



Association Between Husband Support And Breastfeeding Status An Explanatory Sequential Mixed-Methods Study

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Abstract

Exclusive breastfeeding remains a public-health priority in Indonesia. At the same time, previous local studies have identified husband support as one of several associated factors without explaining how that support operates when mothers encounter breastfeeding difficulties. We conducted an explanatory sequential mixed-methods study with a quantitative priority in Bengkulu City from August to September 2023. The quantitative phase included 90 mothers of infants younger than 6 months recruited through purposive sampling. We measured husband support and breastfeeding status once, followed by semi-structured in-depth interviews with five mothers to explain the quantitative pattern. We used Pearson's Chi-square test and an odds ratio with a 95% confidence interval. Fifty-five mothers (61.1%) reported exclusive breastfeeding, and 48 (53.3%) were categorized as receiving husband support. The odds of exclusive breastfeeding were higher in the supported group, but the estimate was imprecise and not statistically significant (OR = 1.65, 95% CI 0.70-3.88; Chi-square(1) = 1.34; p = 0.248). Interviews indicated that support was often passive or instrumental, maternal intention was established during pregnancy, and husbands had limited capacity to resolve lactation problems. The findings do not demonstrate the absence of an association. They suggest that the type and timing of support, maternal intention, and access to skilled lactation assistance may be more informative than a broad dichotomous support category. Couple-inclusive assistance from late pregnancy through six months postpartum is recommended.

Keywords: Husband Support; Breastfeeding Status; Perception; Exclusive Breastfeeding; Partial Breastfeeding

INTRODUCTION

Exclusive breastfeeding rates vary globally by region, with South Asia having the highest prevalence at 57%, followed by Eastern and Southern Africa at 56%. Eastern Europe and Central Asia, as well as Latin America and the Caribbean, have a prevalence of 38%. The Middle East and North Africa region has a prevalence of 34%, while North America has 35%. The East Asia and Pacific region has the lowest prevalence at 30%. Indonesia is included in the East Asia and Pacific region, which has the lowest exclusive breastfeeding rate (North, Gao, Allen, & Lee, 2022). Studies have shown that exclusive breastfeeding during the first six months of life and exclusive breastfeeding

with enough complementary foods until children are two years of age or older can significantly reduce child mortality, saving the lives of more than 820,000 children under the age of five globally (WHO, 2021).

Exclusive breastfeeding is associated with maternal education, household income, pregnancy counseling, and support from husbands and other family members (Jama et al., 2020). Fathers can strengthen maternal confidence and breastfeeding continuation by participating in decision-making (Metin & Altinkaynak, 2020; Ouyang & Nasrin, 2021). However, fathers who participate in childcare may still lack the information and practical resources required to respond to breastfeeding difficulties (deMontigny et al.,

2018; Ng et al., 2019). This distinction suggests examining support presence and effectiveness separately.

The 2024 Indonesian Nutrition Status Survey reported that 66.4% of infants aged 0-5 months nationally and 68.7% in Bengkulu Province had received only breast milk during the preceding 24 hours (Kementerian Kesehatan Republik Indonesia, 2025). These surveillance estimates use a 24-hour indicator and are therefore not directly equivalent to the since-birth definition used in the present study.

The same survey showed substantial variation by infant age: the proportion receiving only breast milk during the preceding 24 hours was 80.6% at 0 months but 54.1% at 5 months (Kementerian Kesehatan Republik Indonesia, 2025). This age pattern highlights the continuing risk of non-breast-milk introduction across the first six months and the need to understand whether family support remains active when breastfeeding difficulties arise.

Earlier research in Bengkulu City identified early initiation, maternal knowledge and attitudes, self-efficacy, support from health workers and family, exposure to formula marketing, and husband support as relevant factors (Khairani et al., 2019; Pratiwi et al., 2020). However, those studies did not explain how mothers and husbands negotiate infant feeding when milk-supply concerns, fatigue, or other breastfeeding problems arise. The unresolved problem is therefore not only whether support is present, but whether it is sufficiently informed, timely, and problem-focused to help mothers continue exclusive breastfeeding.

