

Medicines information, breastfeeding support, and nursing practice in a conflict-affected primary care setting: a cross-sectional study in Gaza

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Abstract

Background: Medication use can become an avoidable reason for breastfeeding discontinuation when frontline clinicians lack reliable evidence or confidence in counselling. This may be especially important in conflict-affected or resource-constrained settings, where nurses are key breastfeeding advisors. We examined nurses' knowledge, attitudes, and medicines information access in Gaza, with implications for similar settings.

Methods: A cross-sectional study was conducted among female nurses working in governmental Primary Health Care Clinics (PHCCs) across the Gaza Strip. A literature-informed questionnaire assessing knowledge and attitudes was developed, reviewed by topic experts, translated into Arabic, pilot-tested, and administered through structured face-to-face interviews between April and June 2018. Recruitment was conducted across governmental PHCCs in the five governorates. Data were analysed using descriptive statistics, bivariate tests, and exploratory multivariable linear regression models with robust standard errors.

Results: Of 156 invited nurses, 150 participated (96.2%). Knowledge of medicines affecting breastfeeding was limited and uneven across items, with particularly low awareness of drug effects on prolactin (12.0%) and limited access to drug-safety resources during breastfeeding (13.3%). Attitudes were more favourable than knowledge: 98.7% agreed that health education is the best way to reduce harmful effects of medicines on breastfeeding, and 96.0% supported including guidance in clinic protocols. However, only 31.3% considered current counselling and education for women adequate. In exploratory adjusted analyses, no clear independent predictors of knowledge score were identified overall, although nurses working in Rafah clinics had adjusted knowledge scores 9.3 points higher than those working in Gaza clinics. Attitude scores were higher among nurses with 10 years or less of experience and lower among those working in North Gaza clinics. Higher adjusted knowledge scores were also associated with more positive attitudes.

Conclusion: The findings suggest a modifiable systems-level gap rather than a lack of professional commitment. Nurses in Gaza appeared willing to support breastfeeding women, but many lacked the resources and confidence needed to provide consistent, evidence-based advice about medicines. Improving access to reliable reference tools, embedding breastfeeding-related drug guidance in clinic materials, and offering targeted post-qualification training may strengthen counselling in Gaza and similar resource-constrained settings where nurses are key sources of breastfeeding advice.

Trial registration: not applicable

Background

The World Health Organization (WHO) recommends exclusive breastfeeding as the primary source of nutrition for infants during the first six months of life.[1] Taking this approach to infant nutrition supports infant survival and development, whilst also ensuring complete nutritional adequacy.[2,3] Extensive research has consistently demonstrated the superiority of breastfeeding over formula feeding with respect to early health outcomes.[4] However, exclusive breastfeeding rates vary considerably across settings, influenced by social and contextual determinants.[5] In Middle Eastern settings, exclusive breastfeeding rates vary considerably across countries and remain suboptimal in many contexts. World Bank indicator data suggest substantial variation in exclusive breastfeeding rates across settings in the region, including Egypt, Jordan, Sudan, and the West Bank and Gaza.[6]

A common cause of breastfeeding cessation is the use of medications by the breastfeeding mother. There is a risk that healthcare professionals may inappropriately advise new mothers to discontinue breastfeeding or to avoid taking essential drugs, due to an unnecessarily cautious approach.[7] Assessing risks of harm from prescribed medicines

for breastfeeding women can be challenging for healthcare professionals due to a lack of available information on the pharmacokinetic excretion of drugs into breastmilk. However, the majority of drugs are safe to use when breastfeeding, with only a minority absolutely contraindicated.[8] It is thought that many instances of breastfeeding cessation attributable to inconsistent healthcare advice may be avoidable.[9]

Primary care clinics play a vital role in ante- and postnatal care for new families, often used as a point of first access for healthcare and advice. This system has come under significant challenge to the point of collapse in the Gaza Strip due to recent war conditions.[10] Ministry of Health (MoH) centres account for 62.7% of all working primary care settings in Palestine.[11] Whilst there are active efforts from the MoH and United Nations Relief and Works Agency (UNRWA) in the region to encourage breastfeeding, there is a significant lack of programmes targeting nurses' awareness and beliefs concerning drugs that affect breastfeeding. Understanding how nurses view and approach giving drug safety advice during breastfeeding could affect breastfeeding uptake and discontinuation.

