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Engaging Fathers in Infant and Young Child Feeding: A Mixed-Methods Study to explore feasible pathways in South India

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Article

Keywords: Father Involvement, Complementary feeding, Child nutrition, Social norms, Shared caregiving, Gender norms

Posted Date: September 24th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10878390/v1

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Additional Declarations: No competing interests reported.

Abstract

Father's role has been underutilized in child nutrition despite their potential influence on household food choices and caregiving. This study aimed to identify feasible practices to strengthen fathers' involvement and explore the social and contextual factors shaping it. An explanatory mixed-methods study was conducted among 216 fathers of children aged 6–23 months across 21 Anganwadi centres in urban Puducherry. Fathers were categorized as actively or passively involved based on self-reported participation. Knowledge, perceptions and practices and feasible practices were assessed using a pre-tested semi-structured questionnaire. Eight purposively selected fathers participated in in-depth interviews exploring barriers, facilitators, and social norms influencing practice adoption. Among 216 fathers, 132 (61.1%; 95% CI: 54.4–67.4%) reported active involvement. But only 38.4% of their partners concorded with this perception. Active involvement was associated with higher knowledge, perceptions, and practices. The major feasible practices emerged were purchasing nutritious food (92.6%), joint food-choice discussions (57.9%), role modeling (71.8%), spending quality time (61.1%), and seeking nutrition knowledge (48.1%). Social norm theory described gender norms that assigned feeding responsibilities to mothers but injunctive norms showed a positive shift in perceptions of fathers about their involvement in child feeding. Father-inclusive, family-centered counseling, spousal support, reliable information sources, and intrinsic motivation could facilitate father's participation.

Introduction

The first **1,000 days of life**, is a critical window for child survival, optimal growth, and long-term human capital development.[1] According to World Health Organization (WHO), three out of ten children are stunted.[2] In India, 35.5% of children are stunted and only 11.3% children received minimum adequate diet[3, 4]. Strengthening optimal diet diversity in the complementary feeding period can reduce child stunting and associated morbidity[5].

Studies in other settings have demonstrated that fathers' involvement in child feeding is associated with positive child health outcomes[6, 7]. Though fathers have the potential to influence socio-environmental determinants of optimal child feeding, such as increasing access to food, increasing support from other caregivers, and regulating media influence[8], father's support is often overlooked in the context of complementary feeding in India.[5] Interventions aimed at improving the quality of complementary feeding and dietary diversity have predominantly focused on building knowledge and capacity among mothers.[8] Recently, two qualitative studies have reported that men's involve less due to inadequate knowledge regarding child feeding and they do not perceive themselves as competent caregivers [9.10] Only one study has reported an improvement in fathers' knowledge on infant and young child feeding which improved feeding practices, in the intervention group.[11]

In this context, the present study aims to assess the perception of fathers and their partners regarding their active involvement in complementary feeding practices. Additionally, using a mixed method participatory approach, the study explores the feasible and acceptable practices that fathers can adopt

in their daily lives and the barriers or facilitators that could help or hinder the sustainability of these practices. The future interventions aimed at enhancing father's involvement in complementary feeding of their children can learn from these fathers' perspectives.

Results

The flow of study participants is provided in (Fig. 1).

Majority of the fathers were in the 31–35-year age group (41.2%), had a graduate degree or higher (77.7%) employed in the private sector (55.5%). The mean age of mothers was 28.7 ± 3.6 years, had education up to graduation and above (73.0%), and was stay-at-home parents (65.2%). In the qualitative component of the study, the fathers were aged between 27 to 35 years. Most fathers were employed in the private sector and mothers were stay-at-home parents. (Table 1)

Table 1
Sociodemographic characteristics of participants having children aged 6 to 23 months in urban Puducherry, India, November 2025 (N = 216)

Characteristics	Category	Frequency(n)	Proportion (%)
Father's Age (Mean, SD)		31.5	3.6
First time fathers		108	50
Father's working hours (mean, SD)		11.01	1.9
Father's educational status	Primary and middle school (1-10th std)	5	2.3
	High school (11-12th std)	43	19.9
	Graduate and above	168	77.7
Father's occupation	Government employee	27	12.6
	Private employee	120	55.5
	Self-employed	68	31.5
	Stay-at-home parent	1	0.4
Mother's Age (Mean, SD)		28.7	3.6
Mother's educational status	No formal education	2	0.9
	Primary and middle school (1-10th std)	11	5.2
	High School (11–12 std)	44	20.7
	Graduate and above	159	73.2
Mother's occupation	Government employee	11	5.1
	Private employee	46	21.3
	Self-employed	18	8.4
	Stay-at-home parent	141	65.2
Child's age in months	6–8	31	14.3
	9–11	39	18.2
	12–23	146	67.5
Birth order of the child	First	104	48.2
	Second	101	46.7

