

Roles and Associated Sociodemographic Correlates of Male Involvement in Breastfeeding in Juba, South Sudan

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Abstract: Optimal breastfeeding, which involves initiating breastfeeding within one hour of birth, giving colostrum, exclusive breastfeeding for six months, and introducing complementary food at six months, prevents under-five deaths in developing countries, saving millions of lives annually. The maximum effect of prolactin and oxytocin on milk production is dependent on insulin, insulin-like growth factors, cortisol, and the intake of nutrients and fluids. Stress affects these factors and processes, reducing the quantity and quality of milk for the growth and health of the baby. The supportive or non-supportive role of male partners affects the mothers' physical and emotional states. The researchers administered a structured questionnaire of 13 close-ended questions through scheduled interviews with 275 male parents of children younger than two years. The Statistical Package for the Social Sciences (SPSS) version 28.0 analyzed the data to generate frequencies, median, and interquartile range as measures of dispersion and central tendency, respectively. Spearman's rank correlation test did the calculations of correlations. Fathers helped with house works, responding to the baby's cries and bathing the baby (86%); taking care of other children or other house responsibilities (85%); taking care of the baby while the mother sleeps for a bit of time (85%) and smiling, holding and watching the mother as she breastfeeds (91%). Roles were correlated with education level ($r=.308$, $p=0.000<0.05$) and employment ($r=-.155$, $p=.007<0.05$) but not with hours of work ($r=0.049$, $p=0.448>0.05$).

Keywords: Fathers, Roles, Breastfeeding, Juba, South Sudan

1. Introduction

Adequate breastfeeding prevents 12-13% of all under-five deaths in developing countries, saving 1.4 million lives annually [1]. The supportive or non-supportive role of male partners affects the physical and emotional states of the

mother, which creates a hormonal imbalance, significantly stress-related/affected hormones such as insulin, thyroid, and prolactin hormones, thus affecting the quantity and quality of milk produced, health and growth of the baby [2].

Breastfeeding all babies for the first two years would save more than 820,000 lives of children under five years annually [3]. Although adequate breastfeeding reduces episodes of

childhood illnesses, South Sudan's gains in exclusive breastfeeding from 45% in 2010 to 74% in 2020 [4] did not reciprocate with improved child survival outcomes as 75% of all childhood mortalities are still attributed to diarrhea, pneumonia, and acute respiratory infections (ARIs) [5].

Nevertheless, other studies indicate that the involvement of males in breastfeeding is associated with improved exclusive breastfeeding rates and child survival outcomes from 27.2-96.5% in Ethiopia over five years, 67.1-73% in Uganda in 4 years, and 13.8-73.7 in Kenya over four years [6].

In neighboring Kenya, fathers help provide food, feed the baby, assist with household work, and take care of other children [7].

However, sociodemographic drivers such as perceived behavioral control, breastfeeding knowledge, and committed relationships influence fathers' contributions to breastfeeding [8]. Significant associations exist between fathers' involvement in breastfeeding and educational status (AOR=4.113, 95%CI=2.010–8.414) and monogamy (AOR=8.473, 95%CI=2.982, 24.079) [9].

Similar patterns observed in Canada indicate that 24% of low-income families stopped breastfeeding at one month compared to 6.9% of the privileged parents [10].

2. Methods

2.1. Study Design

The study used descriptive and cross-sectional methods to accurately and systematically describe the roles of male partners in breastfeeding. The participants drawn from the target population were fathers/parents of children less than two years.

2.2. Study Setting

The study was conducted in Juba, the capital city of South Sudan, having 54,439 people and a mixed population of foreign nationals from Uganda, Kenya, Ethiopia, and Congo. Adult (men and women) literacy rates stand at 27%, and 66% of the population lives under the poverty line of less than \$1 per day, and 15.1% are unemployed [11].

2.3. Sample Size Estimation

Sample size estimation applied Cochran's formula with a desired level of precision (e) of 0.05, the proportion of the attribute present in the population (p) of 0.74, and a Z score at a 95% confidence interval of 1.96 yielding a sample size of 295 fathers/parents.

