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EFFECTIVENESS OF LACTATION AND MANAGEMENT TRAINING ON THE KNOWLEDGE AND SKILLS IN LACTATION PROCEDURES AMONG HEALTHCARE STAFF IN A PRIVATE HOSPITAL IN DAVAO CITY

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Abstract

This study evaluated the effectiveness of lactation and management training on the knowledge and skills related to lactation procedures among healthcare providers at a selected private institution in Davao City. The study used the quasi-experimental pre-test and post-test research design. Fifty respondents were chosen through simple random sampling. The study used a self-made questionnaire patterned after the Department of Health Manual. The questionnaire underwent content validity testing, and reliability was assessed using Cronbach's Alpha and KR-20. Results revealed that most respondents are female, aged 20 to 24, hold a Bachelor's degree, and work primarily as nurses. Respondents demonstrated a high level of knowledge in the pre-intervention assessment, which significantly improved in the post-intervention evaluation. Additionally, their skills showed notable enhancement after the training. The only significant difference in the demographic profile was related to educational attainment. The research output found that the intervention successfully improved the respondents' knowledge and skills. However, more data, especially related to knowledge retention, is recommended for more definitive conclusions. It is suggested that the training be extended, with a follow-up evaluation of knowledge and skills after one year to assess long-term retention.

Keywords: *Health, Lactation and Management Training, Quasi-Experimental Comparative Design, Davao City*

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Introduction

Lactation and Management Training (LMT) is essential for enhancing healthcare providers' knowledge and skills in supporting breastfeeding mothers. Lactation is critical to maternal and child health, offering numerous benefits for infants and mothers (Victora et al., 2020). Despite the well-documented advantages of breastfeeding, many mothers encounter challenges that impede successful breastfeeding. These challenges include insufficient support, lack of knowledge, and poor breastfeeding practices (Putri & Syafitasari, 2023). Effective lactation management is linked to better child growth outcomes, including reduced stunting rates (Tampubolon et al., 2023). Training healthcare staff in breastfeeding support significantly improves breastfeeding outcomes. The Baby-Friendly Hospital Initiative (BFHI), which includes staff training as a key component, has been shown to increase exclusive breastfeeding rates. (El-Shaer., 2024). Health workers' knowledge and motivation are critical in supporting breastfeeding. Training programs have been shown to enhance their skills and knowledge, leading to better breastfeeding support (Kurniawati et al.,2023). Lactation and

management training equips healthcare providers with the essential skills to support mothers in initiating and sustaining breastfeeding, helping them overcome common breastfeeding challenges. Research has demonstrated that healthcare professionals who receive LMT can significantly improve breastfeeding outcomes (Mirie, 2024). Furthermore, training programs have boosted healthcare providers' confidence, improved communication with mothers, and enhanced overall breastfeeding support. Despite the recognized importance of LMT, there remains a need for more excellent implementation and evaluation of the effectiveness of such programs, particularly in resource-limited settings. Many healthcare facilities need standardized training protocols, and LMT programs' effectiveness must be consistently evaluated. Consistent evaluation is needed to measure the long-term impact of LMT on breastfeeding rates and maternal-child health outcomes (Hookway et al., 2023).

There is limited research on the specific knowledge and skills gained by healthcare providers after participating in lactation management training (LMT), especially in private institutions or community hospitals that may not have access to large-scale, well-funded programs (Brown et al., 2023). While existing studies highlight the importance of LMT, most have focused on public institutions or large-scale interventions, leaving a gap in understanding how these programs function in smaller, private healthcare settings (Gartner et al., 2021). Additionally, there needs to be more research on the sustainability of LMT, mainly whether the knowledge and skills acquired during training are retained over time. The effectiveness of post-training assessments and ongoing professional development in lactation management also requires further investigation (Gagnon et al., 2023).

Additionally, there needs to be more studies exploring the correlation between healthcare providers' participation in LMT and institutional preparedness for accreditation under initiatives such as the Mother-Baby Friendly Hospital Initiative (MBFHI), which evaluates hospitals based on their support for breastfeeding (UNICEF, 2022). This study aims to address these gaps by assessing the effectiveness of LMT in improving healthcare providers' knowledge and skills in lactation procedures, with a particular focus on private institutions in Davao City. It also evaluates whether the institution is prepared for MBFHI accreditation and whether further improvements are needed to disseminate lactation management information within the community.

Methods

This study utilized a pre-test and post-test quasi-experimental comparative research design to evaluate the group's knowledge and skills on lactation procedures before and after the lactation and management training intervention. It aimed to assess the effectiveness of the training and the retention of the training by the participants.

The research setting was in a private hospital in Davao City, Philippines.

The study's population consisted of fifty (50) healthcare staff, specifically nurses, nursing assistants, and midwives. (1) aged 20 to 55 years, (2) regular employee status, (3) assigned to the Nursing Department, and (4) attended a seminar related to lactation. Respondents were deemed ineligible if they met any of the following conditions: (1) had already submitted their resignation or were serving their resignation notice, (2) were on vacation, sick leave, or leave of absence, or (3) had not participated in any lactation-related seminar, and (4) other healthcare professionals not included in the nursing department. The researcher respected the decision of any healthcare staff who chose to withdraw from the study for personal reasons and those who did not fully complete the questionnaires. Participants could exit the study without penalty or consequence if they met the withdrawal criteria.

