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Promoting Breastfeeding Through Educational Interventions: A Comparison of Face to Face and Group Education

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Abstract

Background: A lack of knowledge regarding breastfeeding is a significant contributing factor to its underutilization.

Objectives: This study was designed to examine the effect of educational intervention based on the theory of planned behavior (TPB) in two formats — individual and group — on promoting breastfeeding practices among pregnant women.

Methods: A semi-experimental design was employed, involving 90 pregnant women who were randomly assigned to one of three groups: Two intervention groups receiving either individual or group-based education, and a control group. A standardized educational program, aligned with the TPB and focused on breastfeeding promotion, was delivered across four weekly sessions. Data were collected using a questionnaire at three time points and analyzed using SPSS version 22.

Results: The average age of the participants was 25 years. The predominant educational level was high school graduation, and the majority of participants were housewives. The intervention and control groups were homogeneous in terms of age, education, occupation, income, and preference for type of delivery. The intervention groups exhibited a significant improvement in scores related to all constructs of the TPB after completing the training program ($P < 0.001$). Moreover, the immediate post-training effects were more pronounced compared to the one-month follow-up. However, no statistically significant differences were found between the two intervention groups in terms of the variables examined.

Conclusions: The findings of this study do not support the hypothesis that one training method (individual or group) is more effective than the other in promoting breastfeeding intentions and behaviors.

Keywords: Breastfeeding, Pregnant Woman, the Planned Behavior Model, Educational Intervention

1. Background

Notwithstanding the acknowledged benefits of breastfeeding, a prevalent issue worldwide is the inadequate initiation and continuation of exclusive breastfeeding. Global data reveal that while most infants commence breastfeeding, a substantial proportion cease before the recommended six months, particularly in low- and middle-income nations. Iran is no exception, with statistics indicating that only 37% of infants under six months receive exclusive breastfeeding (1). Moreover, national data show that exclusive breastfeeding rates decline to 53.4% by four months and 27.9% by six months, with an average breastfeeding duration of 7.54 months (2). The World Health Organization strongly advocates for initiating breastfeeding within the first hour of life and exclusively for the first six months (3). A comprehensive analysis of 24 countries reveals that early initiation can significantly reduce infant mortality rates by as much as 57.6% within the first 24 hours and 37.2% within the first day (4).

Numerous factors influence breastfeeding duration. To optimize breastfeeding outcomes, it is imperative to identify these factors. Research underscores the pivotal role of maternal knowledge and breastfeeding skills in boosting maternal confidence and sustaining lactation. Consequently, antenatal care should prioritize breastfeeding education to empower women for this transformative journey of motherhood (5). Despite the importance of early breastfeeding, this does not happen. In today's society, both social and cultural factors, the health service system, family and community support, and individual factors affect the

initiation and continuation of breastfeeding. Encouragement from healthcare professionals plays an important role in a mother's decision to breastfeed (6). Maternal factors, including attitudes and expectations regarding breastfeeding, as well as low confidence, are amenable to modification through educational interventions during the prenatal and postnatal periods (7).

Research has explored the factors contributing to non-breastfeeding practices among women in Kermanshah. These factors include inadequate maternal knowledge, misconceptions surrounding breastfeeding, suboptimal prenatal care, and the accessibility of infant formula (8). This study proposes an empowerment approach to enhance breastfeeding practices among women by providing educational interventions.

The theory of planned behavior (TPB), developed by Fishbein and Ajzen in the 1960s and 1970s, has been widely used in health education and promotion. The structures of the TPB consist of behavior, attitude, subjective norm, behavioral control, and behavioral intention. In this theory, behavioral intention precedes behavior and is defined by the attitude towards the behavior and the subjective norm (9). While individual training allows for personalized attention and tailored content addressing specific concerns, it may lack the social support and peer interaction provided by group settings. Conversely, group training fosters a sense of community and shared experience, which can strengthen subjective norms related to breastfeeding but may not adequately address individual needs (10).

In conclusion, despite the established importance of breastfeeding, there remains a need for robust research on the most effective educational strategies for promoting it among pregnant women. The TPB provides a valuable framework for understanding the factors influencing health behaviors, including breastfeeding. This study addresses a critical gap in the literature by directly comparing the effects of individual and group training on TPB constructs and subsequent breastfeeding behaviors in this population. Previous research has often focused on one modality or the other, without a direct comparison within the TPB framework.