Cochran's Formula

$$n_0 = \frac{Z^2 PQ}{e^2}$$

e is the desired level of precision (margin of error)=0.05, p is the (estimated) proportion of the population which has the attribute in question=0.74, q is $1 - p=1-0.74=0.26$, Z value found in a Z table (At 95% confidence level, Z value is 1.96)

2.4. Data Collection Tool

The tool contained 13 closed-ended questions adapted from Abu-Abbas [12]. Section A of the questionnaire had questions on the demographic characteristics of participants. Section B identified the roles of male partners in breastfeeding ranked using a Likert scale of 1-7 scores. A score of 1 indicated strong disagreement, 4 represented a neutral point, and a score of 7 showed strong agreement.

2.5. Data Collection Process

Participant's selection process was random to offer representativeness with a minimum bias and susceptibility to vested interests. The researchers made appointments with the selected participants for a scheduled interview conducted either at home or the workplace. Of the 295 randomly selected male parents, 275 responded to the call giving a response rate of 93.2%.

2.6. Ethical Approval and Consent to Participate

The research proposal was approved by Texila American University through a double review process and approved by the directorate of research and planning, ministry of health, Republic of South Sudan. The participants who volunteered to take part received an information sheet containing a brief introduction to the research, the participant's role. The personal information gathered will be stored securely and locked with a password. Participation is voluntary, and a participant will opt to withdraw from the study at any time. Participating or withdrawing from the study will not affect the participant's relationship with the researchers. The participants signed a consent form as a commitment that they had read and understood the purpose of the interview and were willing to participate.

2.7. Data Analysis

Data were analyzed using SPSS version 28.0. The researchers used the 'Analyze' field in the SPSS window to compute the analysis generating tables and graphs to answer the research questions. The analyst used descriptive statistics to calculate the data, including frequencies, median (Mdn), and interquartile range (IQR). Frequency tables characterized the distribution of the variables, and descriptive statistics (Mdn & IQR) measured central tendency. Spearman's rank correlation was used to determine the association between the variables, in line with the following research hypothesis:

Hypothesis 1: H_0 : There is no significant association between education level and male partner roles in breastfeeding.

H_1 : There is a significant association between education level and male partner roles in breastfeeding.

Hypothesis 2: H_0 : There is no significant association between employment status and male partner roles in breastfeeding.

H_1 : There is a significant association between employment status and male partner roles in breastfeeding.

Hypothesis 3: H_0 : There is no significant association between hours of work and male partner roles in breastfeeding.

H_1 : There is a significant association between hours of work

and male partner roles in breastfeeding.

3. Results

3.1. Participant's Sociodemographic Variables

Slightly above half, 144 (52.4%) of the respondents had reached the tertiary level of education, 77 (28%) had secondary education, and 46 (16.7%) stopped at primary school. 155 (56.4%), 80 (29.1%) had part-time jobs, and 17 (6.2%) did not report any formal employment. About half, 126 (45.8%) worked for 8 hours, 91 (33.1%) worked for less than 8 hours, and only 27 (9.8%) worked for more than 8 hours.

3.2. Roles of Male Partners in Breastfeeding

Most participants (Table 2) agreed to roles such as discussing with the wife on solving breastfeeding problems 295 (96%) and how long to continue breastfeeding 258 (94%). Another 254 (92%) would smile, watch, and hold the mother as she breastfeeds, and 249 (91%) allowed their wife to breastfeed while visiting others. Essentially, 243 (88%) provided the necessary support for breastfeeding, and 236 (86%) responded to the baby's cries and bathing the child. 235 (85%) agreed to take care of other children or other housework responsibilities, and 233 (85%) supported the mother in taking care of the baby to allow her sleep. In comparison, 223 (81%)

of the parents would not have problems with the mother if she did not do other housework when breastfeeding. 218 (79%) respected the wife's desire to stop breastfeeding. The descriptive statistics showed a consensus for supportive roles (Mdn=6, 7, and IQR=1) (Table 3).

Table 1. Sociodemographic characteristics of participants.

Variable	N	%
Age group		
10-20	1	0.4%
21-30	84	30.5%
31-40	147	53.5%
41-50	41	14.9%
51-60	1	0.4%
>70	1	0.4%
Level of education		
Primary	46	16.7%
Secondary	77	28.0%
Tertiary	144	52.4%
Employment status		
Full time	155	56.4%
Part-time	80	29.1%
Not employed	17	6.2%
Hours of work		
More than eight hours	27	9.8%
Eight hours	126	45.8%
Less than eight hours	91	33.1%

Table 2. Frequency distribution for roles of male partners in breastfeeding.

