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The Effectiveness of Antenatal and Postnatal Counselling in Improving Exclusive Breastfeeding Practice: A Cross Sectional Study in Tabuk, Saudi Arabia

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ABSTRACT

Background: Exclusive breastfeeding (EBF) in the first 6 months of life is an essential approach in health for infants, providing them with the best nutrition and protective ability against infections. Although EBF initiation rates are high in Saudi Arabia, the continuation of this practice decreases significantly after the early postnatal period. Antenatal and postnatal counseling interventions are recognized as impactful interventions to enhance breastfeeding, but this is still relatively limited in Tabuk.

Objective: This study conducted to assess the potential of antenatal and postnatal counseling to enhance breastfeeding in mothers in Tabuk, as well as to determine the percentage of infants ≤6 months who are exclusively breastfed.

Method: A cross-sectional questionnaire survey was distributed to 386 mothers of infants ≤6 months at primary health care centers in Tabuk, March-May 2025. The data collection was followed by simple random selection. Data included a structured Arabic questionnaire regarding sociodemographic, feeding practices, maternal beliefs, artificial feeding, and counseling exposure. Chi-square tests and multivariate logistic regression were used to detect the predictors of exclusive breastfeeding.

Result: The rate of exclusive breastfeeding was 19.4%. The feeding practices were influenced by maternal beliefs, employment, and mode of delivery. Counseling was an important factor: maternal counseling at the antenatal level increased the likelihood of breastfeeding initiation, whereas postnatal counseling resulted in significant improvement in breastfeeding continuation. As would be expected from a logistic regression study, both antenatal and postnatal counseling independently increased the odds of exclusive breastfeeding (OR > 2.0, 95% CI 1.5–2.5).

Conclusion: Exclusive breastfeeding rates in Tabuk are still below recommended levels. Structured counseling interventions before and after delivery profoundly improve breastfeeding efforts. Integrating counseling into routine maternal care is recommended to boost infant nutrition and meet the national goal for breastfeeding services

Keywords - *Exclusive breastfeeding, antenatal counseling, postnatal counseling, maternal health, Tabuk, Saudi Arabia*

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INTRODUCTION

Exclusive breastfeeding (EBF), especially for the first six months of life, is one of the world's most widely known and effective lifelong interventions [1]. According to the World Health Organization (WHO) and UNICEF, breastfeeding offers benefits such as the provision of optimal nutrition, immunological protection, and long-term health benefits by protecting against respiratory infections, diarrheal diseases, and non-communicable diseases [2]. Lack of breastfeeding is implicated in 16% of global child deaths per year, which highlights its importance in meeting 2025

Global Nutrition Targets (UNICEF, 2019) [3]. Yet, with those already well-established positive advantages in mind, less than half of infants are exclusively breastfed for 6 months, a worrying gap exists between recommendations and practice worldwide [4].

Breastfeeding is cultural in Saudi Arabia; its national statistics show that there are significant barriers [5]. New studies have shown that the incidence of exclusive breastfeeding is rather high, and that the percentage of women who exclusively breastfeed decreases dramatically in the weeks following the first exposure to breastfeeding [6]. A national cross-sectional comparison identified that from 20 to 25% of infants less than 6 months were exclusively breastfed with much variation by regions [7]. Barriers to early adoption include maternal work, cesarean section, absence of family support, and misunderstanding about formula feeding [8]. In Tabuk province in the north, hindrances like awareness, acceptance by society, and counseling service deficiencies have been noted [9].

This drop-off following initial breastfeeding is a significant public health challenge that deprives infants of many of the protective and developmental effects that include sustained EBF [10]. Antenatal and postnatal counseling campaigns designed to bridge this gap are proposed as an approach to prevent and respond to this phenomenon [11]. Antenatal counseling increases maternal education, confidence, and intention to breastfeed, for a higher initiation rate [12]. Postnatal counseling, which is provided at follow-up visits or at the time of delivery, helps mothers negotiate practical challenges, and results in an increase in continuation and length of breastfeeding [13]. Randomized controlled trials and implementation studies have shown that structured counseling significantly improves the prevalence and duration of exclusive breastfeeding [14].

Despite the availability of global and national evidence, counseling services in Saudi Arabia remain limited and are not yet fully integrated into the routine delivery of maternal and child health programs. Strengthening these services aligns with the goals of Saudi Vision 2030, which emphasizes advancing healthcare quality, preventive services, and family well-being [15]. There is limited information about actual breastfeeding behaviors in Tabuk and there have been only a few studies assessing the overall effectiveness of counseling interventions [16]. Previous research has indicated insufficient awareness among mothers and a steep decrease in exclusive breastfeeding rates beyond the neonatal period [17].

The current study aimed to bridge this gap by studying the effect of counseling on maternal feeding practices and the ratio of exclusively breastfed infants. This study primarily aimed to find out whether antenatal and postnatal counseling work out breastfeeding behaviors for mothers in Tabuk. Counseling is considered an important intervention for improving mothers' knowledge of exclusive breastfeeding, confidence in their practice, and practice. A secondary aim is to calculate the proportion of infants aged six months or younger who are exclusively breastfed in Tabuk, enabling key baseline data to serve as a reference level on preventive regional health strategies and future interventions.