This study examined nurses' knowledge, attitudes, and access to medicines information regarding drug use during breastfeeding in governmental Primary Health Care Clinics (PHCCs) in the Gaza Strip. It was designed not only to describe local knowledge and attitudes, but also to assess whether frontline primary care nurses had the information resources and service conditions needed to deliver consistent evidence-based breastfeeding support. We hypothesised that any gap would be expressed less as negative professional attitudes and more as a mismatch between positive commitment to breastfeeding support, limited medicines-information access, and perceived inadequacy of current counselling provision. Framed in this way, the study aims to identify service-level lessons that may also be relevant to other resource-constrained or disrupted primary care settings.

Methods

Study design and setting

An observational, descriptive, cross-sectional study was conducted to assess nurses' knowledge and attitudes regarding drugs affecting breastfeeding in governmental PHCCs in the Gaza Strip. The study was conducted between January and October 2018, with field data collection undertaken from April to June 2018. The study setting comprised all governmental PHCCs in the Gaza Strip operating at levels II, III and IV across the five governorates.

Questionnaire Design

The questionnaire comprised three sections covering socio-demographic and work-related characteristics, knowledge about drugs affecting breastfeeding, and attitudes towards drugs affecting breastfeeding. The knowledge section comprised 19 closed yes/no items, and the attitude section comprised 11 items rated on a three-point Likert scale (1 = disagree, 2 = not sure, 3 = agree). Once developed, the draft instrument was reviewed by topic experts in the field for face and content validity, with feedback used to refine item clarity and relevance to the study objectives [12]. The questionnaire was developed in English, translated into Arabic, and reviewed in both languages by experienced bilingual reviewers before field use to strengthen clarity, consistency and conceptual alignment across versions. Final wording was agreed before pilot testing. Because data collection was conducted through researcher-administered face-to-face interviews, items could be clarified where needed while preserving their intended meaning and ensuring consistent administration. Both language versions were available during data collection as appropriate. A copy of the final questionnaire is provided in the Supplementary Information. The questionnaire is presented as administered, and the English wording of some items reflects a close translation of the Arabic interviewer-administered version. Taken together, these steps support the use of a purpose-built study instrument with preliminary content review and internal consistency assessment, although it should not be interpreted as a fully validated scale.

Participants and sampling

The target population comprised female nurses working in governmental PHCCs in the Gaza Strip. A census sampling approach was used, whereby all eligible female nurses working in governmental PHCCs were invited to participate. Sampling was undertaken across the five governorates and included nurses from PHCCs at levels II, III and IV [13]. Based on the sample size calculation, a minimum of 130 participants was required at the 95% confidence level with a 5% margin of error. This was increased by 20% to 156 to allow for non-response. The sample size calculation was based on an estimated population of 194 female nurses working in governmental PHCCs in the Gaza Strip at the time of study planning. In total, 150 nurses participated.

Pilot testing and data collection

A pilot study was conducted with 10% of the study sample, comprising 15 eligible female nurses, before the start of formal data collection. The pilot was used to identify weaknesses in wording, translation into Arabic, anticipated response rate, time required to complete the questionnaire, and areas of vagueness, and to assess the reliability, practicality, and suitability of the questionnaire for field use. Minor modifications were made accordingly. Because of the limited number of eligible nurses available for sampling, pilot participants were retained in the final study sample.

Data were collected from all 24 government-administered PHCCs in the Gaza Strip using a paper-based structured questionnaire administered through face-to-face interviews by the researcher. Both Arabic and English versions were available during data collection as appropriate. Participants were informed about the purpose of the study, the voluntary nature of participation, and the confidentiality of their responses, and written informed consent was obtained before participation. Each interview took approximately 15 minutes to complete. Of the 156 nurses invited, 150 participated, giving a response rate of 96.2%.