Variables	Disagree		Neutral		Agree	
	N	%	N	%	N	%
Discussed with your wife about how long to continue breastfeeding	8	3%	9	3%	258	94%
Made it easy for your wife to breastfeed while visiting others.	12	4%	11	4%	249	91%
Discussed with your wife ideas for trying to solve breastfeeding problems	7	3%	3	1%	265	96%
Took care with other children or other house responsibilities while your wife breastfeed	22	8%	17	6%	235	85%
Helped your wife with house works and taking care of other baby's tasks like responding to the baby's cries, helping in bathing the baby, etc	28	10%	9	3%	236	86%
Agreed with your wife's desire to stop breastfeeding.	26	10%	10	4%	218	79%
Gave your wife a break from the baby, like taking care of the baby while she can sleep for a bit of time.	24	9%	9	3%	233	85%
Got upset if the other housework was not done during the breastfeeding period	223	81%	10	4%	41	15%
Showed pleasure and satisfaction while your wife was breastfeeding (smile, watch, hold her, etc.)	7	3%	8	3%	254	92%
Provided your wife with the benefits that breastfeeding has for her or her baby	8	3%	11	4%	243	88%

Table 3. Descriptive statistics for roles of male partners in breastfeeding.

Variables	N	Median (Mdn)	Interquartile range (IQR)
Discussed with your wife about how long to continue breastfeeding	275	6	1
Made it easy for your wife to breastfeed while visiting others.	272	6	1
Discussed with your wife ideas for trying to solve breastfeeding problems	275	6	1
Took care with other children or other house responsibilities while your wife breastfeed	274	6	1
Helped your wife with house works and taking care of other baby's tasks like responding to the baby's cries	273	6	1
Agreed with your wife's desire to stop breastfeeding.	254	6	1
Gave your wife a break from the baby, like taking care of the baby while she can sleep for a bit of time.	266	6	1
Got upset if the other housework was not done during the breastfeeding period	274	1	1
Showed pleasure and satisfaction while your wife was breastfeeding (smile, watch, hold her, etc.)	269	6	1
Provided your wife with the benefits that breastfeeding has for her or her baby	262	6.5	1

3.3. Hypothesis

3.3.1. Hypothesis 1

Hypothesis 1 examined the association between education

level and the roles of male partners in breastfeeding at a 0.05 significance level. Using a scatter plot (Figure 1), the direction and strength of the relationship were positive but weak. The test results (Table 4) indicated a significant correlation ($r=.308$,

$p=0.000<0.05$), thus rejecting the null hypothesis suggesting that education level was significantly associated with the roles in breastfeeding.

3.3.2. Hypothesis 2

The second hypothesis explored the relationship between employment status and the role of male partners in breastfeeding. The scatter plot (figure 2) showed a weakly negative association and significant correlation ($r=-.155$, $p=.007<0.05$) (Table 4), rejecting the null hypothesis and therefore confirming that an association exists between

employment status and roles in breastfeeding.

3.3.3. Hypothesis 3

Hypothesis three sought to understand how hours of work were associated with the roles of male partners in breastfeeding. Plotting the results (Figure 3) presented a poor to no association for hours of work and roles in breastfeeding. Spearman's rank correlation (Table 4) was also non-significant ($r=0.049$, $p=0.448>0.05$). These results both retain the null hypothesis, suggesting no significant association exists between hours of work and the roles of male partners in breastfeeding.