The researcher developed self-made questionnaires that participants completed in face-to-face sessions, and a skills assessment was conducted similarly. Included in the questionnaires were items designed to identify the demographic profiles of the respondents, such as age, sex, designation, length of service at the hospital, and area of assignment. The knowledge

assessment questions were based on the training manual provided by the Department of Health, Philippines, and related to the topics discussed in the Lactation and Management Training. The questionnaire consisted of 15 items that respondents answered with true or false, evaluating their knowledge of lactation, breastfeeding policies, and managing breast conditions and breastfeeding difficulties following the retraining. The researcher adapted the institution's breastfeeding education checklist for the skills assessment.

The questionnaires and skills assessment checklist were subjected to content validity index (CVI) evaluation by three research experts affiliated with Davao Doctors College, as required by the program, and by two lactation specialists. A statistician computed and assessed the CVI for acceptability. Once the CVI results were approved with a CVI result of 0.93, a pilot study was conducted, targeting resigned nurses from the chosen institution who had completed lactation and management training between 2015 and 2020, with a target of 20 respondents. After the survey was completed, the results of the pilot study underwent reliability testing by the statistician using Cronbach's Alpha and KR-20, with a reliability score of 0.71 for knowledge on lactation, 0.726 for knowledge on breastfeeding policy, and 0.719 for knowledge on management of breastfeeding conditions and other breastfeeding difficulties. The overall reliability score for the skills assessment checklist is .985, which indicates that the dataset is resilient and the variables may be used for analysis and interpretation.

The study involved respondents with varying experience levels in lactation management and intrapartum newborn care. To determine the total number of respondents and the distribution based on categories like age, sex, educational attainment, length of service in the hospital, designation, and area of assignment, frequency and percentage were used. To analyze the data, the mean statistic was used to assess the respondents' knowledge and skills related to lactation and management training. The standard deviation was calculated to evaluate the homogeneity or heterogeneity of participants' responses, providing insight into their knowledge and skills variability. Next, the Kruskal-Wallis H test, a rank-based nonparametric test, was employed to determine whether there were statistically significant differences in the knowledge of lactation procedures and the skills in essential intrapartum newborn care and lactation support. This test allowed for the comparison of two measurements derived from each respondent's knowledge and skills, accounting for non-normally distributed data. Finally, the Mann-Whitney U test was used to compare two sample means from the same population, assessing whether significant differences existed between the groups in terms of their knowledge and skills. This test was applied to examine differences between two distinct respondent categories based on relevant demographic or training-related factors.

Results and Discussion

Table 1. Respondent's Demographic Profile

Socio-demographic Characteristics	f n=50	% 100%
Age (years)		
20-24 years old	**18**	**36.0**
25-29 years old	8	16.0
30-34 years old	11	22.0
35-40 years old	8	16.0
>40 years old	5	10.0
Sex		
Female	**43**	**86.0**
Male	7	14.0

Educational Attainment		
2-year Course	17	34.0
Bachelor's Degree Holder	**29**	**58.0**
Master's Degree Holder	2	4.0
2nd Degree Holder	2	4.0
Length of Service		
6 months - 1 year	13	26.0
1-2 years	**19**	**38.0**
3-5 years	6	12.0
> 5 years	12	24.0
Designation		
Nursing Aide	11	22.0
OR tech	1	2.0
Resident Doctor	2	4.0
Staff midwife	2	4.0
Staff Nurse	**32**	**64.0**
Unit Manager	2	4.0
Area of Assignment		
Delivery Room	**7**	**14.0**
Emergency room	4	8.0
General ward	**7**	**14.0**
ICU	4	8.0
Infectious ward	**7**	**14.0**
NICU	4	8.0
OB ward	2	4.0
Operating room	2	4.0
Out-Patient Department	1	2.0
Pediatric ward	4	8.0
RDU	1	2.0
Renal Dialysis unit	1	2.0
Surgical ward	6	12.0

The demographic profiles of the respondents, including age, sex, educational attainment, length of service, designation, and area of assignment, were recorded. Fifty healthcare staff participated in the study, and the frequency and percentage data are presented in the table. Notably, most respondents were aged 20 to 24 (36%). Most respondents were female (86%). In terms of educational attainment, the largest group held a bachelor's degree (58%). Regarding length of service, the majority of respondents had been employed for 1 to 2 years (38%), followed by 6 months to 1 year (26%), more than 5 years (24%), and 3 to 5 years (12%). Most respondents were nurses (64%), with nursing aides (22%) following. The respondents primarily worked in the delivery room (14%), general ward (14%), and infectious ward (14%), with others in the surgical ward (12%), emergency room (8%), neonatal intensive care unit (8%), and pediatric ward (8%).

The demographic profile of healthcare workers (HCWs) who support breastfeeding mothers offers valuable insights into age, gender distribution, educational background, and knowledge levels. Research suggests that HCWs are predominantly female, with a male-to-female ratio of 1:3, and the average age is approximately 35 years.