Analysis

The questionnaire comprised 19 knowledge items with dichotomous yes/no responses and 11 attitude items rated on a three-point Likert scale (1 = disagree, 2 = not sure, 3 = agree). Knowledge and attitude scores were summarised using descriptive statistics and examined in relation to socio-demographic characteristics in both bivariate and exploratory adjusted analyses. Composite knowledge and attitude domain scores were analysed as continuous composite scores for descriptive and comparative analyses. For descriptive reporting, the knowledge score was expressed on a percentage scale, whereas the attitude score was treated as a continuous summary measure. Data were entered and analysed using the Statistical Package for the Social Sciences (SPSS), version 22. The first stage of data entry involved constructing an entry base and coding variables, followed by the actual data entry. At the analysis stage, data cleaning and data management were undertaken for the variables of interest. Data management was informed by the scientific literature, including the merging and discretisation of continuous variables into categories with minimal loss of information.

Descriptive analysis, including figures, frequency tables, and cross-tabulation, was used to describe the main features of the data. Student's t-tests and analysis of variance (ANOVA) were used to assess differences in knowledge and attitude scores according to nurses' socio-demographic characteristics.[14] The relationship between knowledge and attitude scores was also examined using correlation and simple linear regression analyses. To enhance analytical depth, exploratory multivariable linear regression models were fitted to examine whether knowledge and attitude scores were independently associated with selected participant and clinic characteristics, with robust standard errors used to estimate confidence intervals and p values. For the adjusted analyses, the knowledge score was reverse-oriented so that higher values reflected a more favourable direction of the measure and could be interpreted

consistently in relation to attitude score in the multivariable models. The knowledge model included age group, qualification, years of experience, clinic address and prior training. The attitude model included the same covariates together with knowledge score. Clinic address was used rather than place of residency in the main multivariable models to prioritise the more service-relevant location measure and to avoid overlap between two closely related geographic indicators.

Preliminary assessment of validity and reliability

To support instrument validity, the questionnaire was reviewed by experts in the field for face and content validity before field use, and their suggestions were considered in revising the questionnaire. Internal consistency was examined by calculating the correlation between each questionnaire item and its corresponding domain score within the knowledge and attitude sections, with statistical significance set at $p \leq 0.05$. Internal reliability of each domain was then assessed using Cronbach's alpha coefficient.[15,16]

Results

Data Characteristics

The number of respondents was 150 out of 156 invited female nurses, indicating a 96.2% response rate. Internal consistency correlation coefficient data is displayed in Table 1 for the "knowledge" domain and Table 2 for the "attitudes" domain, indicating acceptable internal consistency. Cronbach's alpha was 0.68 for the knowledge domain and 0.72 for the attitude domain, indicating moderate internal consistency for knowledge and acceptable internal consistency for attitudes.

Of the 150 respondents, participants worked in clinics in Gaza (28.0%), Khan Younis (24.0%), Rafah (21.3%), North Gaza (14.7%), and the Midzone (12.0%). The achieved sample distribution by governorate is shown in Supplementary Table S1. The age, qualifications, years of experience and clinic locations of participants are shown in Table 3. Half of the nurses who participated in the study were aged 31-40 years, fewer than half had a bachelor's degree, more than half had 11-20 years of experience, and the majority had not attended any postgraduate training.

Questionnaire Responses

Nurses' knowledge of drugs that affect breastfeeding is displayed in Supplementary Table S2. Overall knowledge scores suggested limited knowledge of medicines affecting breastfeeding, with marked variation across items. Item-level affirmative responses were highest for the statement that drugs can affect milk secretion or composition (100.0%), followed by the antiemetic item (68.7%), the paracetamol item (66.0%), and two items at 63.3% concerning drug transfer into breast milk. In contrast, affirmative responses were low for the prolactin item (12.0%), access to drug-safety resources during breastfeeding (13.3%), the statement that some drugs should be stopped during breastfeeding (14.7%), and the item on benefits of breastfeeding continuing if mothers avoid drugs (16.0%). Fewer than half reported having good information about drugs affecting breastfeeding (44.7%).