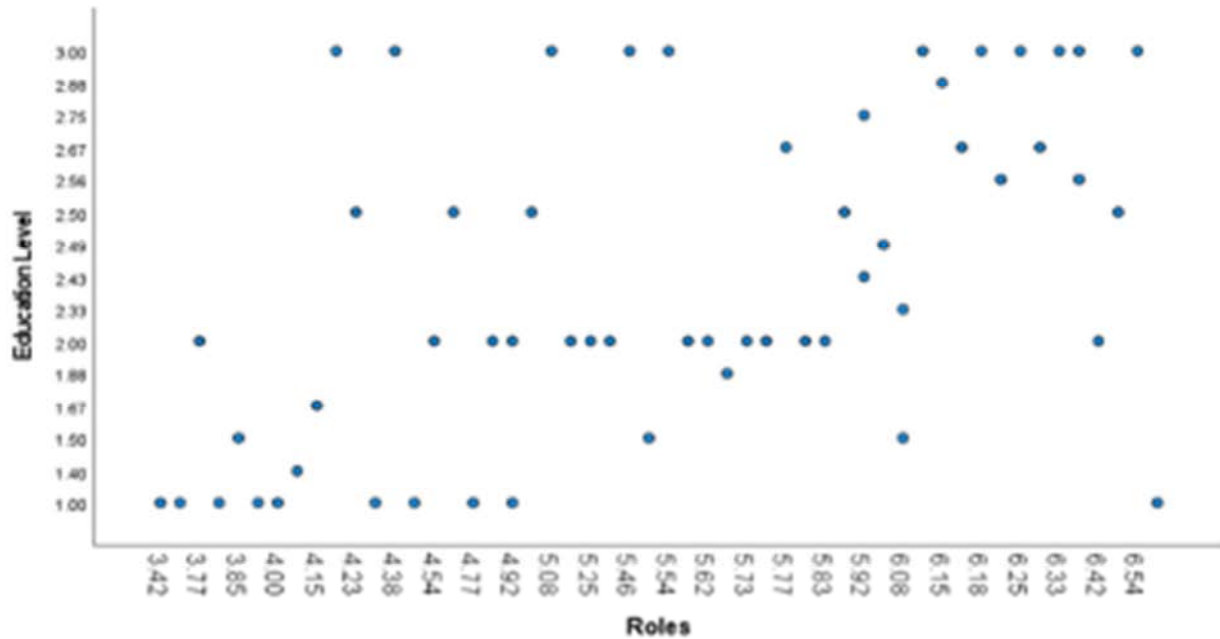


Figure 1. Scatter Plot of education level by Roles.

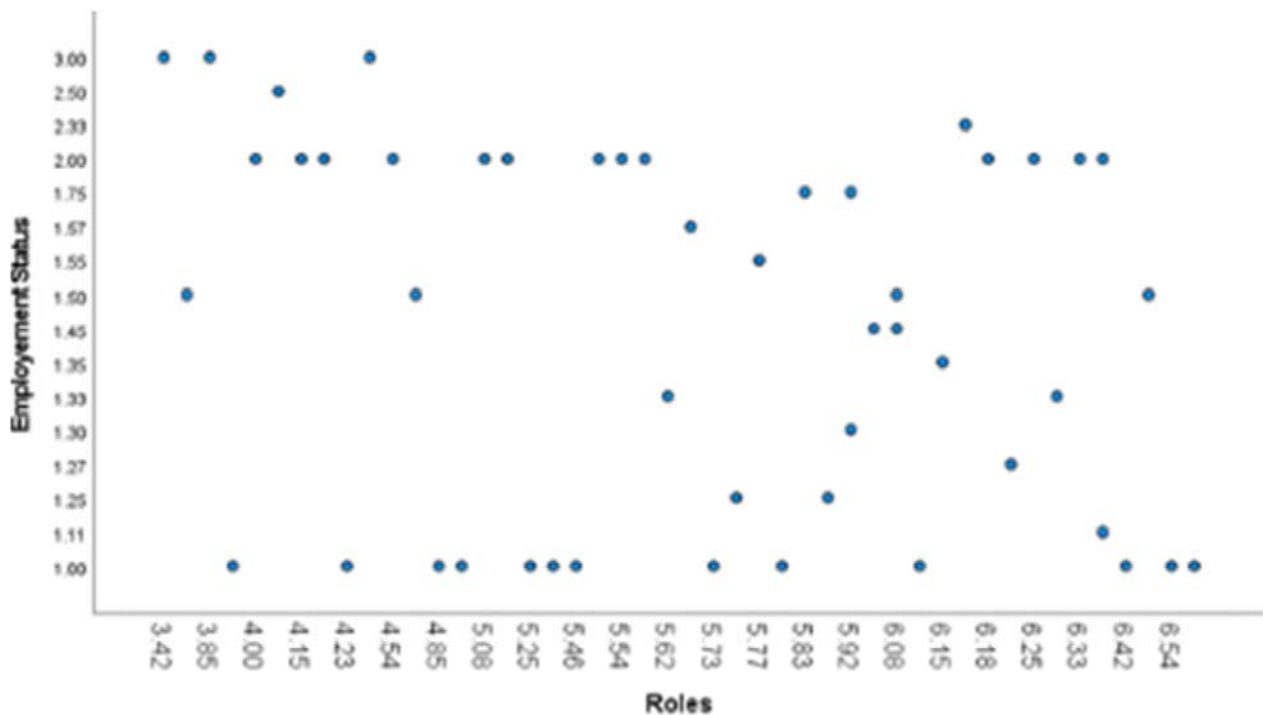


Figure 2. Scatter Plot of employment status by roles.

