to gendered roles. One participant stated, “In our family, women are expected to put others first; it’s always been this way.” Several women emphasized that

Table 1: Biological sex distribution of donors and recipients

Biological Sex	Donors, n (%)	Recipients, n (%)	Statistical Significance (p-value)
Female	925 (79%)	217 (18.5%)	<0.05
Male	247 (21.0%)	955 (81.5%)	<0.05

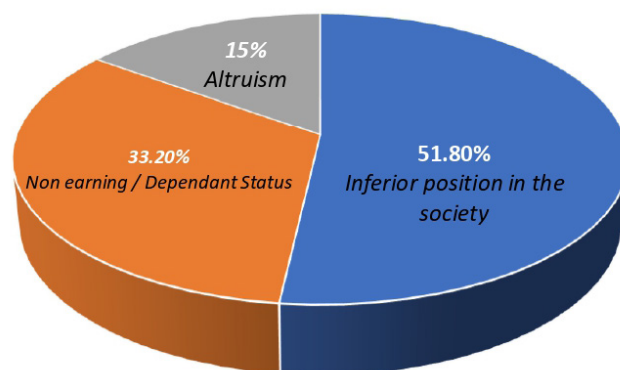


Figure 1: Self-reported reasons for kidney donation by female donors. Each respondent gave only one reason.

refusal to donate was never seen as an option. This theme highlights how entrenched gender norms influence women to internalize the expectation of self-sacrifice, especially in roles such as motherhood or wifehood.

Theme 2: Economic Dependence and Limited Autonomy

Approximately 33.2% of women cited their non-earning or dependent status as the basis for their selection as donors. Men, being primary earners, were often considered unsuitable due to the potential loss of income. One donor remarked, “My husband works, and I stay at home. If he got operated, who would earn? But I could manage.” This theme illustrates how economic vulnerability intersects with gender roles, positioning women as the more “expendable” option as a donor in transplant decisions despite the associated health risks.

Theme 3: Altruism and Emotional Motivation

A smaller but significant group (15%) cited emotional bonds or spontaneous willingness as their primary reason. These responses, particularly from mothers and wives, emphasized love and connection over pressure or obligation. One mother shared, “I didn’t think twice; he is my son. It was natural for me to do it.” While fewer in number, these narratives represent an important contrast, one where personal motivation and emotional choice drove the decision to donate.

Discussion

Our study demonstrates a significant sex and gender disparity in kidney donation in India. Among 1,171 live kidney transplants performed, 79% donors were biologically female, and 81.5% recipients were biologically male ($p < 0.05$). Female donors were younger than male donors. The donating women were predominantly mothers and wives. Qualitative interviews further identified key gendered motivators: perceived lower social status, economic dependence, and altruism.

The findings reveal a systemic gender bias in living kidney donation, shaped by entrenched cultural norms and economic dependence. With only 15.2% of female donors employed, traditional caregiving roles and financial reliance heighten susceptibility to familial pressure. In contrast, men’s status as primary earners often exempts them from donation. Although 75% of women were aware of organ donation, this awareness did not ensure autonomous decision-making, highlighting the need for donor education that prioritizes informed, voluntary consent.

The observed sex and gender disparity in living kidney donation in our study is more pronounced than in several Western countries. Øien *et al.* reported a 44% higher rate of female donors in Norway,¹¹ while Almeida *et al.* noted that women contributed 60-70% of living donors in developing nations.¹² Similar patterns were found in Iran, where 65% of unrelated donors were female.^{3,12} Consistent with Vemuru Reddy *et al.*, males in our study were

significantly more likely to be recipients,⁵ as also reflected in a Kerala-based study where 76.2% of recipients were male versus 23.8% female ($p < 0.001$).¹³

Regionally, donor demographics reflect both healthcare disparities and sociocultural influence. Jindal *et al.* observed that younger women may be more vulnerable to family pressure to donate.¹⁴ The gendered pattern of female donors being mothers (50.1%) and wives (35.6%) aligns with Kute *et al.*,⁹ while male donors as fathers or brothers support Batra and Reio’s perspective on gendered donation roles.⁴

Thematic analysis identified three dominant motivations among women: sociocultural conditioning and perceived subordinate status, economic dependence and limited autonomy, and altruism. Additionally, 75% of respondents were aware of organ donation, higher than the 52.8% reported by Mithra *et al.* Only 15.2% were employed.⁷ This supports prior findings that link female economic dependence to a higher likelihood of intra-family donation.¹⁰ These patterns diverge from Western contexts; for instance, Zimmermann *et al.* found altruism to be the primary motivator for donation among Canadian women.¹⁵

Cultural and socioeconomic variables further shape donation dynamics. Kurnikowski *et al.* demonstrated that country-specific cultural and socioeconomic frameworks influence gender disparities.¹⁶ Malakoutian *et al.* associated donation patterns with socioeconomic status in Iran.¹⁷ Psychological responses also vary. Achille *et al.* found elevated distress among female donors,¹⁸ while Morgan *et al.* reported that women exhibited more favorable attitudes and a greater willingness to engage in donation-related discussions.¹⁹

Our study had some limitations. This was a single-center study, which limits generalizability. While thematic saturation was achieved with 92 interviews, a more diverse and multicentric sample could yield broader insights. The reliance on self-reported data introduces the potential for social desirability and recall bias. Furthermore, as hospital records captured only biological sex (male/female), we were unable to independently assess gender identity. This constrains our ability to explore the full spectrum of gender-related dynamics, particularly for transgender or non-binary individuals, who may face unique barriers or experiences in organ donation.

Despite a reported decline in female donations, sex and gender disparities in kidney donation remain substantial.²⁰ Future research should evaluate the effectiveness of awareness campaigns and healthcare provider involvement in improving donor participation, while addressing persistent training gaps that hinder clinician-led discussions.^{8,21-23} Economic disincentives for male donors, as highlighted by Gill *et al.* underscore the need for supportive policy interventions.²⁴ Cultural and religious influences remain critical: while some studies identify them

as barriers, others suggest religious leaders can positively shift attitudes. Integrating gender-sensitive approaches and prioritizing long-term donor outcomes are essential.^{6,25,26}

To conclude, our study reveals significant sex and gender disparities in kidney donation in India, with complex sociocultural, economic, and psychological factors influence. Women, mainly mothers and wives, dominate the donor pool, while male recipients are the majority. While some progress has been made in recent years, there is still a need for multifaceted strategies, including public awareness, healthcare provider engagement, financial safeguards, and policy reforms, to address these disparities and promote equitable participation in organ donation across genders.

Conflicts of interest: There are no conflicts of interest.

The authors declare that no generative AI or AI-assisted tools were used in drafting, editing, or preparing this manuscript.

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