2. Objectives

This study was designed to examine the effect of educational intervention based on the TPB in two formats — individual and group — on promoting breastfeeding practices among pregnant women.

3. Methods

3.1. Participants

A quasi-experimental study was conducted at a comprehensive health center in suburban Kermanshah. The study population consisted of pregnant women receiving care at this center. The study sample was calculated with a confidence level of 95% and a power of 80% as follows.

$$n = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2 \left(\sigma_1^2 + \sigma_2^2\right)}{\left(\mu_1 - \mu_2\right)^2}$$

$$n = \frac{(1.96 + 1.28)^2 (15.62 + 12.072)}{(76.02 - 89.12)^2} = 24$$

In this research, a random sampling method was used. Initially, a list of pregnant women at the center was prepared. Then, using the entry and exit criteria, 90 women were randomly recruited sequentially and assigned to one of three conditions: A control group, an individual training group, and a group training group. Eligible women were in their second trimester of pregnancy, without complications, untreatable illnesses, or documented substance abuse, and resided in Kermanshah. Participants were excluded for incomplete questionnaires or missing more than one training session.

The educational content was developed through a systematic process involving a preliminary needs assessment, formulation of learning objectives, compilation of content from reputable scientific sources, and expert review for content validity. Feedback from faculty experts was incorporated to refine the final materials. The training program was implemented in four sessions during winter 2018 (Table 1). In the meetings, an introduction to the discussion was presented first, followed by the presentation of topics. At the end of the sessions, discussions were summarized, questions raised by participants were answered, and successful behavioral models were used for explanations and discussions to change attitudes.

Both individual and group training sessions were conducted at the comprehensive health service center by a female instructor (MM). The content delivered in both modalities was identical, with the key difference being the presentation format (individual or group). To enhance self-efficacy, modeling techniques were incorporated into both training approaches. Each

Table 1. The Educational Contents of the Sessions

Sessions	One	Two	Three	Four
Topics	Introduction and explanation of the training sessions; definition of breastfeeding; breast structure; advantages of breastfeeding; disadvantages of formula milk; summary and conclusions; explaining the assignment for the next session	Introduction and review of past topics; explanation of the pamphlet; discussion of people who influence the choice of breastfeeding; type and explaining the experiences; how to breastfeed; benefits of skin-to-skin; benefits of starting breastfeeding early; answering the questions raised	Introduction and review of the previous session; the importance of colostrum and its properties; intervals, frequency and duration of breastfeeding; signs of hunger; different methods how to hold the baby in your arms; signs of effective sucking; answering the questions raised	Motivation and self-efficacy in breastfeeding; practical demonstration of breastfeeding; final summary of all sessions; answering the questions raised

session lasted between 45 and 60 minutes and was scheduled during less busy periods at the center to minimize disruptions and maximize participant engagement.

Training sessions were held in the hall of the health center in a suitable environment with the necessary standards. This hall is equipped with cooling and heating systems, benefits from sufficient light, and is free from interference factors such as noise and environmental pollution. Additionally, there is a suitable teaching space, a table, chairs, a computer, audio and video teaching aids, and a suitable whiteboard.

3.2. Data Collection Tool

Data were collected using a questionnaire that had been previously tested for validity and reliability (11). The questionnaire comprised 45 items, including 14 awareness questions, with a score of one given for a correct answer and a score of zero for a wrong answer or no answer. The attitude section included 13 specific questions on a Likert scale, with scores assigned from 5 to 1 for each option, respectively. The subjective norm section included 9 four-choice questions, which were assigned scores from 4 to 1. The perceived behavioral control section included 8 specific questions on a Likert scale, with each option given a score from 5 to 1. The behavioral intention question included a three-choice question, and the desired option.

In the intervention groups, data were collected on three occasions: Before the training intervention, immediately after the four training sessions, and one month later.

3.3. Ethical Considerations

The current research was approved by the Ethics Committee of Kermanshah University of Medical Sciences under ID IR.KUMS.REC.1396.505. Ethical considerations were paramount throughout this study. All procedures were conducted in accordance with relevant ethical guidelines and regulations. Informed consent was obtained from all participants prior to their involvement, ensuring their voluntary participation and understanding of the study's purpose and procedures.

