Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Knowledge, Attitude and Practice of Healthcare Providers Regarding Baby-Friendly Hospital Initiative (BFHI) Practices in the Gaza Strip, Palestine: A Cross-Sectional Study

Marwan Jalambo

moj_biology@yahoo.com

Palestine Technical College

Basil Kanoa

Ministry of Health

Mueen Kariri

Ministry of Health

Research Article

Keywords: Knowledge, Attitude, Practice, Baby-Friendly, Practices, Gaza, Palestine

Posted Date: September 18th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10614875/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Background.

Breastfeeding provides well-recognized benefits for both infants and mothers, and the Baby-Friendly Hospital Initiative (BFHI) is the main global strategy used to protect and encourage it. The success of the initiative depends heavily on the competence of frontline providers, yet very little has been published on provider knowledge, attitudes, and practices (KAP) in Palestine. This study assessed the KAP of health care providers regarding the BFHI in the Gaza Strip and examined how it differed by facility type, profession, and training.

Methods.

A cross-sectional study was carried out between August and December 2022 in BFHI-designated hospitals and primary health care centers in the Gaza Strip. In total, 369 physicians, pharmacists, and nurses completed a structured questionnaire based on the ten steps of the BFHI. The data were analyzed in SPSS version 25 using descriptive statistics, independent-samples t-tests, one-way analysis of variance, and the chi-square test.

Results.

Overall KAP was moderate (mean 67.15%). Only 53.1% of the providers had heard of the BFHI, and just 40.1% had completed BFHI-specific training. Providers in BFHI hospitals scored significantly higher than those in health centers (75.00% versus 64.07%, $p < .001$), and KAP differed significantly by profession, with nurses scoring highest, followed by physicians and then pharmacists ($p < .001$). Training was strongly associated with KAP category: 91.4% of the providers in the highest band had been trained, compared with 6.0% of those with significant gaps, $\chi^2(2, N = 369) = 144.19$, $p < .001$, Cramér's $V = .63$.

Conclusion.

BFHI training was the factor most strongly linked to competent breastfeeding support, yet most providers had not received it. Expanding BFHI training, especially for health-center staff, physicians, and pharmacists, is a practical way to strengthen breastfeeding support in Gaza.

INTRODUCTION

Over the past quarter century, the value of breastfeeding for mothers and infants has been documented repeatedly, and its short- and long-term benefits are now firmly established [1, 2]. Building on that evidence, the World Health Organization (WHO) recommends that infants receive only breast milk for the

first six months of life and that breastfeeding then continue, together with appropriate weaning foods, until the age of two years or beyond, for as long as the mother and child both wish [3].

Many of these benefits appear early. Breastfed infants suffer fewer episodes of necrotizing enterocolitis, childhood leukemia, middle-ear infection, asthma, obesity, and type 1 and type 2 diabetes [2]. Mothers benefit as well, sometimes for decades afterward. In a pooled analysis of about 50,000 women with breast cancer, each additional year of lifetime breastfeeding was tied to a 4.3% drop in breast cancer risk [4], and the risk of developing type 2 diabetes is lower among women who breastfeed than among those who do not [5].

The importance of breastfeeding extends well beyond the individual. Because breast milk gives newborns the nutrition they need for healthy growth and development, exclusive breastfeeding has been shown to reduce mortality and illness among children under five in developing countries [6]. The numbers involved are considerable: roughly 823,000 child deaths worldwide could be prevented each year through higher breastfeeding rates, and some 20,000 cases of breast cancer are attributed to its absence [7].

Despite all of this, actual practice lags behind the guidance. Breastfeeding remains relatively rare across the Middle East, even though its advantages for mother and infant are well known [8]. The shortfall is not confined to one region. Although a substantial evidence base links breastfeeding to benefits for infants, mothers, the environment, and society at large [9, 10], global rates have remained stubbornly low [11, 12]: only 41% of infants under six months are exclusively breastfed worldwide, and just 45% are still being breastfed at two years of age [11, 12].

The Baby-Friendly Hospital Initiative (BFHI) was created to narrow precisely this gap. Established by UNICEF and WHO in 1991, it stands as a global commitment to protect, promote, and support exclusive breastfeeding for the first six months of life, followed by continued breastfeeding to age two alongside complementary foods [13]. The two organizations formally launched the initiative in 1992 with the explicit aim of raising breastfeeding rates around the world [14]. Seen this way, breastfeeding becomes a cornerstone of any effort to secure a healthy mother, a healthy baby, and a healthy society.

Adoption of the initiative, however, has been far from uniform. Implementation of the BFHI in the Gaza Strip began in 2011. Marking 25 years since the program’s inception, WHO assessed its status across 168 countries and reported that, as of 2016, overall accreditation stood at only about 10% [7]. The European region led at 36%, while Africa and South-East Asia trailed below 5%; the Eastern Mediterranean Region (EMR) occupied a middle position at 17%, a level sustained largely by a few heavily populated countries [7]. Across the EMR, the degree of implementation mirrors each country’s nutritional stage: in advanced-stage nations such as the Gulf Cooperation Council states, roughly 80% of hospitals are accredited as Baby-Friendly, compared with just 6.85% in Palestine, which remains in the early phase of its nutrition transition [15].