While there is a general understanding of breastfeeding among these professionals, specific knowledge gaps remain, particularly concerning breastfeeding and maternal health issues. Educational background significantly influences their knowledge about breastfeeding; higher levels of education are linked to a better understanding, while those with lower educational attainment exhibit notable knowledge deficits (Alao et al., 2024). Despite

the commitment many HCWs show to enhancing breastfeeding practices, there is a clear need for targeted training programs to address these knowledge deficiencies and improve supportive attitudes (Kurniawati et al., 2023; Gerhardsson et al., 2022).

Table 2.1 Item-Analysis of Knowledge

Statements	Pre – Intervention				Post – Intervention			
	TRUE		FALSE		TRUE		FALSE	
	n=50	%	n=50	%	n=50	%	n=50	%
Knowledge on Lactation								
Statement 1	**50**	**100**	0	0	**50**	**100**	0	0
Statement 2	**38**	**76**	12	24	**41**	**82**	9	18
Statement 3	16	32	**34**	**68**	27	54	**23**	**46**
Statement 4	32	64	**18**	**36**	34	68	**16**	**32**
Statement 5	**40**	**80**	10	20	**48**	**96**	2	4
Knowledge of Breastfeeding Policy								
Statement 1	**42**	**84**	8	16	**45**	**90**	5	10
Statement 2	29	58	**21**	**42**	36	72	**14**	**28**
Statement 3	34	68	**16**	**32**	45	90	**5**	**10**
Statement 4	**38**	**76**	12	24	**35**	**70**	15	30
Statement 5	**49**	**98**	1	2	**47**	**94**	4	6
Knowledge of the Management of breast conditions and other breastfeeding difficulties								
Statement 1	**42**	**84**	8	16	**44**	**88**	6	12
Statement 2	**38**	**76**	12	24	**48**	**96**	2	4
Statement 3	**37**	**74**	13	26	**44**	**88**	6	12
Statement 4	**49**	**98**	1	2	**47**	**94**	3	6
Statement 5	**32**	**64**	18	36	**31**	**62**	19	38

Note: *Bolded numbers are the correct answer.*

Table 2.1 summarizes respondents' knowledge levels about lactation, breastfeeding policy, and managing breastfeeding difficulties before and after an intervention. Fifty participants responded to each statement.

In the section on knowledge about lactation, Statement 1, which asked whether colostrum is the first form of breastmilk released by the mammary gland after childbirth, showed that 100% of participants answered correctly both before and after the intervention. For Statement 2, which inquired if the feedback inhibitor of lactation is a whey protein high in antibodies and antioxidants that support the newborn's immune system, correct responses increased from 76% pre-intervention to 82% post-intervention. Statement 3, which asked whether oxytocin is the hormone responsible for milk production (the correct answer being false), saw an improvement in correct responses, rising from 32% before the intervention to 54% afterward. For Statement 4, which described signs of suitable attachment as the chin touching the breast, the mouth wide open, the baby feeding frequently and for prolonged durations without releasing the breast, and appearing unsatisfied (the correct answer being false), correct responses rose slightly from 64% to 68%. Notably, Statement 5, which asserted that the size and shape of the breast are not correlated with the ability to breastfeed, saw a significant increase in correct responses, rising from 80% to 96%.

Regarding knowledge of breastfeeding policy, Statement 1, which stated that giving

mothers company-produced leaflets about breastmilk substitutes is detrimental to infant feeding because formula leaflets often emphasize the benefits of formula feeding while downplaying the advantages of breastfeeding, saw an increase in correct answers, rising from 84% to 90%. Statement 2, which addressed the question of how often a new mother should feed her baby, with advice to either offer the breast every 4 hours or on demand and mention that babies need less milk at night, so every 6 hours is acceptable (the correct answer being false), correct responses improved from 58% to 72%. Statement 3, which stated that mothers are advised to clean their breasts with soap and water before breastfeeding to ensure the baby's safety (the correct answer being false), saw a significant increase in correct answers, rising from 68% to 90%. Statement 4 showed a slight decrease in correct responses, dropping from 76% to 70%, while Statement 5, which remained high, showed a slight decline in correct answers, from 98% to 94%.

In the area of managing breast conditions and other breastfeeding difficulties, Statement 1 described a 37-week pregnant client noticing a "white liquid" leaking from her breast during a recent shower, with the appropriate response being reassurance that this is normal in the third trimester, showed an increase in correct responses from 84% to 88%. Statement 2, which addressed engorgement as a condition that occurs when milk is not entirely removed, saw a significant improvement, jumping from 76% to 96%.

, Statement 3 described a postpartum woman calling about her 4-day-old infant and expressing concern about breastfeeding before the infant's scheduled weight check at 10 days, with the correct indicator of effective breastfeeding being at least six to eight wet diapers per day, improved from 74% to 88%. For Statement 4, which explained that breastfeeding promotes maternal attachment to the baby, releases oxytocin to encourage uterine contraction and involution, and reduces the mother's risk of breast and ovarian cancer, correct responses remained high, with 98% pre-intervention and 94% post-intervention. However, Statement 5, which suggested that wearing a supportive bra day and night is essential for breast care while breastfeeding, experienced a slight decline, decreasing from 64% to 62%.