Nurses' attitude regarding drugs in breastfeeding is displayed in Supplementary Table S3. The mean attitude score was 75.3%. Almost all nurses agreed that health education is the best way to reduce the harmful effects of drugs on breastfeeding (98.7%), that women should be encouraged to avoid over-the-counter medicines during breastfeeding (96.7%), and that guidance on medicines affecting breastfeeding should be included in the clinic guide (96.0%). A large majority also wished to undertake training courses on this topic (94.7%). However, only 31.3% agreed that the current health education and nursing counselling provided to women were adequate, while 65.3% agreed that workload pressure prevented them from giving information about drugs affecting breastfeeding.

In bivariate analyses, knowledge scores did not differ significantly by age, place of residency, qualification, years of experience, clinic address or prior training. Attitude scores also did not differ significantly by age, qualification, years of experience or prior training; however, attitude scores varied significantly by place of residency ($p=0.003$) and clinic address ($p=0.002$). In exploratory adjusted analyses, the multivariable model for knowledge score showed limited explanatory power overall ($R^2=0.072$, adjusted $R^2=-0.010$; overall $p=0.437$). No clear independent predictors of knowledge score were identified overall, although nurses working in Rafah clinics had **adjusted** knowledge scores 9.3 points higher than those working in Gaza clinics (95% CI 2.7 to 16.0; $p=0.007$). In the adjusted attitude model, the model explained 24.6% of the variance in attitude score (adjusted $R^2=0.174$; overall $p<0.001$). Compared with nurses with 11 to 20 years' experience, those with 10 years or less had attitude scores 8.4 points higher (95% CI 1.8 to 15.1; $p=0.014$). Compared with Gaza clinics, North Gaza clinics had attitude scores 11.4 points lower (95% CI -18.8 to -3.9; $p=0.003$). In addition, higher adjusted knowledge scores were independently associated with more positive attitudes ($\beta=0.28$ per one-point increase, 95% CI 0.09 to 0.47; $p=0.004$) (Table 4; Supplementary Tables S9 and S10).

Discussion

The novel contribution of this study is not simply that primary care nurses in Gaza showed incomplete knowledge about medicines use during breastfeeding. Rather, the findings identify a clinically important mismatch between broadly favourable professional attitudes towards breastfeeding support and weak medicines-information capacity within frontline primary care. In a setting where nurses are often first-line sources of advice for breastfeeding women, this gap may function as a health-system impediment to consistent evidence-based counselling.

These findings should, however, be interpreted with appropriate caution. This study used a study-specific questionnaire developed from the literature and refined through expert review and pilot testing. The instrument showed moderate internal consistency for the knowledge domain and acceptable internal consistency for the attitude domain, and the pilot phase helped identify wording that required clarification before field use. However, the data were collected before the Gaza war and should therefore be interpreted as reflecting the pre-war primary care context rather than current service conditions [17]. In addition, the questionnaire was based on a limited literature base and closed-item responses, so it may not have captured wider contextual factors influencing nurses' knowledge and attitudes towards medicines use during breastfeeding.

Even with these limitations, the findings have clear implications for nursing practice in the Gaza Strip. Lack of access to resources on drug safety during breastfeeding was reported by 86.7% of respondents. Improving access to reliable, up-to-date information for post-qualification professional education could help address the observed knowledge gaps and strengthen nurses' confidence in providing comprehensive advice to breastfeeding women. Useful lessons may be drawn from more stable primary care systems, such as the UK Specialist Pharmacy Service information repository for advice on medicines and breastfeeding.[18] Similarly, bespoke post-qualification modules could be developed in bite-sized, on-demand formats to support remote learning at times that fit around the demands of practice.[19,20]

A point for future consideration which was not interrogated in this study is the approach to cautiousness and recommending 'no action' or discontinuation of breastfeeding as a perceived safe option by clinicians. This clinical inertia has been shown to be amplified in scenarios of uncertainty, as an active inhibitor of clinical decision-making and recommending interventions.[21,22] This is relevant to the context of breastfeeding information availability, where drug safety information may not be comprehensive or may include ambiguity over safety claims due to limited clinical information.[23] Evidence gaps in pregnancy and lactation research remain substantial, and in practice, this uncertainty may contribute to overly cautious medication advice to breastfeeding mothers.[9,24] This could be

addressed through multidisciplinary working with pharmacists, who are key sources of medicines advice for breastfeeding women.[25]