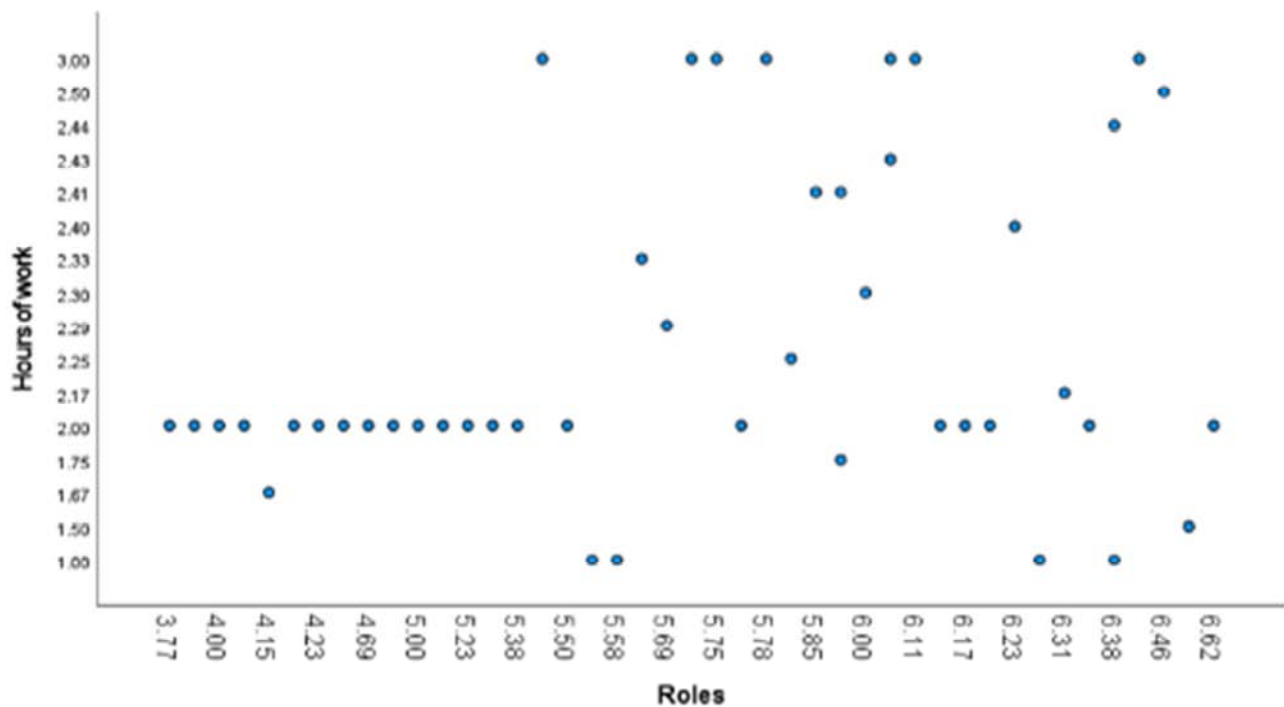


Figure 3. Scatter Plot of Hours of work by roles.

Table 4. Spearman's rank correlation roles with education level, employment status, and hours of work.

Correlations						
		Roles	Education level	Employment status	Hours of work	
Spearman's rho	Roles	Correlation Coefficient	1.000	.308**	-.155**	0.049
		Sig. (1-tailed)		0.000	0.007	0.224
		N	275	267	252	244
	Education level	Correlation Coefficient	.308**	1.000	-.135*	-.280**
		Sig. (1-tailed)	0.000		0.017	0.000
		N	267	267	247	240
	Employment	Correlation Coefficient	-.155**	-.135*	1.000	-.379**
		Sig. (1-tailed)	0.007	0.017		0.000
		N	252	247	252	242
	Hours of work	Correlation Coefficient	0.049	-.280**	-.379**	1.000
		Sig. (1-tailed)	0.224	0.000	0.000	
		N	244	240	242	244
**. Correlation is significant at the 0.05 level (1-tailed).						