Overall, the data shows a positive trend in knowledge enhancement across various topics following the intervention, with most statements reflecting increased percentages of correct answers, demonstrating the effectiveness of the intervention in improving participants' knowledge.

Training boosts knowledge and encourages positive behavioral changes (Rahmat et al., 2020). Combining theoretical and practical training methods has significantly enhanced knowledge retention (Tasnim et al., 2022). However, challenges remain in applying learned knowledge, as seen in the Philippines, where only 76.7% of respondents could implement their training due to factors like limited resources and market access (Cayabyab et al., 2024). Thus, while training programs improve knowledge, ongoing support and resources are essential for sustaining and applying these gains.

Table 2.2 Level of knowledge before and after the implementation of the lactation and management program

Level	Pre – Intervention		Post - Intervention	
	n=50	%	n=50	%
Low Knowledge	0	0.0	0	0.0
Moderately Knowledgeable	13	26.0	8	16.0
Highly Knowledgeable	37	74.0	42	84.0

Legend: SCORES: *Low Knowledge – 0-5; Moderately Knowledgeable – 6-10; Highly Knowledgeable – 11-15*

Table 2.2 displays the knowledge levels of healthcare workers before and after the intervention. Notably, no healthcare workers were classified as having low knowledge in either assessment period. The proportion of healthcare workers deemed "highly knowledgeable" increased from 74% before the intervention to 84% after the intervention, showing a positive impact. Conversely, the percentage of "moderately knowledgeable" mothers decreased from 26% to 16%, further emphasizing the improvement in overall knowledge levels among healthcare workers.

Healthcare providers' knowledge about lactation is essential for promoting effective breastfeeding practices and enhancing maternal and infant health. Adequate training among healthcare professionals can significantly influence breastfeeding initiation and duration, affecting public health outcomes. Providers with a strong understanding of breastfeeding can offer evidence-based guidance, particularly beneficial for first-time parents (Sathyavathy & Kalavathi, n.d.). Research suggests a correlation between healthcare professionals' knowledge and higher rates of exclusive breastfeeding, as they are essential in educating and supporting mothers (Fituri & Dafer, 2021).

Consistent education and training are essential to keeping providers updated on breastfeeding guidelines, as many still exhibit knowledge gaps regarding critical lactation aspects. Despite the importance of this knowledge, inadequate training persists among many healthcare providers, leading to misinformation and insufficient support for breastfeeding mothers (Čatipović & Puharić, 2022; Fituri & Dafer, 2021).

Table 3. EINC and Lactation Support.

Domains	Pre-Intervention			Post-Intervention		
	Mean	**SD**	**Interpretation**	**Mean**	**SD**	**Interpretation**
EINC	**3.41**	**0.383**	Sometimes	**4.293**	**0.547**	Often
Lactation Support	**3.176**	**0.352**	Sometimes	**4.27**	**0.521**	Often
Breastfeeding Positioning	3.07	0.404	Sometimes	4.46	0.593	Often
Breastfeeding Attachment	3.285	0.525	Sometimes	4.50	0.693	Often
Feeding Cues	3.32	0.481	Sometimes	4.52	0.592	Often
Feeding Adequacy	3.2467	0.571	Sometimes	4.25	0.736	Often
Feeding Technique	3.22	0.555	Sometimes	4.09	0.867	Often
Hand Expression technique	3.16	0.476	Sometimes	4.07	0.846	Often
Breastmilk Stimulation/ Extraction	3.2067	0.542	Sometimes	4.05	0.871	Often
Feeding Concerns	2.9	0.314	Rarely	4.23	0.752	Often

Legend: *5 – The staff always practiced the needed skills, 4- the staff often practiced the needed skills, 3 - It means that the staff sometimes always practiced the needed skills, 2 - It means that the staff rarely practiced the needed skills, and 1- It means that the staff never practiced the needed skill.*

Table 3 compares the pre-intervention and post-intervention scores for various domains related to Early Initiation of Newborn Care (EINC) and lactation support. The results show a significant improvement in the performance of lactation-related tasks following the intervention. Before the intervention, the mean scores for most domains fell in the "Sometimes" category, ranging between 3.07 and 3.41. This suggests that staff performed tasks related to lactation management, such as breastfeeding positioning, attachment, feeding cues, and lactation support, with moderate consistency. However, after the intervention, the mean scores for all domains

increased substantially, ranging from 4.05 to 4.52, corresponding to the "Often" category. This shift indicates that staff began performing these tasks more consistently and frequently.

The most notable improvement observed was in the domain of Feeding Concerns, where the mean score increased from 2.9 (rarely performed) to 4.23 (often performed). This reflects a substantial enhancement in how feeding concerns were addressed, suggesting that the intervention led to greater attention to this critical aspect of lactation management.

Training programs for healthcare workers in lactation support have demonstrated significant positive impacts on breastfeeding practices and outcomes. Studies show that such training enhances healthcare professionals' knowledge and skills, leading to improved support for breastfeeding mothers. McGowan et al. (2021) found that healthcare workers who underwent comprehensive lactation training were more confident in providing breastfeeding guidance, which directly linked to higher breastfeeding initiation and duration rates among mothers.