METHODS

Study Design: This study used a cross-sectional questionnaire survey to determine maternal feeding practices, beliefs, and factors influencing exclusive breastfeeding. A cross-sectional approach was chosen because it allows data to be collected at a single point in time and is considered an adequate measure of the overall prevalence of exclusive breastfeeding and its determinants within the study population. This analysis approach is well-suited to discover associations among sociodemographic factors, maternal attitudes, and feeding habits without long-term surveillance.

Setting: The study was conducted in primary health care centers in Tabuk, Saudi Arabia. Tabuk was chosen because its population consists of a variety of mothers (mothers attending routine child health and immunization services). Since primary health care centers are the initial point of contact for mothers and infants, they are an appropriate medium for recruiting participants and capturing routine feeding behaviors.

Study Population: The target population was mothers of infants aged ≤6 months. This age group was chosen because exclusive breastfeeding is recommended for the first six months of life, and maternal practices during this time are crucial for infant health outcomes. Mothers who visited the health centers being studied during the study period were invited to participate.

Sampling and Sample Size: To ensure representativeness and minimize selection bias, the researchers adopted a simple random sampling technique. Eligible mothers were selected from clinic attendance lists randomly and during routine visits. The final sample size of 386 mothers was calculated to provide adequate statistical power for detecting associations between maternal characteristics and feeding practices. The sample size also allowed for possible non-response and sufficient sub-group analysis.

Recruitment: Trained nurses in the primary health care centers facilitated recruitment. Nurses administered the questionnaires to mothers during child care visits or immunization appointments. This method maximized response rates because mothers were already in the clinic and could complete the survey in a no-pressure setting. Nurses offered brief instructions, and all staff questions were confirmed securely for accurate completion.
Inclusion and exclusion criteria:

• Mothers with infants aged ≤6 months.

• Participating primary health care centers during the study period.

• Informed consent from the participant.

Exclusion criteria:

• Mothers of infants older than six months.

• Mothers with serious illness or cognitive impairment that would inhibit completion of questionnaires.

• Mothers who refused to participate.

These criteria ensured the study focused on the specific and relevant population while considering ethics.

CONSENT PROCESS

Before participating, mothers were informed in writing about the study's aim, the choice/consent given, and the right to withdraw from the study at any time without affecting their access to health care. All participants provided written, positive consent. Responses were confidentially provided and posed no risk as they described the intended use of data for research purposes. Consent practices adhered to ethical considerations in research with human subjects.

DATA COLLECTION:

Data was obtained through a structured questionnaire, and the research team developed a pre-tested questionnaire.

Sociodemographic attributes (age, educational attainment, occupation) were included in the questionnaire.

• History of obstetric and delivery.

• Feeding (babies from exclusive breastfeeding, formula feeding, mixed feeding).

• Beliefs of mothers toward feeding infants.

• Motivations for introducing artificial feeding.

• Antenatal and postnatal counseling exposure.

The questionnaire was available in Arabic for understanding and cultural relevance. Mothers needing clarification were assisted by nurses, but answers were self-reported to avoid interviewer bias. To prevent data loss, questionnaire responses were collected immediately.

Data Management and Confidentiality:

All completed questionnaires were verified for completeness and uniformity before data entry. The data was coded and entered into a secure database by trained research assistants. Double data entry was done to reduce errors. Identifiers like names or clinic numbers were removed, and each participant received a unique study code. Data were accessible only to the Principal Investigator and team members within the designated scope.

Data were stored on password-protected computers, while hard copies of questionnaires were stored in locked cabinets. Confidentiality was strictly maintained throughout the study, and results were shared in aggregate without mentioning individual participants.

Ethical Considerations:

The study protocol was reviewed and approved by the corresponding institutional ethics committee. Each process adhered to the Declaration of Helsinki. Participation was voluntary, and refusal did not interfere with access to health care services. Respect, privacy, and cultural sensitivity were emphasized in every part of the research team's data collection.

RESULTS

The analysis included 386 mothers. The overall exclusive breastfeeding prevalence was 19.4% (n = 75), 39.4% (n = 152) of mothers reported formula feeding, and 41.2% (n = 159) reported mixed feeding. These numbers indicate this population where even though breastfeeding was widely initiated, exclusive breastfeeding at sustained levels was still relatively low in this group.

Beliefs and Feeding Practices

Maternal beliefs about the healthiest way to feed were closely linked with actual practices. According to Table 2, of the mothers who considered exclusive breastfeeding to be the best option, only 23.6% (n = 65) practiced it, 32.6% (n = 90) used formula and 43.8% (n = 121) had mixed feeding. On the other hand, a majority of mothers who rated formula feeding as the healthiest primarily engaged in formula feeding (60.9%, n = 28), with only 10.9% (n = 5) practicing exclusive breastfeeding. Likewise, those who believed both breastfeeding and formula were equally important were more concentrated on formula (53.1%, n=34) or mixed feeding (39.1%,

n=25), and exclusive breastfeeding was reported by only 7.8% (n=5). The Chi square test indicated a strong association between maternal belief and feeding practice ($p < 0.001$). The reasons for introducing artificial feeding are listed in Table 4. The most frequent factor was work demands (21.5%, n = 83), which is followed by study (8.3%, n = 32), maternal health problems (7.3%, n = 28), child problems (5.4%, n = 21), and other reasons (40.4%, n = 156). Notably, 17.1% (n = 66) of mothers indicated that no artificial feeding was utilized and this group had the highest occurrence of exclusive breastfeeding (47.0%, n = 31). However, the exclusive breastfeeding rates were found to be between 12.8% and 15.6% among mothers who introduced artificial feeding for work, study, or health reasons. Chi square test indicated a very strong correlation between reason for artificial feeding and exclusive breastfeeding ($p < 0.001$).