The findings also suggest that the main problem is not simply a lack of willingness among nurses to support breastfeeding women, but a more complex gap between positive professional attitudes and the practical ability to give confident medicines advice. In the present study, almost all respondents endorsed health education as the best way to reduce harmful effects of drugs on breastfeeding, and most agreed that breastfeeding-related drug guidance should be included in the clinic guide. However, only a minority considered current counselling services adequate, most reported that workload pressure limited their ability to provide information, and very few reported access to drug-safety resources. This pattern is consistent with earlier work showing that health professionals often hold broadly positive attitudes towards medication use in breastfeeding, yet have incomplete knowledge and variable practice, with advice frequently shaped by personal experience rather than consistent evidence-based information sources [26]. The broader contribution of the present study lies in showing that this issue may be understood not only as an individual knowledge problem, but also as a frontline service-capacity problem. In that sense, the relevance of the findings extends beyond Gaza, because similar tensions between supportive professional attitudes and weak medicines-information support may arise in other resource-constrained or disrupted primary care settings. The positioning of the present study in relation to selected published literature is summarised in Supplementary Table S11. Although this study did not measure breastfeeding continuation directly, the observed combination of low knowledge on selected medicines items, poor access to breastfeeding drug-safety resources, and low perceived adequacy of counselling is clinically relevant because earlier work suggests that healthcare professional advice can materially influence medication-related breastfeeding discontinuation [9].

The adjusted analyses reinforced this interpretation. Differences in knowledge were not strongly explained by age, qualification, years of experience, or prior training once these variables were considered together, although clinic location remained relevant in the exploratory knowledge model. By contrast, attitude scores were more clearly patterned by service context and experience, with lower scores in North Gaza clinics and higher scores among nurses with 10 years or less of experience. Higher adjusted knowledge scores were also independently associated with more positive attitudes. Taken together, these findings suggest that medicines-related breastfeeding support may be shaped less by basic professional background alone and more by local service conditions, experience, and the availability of knowledge support within frontline care.

A more critical interpretation of these findings is that uncertainty about medicines in breastfeeding should not be viewed only as an individual knowledge deficit. It is also a structural information problem. Medication can become an avoidable barrier to breastfeeding when risk is overestimated, evidence is inconsistent across sources or the available advice is difficult to translate into day-to-day clinical decisions [27]. In a prospective cohort study, medication-related breastfeeding cessation was strongly influenced by professional counselling, and many women who stopped breastfeeding because of medicines had not received clearly evidence-based advice [28]. Qualitative work with healthcare providers similarly shows that cautious recommendations are often driven by limited, unfamiliar or unreliable lactation resources rather than by clear evidence of harm [29]. This is compounded by the long-standing exclusion of pregnant and breastfeeding women from clinical research, which has left substantial gaps in the evidence base for many medicines used during lactation [30].

These findings therefore support a broader practice recommendation than simple awareness-raising. In this setting, improvement is likely to require a combination of accessible reference tools, concise post-qualification teaching and a clearer multidisciplinary pathway for complex medicines queries. The results of the present study support this directly, given the strong expressed demand for training and the low reported access to reliable information

resources. A blended learning approach may be particularly relevant here, because recent evidence suggests that it can improve nurses' knowledge, attitudes and practical skills in lactation and breastfeeding management [31]. This interpretation is also consistent with regional evidence from Jordan, where healthcare providers, including nurses, showed low knowledge regarding medication use during breastfeeding, suggesting that the problem may extend beyond a single local setting [32]. At the same time, the present findings should be interpreted with some caution. The knowledge scale showed only modest internal consistency, several items were framed as simple yes/no statements rather than clinically nuanced judgments, and some wording appears influenced by direct translation and local brand naming. These features may reduce precision and may partly explain why some respondents showed high agreement with broad statements while performing less well on more specific items.