3.4. Statistical Analysis Method

Statistical analyses were conducted to evaluate the data. The Kolmogorov-Smirnov test was used to assess the normality of data distribution. For comparisons between independent groups, analysis of variance (ANOVA) was employed if the data met the assumption of normality; otherwise, the non-parametric Kruskal-Wallis test was utilized. For repeated measures within groups, the Friedman test was used. Post-hoc analyses, where appropriate, were conducted using Wilcoxon signed-rank tests for pairwise comparisons.

4. Results

The average age of the participants was 25 years. The predominant educational level was high school graduation, and the majority of participants were housewives. The intervention and control groups were homogeneous in terms of age, education, occupation, income, and preference for type of delivery.

Table 2 shows that while there was no significant difference in awareness before the educational intervention, a noticeable difference was found immediately after the training and persisted one month later. Similarly, significant differences were observed in attitude, subjective norm, perceived behavioral control, and behavioral intention one month after the training, indicating that the educational intervention had a lasting impact on these variables.

Table 3 shows that in the comparison of the variable of awareness, the changes in awareness before and after training in both individual and group training did not differ significantly. However, compared to the control group, the changes in awareness were significantly accompanied by an increase.

Table 2. Comparison of Variables in the Intervention and Control Groups Based on the Constructs of the Theory [a]

Variables	Before Intervention	Immediately After Intervention	One Month After Intervention
Awareness			
Individual (n = 30)	8.20 ± 2.644	13.77 ± 0 .568	12.93 ± 0 .868
Group (n = 30)	7.33 ± 2.783	12.47 ± 0 .860	11.73 ± 1.172
Control (n = 30)	8.20 ± 2.858	-	8.03 ± 2.822
Total sum (n = 90)	7.91 ± 2.763	13.12 ± 0 .976	10.90 ± 2.772
Significance level [b]	0.378	0.001	0.001
Attitude			
Individual (n = 30)	49.27 ± 7.629	59.30 ± 3.653	57.33 ± 3.916
Group (n = 30)	51.10 ± 6.036	58.13 ± 3.560	55.87 ± 3.511
Control (n = 30)	52.10 ± 7.117	-	50.97 ± 6.206
Total sum (n = 90)	50.82 ± 6.981	58.58 ± 3.605	54.72 ± 5.390
Significance level [b]	0.283	0.338	0.001
Subjective norm			
Individual (n = 30)	33.67 ± 4.444	37.93 ± 2.083	36.17 ± 2.291
Group (n = 30)	34 .13 ± 3.481	37.40 ± 2.207	36.03 ± 2.498
Control (n = 30)	33.83 ± 4.069	-	33.33 ± 3.863
Total sum (n = 90)	33.88 ± 3.977	37.67 ± 2.144	35.18 ± 3.214
Significance level [b]	0.901	0.340	0.001
Perceived behavioral control			
Individual (n = 30)	32.60 ± 3.775	35.40 ± 1.404	34.67 ± 1.605
Group (n = 30)	33.60 ± 1.868	35.53 ± 0 .629	35.07 ± 0 .583
Control (n = 30)	33.57 ± 2.967	-	33.57 ± 3.266
Total sum (n = 90)	33.26 ± 2.978	35.47 ± 1.081	34.43 ± 2.198
Significance level [b]	0.340	0.637	0.022
Behavioral intention			
Individual (n = 30)	2.43 ± 0 .898	3 ± 0.001	3 ± 0.001
Group (n = 30)	2.53 ± 0 .730	3 ± 0.001	2.97 ± 0.183
Control (n = 30)	2.60 ± 0 .770	-	2.60 ± 0 .770
Total sum (n = 90)	2.52 ± 0.796	3 ± 0.001	2.86 ± 0 .487
Significance level [b]	0.721	0.001	0.001

[a] Values are expressed as mean ± SD.

[b] $P < 0.05$ was considered statistically significant.

Table 4 shows that in the comparison of the attitude variable, the difference in attitude scores between individual and group training methods was not significant. However, compared to the control group, the scores increased.

In the comparison of the subjective norm variable, the difference in scores between individual and group training methods was not significant. However, compared to the control group, the scores increased (Table 5).