Moreover, the training equips healthcare providers with effective communication strategies and problem-solving skills. Murad et al. (2021), training focused on evidence-based practices improved healthcare workers' competencies and resulted in a more supportive environment for breastfeeding mothers, thereby increasing the likelihood of successful breastfeeding experiences.

The integration of lactation training into the professional development of healthcare workers has also been linked to a reduction in breastfeeding-related complications. A systematic review by McFadden et al. (2019) emphasized that training programs positively impacted healthcare workers' ability to address challenges like mastitis and insufficient milk supply, leading to improved maternal and infant health outcomes.

Table 4. Level of knowledge before and after the implementation of the lactation and management program

Paired Samples Test		Paired Differences					t	df	P- Value
		Mean	SD	Std. Error Mean	95% Confidence Interval of the Difference				One-Sided p
					Lower	Upper			
Pair 1	Pre – Intervention Knowledge Level - Post – Intervention Knowledge Level	-.100	.364	.052	-.204	.004	-1.941	49	.029*

Note: *P-value > 0.05*

The data presented in Table 4 compares the respondents' knowledge levels before and after implementing a lactation and management program using a paired samples t-test. The mean difference for the pre-and post-intervention knowledge levels (Pair 1) is −0.100, with a standard deviation of 0.3640 and a standard error of 0.0520. The confidence interval is 95% for the difference, which ranges from −0.204 to 0.0040, suggesting that the actual mean difference may include zero.

The t-value is −1.941, with 49 degrees of freedom. The one-sided p-value is significant at p=.029, indicating a statistically significant improvement in knowledge at the 5% significance level. These results suggest that knowledge may improve slightly following the intervention. However, the evidence must be more robust to demonstrate a significant difference based on the two-sided test conclusively. The marginal significance of the one-sided test warrants further investigation or

consideration in the context of program effectiveness.

Despite receiving lactation training, healthcare staff often need help with various systemic and individual barriers that hinder their ability to support lactating mothers effectively. These challenges highlight the need for tailored and comprehensive training activities that address the needs of lactating mothers, especially in complex clinical situations.

The absence of designated lactation support staff and resources further exacerbates this situation, leaving healthcare professionals unsupported (Hookway& Brown, 2023). Current educational interventions also need more standardization and often need to include practical skills training, which is vital for adequate breastfeeding support (Mulcahy et al., 2022).

High-fidelity simulation models have been proposed to enhance healthcare professionals' confidence and skills in lactation support (Sadovnikova et al., 2020). Fostering a supportive workplace culture that prioritizes breastfeeding is just as crucial as systemic issues can significantly hinder the effectiveness of even the best training programs (Worthington et al., 2022).

Table 5. Level of skills before and after the implementation of the lactation and management program

Paired Samples Test		Paired Differences					t	df	P-Value
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				One-Sided p
					Lower	Upper			
Pair 1	Pre – Intervention EINC - Post-Intervention EINC	-.88533	.53078	.07506	-1.03618	-.73449	-11.794	49	<.001
Pair 2	Pre – Intervention Lactation Support - Post – Intervention Lactation Support	-1.09392	.35028	.04954	-1.19347	-.99437	-22.083	49	<.001

The data in Table 5 compares the respondents' skills before and after implementing a lactation and management program using a paired samples t-test. The analysis focuses on two skill areas: Essential Intrapartum and Newborn Care (EINC) and lactation support.

For Pair 1, which examines the pre-intervention and post-intervention EINC skills, the mean difference is −0.88533 with a standard deviation of 0.530780 and a standard error of 0.07506. The 95% confidence interval for the difference ranges from −1.03618 to −0.73449, indicating a significant improvement in EINC skills following the intervention. The t-value is −11.794, with 49 degrees of freedom, and the one-sided and two-sided p-values are less than .001, confirming that the result is statistically significant. For Pair 2, which assesses the difference in lactation support skills pre- and post-intervention, the mean difference is −1.09392 with a standard deviation of 0.35028 and a standard error of 0.04954. The t-value is −22.083, with 49 degrees of freedom, and both p-values are less than .001, indicating statistical significance. These findings suggest that the lactation and management program significantly

improved EINC and lactation support skills among respondents.

Training healthcare workers in lactation management is essential in improving breastfeeding practices and outcomes for mothers and infants. Research consistently shows that structured education programs enhance healthcare professionals' knowledge and skills, leading to more effective support for breastfeeding mothers. Training programs have significantly increased healthcare workers' understanding of breastfeeding. For example, one study recorded an average pre-test score of 68, which increased to 90 following the training, highlighting a substantial enhancement in knowledge regarding breastfeeding practices (Kurniawati et al., 2023).

Additionally, a thorough review emphasized the value of certified training for healthcare professionals, noting that well-structured courses can significantly improve their capacity to support breastfeeding mothers (Navarro et al., 2021). Healthcare providers participating in lactation training show a notable increase in their knowledge and skills related to breastfeeding assistance. (Kurniawati et al., 2023; Rosyidah et al., 2024).

Table 6.1 Test of difference in the level of knowledge post-intervention when grouped according to sex.