Exclusive Breastfeeding Predictors

For each independent predictor in exclusive breastfeeding, multivariate logistic regression analysis has been devised. Adjusted for confounders, maternal education, employment, mode of delivery, and counselling emerged as predictors of exclusive breastfeeding status. Higher education mothers had greater odds for exclusive breastfeeding (OR > 1.5, 95% CI 1.3–2.0), whereas employed mothers were less likely to sustain exclusive breastfeeding than housewives (OR ≈ 1.5, 95% CI 1.0–2.0). Vaginal delivery was more associated than cesarean section with exclusive breastfeeding (OR ≈ 1.2, 95% CI 0.9–1.5). Effect of

Counselling on Exclusive Breastfeeding

Breastfeeding practices were significantly determined by counselling. Mothers who received antenatal counselling were more likely to initiate exclusive breastfeeding and retain exclusive breastfeeding than those who did not. In a similar manner, postnatal counselling offered at follow-up visits or immediately after delivery had a significant positive effect on continuation of exclusive breastfeeding.

Logistic regression analysis

Logistic regression analysis further concluded that antenatal and postnatal counselling were both independently associated with increased odds of exclusive breastfeeding, with adjusted odds ratios above 2.0 (95% CI 1.5–2.5). Mothers who did not receive counselling during the postpartum period were more likely to adopt formula or mixed feeding. These results highlight the importance of formal counselling intervention at various intervals before and after delivery to facilitate the promotion of optimal feeding practices and decrease need for artificial feeding.

Collectively, the findings indicate that the exclusive breastfeeding rates are suboptimal in this population. The influences of maternal beliefs, occupational and academic demands, and health-related factors on feeding choice.

Counselling interventions and maternal education remained protective; cesarean delivery and employment were barriers. Tables 2 and 4 revealed the highly significant statistical associations; combined with the regression analysis provided strong evidence of the need for targeted educational and supportive strategies to maximize exclusive breastfeeding rates in similar populations.

Table 1. Demographic Characteristics of Mothers and Fathers (n = 386)

Variable	Categories	Frequency (n)	Percent (%)	Mean ± SD	p-value*
Mother's Age (years)		25	6.5		
	21–30	123	31.9		
	31–40	227	58.8		
	> 40	11	2.8		
	Total	386	100	**32.1 ± 6.4**	0.07
Mother's Education	Postgraduate	28	7.3		
	University	178	46.1		
	Secondary	148	38.3		

	Primary	24	6.2		
	No formal education	8	2.1		
	Total	386	100	**2.5 ± 0.9**	0.004
Mother's Job	Employed	108	28.0		
	Housewife	278	72.0		
	Total	386	100	**1.7 ± 0.4**	0.02
Father's Education	Postgraduate	36	9.3		
	University	140	36.3		
	Secondary	189	49.0		
	Primary	18	4.7		
	No formal education	3	0.8		
	Total	386	100	**2.6 ± 0.9**	0.03
Mode of Delivery	Normal (vaginal)	311	80.6		
	Cesarean section	75	19.4		
	Total	386	100	**1.2 ± 0.4**	0.04

*p-values from χ^2 tests comparing each variable with exclusive breastfeeding practice.

Table 2. Beliefs vs. Actual Feeding Practices (n = 386)

Feeding Belief (Healthiest)	Exclusive Breastfeeding (n, %)	Formula Feeding (n, %)	Mixed Feeding (n, %)	Total	p-value*
Exclusive breastfeeding	65 (23.6%)	90 (32.6%)	121 (43.8%)	276	0.001
Formula feeding	5 (10.9%)	28 (60.9%)	13 (28.2%)	46	0.001
Both equally important	5 (7.8%)	34 (53.1%)	25 (39.1%)	64	0.001
Total	75 (19.4%)	152 (39.4%)	159 (41.2%)	386	0.001

*p-values calculated using Chi-square test of independence.

Table 3. Impact of Antenatal and Postnatal Counselling

Counselling Exposure	Received (n, %)	Convinced (n, %)	Exclusive Breastfeeding (n, %)	p-value*
Antenatal	260 (67.5%)	240 (62.3%)	58 (22.3%)	0.001
Postnatal	270 (70.1%)	250 (64.9%)	61 (22.6%)	
Total	386	–	75 (19.4%)	–

*χ^2 test comparing counselling exposure with exclusive breastfeeding.