Countries that have invested in the model tend to see returns. After increasing its number of Baby-Friendly hospitals, Switzerland recorded higher breastfeeding rates and longer breastfeeding duration. Women who delivered in facilities that fully complied with UNICEF's recommended practices breastfed for longer than those who gave birth in less compliant Baby-Friendly hospitals, and breastfeeding even rose in hospitals with no Baby-Friendly designation, a change credited to public training programs and the wide availability of lactation counselors [16].

How well such programs work ultimately depends on the staff who run them. Nurses are especially important here, as much of the counseling, education, and preparation of mothers for breastfeeding falls to them [17, 18]. The workforce, however, is not always ready for the role. An integrative review of 18 studies found that many nurses, doctors, and other health professionals possess theoretical knowledge but lack practical skill [19], and another study reported that despite generally good knowledge and practice among nurses, only 4% reached an adequate breastfeeding score [20]. The setting makes a difference as well: breastfeeding education and encouragement were considerably more common in BFHI hospitals than in non-BFHI ones, at 93.3% versus 48.2% ($p < 0.01$) [21]. It is partly for this reason that Abd El-Ghany et al. (2019) stressed the value of staff self-appraisal during BFHI implementation, since it brings a team's knowledge, attitudes, and practices to light [22]. Two problems surface repeatedly: hospitals that have not yet adopted the BFHI policy, and the absence of early breastfeeding initiation in the labor room [23].

In short, the BFHI is a worldwide program intended to make maternity facilities supportive of breastfeeding. In Palestine, though, published work on the effects of BFHI training among healthcare providers is scarce, and evidence from elsewhere indicates that training can produce different results in different communities. The present study takes up this question through a knowledge, attitudes, and practices (KAP) survey of healthcare professionals, examining how aware they are of the BFHI and distinguishing those who have received training from those who have not. By clarifying what providers know, think, and do, the research seeks to pinpoint the gaps and openings for improving BFHI implementation and, on that basis, to evaluate the KAP of the program among healthcare workers with respect to breastfeeding practice in the Gaza Strip, Palestine.

METHODOLOGY

Study Design and Setting

This was a cross-sectional study carried out in the Gaza Strip between August and December 2022. The territory is divided into five governorates, each served by a mix of primary health care (PHC) facilities and governmental hospitals. At the time of the study, four maternity hospitals, one pediatric hospital, and 15 PHC centers had been designated as Baby-Friendly, and it was within this group that the assessment was conducted. Together these facilities handle the bulk of the delivery and childbirth care delivered through the public system. Data collection itself ran from September to December 2022 at two of the hospitals and six of the PHC centers.

Study Population and Eligibility

The target population comprised physicians, pharmacists, and nursing staff working in the pediatric and obstetrics/gynecology (OB/GYN) departments of the selected hospitals and health centers. To qualify, a provider had to have been employed at the facility for at least two years. Staff from other departments, anyone who had joined less than two years earlier, and health care providers based at institutions outside the study sites were therefore excluded.

Sampling and Sample Size

Participants were recruited through convenience sampling. This approach was chosen because the data collection window was short and providers' shifts were frequently unpredictable, which ruled out a more structured method and allowed respondents to be enrolled efficiently within the time available. The required sample size was estimated at 385. As comparable studies in Palestine are scarce, the calculation assumed that 50% of workers would have good KAP regarding the BFHI, applying a 95% confidence interval (CI) and a 5% margin of error in the single-proportion formula, $n = (Z^2 \times P \times (1 - P)) / d^2$. Recruitment began with 396 providers; of these, 369 answered every item and made up the final sample, representing 95.8% of the calculated size.

Data Collection Instrument

Data were gathered with a structured questionnaire adapted from the BFHI guidelines. The instrument contained a single section of 14 questions designed to measure providers' knowledge, attitudes, and practices (KAP) in relation to the ten steps of the BFHI. Most items were answered in a yes/no format.

Each questionnaire was administered face to face: the data collector interviewed the respondent, recorded the answers, and remained on hand to clarify anything the participant found unclear. Providers were approached at random on separate days within the departments of the designated hospitals.

Every item carried equal weight, so the maximum KAP score was 16, treated as 100%. A total below <60% was classified as poor knowledge, 60% to 79% as moderate, and ≥80% as good.

Ethical Considerations

Written consent to collect data and to observe their practice was obtained from every provider, and participation was entirely voluntary. To protect identity, each respondent was assigned a code number rather than recorded by name, and the information gathered was kept confidential, used solely for research purposes and disclosed to no one.