An explanatory sequential mixed-methods design was selected because a cross-sectional estimate alone cannot show how support is enacted within households. The quantitative phase estimated the association between perceived husband support and breastfeeding status, and the follow-up qualitative phase examined maternal accounts of decision-making, instrumental assistance, emotional support, and responses to lactation difficulties. Integration occurred when the qualitative themes explained the direction and uncertainty of the quantitative estimate. This approach responds to calls for theory-informed and context-sensitive breastfeeding support and recognizes that paternal support can influence breastfeeding outcomes through several distinct pathways (Amoo et al., 2022; Zhou et al., 2024).

The study aimed to assess the association between perceived husband support and breastfeeding

status among mothers of 6-month-old infants in Bengkulu City and to explain the quantitative findings through maternal interview accounts. Its practical contribution is to inform couple-inclusive breastfeeding assistance that begins during pregnancy and links family support with timely professional management of lactation problems, an approach consistent with recent Indonesian evidence on the importance of high-quality postnatal breastfeeding care (Triadmajani et al., 2024).

METHOD

Study Design

This study used an explanatory sequential mixed-methods design with quantitative priority. We first collected and analyzed quantitative data. The subsequent qualitative phase explained why the observed statistical association was weak and imprecise and how mothers experienced different forms of husband support. We integrated the findings during interpretation by comparing quantitative support categories and breastfeeding outcomes with themes from the follow-up interviews. The study was conducted in Bengkulu City from August to September 2023.

Participants

The study population comprised married mothers in Bengkulu City with 6-month-old infants. After calculation of the minimum sample size, 90 mothers were recruited through purposive sampling during health-service visits. Mothers were eligible if they lived in Bengkulu City, were married, lived in the same household as their husbands, and had a 6-month-old infant. We excluded mothers who did not live in the same household as their husbands. For the qualitative phase, we selected five mothers who had participated in the quantitative phase through purposive sampling. Selection sought to include mothers with different breastfeeding experiences. The qualitative sample consisted of two mothers practicing exclusive breastfeeding and three mothers practicing partial breastfeeding. The qualitative component aimed to provide contextual explanations of the quantitative findings rather than statistically represent the study population. The number of qualitative informants was determined through information saturation. The research team conducted data collection and preliminary analysis iteratively. After each interview, the research team reviewed the transcript, identified initial codes, and compared the emerging information with that obtained from previous interviews.

Recruitment was discontinued after the fifth interview because the informants' accounts had become repetitive and no substantively new codes or explanatory categories concerning husband support and breastfeeding practices emerged. The team therefore considered adequate information saturation for the focused explanatory purpose of the qualitative phase.

Instruments and data collection

The research team developed the husband-support questionnaire to measure mothers' perceptions of the support their husbands provide during breastfeeding. The initial instrument consisted of 19 items. The instrument was pilot-tested two months before the main data collection among 20 mothers who were different from and were not included in the main study sample. Item analysis used corrected item-total correlation, with a coefficient greater than 0.30 considered acceptable. For reporting consistency, we presented five graded response categories as Never, Rarely, Sometimes, Often, and Always (scoring range 1-5); for negative statements, we reversed the scoring range to 5-1. The pilot test yielded a Cronbach's alpha value of 0.937. Given the small pilot sample size relative to the 19-item scale, this value is considered preliminary evidence of internal consistency rather than construct validation. The cutoff point was determined based on data normality test results; the data were normally distributed ($p = 0.077$), so the mean value was used as the cutoff.

We assessed breastfeeding status retrospectively from birth to the interview date. Exclusive breastfeeding was defined as the provision of breast milk only throughout this period, except for oral rehydration solution and drops or syrups containing vitamins, minerals, or medicines. Infants who had received water, honey, infant formula, other milk, juice, or any liquid, semisolid, or solid food at least once since birth were not classified as exclusively breastfed. Partial breastfeeding was defined as continued breastfeeding combined with providing at least one non-breast-milk liquid or food.