Characteristics	Category	Frequency(n)	Proportion (%)
	Third or more	11	5.1
Sex of the child	Male	112	51.6
	Female	104	48.4
Type of family	Joint family	112	51.6
	Nuclear family	104	48.4
Socio-economic status (INR)* 2025	Upper class (> 9130)	113	52.3
	Upper middle class (4565–9129)	87	40.3
	Middle class (2739–4564)	14	6.4
	Lower middle class (1369–2738)	1	0.5
	Lower class (≤ 1368)	1	0.5

*Socioeconomic status was assessed using the modified B. G. Prasad scale (2025) calculated from per capita monthly income, obtained by dividing the total monthly family income by the total number of family members.

Regarding perceived active involvement of fathers in child feeding related activities Majority of fathers self-reported to be actively involved in complementary feeding (61.1%; with 95% CI, 54.4–67.4%). However, only 38.4%, 95% CI (31.9% – 44.9%) concorded fathers are actively involved in complementary feeding related activities. Majority of mothers believed that father's involvement improves the child's nutritional status (63.4%) and strengthens the father child bond (88.8%) (Table 2).

Table 2
Perception regarding father's active involvement in complementary feeding of the child in urban Puducherry, India, November 2025 (N = 216)

Characteristic	Frequency (n)	Proportion (%)
Father's Self-reported active participation in complementary feeding		
Yes	132	61.1
No	80	37
Don't know	4	1.8
Father's Self-rated involvement in complementary feeding compared to mother (1–10)		
1–5	159	73.6
6–10	57	26.3
Mother's perception regarding father's active participation in child feeding and other activities		
Yes	83	38.4
No	131	60.7
Don't know	2	0.93
Concordance of parental reports on father's involvement (N = 210)*		
Both agreed that father was actively involved	72	34.3
Both agreed that father was not actively involved	69	32.9
Father and mother did not concord in their response (father reported active involvement and mother refuted)	59	28.1
Father reported inactive involvement and mother refuted)	10	4.8
Mother's perception about main decision maker in the family		
Herself	59	27.3
Her husband	62	28.7
Her mother-in-law	64	29.6
Other elder member in the family	31	14.4
*Participants who responded "Don't know" (n = 6) were excluded from the analysis		

Knowledge, perceptions and practices related to complementary feeding: Of 216 fathers, 132 (61.1%) reported active involvement, 80 (37.0%) passive involvement, and 4 (1.9%) responded "Don't know"; were excluded from comparative analyses. Actively involved fathers had a higher median knowledge score than passively involved fathers [8 (IQR 7–10) vs. 7 (IQR 6–9), p = 0.0583], although knowledge remained suboptimal in both groups (Supplementary Table 1). Significant differences were observed across all

perception domains, with actively involved fathers showing more favorable perceptions of shared decision-making [7 (4–8) vs. 4 (4–6)], support [19.5 (17–21) vs. 16 (14–18)] and responsive feeding [18 (17–19) vs. 17 (16–18)], while endorsing fewer traditional norms [12 (10–14) vs. 15 (14–16)] (all $p < 0.01$). Similarly, actively involved fathers had higher practice scores across all domains, including financial support [29 (24.5–35) vs. 25 (18–33)], shared decision-making [4 (2–6) vs. 2 (2–4)], workload sharing [3 (2–7) vs. 1 (0–2)], physical and psychological support [11 (8–14) vs. 8 (4.5–10)], and responsive feeding [2 (1–3) vs. 1 (0–2)] ($p < 0.001$ for all except financial support, $p = 0.0003$), although scores remained below the maximum possible values (Table 3).