Statistical Analysis

Analyses were performed in IBM SPSS Statistics version 25 (IBM, NY, USA). Qualitative variables were summarized as frequencies and percentages, while quantitative variables were expressed as means ± standard deviation (SD). An independent-samples *t*-test and a one-way ANOVA were used to compare mean KAP scores between the BFHI hospitals and the health centers, and between providers who had received BFHI training and those who had not.

RESULTS

Sociodemographic Characteristics

Table 1
Frequency of sociodemographic and demographic characteristics of the study sample

Variable	N (%)
Health Facility	**104 (28.2)**
Hospital	**265 (71.8)**
Health center	
Jobs	**109 (29.5)**
Physician	**54 (14.6)**
Pharmacist	**206 (55.8)**
Nurse	
Study Area	70 (19.0)
North Gaza	195 (52.8)
Gaza city	40 (10.8)
Middle area	44 (11.9)
Khan Younis	20 (5.4)
Rafah	

Table 1 summarises the sociodemographic profile of the 369 health care providers who took part in the study. Most participants worked in health centres (n = 265, 71.8%), while the remaining 104 (28.2%) were based in hospitals, meaning that the findings reflect primary-care practice more closely than hospital practice. Nurses made up over half of the sample (n = 206, 55.8%), followed by physicians (n = 109, 29.5%) and pharmacists (n = 54, 14.6%). This distribution is consistent with the composition of the workforce in Gaza's maternal and child health services, where nurses carry most of the day-to-day counselling load.

Participants were drawn from all five governorates, but not in equal numbers. Just over half were recruited from Gaza City (n = 195, 52.8%), with smaller contributions from North Gaza (n = 70, 19.0%), Khan Younis (n = 44, 11.9%), the Middle Area (n = 40, 10.8%), and Rafah (n = 20, 5.4%). The concentration of participants in Gaza City mirrors the density of health facilities there, though the small number recruited from Rafah means that estimates for that governorate should be read with caution.

Knowledge, Attitude, and Practice Responses

Table 2

Frequency of correct and false responses to the questions

Domains and questions	***Correct N (%)***	***False N (%)***
Knowledge		
Complementary foods can be added to children in some of the following cases while continuing to breastfeed: less than 1.5kg;child at risk of low blood sugar; a child suffering from severe weight loss; weight gain of less than 120g per week; another case	289 (78.3)	80 (21.7)
Have you heard about the Baby-Friendly Hospital Initiative?	196 (53.1)	173 (46.9)
Breastfeeding should begin within the first half hour after birth.	349 (94.6)	20 (5.4)
Do you think it's okay to give a baby water before six months?	247 (66.9)	122 (33.1)
Should complementary foods be introduced to the baby after the fourth month?	261 (70.7)	108 (29.3)
Can a mother wean her child once he has completed his first year?	162 (43.9)	207 (56.1)
When giving formula milk to a baby, it should be noted that it contains an additional amount of iron.	263 (71.3)	106 (28.7)
Attitude		
Is it important to schedule breastfeeding every two or three hours?	132 (35.8)	237 (64.2)
Is it extremely difficult for a working mother to exclusively breastfeed?	218 (59.1)	151 (40.9)
Pacifiers are important for babies, and I believe in their use.	357 (96.7)	12 (3.3)
Practice		
Have you ever received training on counseling skills in breastfeeding support?	241 (65.3)	128 (34.7)
Have you taken any courses or practical training on the Baby Friendly Hospital program for breastfeeding support while working in maternity services?	148 (40.1)	221 (59.9)
Demonstrates correct attachment to breast	241 (65.3)	128 (34.7)
Demonstrates correct positioning of baby	241 (65.3)	128 (34.7)
During the past six months, did any company representative meet you at the health center or institution for the purpose of marketing artificial milk?	299 (81.0)	70 (19.0)

Domains and questions	*Correct N (%)*	*False N (%)*
Have you given advice to any mothers about giving formula milk during the past month?	307 (83.2)	62 (16.8)

Table 2 presents the proportion of correct and incorrect responses across the three domains. Knowledge was uneven rather than uniformly weak. Almost all participants knew that breastfeeding should be initiated within the first half hour after birth (n = 349, 94.6%), and most correctly identified the clinical situations in which complementary feeding may be introduced alongside continued breastfeeding (n = 289, 78.3%). Correct responses were somewhat lower for the iron content of infant formula (n = 263, 71.3%), the timing of complementary feeding after the fourth month (n = 261, 70.7%), and giving water before six months of age (n = 247, 66.9%). Two items stood out as gaps: only 196 participants (53.1%) had heard of the Baby-Friendly Hospital Initiative, and the item on weaning at the completion of the first year was the only one in the domain answered incorrectly by the majority (n = 207, 56.1% incorrect versus n = 162, 43.9% correct). Taken together, these results suggest that providers were confident about the early initiation message but less secure about the recommendations governing the second half of the first year.