The principal researcher conducted individual semi-structured in-depth interviews at the informants' homes. Informants were assigned de-identified codes P1-P5. The interviewer had no relationship with the informants beyond the research interaction. Before each interview, the researcher explained the study objectives, confidentiality procedures, voluntary nature of participation, and the informant's right to withdraw from the study. The interviews were conducted in

Indonesian and lasted approximately 90 minutes. With the informants' consent, all interviews were audio-recorded and transcribed verbatim in Indonesian.

Data analysis

Data were entered, checked, and analyzed using statistical software. We used frequencies and percentages for descriptive analysis. We assessed the association between husband support category and breastfeeding status using Pearson's Chi-square test. We report the effect estimate as an odds ratio (OR) with a 95% confidence interval. All four expected cell counts exceeded five, with a minimum expected count of 16.33. The analysis was unadjusted and did not evaluate potential confounding by infant age or other maternal characteristics. The quantitative results must therefore be interpreted as an unadjusted cross-sectional association rather than a causal effect.

Qualitative analysis and integration

The qualitative data were analyzed using a thematic approach (Bingham, 2023). All members of the research team reviewed and coded the interview transcripts. The researchers first read the transcripts repeatedly to become familiar with the data. The researchers then assigned initial codes to relevant segments based on their substantive meaning. The researchers compared related codes across informants and grouped them into categories based on recurring similarities and differences. The team then reviewed the categories and developed them into explanatory themes.

The team resolved differences in coding, category boundaries, or theme interpretation through discussion and consensus. When different interpretations emerged, the research team returned to the relevant sections of the original transcripts and retained the interpretation most strongly supported by the informants' statements. Representative quotations were selected to demonstrate the relationship between the original accounts and the resulting themes.

The qualitative themes were subsequently compared and integrated with the quantitative findings. This integration explored how specific forms of husband support shaped breastfeeding experiences and provided contextual explanations for the absence of a statistically significant association between the overall husband-support category and breastfeeding status.

Trustworthiness and translation

Credibility was enhanced through member checking and investigator triangulation. Typed summaries of the findings and selected quotations were

returned to the informants to confirm that the written accounts represented their statements and intended meanings. All research team members reviewed the codes, categories, themes, and supporting quotations. The team discussed differences with reference to the original transcripts until it reached consensus.

The interviews were conducted and transcribed verbatim in Indonesian. The research team translated quotations selected for the English-language manuscript into English and checked them against the original Indonesian transcripts to preserve semantic equivalence and the informants' intended meanings.

Ethical considerations

The Health Research Ethics Committee of STIKes Sapta Bakti Bengkulu granted ethical approval before data collection. All participants provided informed consent before completing the questionnaire or participating in the interview. The ethics committee issued the approval in June 2023 under reference number 025/DIII/KEPKSTIKesSaptaBakti/2023.

RESULTS AND DISCUSSION

Among the 90 mothers, 69 (76.7%) were aged 20-35 years, 55 (61.1%) were homemakers, 48 (53.3%) had completed college education, and 43 (47.8%) had one child. Forty-four mothers (48.9%) delivered by cesarean section and 46 (51.1%) delivered vaginally (Table 1).