Several limitations should be considered when interpreting these findings. First, the data were collected in 2018 and should therefore be understood as reflecting the pre-war primary care context in Gaza rather than current service conditions. Second, because data were collected through interviewer-administered face-to-face questionnaires, responses may have been influenced by social desirability, particularly for items concerning professional knowledge and counselling attitudes. Third, the questionnaire was developed specifically for this study and should be considered a study-specific instrument with preliminary content review and internal consistency assessment rather than a fully validated scale. Finally, the study examined nurses' knowledge and attitudes only, and did not measure actual counselling behaviour, breastfeeding continuation, or patient-level outcomes. The findings should therefore be interpreted as identifying a plausible service-level barrier to evidence-based breastfeeding support rather than demonstrating a direct effect on breastfeeding behaviour.

Conclusion

In this study, nurses reported a lack of information and insufficient knowledge regarding medications that may affect breastfeeding. Despite their important role in counselling breastfeeding women, nurses should possess adequate knowledge and awareness about drugs that can influence breastfeeding. This is particularly important because mothers may sometimes use medications that are available without a prescription, and their decisions can be influenced by the guidance they receive from healthcare professionals. There remains a lack of high-quality evidence regarding the safety of many medications used during breastfeeding, which may further hinder healthcare professionals in providing clear and confident recommendations. Future studies should examine whether strengthening medicines-information support for nurses improves counselling quality and breastfeeding-related outcomes in practice, both in Gaza and in other resource-constrained primary care settings where nurses are central to breastfeeding advice.

Abbreviations

UNRWA: United Nations Relief and Works Agency

PHCCs: Primary Health Care Clinics

Declarations

Ethics approval and consent to participate

Ethical approval was granted by the Helsinki Committee (HC) for Ethical Approval, Palestinian Health Research Council (PHRC), approval number PHRC/HC/329/18; 05 Feb 2018 in accordance with the Declaration of Helsinki. Administrative approval was obtained from the Ministry of Health, State of Palestine (Human Resources Development

Directorate; correspondence number 197915; 28 Feb 2018). Academic approval was granted by the Faculty of Health Professions, Al-Quds University (25 Feb 2018). Written informed consent was obtained from participants.

Consent for publication

Not applicable.

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Not applicable.

Availability of data and materials

The de-identified dataset supporting the conclusions of this article is not publicly available because it contains potentially identifiable information from a relatively small workforce within a restricted geographic setting. A de-identified dataset may be made available from the corresponding author on reasonable request, subject to approval by the relevant ethics and institutional authorities and to a data-sharing agreement where required.

Competing interests:

The authors declare that they have no competing interests.

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Authors' Contributions:

FM contributed to data collection analysis, and interpretation. AN and HA contributed to study conception and design and revised the manuscript for intellectual content. TJK drafted the manuscript and critically revised it. RA contributed to data analysis, interpretation and critically revised the manuscript. KM provided senior oversight, contributed to data analysis, led manuscript development, and critically revised the manuscript for scientific rigour. All authors approved the final version of the manuscript and agree to be accountable for all aspects of the work.

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Tables

Table 1 Correlation coefficient of each questionnaire item within the “knowledge” domain