Attitudes followed a similar pattern of strong performance on one item and weakness on another. Nearly all participants gave the desired response to the statement about pacifier use (n = 357, 96.7%), and a majority (n = 218, 59.1%) responded appropriately to the item on the difficulty of exclusive breastfeeding for working mothers. In contrast, only 132 participants (35.8%) answered the item on scheduled feeding correctly, with 237 (64.2%) endorsing a fixed two- to three-hourly schedule rather than feeding on demand. This is a clinically meaningful finding, since scheduled feeding advice from a provider can undermine milk supply and shorten the duration of exclusive breastfeeding.

In the practice domain in the same table (2), 241 participants (65.3%) reported having received training in breastfeeding counselling skills, yet only 148 (40.1%) had completed a course or practical training related to the Baby-Friendly Hospital programme while working in maternity services; the remaining 221 (59.9%) had not. The gap between general counselling training and programme-specific training echoes the low awareness of the initiative reported in the knowledge domain. In the same practice domain, 241 participants (65.3%) reported that demonstrates correct attachment to breast and demonstrates correct positioning of baby, while the rest 128 (34.7) not. The last two items addressed formula milk promotion, and both were scored with *no* as the correct response. Most participants (n = 299, 81.0%) reported that no company representative had approached them at their facility to market artificial milk during the previous six months, but 70 (19.0%) reported that such a visit had taken place. Similarly, 307 participants (83.2%) had not advised any mother to give formula milk in the preceding month, while 62 (16.8%) had done so. Although these proportions indicate that the majority of providers were neither targeted by formula marketing nor recommending formula, roughly one in five had been contacted by a company representative and one in six had recommended formula to mothers. Both figures are relevant to the International Code of Marketing of Breast-milk Substitutes, which restricts contact between

manufacturers and health workers and discourages the promotion of breast-milk substitutes through health facilities. The finding also sits uneasily beside the training results reported above, since fewer than half of the participants had completed Baby-Friendly programme training, which is where Code obligations are normally taught.

Comparison of KAP Scores Between Health Facility Types

Table 3

Independent-Samples t Test Comparing KAP Percentage Scores of Providers in Hospitals and Health Centers

Group	*n*	*M*	*SD*	*t*	*df*	95% CI
Hospital	104	75.00	14.59	6.67	367	[7.71, 14.15]
Health center	265	64.07	13.98			

Note. KAP = knowledge, attitude, and practice. Hospitals apply the Baby-Friendly Hospital Initiative; health centers do not. Levene's test was nonsignificant, $F = 0.04$, $p = .846$, so equal variances were assumed. Mean difference = 10.93, $SE = 1.64$. *CI* = confidence interval of the difference.

Table 3 presents the comparison of KAP scores between providers in hospitals and health centres. An independent-samples *t* test was run to compare overall knowledge, attitude, and practice (KAP) scores between health care providers working in hospitals, where the Baby-Friendly Hospital Initiative is applied, and those working in health centers, where it is not. Before interpreting the test, Levene's test for equality of variances was checked and was not significant, $F = 0.04$, $p = .846$, so the assumption of equal variances was met and the pooled-variance row was read.

Hospital providers scored higher on the KAP measure ($M = 75.00$, $SD = 14.59$, $n = 104$) than health-center providers ($M = 64.07$, $SD = 13.98$, $n = 265$). The difference of 10.93 points was statistically significant, $t(367) = 6.67$, $p < .001$, 95% CI [7.71, 14.15]. Because the confidence interval lies well above zero and does not contain it, the higher hospital score is unlikely to be a chance result.

The size of this gap was moderate to large (Cohen's $d = 0.77$), meaning the two groups differed by roughly three quarters of a standard deviation — a difference that matters in practice, not only in statistical terms. Taken together, the results indicate that providers in hospitals applying the Baby-Friendly Hospital Initiative had meaningfully stronger breastfeeding-related knowledge, attitudes, and practices than their counterparts in health centers that had not adopted the initiative. This pattern is consistent with the idea that exposure to the initiative is associated with better provider performance, although the cross-sectional design means the analysis shows an association rather than proof that the initiative caused the higher scores.

Comparison of KAP Scores Across Provider Job Types

Table 4

Descriptive Statistics for KAP Percentage Scores by Job Type

Job type	*n*	*M*	*SD*	95% CI for M
Physician	109	65.86	14.59	[63.09, 68.63]
Pharmacist	54	51.59	9.88	[48.89, 54.28]
Nurse	206	71.91	13.32	[70.08, 73.74]
Total	369	67.15	14.97	[65.62, 68.68]

Note. KAP = knowledge, attitude, and practice. *CI* = confidence interval.

Table 5

One-Way Analysis of Variance of KAP Percentage Scores by Job Type

Source	*SS*	*df*	*MS*	*F*	*p*
Between groups	17935.82	2	8967.91	50.85	< .001
Within groups	64545.79	366	176.36		
Total	82481.61	368			

Note. SS = sum of squares; *MS* = mean square. η^2 = .22.