Table 1. Characteristics of Mothers with Infants 6 Months in Bengkulu City

Characteristic	f	%
Age		
<20 or >35 years	21	23.3
20-35 years	69	76.7
Employment		
Housewife	55	61.1
Civil servant or police	16	17.8
Private-sector employee	19	21.1
Education		
College	48	53.3
		36.7

Characteristic	f	%
Senior high school	33	6.7
Junior high school	6	3.3
Elementary school	3	
Number of children		
One	43	47.8
Two	20	22.2
Three	22	24.4
Four	5	5.5
Mode of delivery		
Caesarean section	44	48.9
Vaginal delivery	46	51.1

Table 2. Distribution of Infant Age by Breastfeeding Status

Infant age	Partial breastfeeding, n (%)	Exclusive breastfeeding, n (%)	Total (%)
0	6 (66.7)	3 (33.3)	9 (10.0)
1	6 (35.3)	11 (64.7)	17 (18.9)
2	8 (53.3)	7 (46.7)	15 (16.7)
3	4 (26.7)	11 (73.3)	15 (16.7)
4	5 (33.3)	10 (66.7)	15 (16.7)
5	6 (31.6)	13 (68.4)	19 (21.1)
Total	35 (38.9)	55 (61.1)	90 (100.0)

Table 2 shows that, of the 90 infants, 9 (10.0%) were younger than 1 completed month, 17 (18.9%) were aged 1 month, 15 (16.7%) were aged 2 months, 15 (16.7%) were aged 3 months, 15 (16.7%) were aged 4 months, and 19 (21.1%) were aged 5 months. No infant had reached 6 completed months of age. In Table 2, age 0 denotes infants younger than 1 completed month.

Table 3. Distribution of Responses to Husband-Support Items among Mothers of Infants in Bengkulu City

Statement	Never n (%)	Rarely n (%)	Sometimes n (%)	Often n (%)	Always n (%)
Discuss or negotiate how long breastfeeding will continue	4 (4.4)	22 (24.4)	25 (27.8)	26 (28.9)	13 (14.4)
Try to solve breastfeeding problems or suggest alternative solutions	5 (5.6)	12 (13.3)	34 (37.8)	25 (27.8)	14 (15.6)
Learn about breastfeeding from books or articles	5 (5.6)	22 (24.4)	26 (28.9)	29 (32.2)	8 (8.9)

Statement	Never n (%)	Rarely n (%)	Sometimes n (%)	Often n (%)	Always n (%)
Express support when others make negative comments about breastfeeding	4 (4.4)	11 (12.2)	24 (26.7)	30 (33.3)	21 (23.3)
Seek help from others to solve breastfeeding problems	6 (6.7)	10 (11.1)	33 (36.7)	28 (31.1)	13 (14.4)
Remind the mother of breastfeeding benefits for mother and infant	1 (1.1)	9 (10.0)	31 (34.4)	27 (30.0)	22 (24.4)
Assist with other childcare duties	6 (6.7)	8 (8.9)	29 (32.2)	27 (30.0)	20 (22.2)
Help with household tasks so the mother has more time and energy	2 (2.2)	4 (4.4)	36 (40.0)	24 (26.7)	24 (26.7)
Help the mother during nighttime breastfeeding	2 (2.2)	4 (4.4)	44 (48.9)	26 (28.9)	14 (15.6)
Attend to maternal health and nutrition	1 (1.1)	3 (3.3)	28 (31.1)	30 (33.3)	28 (31.1)
Allow the mother to rest from infant care	2 (2.2)	3 (3.3)	30 (33.3)	32 (35.6)	23 (25.6)
Encourage the mother and affirm her breastfeeding ability	2 (2.2)	1 (1.1)	32 (35.6)	33 (36.7)	22 (24.4)
Praise breastfeeding achievements	2 (2.2)	9 (10.0)	27 (30.0)	29 (32.2)	23 (25.6)
Listen to and encourage the mother when she is discouraged	2 (2.2)	2 (2.2)	28 (31.1)	35 (38.9)	23 (25.6)
Help prepare breastfeeding equipment or supplies	3 (3.3)	2 (2.2)	32 (35.6)	34 (37.8)	19 (21.1)
Facilitate breastfeeding when receiving guests or visiting others	2 (2.2)	8 (8.9)	25 (27.8)	34 (37.8)	21 (23.3)
Remain patient about breastfeeding time and unfinished household tasks	2 (2.2)	6 (6.7)	22 (24.4)	35 (38.9)	25 (27.8)
Encourage breastfeeding to soothe the infant	1 (1.1)	5 (5.6)	24 (26.7)	34 (37.8)	26 (28.9)
Discourage or disagree with a decision to stop breastfeeding	6 (6.7)	13 (14.4)	28 (31.1)	23 (25.6)	20 (22.2)