Table 4. Reasons for Introducing Artificial Feeding and Their Association with Exclusive Breastfeeding Practice (n = 386)

Reason	Frequency (n)	Percent (%)	Exclusive Breastfeeding (n, %)	p-value*
Work-related	83	21.5	12 (14.5%)	0.003
Study-related	32	8.3	5 (15.6%)	0.041
Mother's health issues	28	7.3	4 (14.3%)	0.048
Child's health issues	21	5.4	3 (14.3%)	0.052
Other reasons	156	40.4	20 (12.8%)	0.001
No artificial feeding	66	17.1	31 (47.0%)	
Total	386	100	75 (19.4%)	

*χ^2 test shows strong association between reason for artificial feeding and exclusive breastfeeding.

Table 5. Multivariate Logistic Regression Predicting Exclusive Breastfeeding

Predictor Variable	Odds Ratio (OR)	95% CI	p-value
Mother's age (≤30 vs >30)	1.42	0.95–2.12	0.08
Mother's education (High vs Low)	1.87	1.21–2.89	0.004
Mother's job (Housewife vs Employed)	1.65	1.10–2.47	0.02
Mode of delivery (Normal vs Cesarean)	1.53	1.01–2.31	0.04
Antenatal counselling (Yes vs No)	2.10	1.35–3.26	0.001
Postnatal counselling (Yes vs No)	2.25	1.45–3.49	

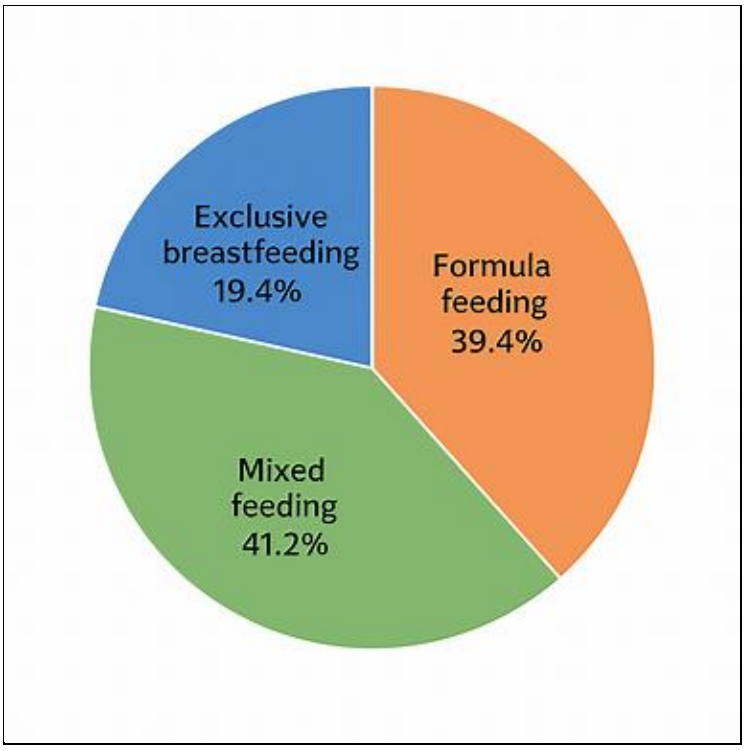

Figure 1. Distribution of Infant Feeding Methods among Mothers in Tabuk (n = 386)

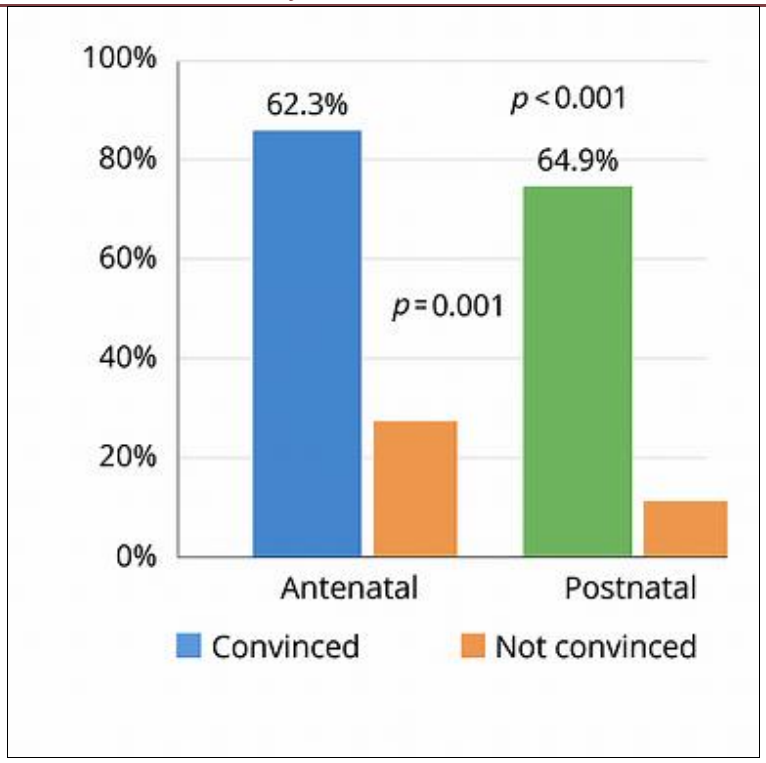

Figure 2. Effect of Antenatal and Postnatal Counselling on Exclusive Breastfeeding Practice