While there was no significant difference in perceived behavioral control between individuals and groups who received training, both training groups exhibited a significant increase in perceived behavioral control compared to the control group (Table 6).

This table compares the average rank of behavioral intention scores among different groups at various time points. A higher average rank indicates a stronger intention to perform the behavior, in this case, breastfeeding (Table 7).

5. Discussion

The study found that the training program was effective in changing participants' awareness, attitudes, beliefs, and intentions. Some changes were most evident one month after the training ended, suggesting a long-lasting effect. Regarding participants' awareness, the

Table 3. Comparison of Awareness Variable in Terms of Number and Average Rank

Variables	Average Rank (Wilcoxon Test)	Level of Significance [a]
Awareness before and immediately after training		0.455
Individual (n = 30)	32.17	
Group (n = 30)	28.83	
Total sum (n = 60)	-	
Awareness before and one month after training		0.001
Individual (n = 30)	60.82	
Group (n = 30)	59.32	
Control (n = 30)	16.37	
Total sum (n = 90)	-	
Awareness immediately and one month after training		0.605
Individual (n = 30)	29.43	
Group (n = 30)	31.57	
Total sum (n = 60)	-	

[a] $P < 0.05$ was considered statistically significant.

Table 4. Comparison of Attitude Variable in Terms of Number and Mean Rank

Variables	Average Rank (Wilcoxon Test)	Level of Significance [a]
Attitudes before and immediately after training		0.303
Individual (n = 30)	32.82	
Group (n = 30)	28.18	
Total sum (n = 60)	-	
Attitudes before and one month after training		0.001
Individual (n = 30)	62.75	
Group (n = 30)	53.25	
Control (n = 30)	20.50	
Total sum (n = 90)	-	
Awareness attitude immediately and one month after training		0.491
Individual (n = 30)	32.02	
Group (n = 30)	28.98	
Total sum (n = 90)	-	

[a] $P < 0.05$ was considered statistically significant.

results showed that the implementation of the educational intervention based on the TPB increased the level of awareness in both individual and group education groups. Various studies have been conducted on the effect of educational interventions on participants' level of awareness, some of which align with the results of this study (5). Studies indicate that education during pregnancy and the supportive role of the family before and after childbirth are effective in improving knowledge (11, 12). In individual and group training, the knowledge score immediately after the training was higher than one month after the training, indicating a gradual change over time that should be considered.

This study found that both individual and group training sessions led to a significant improvement in participants' attitudes towards breastfeeding compared to the control group. The educational intervention focused on addressing common misconceptions and ineffective beliefs about breastfeeding. Despite conflicting opinions, Sharifrad believes that supporting mothers is a proven effective method for encouraging continued breastfeeding (13). However, Ahmadi's study found no significant change in attitudes, contradicting these findings (11). This lack of change can be attributed

Table 5. Comparison of Subjective Norm Variable According to the Number and Mean Rank

Variables	Average Rank (Wilcoxon Test)	Level of Significance [a]
Subjective norm before and immediately after training		0.261
Individual (n = 30)	32.02	
Group (n = 30)	27.98	
Total sum (n = 60)	-	
Subjective norms before and one month after training		0.001
Individual (n = 30)	53.83	
Group (n = 30)	52.25	
Control (n = 30)	42.30	
Total sum (n = 90)	-	
Subjective norm immediately and one month after training		0.065
Individual (n = 30)	26.45	
Group (n = 30)	34.55	
Total sum (n = 60)	-	

[a] P < 0.05 was considered statistically significant.

Table 6. Comparison of the Perceived Behavioral Control Variable in Terms of Number and Mean Rank

Variables	Average Rank (Wilcoxon Test)	Level of Significance [a]
Perceived behavioral control before and immediately after training		0.324
Individual (n = 30)	32.53	
Group (n = 30)	28.47	
Total sum (n = 60)	-	
Perceived behavioral control before and one month after training		0.001
Individual (n = 30)	54.43	
Group (n = 30)	54.70	
Control (n = 30)	27.37	
Total sum (n = 90)	-	
Perceived behavioral control immediately and one month after training		0.280
Individual (n = 30)	28.32	
Group (n = 30)	32.68	
Total sum (n = 60)	-	

[a] P < 0.05 was considered statistically significant.

to the fact that attitudes towards specific behaviors are influenced by a complex interplay of cognitive, emotional, and behavioral factors over time. Changing attitudes requires addressing underlying beliefs and opinions. Therefore, modifying attitudes takes time and comprehensive interventions that consider all relevant factors, as changing deeply held beliefs is not easily achieved. This underscores the need for extended training and education (14).