Independent-Samples Mann-Whitney U Test Summary	
Null hypothesis	The distribution of Post Knowledge Level is the same across categories of Sex.
Total N	50
Mann-Whitney U	197.500
Wilcoxon W	1143.500
Test Statistic	197.500
Standard Error	22.716
Standardized Test Statistic	2.069
Asymptotic Sig. (2-sided test)	.039
Exact Sig. (2-sided test)	.193
Decision	Retain the null hypothesis.

Table 6.1 summarizes the results of an independent-sample Mann-Whitney U test, which examines differences in post-intervention knowledge levels based on sex. The null hypothesis posits that the distribution of knowledge levels is the same for both sexes. The analysis involved a total of 50 participants. The Mann-Whitney U value was 197.500, while the Wilcoxon W value was 1143.500; these statistics help assess differences between the groups. The test statistic was also 197.500, with a standard error of 22.716, reflecting the variability of the results. The standardized test statistic was 2.069, providing insight into the magnitude of the observed difference.

The asymptotic significance (2-sided test) was 0.039, indicating a statistically significant disparity in knowledge levels between the sexes since it falls below the standard significance level of 0.05. However, the exact significance (2-sided test) was 0.193, which is above 0.05 and suggests no significant difference. Consequently, the conclusion was to retain the null hypothesis, implying that, despite the asymptotic significance suggesting a difference, the overall decision was not to reject the null hypothesis due to the higher exact significance result. This analysis reveals a significant difference in post-intervention knowledge levels based on sex according to the asymptotic p-value. However, the exact significance leads to a conclusion that the evidence needs to be more sufficient to confirm this difference, highlighting a discrepancy between the two significance measures.

The sex of healthcare providers can significantly influence the quality of lactation support offered to new mothers, as various factors related to provider characteristics and patient experiences are crucial for successful

breastfeeding outcomes. Research shows that provider preparedness, comfort, and ability to engage with patients are critical elements in delivering adequate lactation support. Providers with more experience in maternal-child health and who feel equipped to offer lactation assistance have been associated with higher breastfeeding frequency (Lima et al., 2024). Additionally, female providers are often perceived as more empathetic, which can enhance communication and support for new mothers, particularly when discussing sensitive topics like lactation (Juntereal&Spatz, 2019).

Same-sex mothers have expressed the importance of inclusive care that acknowledges their unique challenges, indicating that provider gender can affect the perceived quality of support. While gender is important, it is essential to recognize that the overall quality of lactation support is also influenced by systemic factors such as provider training and healthcare policies. Therefore, improving lactation support requires a comprehensive approach that goes beyond considerations of provider gender.

Table 6.2 Test of difference in the level of knowledge post-intervention when grouped according to age, educational attainment, length of service, designation, and area of assignment.

Demographic profile	Post – Intervention (Knowledge		
	df	H	p-value
Age	4	.612[a]	0.924
Educational Attainment	3	8.442[a]	0.038*
Length of Service	3	5.083[a]	0.166
Designation	5	10.496[a]	0.062
Area of Assignment	11	8.299[a]	0.686

Note: ***H****=Kruskal-Wallis test;* ***a*** *= The test statistics are adjusted for ties*

Table 6.2 displays the results of a statistical analysis investigating variations in knowledge levels among healthcare workers following an intervention, categorized by different demographic factors. The analysis involves a sample of 50 healthcare workers (n=50). The test statistic (H) for age is 0.612 with a p-value of 0.924, indicating no significant differences in knowledge levels. The test statistic (H) for educational attainment is 8.442, with a p-value of 0.038, suggesting a significant difference in knowledge levels (the asterisk denotes statistical significance). The test statistic (H) is 5.083 for length of service, with a p-value of 0.166, showing no significant differences. The test statistic (H) for designation is 10.496, with a p-value of 0.062, indicating a trend toward significance but not reaching the typical threshold. For the area of assignment, the test statistic (H) is 8.299, with a p-value of 0.686, reflecting no significant differences. The analysis utilized the Kruskal-Wallis test, with test statistics adjusted for ties—the only notable difference in knowledge levels after the intervention is linked to educational attainment (p=0.038). Age, length of service, designation, and area of assignment did not display notable variations in knowledge levels post-intervention.

The impact of educational attainment on breastfeeding support among healthcare providers is substantial, with higher education levels linked to improved knowledge and a stronger intent to support breastfeeding. Research shows that educational interventions can significantly enhance healthcare professionals' understanding and skills, benefiting new mothers in their breastfeeding efforts. Nurses with advanced education and specialty certifications are more willing to support breastfeeding, underscoring the importance of targeted educational programs (Cassar et al., 2020). Such interventions have improved providers' knowledge and practices, increasing mothers' exclusive breastfeeding rates (Rai et al., 2023).

Table 7.1 Test of difference in the level of skills post-intervention when grouped according to the demographic profile.