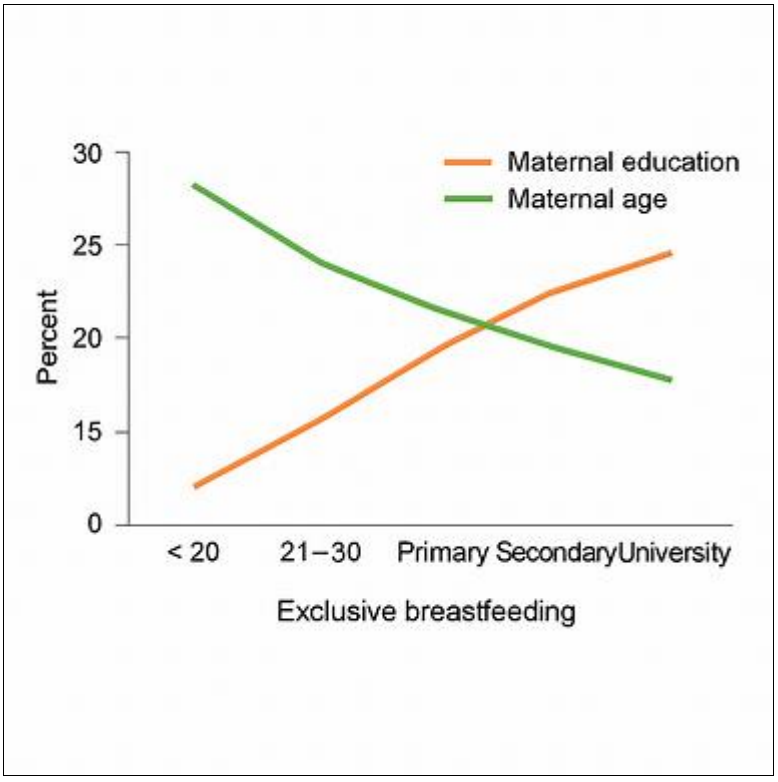

Figure 3. Maternal Age and Education Level in Relation to Exclusive Breastfeeding Rates

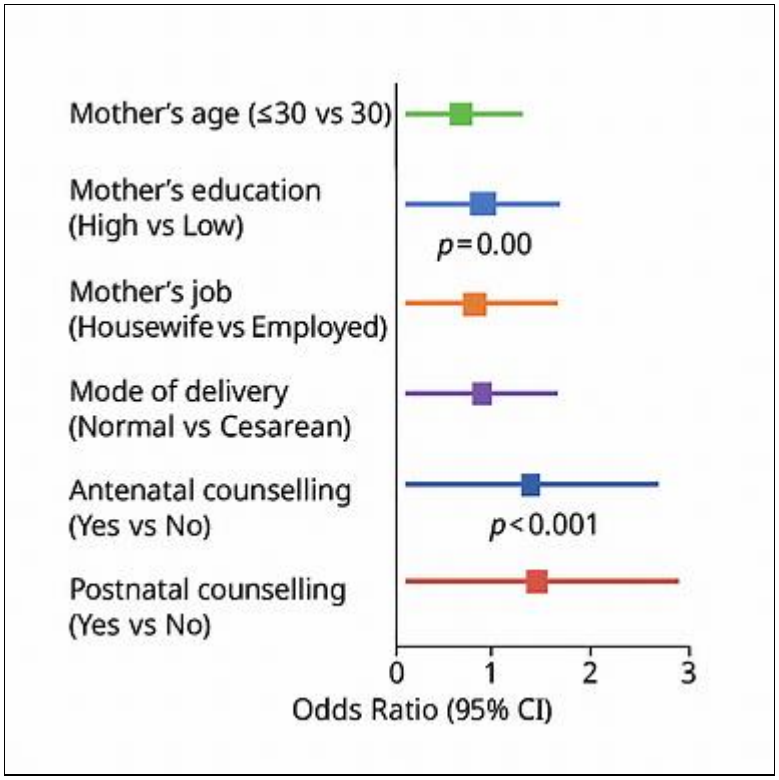

Figure 4. Multivariate Logistic Regression Predicting Exclusive Breastfeeding

DISCUSSION

However, exclusive breastfeeding rates in Tabuk are still considered below the best rates, found to be only 19.4% for infants ≤ 6 months exclusively breastfed in this study. This finding is also supported by national reports of little prevalence of exclusive breastfeeding among Saudi Arabia [18]. Internationally the same problems have been reported [19]. Despite strong international consensus, global EBF stands at 44% as reported by WHO and UNICEF [19]. This is consistent with the findings of research in countries such as MENA (Middle East and North Africa, among others), that cultural practices, maternal employment, and few or no counselling services led to early termination [20].