Table 3
Domain -wise difference of perceptions and practices among self-reported active vs passive fathers in complementary feeding in urban Puducherry, India, November 2025 (N = 212)*

Perception domain	Maximum score possible	Fathers perceived to be actively involved Median (IQR)	Fathers who perceived to be passively involved Median (IQR)	P Value†
		n = 132	n = 80	
Perceptions				
Traditional Norms (4 items)	4 (decreasing score favorable)	12 (10,14)	15 (14,16)	< 0.0001
Shared decision making (3 items)	11	7 (4,8)	4 (4,6)	< 0.0001
Providing financial, physical and psychological support (5 items)	25	19.5 (17,21)	16 (14,18)	< 0.0001
Responsive and child feeding (5 items)	21	18 (17,19)	17 (16,18)	0.002
Practices				
Providing financial support for purchasing child care items (12 items)	48	29 (24.5, 35)	25 (18,33)	0.0003
Shared decision making in initiation of complementary foods and diet (3 items)	12	4 (2,6)	2 (2,24)	< 0.001
Workload sharing in household and childcare activities (4 items)	16	3 (2,7)	1 (0,2)	< 0.001
Providing physical and psychological support for child care activities (6 items)	24	11 (8,14)	8 (4.5,10)	< 0.001
Responsive feeding and childcare (3 items)	12	2 (1,3)	1 (0,2)	< 0.001

*Participants who responded “Don’t know” (n = 4) were excluded from the analysis.

† Mann-whitey U test

Identified feasible practices and their barriers and facilitators: More than half of the fathers (55.0%) expressed readiness to increase their involvement in sharing workload with mother (41.2%), more financial support (20.1%), and greater shared decision making (12.6%). Fathers preferred web-based

information sharing (73.9%), and, least preferred the in-person contact (87.4%) for receiving information on child nutrition (supplementary table 2). Fathers reported practices such as purchasing nutritious food, discussing the child's nutrition and food choices with their partner, role modeling, spending quality time with the child, assisting in learning activities and actively seeking knowledge about nutritious food and feeding practices as feasible (Table 4).

Table 4
Number and Frequency of Active and Passive Fathers Reporting Regular Practice of feasible practices (N = 216)

Practice	**Active fathers n (%)**	**Passive fathers n (%)**
	N = 132	**N = 82**
Purchasing nutritious food, clothing and childcare items like diapers etc.	128 (96.9)	72 (90)
Discussing the child's nutrition and food choices with partner	93 (70.4)	32 (40)
Preparing or assisting wife in food preparation of the child	39 (29.5)	1 (1.2)
Feeding the child at least once every day	19 (14.3)	1 (1.2)
Taking the child outdoors for walks or playtime regularly	48 (36.3)	18 (22.4)
Taking or accompanying the mother to regular growth monitoring visits	67 (50.6)	47 (58.7)
Spending quality time with the child daily and assisting the child with learning activities	94 (71.2)	38 (47.4)
Actively seeking knowledge about nutritious food and best feeding practices for the child	79 (59.8)	25 (31.2)
Regularly doing household chores to support my partner in child care	30 (22.6)	3 (3.7)
Adapting healthy food practices in family (being a role model)	112 (84.8)	43 (53.7)

Qualitative findings identified key barriers and facilitators, which were synthesized using force-field analysis (Fig. 2).

Fathers also stressed that *"If health workers actively invite fathers and speak to us directly it will help us to involve more" (P2).* They required flexible clinic and anganwadi timings, especially evening or weekend sessions to reduce clashes with work schedules. They identified encouragement and step-by-step guidance from wives and elders, would make it easier for them to be involved. They requested practical demonstrations on safe feeding, appropriate portions, and age-appropriate foods to build confidence. Fathers emphasized that *"I feel educating elders, with special focus on men's mothers, is needed to sustain father involvement in childcare." (P6).* They were interested to learn how to recognize and respond to children's hunger and satiety cues.

The Social Norms Theory approach: Most of the peer-group fathers were not participating in direct caregiving roles. Injunctive norms reflected those societal expectations primarily position fathers as financial providers, rather than actively engaging in feeding practices. Descriptive norms further reinforced this pattern, as other men in their social circle also had minimal involvement in child feeding and related activities. Conditional norms indicated that fathers were more likely to participate in complementary feeding when encouraged or supported by their spouses, or when such involvement was accepted and facilitated within the family environment. The findings suggested a gradual shift in norms, with some fathers expressing willingness to take on more active roles (Supplementary table 3)

The integration table presents the convergence and complementarity of quantitative and qualitative findings on fathers' involvement in complementary feeding. It highlights how qualitative findings explain and contextualize the quantitative results, identifying key barriers, facilitators, and feasible practices (Table 5).