No	Item	Correlation Coefficient	P-Value
1	Taking a drug during breastfeeding is safe.	0.821	*0.001
2	Some drugs affect the amount of milk for the baby.	0.520	*0.001
3	Almost all drugs transfer into breast milk, and this may carry a risk to breastfeeding.	0.632	*0.001
4	Some drugs should be stopped during breastfeeding.	0.333	*0.036
5	Antiemetic drugs such as metoclopramide (Pramin) increase the amount of milk the baby receives.	0.375	*0.017
6	The benefits of breastfeeding continue if mothers avoid using drugs.	0.325	*0.040
7	Prolactin is affected by the use of some drugs during breastfeeding.	0.412	*0.012
8	Drugs can affect milk secretion or composition by affecting mammary gland development and milk secretion.	0.374	*0.017
9	Antihistamines are considered to be safe.	0.680	*0.001
10	Anticonvulsants are considered unsafe during breastfeeding.	0.344	*0.032
11	Anticoagulants such as heparin is considered and do not cross into breast milk.	0.700	*0.0001
12	Antibiotics, tetracyclines, affect bone growth.	0.682	*0.0001
13	Avoid taking aspirin during breastfeeding due to the risk of Reye's syndrome.	0.580	*0.001
14	You have access to resources about drug safety in breastfeeding.	0.422	*0.010
15	Analgesics such as paracetamol (Acamol) affect breastfeeding.	0.500	*0.001
16	ibuprofen (Trufen) effect on the taste of milk for the baby	0.610	*0.001
17	Some mothers need to use drugs while breastfeeding.	0.510	*0.001
18	Transfer some drugs from maternal plasma to milk	0.313	*0.049
19	have good information about drugs affecting breastfeeding.	0.355	*0.025

Table 2 Correlation coefficient of each questionnaire item within the “attitudes” domain

No	Item	Correlation Coefficient	P-Value
1	You think Workload pressure prohibits me from giving information about drugs affecting breastfeeding.	0.349	*0.027
2	You think the effect of drugs on breastfeeding is a problem for the baby.	0.571	*0.000
3	Health Education is the best way to decrease the harmful effects of drugs on breastfeeding.	0.500	*0.001
4	Nursing counselling is the best way to decrease the harmful effects of drugs on breastfeeding.	0.552	*0.000
5	Women should be encouraged to avoid over-the-counter drugs during breastfeeding.	0.521	*0.001
6	Drugs affecting breastfeeding should be included in the clinic's guide.	0.601	*0.000
7	Service provided by health education and nursing counselling is adequate for women about the effects of drugs on breastfeeding.	0.518	*0.001
8	You think there is a relationship between the income of the family and drug use during breastfeeding.	0.432	*0.005
9	You think there is a relationship between a mother's educational level and drugs.	0.576	*0.000
10	You think there is a relationship between the number of births and attitudes about the effect of breastfeeding on drugs.	0.496	*0.001
11	Would you like to conduct training courses on drugs affecting breastfeeding	0.570	*0.000

Table 3 *Socio-demographic characteristics of respondents*

Variable	Number (N)	Percentage (%)
Age		
30 years and below	10	6.7
31 - 40 years	75	50.0
41 years and above	65	43.3
Total	150	100.0
Qualification		
Master's degree	12	8.0
bachelor's degree	60	40.0
Diploma 3 years	30	20.0
Diploma 2 years	48	32.0
Total	150	100.0
Experience		
10 years and less	28	18.7
11 - 20 years	84	56.0
21 years and more	38	25.3
Total	150	100.0
Clinic address		
Gaza	42	28.0
Khan Younis	36	24.0
Rafah	32	21.3
North Gaza	22	14.7
Midzone	18	12.0
Total	150	100.0
Prior training on medicines affecting breastfeeding (T- test)		
No	130	86.7
Yes	20	13.3
Total	150	100.0

Table 4 Significant findings from exploratory multivariable linear regression models for knowledge and attitude scores

Outcome	Predictor	β (95% CI)	P value
Knowledge score	Clinic address: Rafah vs Gaza	9.3 (2.7 to 16.0)	0.007*
Attitude score	Experience: 10 years and less vs 11-20 years	8.4 (1.8 to 15.1)	0.014*
Attitude score	Clinic address: North Gaza vs Gaza	-11.4 (-18.8 to -3.9)	0.003*
Attitude score	Adjusted knowledge score, per 1-point increase	0.28 (0.09 to 0.47)	0.004*

Note: Results shown are from exploratory multivariable linear regression models including age group, qualification, years of experience, clinic address, and prior training; the attitude model also included knowledge score. Reference categories were age 31-40 years, Bachelor's degree, 11-20 years' experience, clinic address Gaza and no prior training. For the adjusted analyses, the knowledge score was reverse-oriented so that higher values reflected a more favourable direction of the measure. Full models are presented in Supplementary Tables S9 and S10.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [SupplementaryInformation.pdf](#)