Table 6

Bonferroni Post Hoc Comparisons of KAP Percentage Scores by Job Type

Comparison	Mean diff. (*I–J*)	*SE*	*p*	95% CI
Physician Vs. Pharmacist	14.27	2.21	< .001	[8.96, 19.59]
Physician Vs. Nurse	−6.06	1.57	< .001	[− 9.84, − 2.27]
Pharmacist Vs. Nurse	−20.33	2.03	< .001	[− 25.21, − 15.44]

Note. Mean differences (I – J) reflect the first group minus the second. *SE* = standard error; *CI* = confidence interval. All comparisons were significant at the .05 level.

Descriptive statistics of KAP scores by job type are shown in Table 4. A one-way analysis of variance (ANOVA) was conducted to examine whether overall knowledge, attitude, and practice (KAP) scores differed among the three provider groups: physicians (*n* = 109), pharmacists (*n* = 54), and nurses (*n* = 206). Nurses recorded the highest mean score (*M* = 71.91, *SD* = 13.32), followed by physicians (*M* = 65.86, *SD* = 14.59), while pharmacists scored the lowest by a wide margin (*M* = 51.59, *SD* = 9.88).

The results of the one-way ANOVA are presented in Table 5. The overall test was significant, $F(2, 366) = 50.85$, $p < .001$, showing that KAP scores were not the same across the three job types. The effect was large, $\eta^2 = .22$, meaning that about 22% of the variation in KAP scores was explained by the provider's

profession. Because the omnibus test only tells us that a difference exists somewhere among the groups, Bonferroni-corrected post hoc comparisons were examined to locate the specific differences.

Table 6 shows the Bonferroni post-hoc comparisons between the professions. All three pairwise comparisons were statistically significant. Nurses scored significantly higher than pharmacists, a difference of 20.33 points ($p < .001$, 95% CI [15.44, 25.21]), which was the largest gap in the analysis. Physicians also outscored pharmacists by 14.27 points ($p < .001$, 95% CI [8.96, 19.59]). Finally, nurses scored significantly higher than physicians, though by a smaller margin of 6.06 points ($p < .001$, 95% CI [2.27, 9.84]). None of these confidence intervals crossed zero, which is consistent with each difference being a real one rather than a chance finding.

Taken together, the results point to a clear ordering of KAP performance by profession, with nurses at the top, physicians in the middle, and pharmacists well below both. The standout finding is how far pharmacists fell behind the other two groups, which suggests that they may benefit most from targeted breastfeeding-support training. As with any cross-sectional comparison, these differences describe the groups as they were surveyed and do not by themselves explain why the professions differ; factors such as the amount of direct contact each group has with mothers and infants may lie behind the pattern.

Association Between Participants Who Received BFHI Training and KAP Category

Table 7

Cross-Tabulation of KAP Category by Baby-Friendly Hospital Initiative Training

KAP category	Trained	Not trained	Total
Adequate / favorable / good	64 (91.4%)	6 (8.6%)	70
Partial gaps	76 (46.1%)	89 (53.9%)	165
Significant gaps	8 (6.0%)	126 (94.0%)	134
Total	148	221	369

Note. Percentages are row percentages (the proportion within each KAP category that had, or had not, completed Baby-Friendly Hospital Initiative training). $N = 369$.

Table 8

Chi-Square Test of Independence for KAP Category and BFHI Training

Statistic	χ^2	*df*	*p*
Pearson chi-square	144.19	2	< .001
Likelihood ratio	167.73	2	< .001
Linear-by-linear association	143.55	1	< .001

Note. $N = 369$. No cell had an expected count below 5 (minimum expected count = 28.08). Cramér's $V = .63$.

The cross-tabulation of KAP category by BFHI training is shown in Table 7. A chi-square test of independence was used to examine whether providers' overall knowledge, attitude, and practice (KAP) category was related to whether they had completed Baby-Friendly Hospital Initiative (BFHI) training. Of the 369 providers, 148 (40.1%) had taken such training and 221 (59.9%) had not. The assumptions for the test were met, as every cell had an expected count well above five (the smallest expected count was 28.08).

Table 8 presents the chi-square test of the association between BFHI training and KAP category. The relationship between training and KAP category was strong and highly significant, $\chi^2(2, N = 369) = 144.19$, $p < .001$. Cramér's V was .63, which points to a large effect — in other words, training status accounted for a substantial share of the difference in KAP standing, not a trivial one.

The pattern behind this result is easy to read from the row percentages. Among providers in the top KAP band (adequate knowledge, favorable attitude, and good practice), the overwhelming majority had been trained (64 of 70, or 91.4%), and only 6 (8.6%) had not. The reverse was true at the bottom band: of the 134 providers with significant gaps, just 8 (6.0%) had received training, while 126 (94.0%) had not. The middle group, whose gaps were only partial, fell in between and was split almost evenly (76 trained, 46.1%, versus 89 untrained, 53.9%).