The subjective norm component of the TPB highlights the impact of social influences on a woman's decision to breastfeed. This includes the opinions and attitudes of her spouse, family, friends, and healthcare providers. Regarding this structure in the TPB, the results showed that in individual and group training, the average scores increased significantly compared to the control group. Ahmadi argues that higher subjective norms suggest that mothers receive greater encouragement and persuasion from others to breastfeed their infants (11). Research also supports the idea that social support has a substantial influence on exclusive breastfeeding during the first six months (15). A study revealed that subjective norms were key determinants for starting and maintaining breastfeeding. In particular, the attitudes of spouses and

Table 7. Comparison of the Behavioral Intention Variable According to the Number and Mean Rank

Variables	Average Rank (Wilcoxon Test)	Level of Significance [a]
Behavioral intention before and immediately after training		0.900
Individual (n = 30)	30.73	
Group (n = 30)	30.27	
Total sum (n = 60)	-	
Behavioral intention before and one month after training		0.004
Individual (n = 30)	50.60	
Group (n = 30)	49.40	
Control(n = 30)	36.50	
Total sum (n = 90)	-	
Behavioral intention immediately and one month after training		0.317
Individual (n = 30)	31	
Group (n = 30)	30	
Total sum (n = 60)	-	

[a] $P < 0.05$ was considered statistically significant.

nurses or midwives had a notable impact on the initiation and follow-up of breastfeeding (16).

The present study also investigated changes in perceived behavioral control in two groups. This concept addresses how much a person feels they are acting in accordance with the established behavior (16). The findings suggest that both individual and group training sessions were effective in enhancing pregnant women's perceived behavioral control. Training sessions emphasized factors that enable breastfeeding, such as the benefits for both mothers and infants and the potential cost savings associated with formula and medical expenses. Another study established a robust correlation between perceived behavioral control and behavioral intention, underscoring the utility of the TPB in this context. Additionally, educational interventions based on the theory have been shown to have a significant impact on perceived behavioral control related to exclusive breastfeeding (17).

This study also focused on the concept of pregnant women's intentions regarding breastfeeding. The findings revealed that the training significantly influenced women's intentions to breastfeed, as predicted by the TPB. Given the theory's strong predictive power for exclusive breastfeeding, the training effectively increased women's intentions to exclusively breastfeed (18, 19).

5.1. Limitations

While the study's utilization of the TPB and its comparison of individual and group interventions are commendable, several limitations should be considered. The generalizability of the findings may be constrained by the specific context of the study. Additionally, the lack of long-term follow-up data raises questions about the sustainability of the observed changes. Future research should address these limitations by employing larger, more diverse samples, conducting longer-term follow-up studies, and carefully considering potential confounding factors. Nonetheless, the study provides valuable insights into the effectiveness of educational interventions in promoting breastfeeding and highlights the importance of tailoring interventions to the specific needs and characteristics of the target population.

5.2. Conclusions

This study did not demonstrate a preference for either individual or group training methods regarding their impact on awareness and changes in the measured constructs of the TPB. Despite this, the group method, due to its time and cost-effectiveness, could be considered for breastfeeding promotion training. For women who cannot participate in group sessions, individual training remains a viable option. From a practical perspective, it is recommended that policymakers use the results of this study in their breastfeeding programs.

Footnotes

Authors' Contribution: H. A.: Developed the study concept, design, analysis and writing the first and final draft of the manuscript; M. M.: Contributed to the implementation and data gathering.

Conflict of Interests Statement: The authors declare that they have no conflict of interests.

Data Availability: The dataset used in the present study will be provided by the corresponding author upon reasonable request.

Ethical Approval: This study was approved by the Research Ethics Committee of Kermanshah university of Medical Sciences (IR.KUMS.REC.1396.505).

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Informed Consent: Written informed consent was obtained from the participant.

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