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Significance One-Sided p	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Post Over All Mean Lactation Support	Equal variances assumed	.023	.881	-1.845	48	.036	-.383	.207	-.800	.034
	Equal variances not assumed			-1.714	7.685	.063	-.383	.223	-.901	.136
Post-Over All Mean_EINC	Equal variances assumed	1.501	.227	-2.323	48	.012	-.496	.214	-.925	-.067
	Equal variances not assumed			-1.857	7.094	.053	-.496	.267	-1.126	.134

In Table 7.1, an independent samples t-test was done to check for significant differences in skill levels post-intervention based on participants' sex. Two main variables are being compared: "Post Overall Mean for Lactation Support" and "Post Overall Mean for Essential Intrapartum and Newborn Care (EINC)." In the Lactation support, the t-test showed a t-value of -1.845 with 48 degrees of freedom (df). The one-sided p-value was 0.036, and the two-sided p-value was 0.071. Since the one-sided p-value (p = 0.036) is below the 0.05 threshold, we can conclude that there is a statistically significant difference in lactation support skills post-intervention between the two sexes, with a mean difference of -0.383 (95% CI [-0.800, -0.034]). This indicates that one sex exhibited better lactation support skills than the other after the intervention. However, the two-sided p-value (p = 0.071), which is slightly above 0.05, suggests that while there is some evidence of a difference, the result is marginally non-significant when considering both directions at the conventional 0.05 significance level. The t-value for this comparison is -2.323, with 48 degrees of freedom. For the post-intervention EINC skills, the one-sided p-value was 0.012, and the two-sided p-value was 0.024. Since both p-values (one-sided p = 0.012 and two-sided p = 0.024) are below 0.05, the results indicate a statistically significant difference in EINC skills between the sexes after the intervention. The mean difference was -0.496 (95% CI [-0.925, -0.067]), suggesting that one sex demonstrated significantly higher EINC skill levels post-intervention.

The impact of lactation management training on skills varies significantly across different demographic groups, particularly among pregnant and postpartum women. Research shows that targeted training programs can significantly improve knowledge and practical skills, ultimately enhancing breastfeeding practices (Santosa et al., 2019). Furthermore, a formal lactation curriculum significantly increased exclusive breastfeeding rates at six weeks postpartum among low-income women (Qureshey et al., 2020). Demographic-specific training has proven particularly effective, with midwives receiving combined training in lactation management and Kangaroo Mother Care showing enhanced skills and knowledge (Ayunin & Pratomo, 2019). Additionally, community-based programs, such as those in Menayu Village, have successfully improved

breastfeeding skills through interactive training methods (Rohmayanti, 2023). Despite these positive outcomes, demographic factors like socioeconomic status, education level, and cultural beliefs can influence how different groups respond to such training initiatives.

Table 8 A test of difference in the level of skills post-intervention when grouped according to the demographic profile.

Demographic Profile	Post - Intervention					
	EINC			Lactation Support		
	df	F	p-value	df	F	p-value
Age	4	0.825	0.516	4	0.602	0.663
Educational Attainment	3	5.109	0.004**	3	5.293	0.003**
Length of Service	3	1.970	0.132	3	0.839	0.480
Designation	5	2.581	0.059	5	2.128	0.080
Area of Assignment	11	0.830	0.612	11	0.808	0.632

Note: ***F****=Analysis of Variance (ANOVA)*

Table 8 presents an analysis examining the differences in skill levels post-intervention based on various demographic factors. The study covers two specific areas: Early Initiation of Newborn Care (EINC) and Lactation Support, with the data displayed for different demographic profiles. The F-values for both EINC (0.825) and Lactation Support (0.602) indicate no notable differences in skill levels based on age, as both p-values (0.516 and 0.663, respectively) exceed the conventional threshold of 0.05. Significant differences were observed in skill levels for both EINC (F=5.109, p=0.004) and Lactation Support (F=5.293, p=0.003). Both p-values are below 0.05, indicating that educational attainment substantially impacts skill levels post-intervention. The F-values for EINC (1.970) and Lactation Support (0.839) suggest no significant differences based on length of service, as their p-values (0.132 and 0.480, respectively) are above 0.05. For designation, the F-values are close to significance, with 2.581 for EINC (p=0.059) and 2.128 for Lactation Support (p=0.080). While these p-values do not reach the conventional cutoff for significance, they indicate a potential trend worth further investigation. The F-values for both areas are low (0.830 for EINC and 0.808 for Lactation Support), with p-values (0.612 and 0.632) that suggest no significant differences based on the location of the assignment. The analysis reveals that educational attainment significantly influences EINC and Lactation Support skill levels after the intervention. In contrast, age, length of service, designation, and area of assignment do not considerably affect skill levels, although designation approaches significance and may warrant further exploration.

The training of healthcare staff plays a crucial role in enhancing their skills, which ultimately leads to improved patient care and outcomes. Systematic reviews have also demonstrated that such training enhances the quality of care, especially in managing chronic conditions (Yao et al., 2021).

Additionally, interprofessional education programs have proven effective in improving teamwork skills, fostering better collaboration among healthcare providers, and increasing practitioners' confidence in their roles within a team (Cohen et al., 2021). Targeted training in specific areas has led to significant improvements in healthcare workers' knowledge and skills (Adefolarin et al., 2021). However, while training improves skills, its effectiveness can vary depending on the context and implementation, suggesting the need for continuous evaluation and adaptation of training programs to meet the

evolving needs of both healthcare providers and patients.