Table 3 shows that the participants' responses to the husband-support items were predominantly concentrated in the "sometimes" and "often" categories. The highest proportion of participants reported that their husbands often discussed or negotiated the intended duration of breastfeeding (28.9%), learned about breastfeeding from books or articles (32.2%), expressed support when others made negative comments about breastfeeding (33.3%), attended to maternal health and nutrition (33.3%), and gave mothers opportunities to rest from infant care (35.6%).

The "often" category also represented the largest proportion of responses for encouraging mothers and affirming their breastfeeding ability (36.7%), praising breastfeeding achievements (32.2%), listening to and encouraging mothers when they felt discouraged (38.9%), helping prepare breastfeeding equipment or supplies (37.8%), facilitating breastfeeding when receiving guests or visiting others (37.8%), remaining patient regarding breastfeeding time and unfinished household tasks (38.9%), and encouraging breastfeeding to soothe the infant (37.8%).

In contrast, "sometimes" was the most frequently selected response for attempting to solve breastfeeding problems or suggesting alternative solutions (37.8%), seeking help from others to address breastfeeding problems (36.7%), reminding mothers about the benefits of breastfeeding (34.4%), assisting with other childcare duties (32.2%), helping with household tasks (40.0%), and helping mothers during nighttime breastfeeding (48.9%). The "sometimes" category was also the most common response regarding discouraging or disagreeing with a decision to stop breastfeeding (31.1%). Overall, the findings indicate that husbands generally provided support intermittently or frequently rather than consistently across all aspects of breastfeeding support.

Consistently active, problem-focused support was comparatively limited. Only 15.6% of mothers reported that husbands always tried to solve breastfeeding problems, 14.4% reported that husbands always sought help from others, and 15.6% reported that husbands always assisted during nighttime breastfeeding.

Table 4. Association between Husband Support and Breastfeeding Status among Mothers of Infants Younger Than 6 Months in Bengkulu City

Variable	Breastfeeding Status				Total		OR	95% CI	df	P value
Husband Support	Partial		Exclusive							
	n	%	N	%	n	%				
Less supportive	19	45.2	23	54.8	42	100	1.00	Reference		
Support	16	33.3	32	66.7	48	100	1.65	0.70–3.88	1	0.248
Total	35	38.9	55	61.1	90	100				

Among 42 mothers categorized as receiving less husband support, 23 (54.8%) reported exclusive breastfeeding. Among 48 mothers categorized as receiving husband support, 32 (66.7%) reported exclusive breastfeeding. Pearson's Chi-square test did not meet the conventional 0.05 significance threshold (Chi-square(1) = 1.34, $p = 0.248$), and all expected cell counts exceeded five. The odds of exclusive

breastfeeding were estimated to be 1.65 times higher in the support group than in the less-supportive group, but the 95% confidence interval was wide and crossed 1 (OR = 1.65, 95% CI 0.70-3.88). The result is therefore compatible with both a lower and a substantially higher odds of exclusive breastfeeding and should not be interpreted as proof that no association exists.

Table 5. Qualitative Themes and Supporting Informant Evidence

Theme	Informant	Explanatory contribution
Passive endorsement and maternal control of feeding decisions	P1, 32 years	The husband endorsed breastfeeding but deferred to the mother when milk supply was perceived as insufficient.
Antenatal breastfeeding intention as a primary driver	P2, 35 years	The mother formed an intention to breastfeed exclusively during pregnancy, and the husband supported this goal.
Instrumental support through nutrition, childcare, and housework	P3, 32 years	Support focused on food, drinks, infant care, and assistance during the night.
Limited capacity to resolve lactation problems	P4, 35 years	The husband encouraged breastfeeding but did not persist or seek skilled help when milk output was perceived as low.
Emotional support and maternal calm	P5, 31 years	Attention and shared childcare helped the mother feel calm, which she associated with smoother breastfeeding.