Table 5
Integration of quantitative and qualitative findings on feasible practices for fathers' involvement in complementary feeding

Quantitative result:	**Qualitative result**		**Meta-inference**
Practice, N = 216, n (%)	**Facilitators**	**Barriers**	
Purchasing nutritious food, clothing and childcare items **(200, 92.6%)**	Familiar role, financial responsibility, satisfaction in providing for child		**Convergence**: Financial provision was perceived as a legitimate and feasible form of father involvement.
Discussing child nutrition and food choices with partner **(125, 57.9%)**	Desire to support child's health, easy to participate, nuclear family setting	Gendered expectations limiting regular engagement	**Convergence**: Indirect involvement was feasible, but gender norms constrained consistent engagement.
Adapting healthy food practices in family, being a role model **(155, 71.8%)**	Motivation to be a positive role model, awareness that children imitate fathers, desire to prevent illness	Unhealthy habits, social influences, work-related lifestyle	**Convergence**: Fathers recognized their modeling role, while established habits and social influences hindered sustained practice.
Spending quality time with child daily and assisting learning activities **(132, 61.1%)**	Emotional bonding, recognition of developmental needs, shared caregiving	Long and irregular working hours, fatigue, low confidence	**Convergence**: Strong motivation was present, but time constraints and fatigue limited implementation.
Actively seeking knowledge about nutritious food and best feeding practices **(104, 48.1%)**	Desire to protect child's health, access through phone, social media, health workers and spouse	Reliance on mothers, limited time and interest, conflicting information, unfamiliar terminology	**Complementarity**: Qualitative findings identified accessible information channels and barriers underlying quantitative readiness.
Taking or accompanying mother to regular growth-monitoring visits **(114, 52.8%)**	Concern for child's health, direct interaction with health workers	Work–clinic timing conflicts, waiting time, mother-centric services, lack of employer support	**Divergence**: Quantitative findings showed substantial participation, despite qualitative reports of structural and service-related barriers.
Preparing or assisting wife in food preparation **(40, 18.5%)**	Willingness to help when mother is unwell or tired	Lack of skills, fear of mistakes or criticism, cooking viewed as women's work	**Convergence**: Low participation corresponded with practical, confidence-related and normative barriers.
Regularly doing household chores to support partner	Desire to reduce mother's workload	Gender norms, low confidence, fear of	**Convergence**: Involvement remained conditional and was constrained by gender

Quantitative result:	Qualitative result		Meta-inference
Practice, N = 216, n (%)	**Facilitators**	**Barriers**	
in childcare **(33, 15.3%)**		criticism and family conflict	norms and fear of negative evaluation.
Taking child outdoors for walks or playtime regularly **(66, 30.6%)**	Enjoyment of bonding with child while playing	Time constraints, safety concerns, low confidence handling child alone	**Convergence**: Fathers valued outdoor engagement, but practical and safety concerns limited regular implementation.
Feeding child at least once every day **(20, 9.3%)**		Fear of choking, low confidence, child preference for mother, messiness, perception that feeding is not a father's role	**Convergence**: Feeding was least feasible, with qualitative findings explaining low participation through skill, confidence and normative barriers.

Discussion

This explanatory mixed-method study was conducted among fathers of children aged 6–23 months in selected urban areas of Puducherry to identify the feasible pathways to engage fathers in the infant and child feeding. We found that majority of fathers considered themselves to be actively involved but less than half of their partners agreed with them. The knowledge, perceptions and practices scores were higher among fathers who reported active Vs. passive involvement. Fathers were ready to involve more in purchasing nutritious foods for the child, discussing about child nutrition with their spouse, adopting healthy practices at home, acting as a role model and spending quality time with the child. On the other hand, the social norms approach could explain their reluctance to directly involve in child feeding.

In our study, 61.1% of fathers reported that they were actively involved in complementary feeding. However, only 34.3% of their partners agreed that the father was actively involved across the same domains. Research done among fathers in other studies have invariably self-reported high involvement (59.1% to 75%) [12, 13, 14]. In the present study, using a mixed method approach, we could find some pointers towards this discrepancy. The social norms in the Indian society often attach the child feeding roles as mother's responsibility. In the words of in-depth interview participant 'fathers often say that they take good care of their children, but usually that means that they earn money, buy things, and play with the child sometimes. If we see actual daily tasks, mothers are doing most of it. (P7)" The discordance between the parents about father's involvement in child feeding could be an outcome of these traditional norms. Furthermore, self-reported active fathers had higher scores across all domains of knowledge and perceptions on child feeding, except traditional gender norms, where passive fathers scored higher, suggesting that social norms may be an important determinant of fathers' involvement in child feeding.