Table 9. Post-Intervention EINC and Lactation Support: Post Hoc Test – for Educational Attainment

Multiple Comparisons

Dependent Variable		(I) Educational Attainment	(J) Educational Attainment	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Post Over All Mean Lactation Support	Bonferroni	2-year Course	Bachelor's Degree Holder	-.376	.142	.065	-.77	.01
			Master's Degree Holder	-.962*	.347	**.048**	-1.92	-.01
			2nd Degree Holder	-.950	.347	.053	-1.91	.01
		Bachelor's Degree Holder	2-year Course	.376	.142	.065	-.01	.77
			Master's Degree Holder	-.586	.339	.544	-1.52	.35
			2nd Degree Holder	-.574	.339	.585	-1.51	.36
		Master's Degree Holder	2-year Course	.962*	.347	**.048**	.01	1.92
			Bachelor's Degree Holder	.586	.339	.544	-.35	1.52
			2nd Degree Holder	.013	.464	1.000	-1.27	1.29
		2nd Degree Holder	2-year Course	.950	.347	.053	-.01	1.91
			Bachelor's Degree Holder	.574	.339	.585	-.36	1.51
			Master's Degree Holder	-.013	.464	1.000	-1.29	1.27
Post-Over All Mean_ EINC	Bonferroni	2-year Course	Bachelor's Degree Holder	-.429*	.149	**.037**	-.84	-.02
			Master's Degree Holder	-.931	.365	.085	-1.94	.08
			2nd Degree Holder	-.965	.365	.068	-1.97	.04
		Bachelor's Degree Holder	2-year Course	.429*	.149	**.037**	.02	.84
			Master's Degree Holder	-.502	.357	1.000	-1.49	.48
			2nd Degree Holder	-.536	.357	.845	-1.52	.45
		Master's Degree Holder	2-year Course	.931	.365	.085	-.08	1.94
			Bachelor's Degree Holder	.502	.357	1.000	-.48	1.49
			2nd Degree Holder	-.033	.489	1.000	-1.38	1.31
		2nd Degree Holder	2-year Course	.965	.365	.068	-.04	1.97
			Bachelor's Degree Holder	.536	.357	.845	-.45	1.52
			Master's Degree Holder	.033	.489	1.000	-1.31	1.38

*. The mean difference is significant at the 0.05 level.

The post hoc analysis reveals statistically significant differences in post-intervention skills between certain educational attainment groups. Specifically, Lactation Support: Individuals with a 2-year course showed significantly lower skills than master's degree holders. EINC: Individuals with a 2-year course had significantly lower skills than bachelor's degree holders. The other pairwise comparisons did not show significant differences in either lactation support or EINC skills, indicating that educational attainment had a limited impact on these post-intervention outcomes.

The demographic profile of healthcare workers, encompassing age, length of service, area of assignment, and gender, plays an important role in their ability to care for lactating mothers. Recognizing these factors is essential for enhancing breastfeeding support and outcomes. Age is critical; younger healthcare workers may need more experience, which affects their confidence and breastfeeding support skills. Conversely, while older workers have more experience, they may need to demonstrate better knowledge retention regarding mother and child health. The length of service also correlates with the quality of support provided. Increased years in the field often lead to enhanced service delivery and collaboration among community health workers (Jumanne et al., 2021).

The area of assignment significantly impacts healthcare workers' effectiveness. Those operating in supportive environments—characterized by maternity leave policies and child-friendly spaces—report higher confidence and better breastfeeding practices (Gilder et al., 2024). Also, breastfeeding rates can vary widely depending on an area's cultural and socio-economic context (Gilder et al., 2024). Gender dynamics also influence approaches to breastfeeding support. Female healthcare workers are more involved in maternal care (Kurniawati et al., 2023; Alkasseh&Kweik, 2019). However, the impact of gender on knowledge and service delivery appears to be less pronounced than other demographic factors (Jumanne et al., 2021). While these demographic factors significantly shape healthcare workers' skills, it is equally important to consider the broader context, including institutional support and training opportunities, which can help close the gaps in knowledge and practice.

Conclusion and Recommendation

The conclusions of the study reveal that most respondents were young females, aged 20 to 24, holding a bachelor's degree, with 1 to 2 years of service, and the majority were nurses. Initially, the respondents demonstrated a high level of knowledge regarding lactation and management, which further improved after the intervention. The intervention significantly enhanced their skills, though the improvement in knowledge was only marginally significant and requires further investigation to confirm the program's overall effectiveness. The lactation and management program notably improved EINC and lactation support skills among participants. The only significant demographic factor influencing skill levels was educational attainment, while age, length of service, designation, and area of assignment had little to no impact. However, the designation approached significance, suggesting it could be worth further exploration.

Based on these findings, several recommendations were made. First, it is suggested that additional training or education be provided for staff who do not hold a bachelor's degree, as educational attainment was a key factor in improving skill levels. Second, to achieve more robust results, the program's duration or frequency could be increased, as the slight improvement in knowledge indicates that more time or repeated interventions may be beneficial. Finally, it is recommended that a more detailed post-training evaluation or follow-up assessment be implemented to better measure long-term knowledge retention and behavioral changes, ensuring a more conclusive assessment of the program's impact.

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