Taken together, these figures show a clear gradient: as KAP performance improved, the proportion of providers who had completed BFHI training rose steeply, from about 6% in the weakest group to more than 90% in the strongest. This is consistent with the idea that BFHI training is closely tied to better knowledge, attitudes, and practices around breastfeeding support. It is worth remembering, however, that the design is cross-sectional, so the analysis establishes an association rather than proof that the training itself produced the higher scores; providers who seek out training may also differ in other ways that bear on their KAP.

DISCUSSION

The aim of this study was to describe the KAP of health care providers in the Gaza Strip regarding the BFHI, and to examine whether KAP varied with facility type, profession, and previous training. Three main findings emerged. First, overall KAP was moderate, with a mean of 67.15%, and performance was uneven across items rather than consistently high or low. Second, providers working in BFHI hospitals scored higher than those in health centers, and nurses scored higher than physicians and pharmacists. Third, and perhaps most importantly, providers who had undergone BFHI training were much more likely than untrained providers to reach the highest KAP band. Taken as a whole, these results suggest that it is formal exposure to the initiative, rather than professional title on its own, that is most closely linked to a provider's competence in supporting breastfeeding.

The moderate overall score agrees with much of the existing literature, which has consistently shown that health workers understand the general principles of breastfeeding but are less sure of the details. An integrative review of 18 studies found that nurses, physicians, and other health professionals often

have adequate theoretical knowledge but limited practical skills at the bedside (Almeida et al., 2015). In the same vein, a survey of maternity nurses reported that only 4% obtained an adequate breastfeeding score, even though their general knowledge appeared acceptable (Alakaam et al., 2018). The present findings reflect this same unevenness. Almost all of the providers knew that breastfeeding should start within the first half hour after birth (94.6%), but considerably fewer answered correctly about the timing of weaning, the use of water before six months, or how feeds should be scheduled. Knowledge was therefore strongest for the well-known core messages and weakest for the practical details that determine the advice a mother actually receives.

Awareness of the initiative was a specific area of weakness. Just 53.1% of the providers had heard of the BFHI at all, which is a striking figure given that every study site was a BFHI-designated facility. Daniels and Jackson (2011) reported a similar shortfall in BFHI knowledge among nursing staff in non-accredited obstetric units in South Africa, and Shaw and Devgan (2018) also found inconsistent breastfeeding knowledge among doctors and nurses. The attitude responses followed a comparable pattern. Although nearly all providers correctly rejected the routine use of pacifiers, close to two-thirds supported feeding on a fixed two- to three-hourly schedule instead of feeding on demand. This misconception carries real consequences, since advice to feed on a schedule, when it comes from a trusted health worker, can reduce milk supply and shorten the period of exclusive breastfeeding, which is the very outcome the initiative aims to avoid.

The difference between hospital and health-center providers was statistically significant and also meaningful in practical terms (75.00% versus 64.07%, a gap of almost 11 points with a moderate-to-large effect size). A similar contrast was reported by Mosher et al. (2016), who found that breastfeeding education and support were much more common in BFHI-accredited hospitals than in non-accredited ones (93.3% versus 48.2%). The finding is also in keeping with evidence from Switzerland, where breastfeeding lasted longer among women who delivered in fully compliant Baby-Friendly hospitals (Merten et al., 2005), and with a recent cross-sectional study from Qatar that linked BFHI implementation to more favorable provider knowledge and practice (Brito et al., 2025). A likely explanation is that accredited hospitals operate under policies, audits, and on-site standards that health centers in Gaza have not yet adopted to the same extent.

The differences between professions were substantial. Nurses achieved the highest scores, physicians came next, and pharmacists scored well below both groups, with a gap of more than 20 points separating nurses from pharmacists. The strong performance of nurses is understandable given their frontline position in breastfeeding support, as they provide most of the counseling, positioning help, and follow-up that mothers receive (Chabot & Lacombe, 2014; Timalsina, 2020). Their frequent, direct contact with mothers probably helps keep their knowledge up to date in a way that is more difficult for other groups. The low scores among pharmacists warrant particular attention. This study assessed general breastfeeding KAP rather than medication counseling as such, but the result is consistent with a wider pattern in which pharmacists show favorable attitudes toward breastfeeding yet relatively weak working knowledge, and tend to base their advice on personal experience rather than formal training

[24]. Since pharmacists are often the most accessible source of advice for new mothers on infant feeding and medicines, this gap is a practical target for future training.

The strongest relationship in the data was between BFHI-specific training and KAP level. Although only 40.1% of the sample had completed this training, training status separated the groups clearly: 91.4% of the providers in the highest KAP band had been trained, compared with only 6.0% of those with significant gaps, and the association was strong (Cramér's V = .63). Comparable links between training and competence have been described before. Mosher et al. (2016) connected BFHI accreditation with better practice, and Abd El-Ghany et al. (2019) argued that structured self-appraisal during implementation helps reveal precisely these training-related gaps. The gradient seen here supports the view that the training built into the initiative, more than professional background or workplace alone, is what develops provider capacity. It may also account for part of the facility and profession differences described above, because trained providers were not evenly distributed across facilities or professions.