** . Correlation is significant at the 0.05 level (1-tailed).

4. Discussion

An extensive literature review on related themes suggests that no other investigation of the same dimension occurred in Juba and South Sudan as a whole in recent years. Moreover, contrary to the common perception of negativity on male partner roles in breastfeeding, the results indicated that male partners are supportive.

The demographic characteristics were typical of an urban setting characterized by a middle-age set of 53.5%, high adult literacy rates, measured at tertiary education attainment of 52.4%, and varying occupations. Employment status stood out at 56.4 measured at full-time job employment.

The findings painted a positive picture of male involvement in breastfeeding for all variables ($Mdn=6$, 7, and $IQR=1$). Similar results in neighboring Kenya and Uganda demonstrated practices such as providing food, feeding the

baby, and helping the mother with the household, providing money to the breastfeeding mother (94%) as well as engaging in growing food (83%) [7]. Much as this is relatively new to the South Sudanese culture, a caveat remains that the tool allowed participants to respond to what they can do, but not to the extent to which they support the mother and baby in the breastfeeding process.

Some of the findings, such as agreeing to share ideas on solving breastfeeding problems (96.4%), discussing with the partner how long to continue breastfeeding (93.8%), and supporting the wife's desire to stop breastfeeding (79.3%), endorse the literature that mothers have a greater responsibility in breastfeeding decision making (Datta, 2013). It also reinforces that sharing information with the father encourages teamwork and effective communication promotes paternal support in initiating and continuing breastfeeding [13].

The significant association between education level and roles in breastfeeding ($r=0.308$, $p=0.000<0.05$) reflects that

education sets the ground for better understanding, critical thinking/analysis, and knowledge acquisition. Although breastfeeding is a natural mammalian behavior, learned behaviors mediate natural breastfeeding. In Ethiopia, a related study confirmed associations between fathers' involvement in breastfeeding and educational status (AOR=4.113, 95%CI=2.010–8.414) [14].

The results showed a weak association between employment status and roles in breastfeeding ($r=-.155$, $p=.007<0.05$), suggesting that even though over half (56.4%) of the fathers worked full-time and 29.1% worked part-time, their employment did not translate into improved household income. Other studies found no association between occupation and breastfeeding roles [15].

The study did not find any association between hours of work and the roles of male partners in breastfeeding ($r=.049$, $p=0.448>0.05$). These findings present a deviating direction from many studies that paternal support for breastfeeding increases with time spent at home [16].

5. Conclusion

This study presented an overall positive view of male involvement in breastfeeding in South Sudan. The everyday practices of watching and holding the mother as she breastfeeds, responding to the baby's cries, and bathing the child indicate fathers' care for their wife and child during breastfeeding. Exceedingly, providing the mother with breastfeeding benefits, sharing ideas with her to solve breastfeeding problems, discussing with the partner how long to continue breastfeeding, and supporting the wife's desire to stop breastfeeding suggest a more collaborative culture.

It also predicted that education level influences fathers' contribution in the breastfeeding process ($r=0.308$, $p=0.000<0.05$) and that employment status affected the roles in breastfeeding ($r=-.155$, $p=.007<0.05$). However, the study did not find a significant relationship between hours of work and the functions of male partners in breastfeeding ($r=.049$, $p=0.448>0.05$).

While these findings present a shift in traditional roles, it is essential to note that this study was urban-based; therefore, the positivity could be from knowledge and exposure. Nevertheless, these findings provide crucial information for infant and young child feeding (IYCF) interventions that promote male involvement.

6. Limitations of This Study

This study was conducted in an urban setting, limiting its applicability to the rural environment with different sociodemographic characteristics. The other limitation arises from the data collection tool, which only allowed participants to respond to what they can do, but not to the extent to which they support the mother and baby in the breastfeeding process.

7. Recommendations

The findings of this study derived the following

recommendations:

- 1) The Ministry of Health would consider including strategies for male involvement in infant and young child feeding promotion.
- 2) Need to design context-specific models aimed at dispelling misinformation about male participation in breastfeeding and expanding on standard supportive practices.
- 3) It is necessary to investigate how male involvement is related to breastfeeding initiation, exclusivity, and continuity, not just their roles.

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