The fathers considered some child-feeding practices as feasible and acceptable in day-to-day life. This included purchasing nutritious foods, discussing about child nutrition with their spouse, adopting healthy practices at home, acting as a role model, spending quality time with the child, and actively seeking knowledge. The future interventions can target these domains for actively engaging fathers. More than half of the fathers expressed a willingness to increase their involvement in child feeding and caregiving and preferred receiving information through smartphones and digital platforms.

The major barriers for fathers' involvement were time constraints, and prevailing beliefs of elders that feeding is primarily a mother's responsibility. Many participants reported that existing services from the health sector are mother-centered and not father-inclusive. Fathers needed flexible clinic timings, and counseling involving both parents and sensitizing elder family members, about the benefits of father involvement in child nutrition and well-being.

Social norms reflected gendered caregiving expectations operating within the community context, but also a gradual shift in the conditional norms among the fathers which is promising. Therefore, future behavioral interventions, could play a transformative role by equipping both men and women with the skills, and confidence to adjust to evolving parental roles[15, 16]

Strengths and limitations

Use of explanatory mixed-methods design, use of a comprehensive operational definition for fathers' involvement and several measures to minimize social desirability bias such as interviewing parents independently, use of mandatory fields and skip logic etc are the strengths of the study. Although data saturation was achieved, the qualitative component included eight in-depth interviews. Therefore, perspectives of fathers from more diverse occupational backgrounds might not have been fully captured.

Conclusion

The findings indicate that improving paternal involvement is a promising area to promote child nutrition. Fathers are ready to up- skill themselves in several domains. **S**trengthening father-inclusive counseling and information delivery mechanisms may enhance father's participation in child feeding and caregiving activities.

Methodology

The study was conducted from March 2024 to March 2025. The study population included parents and their children aged 6 to 24 months residing in the service areas of the three selected Primary Health Centres ICDS Project IV, Puducherry. The study was initiated after obtaining approvals from the Research Monitoring Committee (JIP/JISPH/MPH/1/25), Institutional Ethics Committee–Observational Studies, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry (JIP/IEC-OS/2025/052) and the Department of Women and Child Development All study procedures involving

human participants were conducted in accordance with the ethical principles of the Declaration of Helsinki and its later amendments.

Study design

An explanatory mixed-methods study design was used. The quantitative component assessed father's perceptions and practices regarding complementary feeding followed by a qualitative component which explored the feasible practices that can be adopted by fathers. The prevailing social norms were explored using social norm theory which distinguishes between descriptive norms (what most people actually do) and injunctive norms (what most people think should be done), and conditional norms (what they think they must do) [17]. Integration of both components occurred at the design (explanatory mixed methods study design), method (connecting and building) and results (merging) stage.[18]

Study setting

The study was conducted in Puducherry, India, which has a good coverage of maternal and child health services and the male literacy rate is 92.1% [19, 20]. Out of the 39 Primary Health Centres (PHCs), three urban PHCs from ICDS Project IV were selected for the study. A sub-list of Anganwadi Centres within the selected PHCs was prepared with the support of the Child Development Project Officer (CDPO). Anganwadi Centres were then randomly selected from this sub-list, and eligible households were identified using the enumeration registers maintained at the centres by the Anganwadi teachers.

Inclusion and exclusion participants

All households registered with the Anganwadi centers having a child aged 6–23 months were included. Fathers with severe health issues, mental impairments that may hinder their active participation in the child care and those who are not residing with the child and spouse daily were excluded. Fathers found inebriated during the initial contacts were also excluded. Children with known medical conditions and twins or multiple births were excluded due to a change in normal feeding behavior among these children.

Sample size

The sample size (N = 216) was estimated (OpenEpi Version 3.01 software) based on an expected prevalence of father involvement in complementary feeding of their children as 50.9%,[12], absolute precision of 8%, 95% confidence level (Z = 1.96) and non-response rate of 10%. A design effect of 1.2 was applied to account for the multistage sampling technique used in the study

Sampling

About 21 Anganwadi Centres were randomly chosen from each PHCs to obtain about 72 children from each PHC area. A criterion-based purposive sampling was used to select participants for the qualitative component. Equal numbers of participants were selected from those who reported high involvement

(scores 7–10) and those who reported low involvement (scores 1–4), as determined by Question No 20 and 21 **(Supplementary file 1).**