A further finding concerned exposure to formula marketing. About one in five providers said that a company representative had approached them to promote artificial milk during the previous six months, and roughly one in six had advised a mother to give formula in the previous month. Most providers reported neither, yet a sizeable minority did, and both behaviours are relevant to the International Code of Marketing of Breast-milk Substitutes, which limits contact between manufacturers and health workers and discourages the promotion of breast-milk substitutes in health facilities. Abd El-Ghany et al. (2019) noted a similar issue in an Egyptian hospital, observing that weak awareness of the Code frequently goes together with limited BFHI training. The same connection is plausible in the present sample, given that fewer than half of the providers had completed the programme-specific training in which the Code is usually taught.

A number of limitations should be considered when interpreting these results. Because the design was cross-sectional, it can only show associations at one point in time and cannot demonstrate that BFHI training caused the higher KAP scores; providers who choose to be trained may also differ in motivation or experience, and these differences could affect their KAP. Recruitment used convenience sampling over a short data-collection period, which may have introduced selection bias, and because the sample included more health-center staff than hospital staff, the overall results tend to reflect primary-care practice. The responses were self-reported and collected using a single 14-item questionnaire, so social-desirability bias is possible and each domain could only be assessed to a limited depth. Lastly, the study was conducted entirely within the Gaza Strip under particular service conditions, and its results should therefore be applied to other settings with caution.

CONCLUSION

This study showed that health care providers in the Gaza Strip had only moderate overall knowledge, attitudes, and practices concerning the BFHI. They performed well on core messages such as early initiation, but showed clear gaps in their awareness of the initiative, in the details of complementary

feeding and weaning, and in their attitudes toward scheduled feeding. KAP was consistently higher among providers in BFHI hospitals than in health centers, and higher among nurses than among physicians and pharmacists. Most importantly, it was closely tied to whether a provider had completed BFHI-specific training. Overall, the findings suggest that structured BFHI training, rather than professional title or workplace alone, is the factor most strongly associated with competent breastfeeding support, and that many providers in Gaza have not yet received this training. Expanding and strengthening it therefore offers a practical opportunity to improve breastfeeding support throughout the maternity and child health services of the territory. In light of these findings, breastfeeding support in Gaza would be strengthened chiefly by widening access to BFHI-specific training so that it reaches every staff group and both hospitals and health centers, with the greatest priority given to health-center staff, physicians, and pharmacists, who scored lowest in this study. That training should be shaped around the particular weaknesses identified here, especially the timing of complementary feeding and weaning, the use of water before six months of age, and the choice to feed on demand rather than on a fixed schedule. So that competence does not depend on optional courses alone, BFHI principles and the International Code of Marketing of Breast-milk Substitutes ought to be built into both undergraduate curricula and in-service training for nurses, physicians, and pharmacists, and this should be reinforced by closer facility-level monitoring of contact between formula companies and health workers and by regular reminders of staff obligations under the Code. Finally, because a cross-sectional study can only show associations, longitudinal or interventional research that assesses providers before and after training is needed to measure the effect of BFHI training on knowledge, attitudes, and practices more directly.

Declarations

Ethics approval and consent to participate

Ethical Approval was obtained from Palestinian Ministry of Health-National committee for Breast Feeding, and written informed consent was obtained from each subject before data collection.

Clinical trial number

not applicable.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

[1]Nutrition Sciences and Public Health Program, Academic Department, Palestine Technical College, Deir Albalah, Palestine

[2]Faculty of medical and applied sciences, Al-Azhar University-Gaza, Gaza, Palestine

[3]Ministry of Health, Gaza, Palestine

[4]Dietitian at Jolanda Wuite Dietitian Practice in Harlingen and Sint Nicolaasga, Netherland, Holland

*Corresponding Author

Marwan O. Jalambo

E-mail: moj_biology@yahoo.com

https//orcid.org/0000-0002-7799-6892

Basil JY Kanoa

https//orcid.org/0000-0003-2948-2261

Mueen Kariri

https//orcid.org/0000-0002-3126-1217

Funding

Not applicable

Author Contribution

All authors M.J, B.K, and M.K. contributed significantly to this article. M.J and B.K had full access to all of the study's data and took responsibility for the integrity of the data and the accuracy of the data analysis. Concept and design: all authors. Acquisition, analysis, or interpretation of data: All authors.Drafting of the manuscript: M.J. Writing-review and editing: All authors. Critical revision of the manuscript for important intellectual content: All authors.Statistical analysis: M.J.

Acknowledgement

We would like to acknowledge all the participants in the health centers and hospitals of this study. Appreciation is expressed to the team members of Health Education in the Palestinian Ministry of Health.

Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

References

1. Eidelman AI, Schanler RJ, Johnston M, Landers S, Noble L, Szucs K, et al. Breastfeeding and the Use of Human Milk. Pediatrics. 2012;129:e827–41. https://doi.org/10.1542/peds.2011-3552.
2. Ip S, Chung M, Raman G, Chew P, Magula N, DeVine D et al. Breastfeeding and maternal and infant health outcomes in developed countries. Evid Reporttechnology Assess. 2007;:1–186.
3. WHO, UNICEF. Global strategy for infant and young child feeding. World Health Organization; 2003.
4. Chowdhury R, Sinha B, Sankar MJ, Taneja S, Bhandari N, Rollins N, et al. Breastfeeding and maternal health outcomes: a systematic review and meta-analysis. Acta Paediatr. 2015;104:96–113. https://doi.org/10.1111/apa.13102.
5. Schwarz EB, Brown JS, Creasman JM, Stuebe A, McClure CK, Van Den Eeden SK, et al. Lactation and maternal risk of type 2 diabetes: a population-based study. Am J Med. 2010;123:863–e1.
6. Victora CG, Bahl R, Barros AJ, França GV, Horton S, Krasevec J, et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. lancet. 2016;387:475–90.
7. WHO. National implementation of the Baby-friendly Hospital Initiative. 2017.
8. Bhattacharjee NV, Schaeffer LE, Hay SI. Mapping inequalities in exclusive breastfeeding in low-and middle-income countries, 2000–2018. Nat Hum Behav. 2021;5:1027–45.
9. Bartick M, Reinhold A. The burden of suboptimal breastfeeding in the United States: a pediatric cost analysis. Pediatrics. 2010;125:e1048–56.
10. Binns C, Lee M, Low WY. The Long-Term Public Health Benefits of Breastfeeding. Asia Pac J Public Health. 2016;28:7–14. https://doi.org/10.1177/1010539515624964.
11. Horta BL, De Lima NP. Breastfeeding and Type 2 Diabetes: Systematic Review and Meta-Analysis. Curr Diab Rep. 2019;19:1. https://doi.org/10.1007/s11892-019-1121-x.
12. Ninamou NR, Dupuis JB, Zagré N-M, Daffé M, Blaney S. A path analysis to identify factors influencing the provision of water in addition to breast milk by mothers of infants under six months of age in Conakry and Kindia regions, Republic of Guinea. Int J Child Health Nutr. 2021;10:130–47.
13. Brito JD, Singh K, Falcon L, Elkhaligy S, Alshdafat T, Alrawaili S, et al. Healthcare providers insights on the Baby-Friendly Hospital Initiative: A cross-sectional study in Qatar. Eur J Midwifery. 2025;9:10–18332.
14. Daniels L, Jackson D. Knowledge, attitudes and practices of nursing staff regarding the Baby-Friendly Hospital Initiative in non-accredited obstetric units in Cape Town. South Afr J Clin Nutr. 2011;24:32–8.

15. Al-Jawaldeh A, Abul-Fadl A. Assessment of the baby friendly hospital initiative implementation in the eastern Mediterranean region. Children. 2018;5:41.
16. Merten S, Dratva J, Ackermann-Liebrich U. Do baby-friendly hospitals influence breastfeeding duration on a national level? Pediatrics. 2005;116:e702–8.
17. Timalsina I. Knowledge and practice among nurses regarding breastfeeding in a hospital with baby-friendly hospital initiative. J Patan Acad Health Sci. 2020;7:113–21.
18. Chabot G, Lacombe M. Factors Influencing the Intention of Perinatal Nurses to Adopt the Baby-Friendly Hospital Initiative in Southeastern Quebec, Canada: Implications for Practice. Nurs Res Pract. 2014;2014:1–8. https://doi.org/10.1155/2014/603964.
19. de Almeida JM, Luz S, de AB, Ued F. da V. Support of breastfeeding by health professionals: integrative review of the literature. Rev Paul Pediatr. 2015;33:355–62.
20. Alakaam A, Lemacks J, Yadrick K, Connell C, Choi HW, Newman RG. Maternity nurses' knowledge and practice of breastfeeding in Mississippi. MCN Am J Matern Nurs. 2018;43:225–30.
21. Mosher C, Sarkar A, Hashem AA, Hamadah RE, Alhoulan A, AlMakadma YA, et al. Self-reported breast feeding practices and the Baby Friendly Hospital Initiative in Riyadh, Saudi Arabia: prospective cohort study. BMJ Open. 2016;6:e012890.
22. Abd El-Ghany SM, Korraa AAW, Ahmed EA, Salem IMW, Eslam SA, El-Taweel AA, et al. A survey of knowledge, attitudes, and practices of providers and staff at Al-Zahraa university hospital regarding the Baby-Friendly Hospital Initiative and the international code of marketing breast milk substitutes. J Perinat Educ. 2019;28:210.
23. Shaw SC, Devgan A. Knowledge of breastfeeding practices in doctors and nurses: A questionnaire-based survey. Med J Armed Forces India. 2018;74:217–9.
24. Hussainy SY, Dermele N. Knowledge, attitudes and practices of health professionals and women towards medication use in breastfeeding: A review. Int Breastfeed J. 2011;6:11. https://doi.org/10.1186/1746-4358-6-11.