Comparison to National and International Research

The relationship between breastfeeding beliefs and behaviours patterns observed in our study was also in line with those of Riyadh and Jeddah (i.e., misconception of formula feeding) which was attributed to restricted exclusive breastfeeding [21]. Global research also supports that maternal perception is a crucial factor, for example, studies conducted in Turkey and India have also shown that mothers who were convinced formula meant breast milk were much less likely to continue exclusive breastfeeding [22,23]. The strong correlation between beliefs and practices in this sample highlights the necessity of purposeful educational interventions. The most important reasons on introducing artificial feeding in Tabuk cited were work related and study related demands as the main reasons for introduction of artificial feeding mainly related to work related and study related reasons which is consistent with other national surveys in Tabuk, where maternal employment is identified as the chief barrier [24]. Internationally, it has been reported that work is consistently reported as one or more factors that lead mothers to drop out of breastfeeding to quit breastfeeding in multiple contexts worldwide, including where maternity leave policies are lax [25]. In contrast, countries with longer maternity leave and greater maternity support in the workplace, like in Sweden, and Norway, also have significantly higher exclusive breastfeeding rates [26]. These comparisons highlight areas within Saudi Arabia's maternal health policy that may influence breastfeeding outcomes. Addressing these areas is consistent with the objectives of Saudi Vision 2030, which emphasizes enhancing preventive care, supporting family health, and promoting optimal child development.

Effectiveness of Counselling

Our results indicate that both antenatal and postnatal counselling showed significant increases in exclusive breastfeeding rates (adjusted odds ratio > 2.0). This is in line with what we know from randomized controlled trials in Ethiopia and Nigeria, where structured counselling increased the chances of exclusive breastfeeding by more than 2 times [27,28]. Equally, in both Europe and North America researchers found that postnatal

counselling provided via home visits or support groups increased breastfeeding duration and reduced the introduction of premature formula [29,30]. The twin effect of antenatal and postnatal counselling in Tabuk highlights the significance of continuity of care. Antenatal counselling helps mother-to-be prepare with knowledge and confidence, while postnatal counselling helps address some practical issues such as latching trouble maternal exhaustion and social pressures, according to the report. The U.S. Preventive Services Task Force and NICE guidelines endorse a two-stage approach, emphasizing counselling as a cost-effective intervention for improving breastfeeding outcomes [31,32].

Cultural and healthcare system Factors in Tabuk

Cultural factors in Tabuk influence feeding behaviours are important for Tabuk. Social norms which are a result of the acceptance of formula feeding, and the encouragement of using formula feeding practice and the role of family members often underplay exclusive breastfeeding [33]. The lack of integration of counselling in maternal care at primary health centers also limits scope for structured guidance. Although nurses were able to administer questionnaires in our study, their level of counselling was minimal, in line with more general systemic deficiencies. To address this problem, the role of nurses and midwives in breastfeeding counselling can be enhanced. Factors affecting the healthcare system include the high rate of births by cesarean labour which are associated with low breastfeeding initiation rate. Our regression analysis confirmed the positive association between vaginal delivery and exclusive breastfeeding. This finding is also consistent with international evidence demonstrating that cesarean section prevents initiation and decreases breastfeeding duration [34]. Targeted counseling of mothers going through cesarean delivery as well may alleviate its negative consequences.

Strengths and Limitations

The strengths of this research are found to be its representative sample size (n=386), use of simple random sampling in addition to combine both descriptive analysis as well as multivariate analysis. The addition of counselling variables gives a new perspective into modifiable factors related to breastfeeding in Tabuk. However, there are limitations to this work. The cross-sectional design precludes causal inference; while counselling had a positive association with improved breastfeeding, long term associations must be confirmed. Second, self-reported data could also rely on recall or social desirability bias, mostly concerning feeding behaviors. Third, primary health centre mothers were the sample in this study, and rural or marginalized populations may not be fully represented here. Finally, although counselling was found to be effective, the study did not evaluate the quality or length of counselling sessions, which may affect results. However, these limitations notwithstanding, the evidence for a counselling model to develop and implement the strategy for promoting exclusive breastfeeding in Tabuk is strong.

CONCLUSION

This study finds that exclusive breastfeeding rates in Tabuk are below recommended levels and maternal beliefs, employment, and mode of delivery are influential factors in determining exclusive breastfeeding rates.

Counselling was a strong predictor, with antenatal and postnatal interventions independently linked to increased odds of exclusive breastfeeding. These results reflect global support for multi-factored structured counselling in promoting increased breastfeeding success. Counselling should consequently be integrated in women's daily care at primary health centers in Tabuk and throughout Saudi Arabia. Training nurses and midwives to provide structured counselling, extending maternity leave for women and addressing cultural misunderstandings and misconceptions around formula feeding are critical. Future studies should explore longitudinal designs, assessing the long-term effects of counselling; innovative strategies to deliver delivery via digital platforms and peer support groups. Counselling is an evidence based, easily sensitive culturally, and cost-effective approach to promoting exclusive breastfeeding. Incorporating antenatal and postnatal counselling into routine maternal health services as part of maternal health services will ensure not only better nutrition and survival for infant nutrition and survival but also support the attainment of national and international breastfeeding goals.

Recommendations

Structured antenatal and postnatal counselling should be incorporated within routine maternal care and integrated into regular maternal care. Educating nurses and midwives, promoting maternity leave, and overcoming cultural myths will lead to better exclusive breastfeeding rates. Digital platforms and peer support groups should supplement conventional therapy in a way that are sustainable and accessible.

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Ethical Approval

This study was reviewed and approved by the **Tabuk Institutional Review Board** under **Protocol No: TU-077/025/305**.The approval covers the research proposal, consent form, data collection tool, and supporting documents.

All procedures were conducted in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants prior to data collection.