Passive endorsement and maternal control of feeding decisions

Mothers described husbands who generally endorsed breastfeeding but deferred to the mother's comfort and decision when milk supply was perceived as insufficient. This support reduced conflict but did not necessarily solve the breastfeeding problem.

"My husband leaves it to whatever makes me comfortable. For example, when my breast milk was no longer coming out, he initially encouraged me to

breastfeed, but then said it was okay. What else could we do if there was no milk?" (P1, 32 years)

Antenatal breastfeeding intention as a primary driver

Mothers who reported exclusive breastfeeding described a firm intention established during pregnancy and communicated to their husbands. The husband then supported an existing maternal goal rather than initiating the decision.

"During pregnancy, I told my husband that I wanted to breastfeed exclusively. Whatever happened, I wanted to

continue breastfeeding. When my milk had not yet come in, my husband looked for foods that might help increase milk production." (P2, 35 years)

Instrumental support through nutrition, childcare, and housework

The most concrete support involved obtaining food, reminding mothers to eat and drink, sharing infant care, and helping with household work. These actions gave mothers time to rest but were not always accompanied by breastfeeding information or problem-solving.

"His encouragement was mostly about food and drinks that could increase breast milk. He suggested that I take care of my diet, helped care for the baby, and even helped at night." (P3, 32 years)

Limited capacity to resolve lactation problems

When milk supply was perceived to be low, some husbands suggested breastfeeding but did not persist or seek skilled assistance. The household response could therefore shift toward formula feeding even when both partners initially preferred breastfeeding.

"My husband encouraged breastfeeding, but only a little milk came out, and it lasted for only one day, so he did not insist that I continue." (P4, 35 years)

Emotional support and maternal calm

Mothers valued attention and shared childcare because they linked emotional calm to their ability to keep breastfeeding and avoid postpartum distress.

"A husband's role is important because when he pays attention and helps care for the child, I feel calmer, and my breast milk flows more smoothly." (P5, 31 years)

The themes help explain the imprecise quantitative association. A broad support category may combine passive approval, instrumental help, emotional reassurance, and active lactation problem-solving. However, these forms of support are unlikely to affect breastfeeding status equally. Maternal intention and unresolved milk-supply concerns also appeared to shape feeding decisions independently of the overall support category.

The quantitative estimate did not reach statistical significance, whereas earlier studies reported positive associations between husband support and exclusive breastfeeding (Hameed et al., 2022; Werdani et al., 2021; Yimer et al., 2021). A recent meta-analysis likewise concluded that paternal support is generally associated with better breastfeeding outcomes, while emphasizing heterogeneity in how support is defined and delivered (Zhou et al., 2024). The present OR of 1.65 is directionally consistent with those reports, but

its 95% CI of 0.70-3.88 is too imprecise to distinguish a meaningful positive association from no association.

The interviews suggest that support in this sample was often responsive rather than proactive. Husbands tended to respect maternal choices and provide food, rest, or childcare, but they were less likely to seek information or help resolve breastfeeding difficulties. Earlier evidence similarly identifies fathers' breastfeeding knowledge, attitudes, perceived behavioral control, and attendance at antenatal classes as modifiable determinants of their involvement (Ng et al., 2019). This distinction is important because emotional and instrumental support may improve maternal comfort without directly addressing perceived insufficient milk, pain, or other lactation barriers. Partner involvement may therefore be more effective when paired with access to trained breastfeeding counseling rather than treated as a single undifferentiated exposure.

Maternal intention emerged as another explanatory factor. Mothers who had decided during pregnancy to breastfeed exclusively described involving their husbands in that goal. Theory-informed breastfeeding promotion similarly identifies intention, self-efficacy, and social support as interrelated determinants (Amoo et al., 2022). The qualitative findings therefore do not contradict the quantitative result; they indicate that husband support may operate through maternal confidence, emotional stability, and problem resolution, while the study's dichotomous measure may not distinguish these pathways.