Study tool

Data were collected using a semi-structured questionnaire administered by the investigator. The questionnaire was developed based on two published articles[12, 21]. Sociodemographic details of the family, parental age, education, occupation, type of family, were collected. BG Prasad scale was used to assess socioeconomic status (SES).[22]

Father's perceived active involvement in complementary feeding

Fathers perceived involvement was measured as a dichotomous response of yes and no and a distractor 'don't know' to reduce forced response bias. A collective response to domains of shared decision-making in child-feeding, physical and emotional support during child feeding activities, sharing of workload during child feeding, responsive feeding and providing financial and resource support was recorded. The degree of involvement was also measured using a five-point likert scale. The mothers' perceptions regarding the father's involvement in complementary feeding practices was also measured.

Perceptions and knowledge and practices related to complementary feeding

The knowledge regarding complementary feeding was assessed using 14 items derived from the World Health Organization (WHO) guidelines. Perception and practices were assessed across traditional norms (4 items), shared decision-making (2 and 3 items), provision of financial physical and psychological support (5 and 4 items) and responsive feeding (6 and 3 items) respectively. Additionally, 4 items on workload sharing were used in the practice domain. The responses were recorded using the a five-point Likert scale.

Readiness to enhance involvement and feasible practices

Readiness to involve in domains of financial support, physical and emotional support, workload sharing and shared decision-making were assessed. All the practices listed in two previous studies exploring feasible practices for fathers involvement were included in the current questionnaire [23.24]. Responses were recorded using a five-point Likert scale

Questionnaire validation and pretesting: Face validity was tested among five fathers of children aged 6 to 23 months. Cognitive interviews were carried out with five participants using the "think-aloud"[25] technique. A pre-test of the questionnaire was carried out among **ten respondents** and the data collection tool was revised based on the feedback. Pilot testing was conducted among **28 participants** (about **10% of the final sample size**) from Anganwadi centers **other than the study sites**. Reliability was assessed using **Jamovi software**, and Cronbach's alpha demonstrated good internal consistency: 0.8 for perceptions, 0.9 for practices, and 0.8 for list of feasible practices.

Study procedure:

Data collection for quantitative component

Informed written consent was obtained from each participating father. A maximum of two visits were made; if the father remained unavailable for two consecutive visits, the next eligible household was selected from the line listing of households. The spouse of the participants was interviewed independently. Data collection was carried out using the EpiCollect mobile application (Epicollect 5, Centre for Genomic Pathogen Surveillance, University of Oxford and Imperial College London, UK). Mandatory fields, data ranges and skip logic were incorporated for data accuracy. Data was collected on a dedicated tablet device (Samsung M10, Samsung Electronics. Noida, India). The duration of interviews was kept similar across participants (25–35 minutes). To reduce external influence, fathers and mothers were interviewed separately and without the presence of other family members.

Qualitative component

In-depth interviews (IDIs) were conducted among eight purposively selected fathers of children aged 6–23 months from three selected Primary Health Centre (PHC) areas. The final sample size was determined by data saturation. All interviews were conducted by a trained female investigator in local language. The theme guide for in-depth interview was pretested among 2 fathers. Face-to-face interviews were conducted in a private setting after obtaining informed written consent. Interviews were audio-recorded and supplemented with verbatim field notes. No repeat interviews were planned. Each interview lasted approximately 30–45 minutes. At the conclusion of each interview, member checking was done.

Statistical Analysis:

Quantitative analysis

The data was analyzed using STATA version 17. The scores were presented as frequencies and percentages. As the scores were non-normally distributed, they were summarized using median and interquartile range (IQR). Differences in domain-wise scores between the two groups were assessed using the Mann–Whitney U test, and corresponding p-values were reported.

Qualitative analysis

The qualitative data were analyzed using **Braun and Clarke's six-phase thematic analysis approach**[26]. The audio-recorded in-depth interviews were transcribed verbatim and reviewed for accuracy on the same day of data collection. Transcripts were then read repeatedly for familiarization, and initial codes were generated through manual coding. Related codes were organized into preliminary categories and subsequently reviewed and refined into meaningful themes. The inductively derived codes were subsequently mapped onto constructs from Social Norm Themes and the final findings were presented with illustrative quotations. A second investigator independently reviewed the coding, and any

discrepancies were resolved through discussion and consensus. The **COREQ (Consolidated Criteria for Reporting Qualitative Research)** and MMAT checklist was followed. A force field analysis approach was applied to systematically categorize the identified themes into driving forces (facilitators) and restraining forces (barriers) influencing fathers' involvement in complementary feeding practices.