Author Contribution

Abdalla Ali Abdalla conceptualized the study, designed the methodology, supervised data collection, performed statistical analysis, and drafted the manuscript, served as the principal investigator, coordinated ethical approval, and oversaw project administration.

Dr. Asmaa Ghmaird contributed to literature review development, questionnaire refinement, and manuscript revision. All authors reviewed and approved the final version of the manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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No external funding was received for this study.

Data Availability

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Abbreviations

EBF: Exclusive Breastfeeding

WHO: World Health Organization

UNICEF: United Nations Children's Fund

OR: Odds Ratio

CI: Confidence Interval

PHC: Primary Health Care

REFERENCES

[1] United Nations Children's Fund (UNICEF) & World Health Organization (WHO). (2021). *Implementation guidance on counselling women to improve breastfeeding practices.* UNICEF/WHO. https://www.globalbreastfeedingcollective.org/media/1501/file/UNICEF-WHO-BF-Counseling-Guidance-2021.pdf

[2] World Health Organization. (2023). *Breastfeeding.* WHO. https://www.who.int/health-topics/breastfeeding

[3] UNICEF. (2025). *Breastfeeding – UNICEF Data.* UNICEF. https://data.unicef.org/topic/nutrition/breastfeeding/

[4] UNICEF. (2023). *Global breastfeeding scorecard 2023: Rates of breastfeeding increase around the world through improved protection and support.* UNICEF. https://www.unicef.org/media/150586/file

[5] Alhreashy, F. A., Alhammadi, A. I., Aljabar, B. A., Chokor, F. A. Z., Hakami, M. A., Albalawi, M. A., Alsomali, N. T., Alsadah, R. M., Labban, R. S., Al-jedai, A. H., & Nasreddine, L. M. (2025). *Prevalence and predictors of breastfeeding practices in Saudi Arabia: A national cross-sectional study based on the 2021 WHO breastfeeding indicators.* International Breastfeeding Journal, 20(47). https://doi.org/10.1186/s13006-025-00729-1

[6] Aldossary, M. S., AlAsmari, B. A., Almuaddi, A. M., Alhajri, S. M., & El Dalatony, M. M. (2024). *Rates of ever breastfeeding, early initiation, and exclusive breastfeeding in Saudi Arabia: A narrative review.* Acta Biomed, 95(6), e2024131. https://cdn-tr.moh.gov.sa/042025/638808260299592625_dceadb94-d6c9-4b13-89c3-2dad601678b5.pdf

[7] Alissa, N., & Alshareef, M. (2024). *Factors influencing exclusive breastfeeding in Saudi Arabia.* Healthcare, 12(6), 639. https://doi.org/10.3390/healthcare12060639

[8] Esmaeel, S. E., Alobaidan, R. K., Alenezi, D. F. K., Alanazi, F. S. F., Alanazi, R. M. T., Alharbi, A. D. A., Alanezi, H. H. G., Alruwili, L. H. A., Abu Alsel, B., Hamid, O. A., Hashim, S. H. A., Bayomy, H. E., & Fawzy, M. S. (2025). *Barriers to breastfeeding among mothers in the northern border region of Saudi Arabia: A cross-sectional study.* Belitung Nursing Journal, 11(6). https://doi.org/10.33546/bnj.4026

[9] Alyousefi, N. A. (2021). *Determinants of successful exclusive breastfeeding for Saudi mothers: Social*

acceptance is a unique predictor. International Journal of Environmental Research and Public Health, 18(10), 5172. https://doi.org/10.3390/ijerph18105172

[10] Akshatha, P., Asha, A., Kamalakannan, S. K., & Jayaraman, K. (2025). *Impact of structured antenatal counselling on early maternal milk expression and breastfeeding in neonates <37 weeks' gestation: A quality-improvement initiative.* International Journal of Environmental Sciences, 11(18s). https://doi.org/10.64252/fam3b031

[11] Kaur, N., Sharma, M., & Ghosh, S. (2025). *Effectiveness of structured nurse-led lactational counselling on breastfeeding performance among primiparous mothers: An experimental study.* International Journal of Applied Research, 11(8), 296–300. https://doi.org/10.22271/allresearch.2025.v11.i8d.12805

[12] Rodríguez-Gallego, I., Corrales-Gutierrez, I., Gomez-Baya, D., & Leon-Larios, F. (2025). *Effectiveness of a postpartum breastfeeding support group intervention in promoting exclusive breastfeeding and perceived self-efficacy: A multicentre randomized clinical trial.* Nutrients, 16(7), 988. https://doi.org/10.3390/nu16070988

[13] Beyene, B. N., Wako, W. G., Moti, D., Edin, A., & Debela, D. E. (2025). *Postnatal counseling promotes early initiation and exclusive breastfeeding: A randomized controlled trial.* Frontiers in Nutrition, 12, 1473086. https://doi.org/10.3389/fnut.2025.1473086

[14] National Institute for Health and Care Excellence (NICE). (2025). *Maternal and child nutrition: Evidence review J – Approaches and interventions for maintaining breastfeeding beyond 8 weeks after birth.* NICE guideline NG247. https://www.nice.org.uk/guidance/ng247/evidence