The findings support a practical shift from general encouragement to specific couple-level competencies. Antenatal and postnatal programs should help husbands recognize common lactation problems, locate qualified assistance, protect maternal rest, share childcare, and reinforce the mother's informed feeding goals. Structured support and education beginning in late pregnancy can strengthen breastfeeding self-efficacy, while breast care and oxytocin massage can assist lactation management and infant weight gain (Gustirini & Anggraini, 2020; Mauliyah & Kartikasari, 2020). Recent Indonesian evidence also shows that early postnatal care combining breastfeeding counseling and observation can support continued exclusive breastfeeding, especially in groups facing additional barriers (Triadmajani et al., 2024). Couple-inclusive assistance should therefore connect household support with timely professional care.

This study's main strength is using maternal interviews to explain an unadjusted quantitative association. Several limitations constrain interpretation. The cross-sectional design does not establish temporality or causation, and purposive recruitment of 90 mothers limits generalizability and statistical precision. The analysis did not adjust for potential confounding by infant age or other maternal characteristics. The 20-person questionnaire pilot provided preliminary item-level reliability evidence but was insufficient for construct validation. Breastfeeding status was based on maternal recall since birth and may be affected by recall or social-desirability bias. Finally, the qualitative component involved only five purposively selected mothers, and husbands were not interviewed. Although adequate saturation was reached for the focused explanatory questions, the themes should not be interpreted as exhaustive accounts of breastfeeding experiences or husband perspectives.

CONCLUSION

This study found no statistically significant evidence of an association between husband support and breastfeeding status. The qualitative findings indicated that husband support was predominantly passive, emotional, or instrumental, with limited involvement in addressing lactation difficulties. Health services should engage husbands in breastfeeding education and provide timely professional lactation support.

DECLARATION

Author Contributions:

BAP contributed to the conceptualization, methodology, instrument development, investigation, data collection, formal analysis, interpretation of the findings, and preparation of the original manuscript. BA, DS, and EK contributed to the methodology, instrument development, data analysis, qualitative coding, interpretation of the findings, and critical revision of the manuscript for important intellectual content. All authors reviewed the quantitative results, qualitative codes, categories, themes, and supporting quotations. All authors have read and approved the final

version of the manuscript and agree to be accountable for all aspects of the work.

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Ethical Considerations:

Ethical approval was obtained from the Health Research Ethics Committee of STIKes Sapta Bakti Bengkulu, Indonesia, before data collection. The approval was issued in June 2023 under reference number 025/DIII/KEPKSTIKesSaptaBakti/2023. All participants received information about the study objectives, procedures, voluntary nature of participation, confidentiality protections, and their right to withdraw. All participants provided informed consent before completing the questionnaire or participating in the interview.

Competing Interests:

The authors declare that they have no competing interests.

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Availability of Data and Materials:

The datasets generated and analyzed during the current study are not publicly available because they contain potentially identifiable participant information. De-identified data may be made available by the corresponding author upon reasonable request and subject to ethical and institutional approval.

Consent for Publication:

The participants provided informed consent for the use of de-identified interview quotations in scientific publications. No directly identifiable personal information is presented in this manuscript.

Clinical Trial Number:

Not applicable. This study was an observational explanatory sequential mixed-methods study and did not involve a clinical intervention.

Generative AI:

During the preparation and revision of this manuscript, the authors used AI-assisted technology solely for language editing, including improving grammar, spelling, sentence structure, and English-language clarity. The authors critically reviewed and verified all AI-assisted revisions and take full responsibility for the accuracy, integrity, and originality of the manuscript. AI-assisted technology was not used for participant recruitment, data collection, statistical analysis, qualitative coding, interpretation of the findings, or scientific decision-making.

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