Declarations

Data availability

The datasets generated and analyzed during the current study are not publicly available. The data will be made available from the corresponding author on reasonable request, subject to appropriate ethical and institutional approvals.

Acknowledgements

The authors also acknowledge the support of the Anganwadi workers and health staff who facilitated participant recruitment and data collection.

Author contributions

AD: Data curation, Formal analysis, Investigation, Methodology, Project administration, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. **LA**: Conceptualization, Data duration, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **JR:** Project administration, Supervision, Validation, Writing – review & editing **RR:** Data curation, Formal analysis, Writing – review & editing.

Funding

The study was supported by an intramural research grant from the author's institute, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), to support the conduct of the study. No commercial funding was received. The funders had no role in study design, data collection, data analysis, manuscript preparation, or decision to publish.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Figures

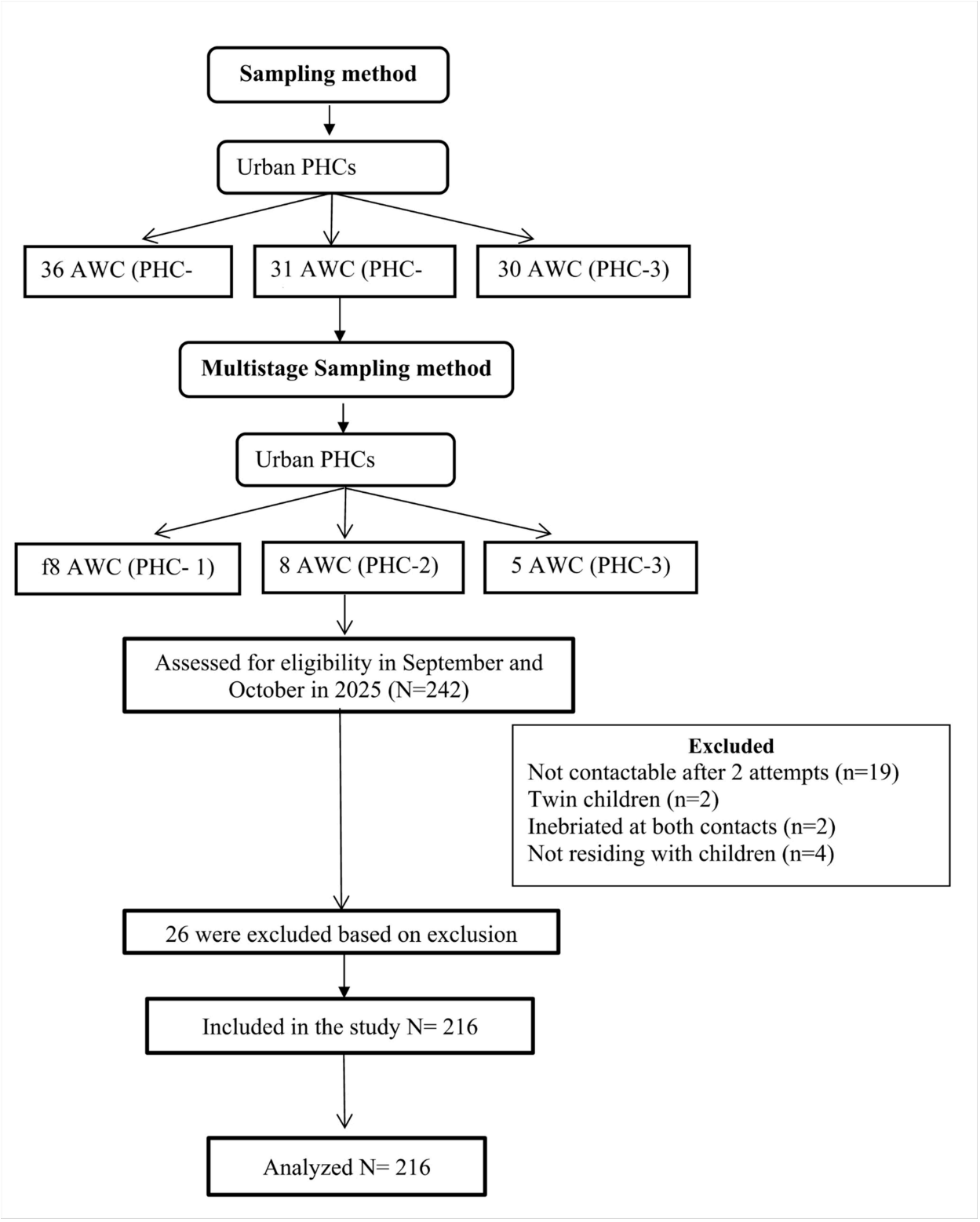


Figure 1

Flow of participants

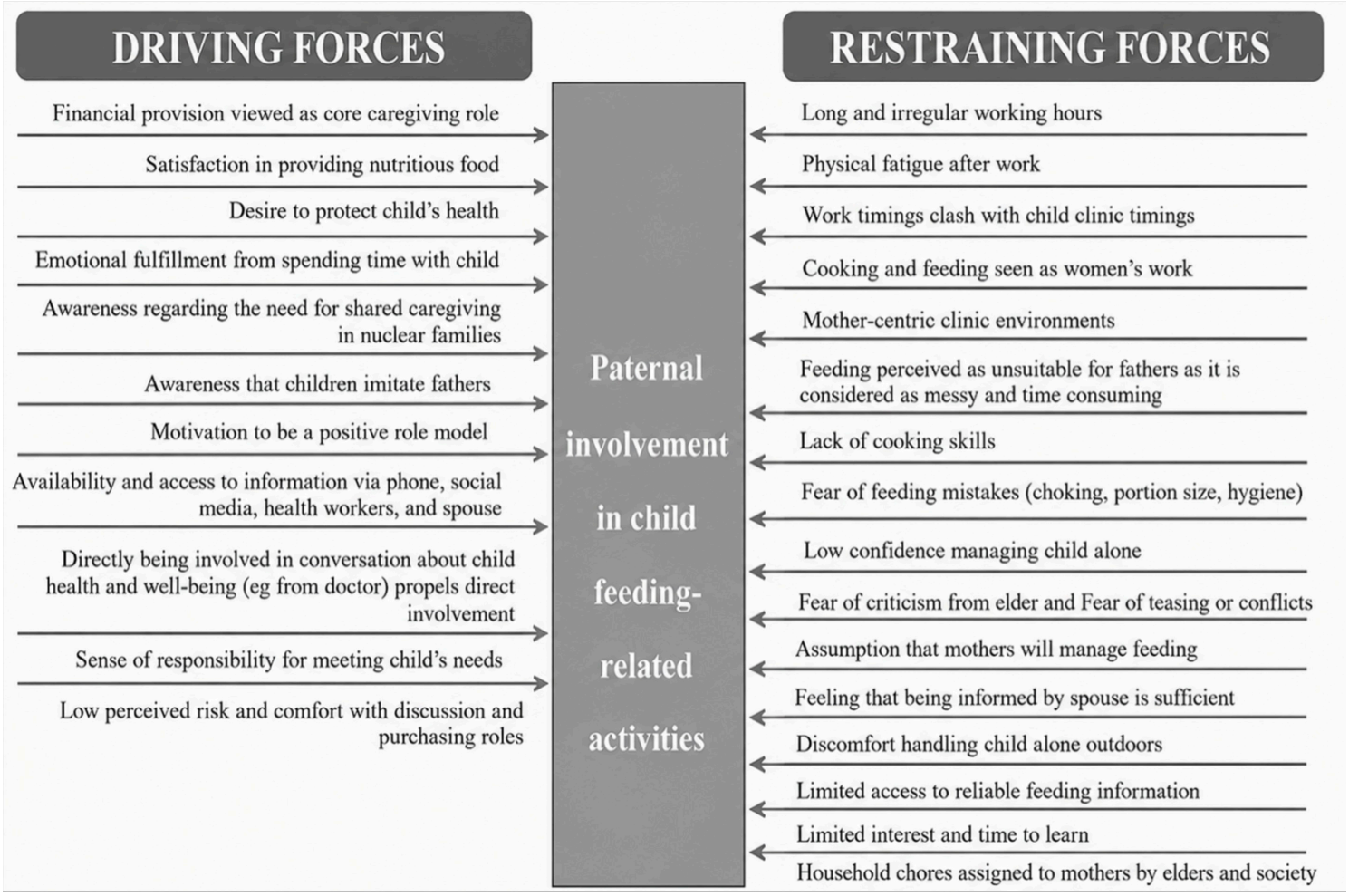


Figure 2

Force field analysis of barriers and facilitators of father's involvements in child feeding and childcare activities

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