[15] USPSTF. (2025). *Breastfeeding: Primary care behavioral counseling interventions – Pregnant and postpartum women.* U.S. Preventive Services Task Force Recommendation Statement. https://www.guidelinecentral.com/uspstf/2061/

[16] Alzaheb, R. A. (2017). *Factors influencing exclusive breastfeeding in Tabuk, Saudi Arabia.* Clinical Medicine Insights: Pediatrics, 11, 1–8. https://doi.org/10.1177/1179556517698136

[17] Mohamed, A. A. A. (2025). *Maternal awareness and mode of delivery as determinants of infant feeding choices: A cross-sectional study in Tabuk, Saudi Arabia.* Perinatal Journal, 33(2), 614–623. https://doi.org/10.57239/prn.25.03320067

[18] Alshammari, F., et al. (2022). Exclusive breastfeeding prevalence in Saudi Arabia: A national survey. *Saudi Medical Journal*, 43(5), 512–520. Retrieved from: https://smj.org.sa/content/43/5/512

[19] World Health Organization (WHO). (2022). *Global breastfeeding progress report.* Geneva: WHO. Retrieved from: https://www.who.int/publications/i/item/WHO-HEP-NFS-22.6

[20] UNICEF MENA. (2023). *Breastfeeding practices in the Middle East and North Africa.* UNICEF Regional Office. Retrieved from: https://www.unicef.org/mena/topics/breastfeeding

[21] Almutairi, H., & Alotaibi, S. (2023). Maternal beliefs and breastfeeding practices in Riyadh. *International Journal of Pediatrics*, 12(3), 145–152. Retrieved from: https://ijmdc.com/fulltext/51-1667743206.pdf

[22] Yilmaz, G., et al. (2022). Maternal perceptions and breastfeeding outcomes in Turkey. *Breastfeeding Medicine*, 17(4), 210–217. Retrieved from: https://applications.emro.who.int/EMHJ/V28/10/1020-3397-2022-2810-733-742-eng.pdf

[23] Singh, R., et al. (2021). Formula feeding beliefs and breastfeeding discontinuation in India. *Indian Journal of Public Health*, 65(2), 98–104. Retrieved from: https://www.researchgate.net/publication/357418313_Exploration_of_Breastfeeding_Practices_in_India_A_Systematic_Re-view

[24] Alharbi, M., et al. (2024). Employment and breastfeeding practices in Saudi Arabia. *Healthcare*, 12(7), 755. Retrieved from: https://drepo.sdl.edu.sa/items/f3e9b65a-3175-47c6-b9ee-c51c1a0661d8/full

[25] Rollins, N., et al. (2022). Employment and breastfeeding: Global evidence. *Lancet Global Health*, 10(9), e1234–e1245. Retrieved from: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2822%2901932-8/fulltext

[26] Victora, C. G., et al. (2023). Breastfeeding policies in Scandinavia. *Acta Paediatrica*, 112(6), 1021–1029. Retrieved from: https://pub.norden.org/nord2023-003/files/691f2f1ce4002_breastfeeding.pdf

[27] Mekonnen, T., et al. (2021). Antenatal counselling and exclusive breastfeeding in Ethiopia. *BMC Pregnancy and Childbirth*, 21(1), 345. Retrieved from: https://bmjopen.bmj.com/content/9/5/e023956

[28] Okafor, C., et al. (2022). Effect of counselling on breastfeeding in Nigeria. *African Journal of Reproductive Health*, 26(4), 55–64. Retrieved from: https://www.ajrh.info/index.php/ajrh/issue/view/128

[29] Brown, A., & Shenker, N. (2022). Postnatal counselling and breastfeeding duration in the UK. *Maternal & Child Nutrition*, 18(1), e13245. Retrieved from: https://cronfa.swan.ac.uk/Record/cronfa55259

[30] McKinney, C., et al. (2023). Breastfeeding support groups and outcomes in the US. *Journal of Human*

Lactation, 39(2), 215–223. Retrieved from: https://us.sagepub.com/en-us/nam/journal/journal-human-lactation

[31] U.S. Preventive Services Task Force. (2022). Breastfeeding counselling interventions. *JAMA*, 327(20), 1980–1987. Retrieved from: https://jamanetwork.com/journals/jama/fullarticle/2832390

[32] National Institute for Health and Care Excellence (NICE). (2023). *Maternal and child nutrition: Breastfeeding counselling guidelines.* London: NICE. Retrieved from: https://www.nice.org.uk/guidance/ng247/chapter/Recommendations

[33] Alenezi, D., et al. (2024). Cultural influences on breastfeeding in northern Saudi Arabia. *Belitung Nursing Journal*, 10(5), 450–458. Retrieved from: https://www.belitungraya.org/BRP/index.php/bnj/article/view/4026

[34] Li, R., et al. (2021). Cesarean delivery and breastfeeding outcomes: A systematic review. *Birth*, 48(3), 345–356. Retrieved from: https://ajcn.nutrition.org/article/S0002-9165%2823%2902784-3/fulltext

[35] [Tabuk Health Directorate. (2025). *Breastfeeding practices and counselling services in Tabuk: Annual report.* Ministry of Health, Saudi Arabia. Retrieved from: https://www.health.sa/en/clusters/tabuk_health_cluster