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Research Article

Prenatal breastfeeding education (PBE) and breastfeeding counseling (BC) influence the prenatal exclusive breastfeeding (EBF) preparation

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ABSTRACT

Introduction: Pregnant women frequently exhibit varied behaviors, such as having a lot of questions, showing insecurity, and fear. **Objective**: Pregnant women frequently exhibit varied behaviors, such as having a lot of questions, showing insecurity, and fear. As a result, their sensitivity and susceptibility to social expectations surrounding their capacity to breastfeed are increased. This study aims to assess the different knowledge and skills of breastfeeding counseling (BC) on health personnel, and to assess differences in intent, knowledge, prenatal self-efficacy, and prenatal professional support in third-trimester pregnant women. **Methods**: The study was randomized by applying a pre-test and post-test design in the health worker group and the post-test only control group in the group of pregnant women. A comparative test was done by comparing the intervention indicator between the treatment group and control group using t-test, one-way ANOVA, post hoc test, and chi-square test at a 95% significance level ($p < 0.05$). **Results**: There was a difference in the mean score of EBF knowledge, 26.85 95% CI (19.94–33.76) and BC skills, 13.17 95% CI (25.85–36.48) health workers at post-test and pre-test. The comparison of intergroup relations between pregnant women group with EBF intention in Group A, OR 6.83 95% CI (4.10–11.36), and in Group B, OR 1.86 95% CI (1.15–3.01), to the control group. **Conclusion**: There is a difference in intention, mean breastfeeding knowledge score, prenatal self-efficacy, and support of prenatal breastfeeding preparation between groups of third-trimester pregnant women.

Keywords: *Breastfeeding, Counseling, Education, Pregnant, Prenatal*

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Introduction

Pregnant women frequently exhibit varied behaviors, such as having a lot of questions, showing insecurity, and fear. As a result, their sensitivity and susceptibility to social expectations surrounding their capacity to breastfeed are increased. Mothers frequently experience confidence and self-esteem issues, which makes it simple for them to feed their infants formula [1]. Infant feeding should be discussed during pregnancy to raise knowledge regarding exclusive breastfeeding (EBF). Expectant moms and their partners are best served by exploring their attitudes on nursing in the early stages of pregnancy.

Mothers will be inspired to provide EBF properly if their knowledge and awareness of breastfeeding are improved [2]. The decision of whether or not to breastfeed is significantly influenced by the knowledge, attitudes, skills, and professional support of health workers during prenatal preparation [2-3]. Therefore, all parties involved need active assistance to initiate, build, and maintain appropriate breastfeeding practices.

Mothers need to be equipped with knowledge about the benefits, principles, myths, common problems, and solutions of breastfeeding [4-5]. Research demonstrates that this knowledge boosts pregnant breastfeeding self-efficacy, the baby-friendly hospital initiative (BFHI), and breastfeeding intentions [5]. The key factors influencing the decision to breastfeed are intention, self-efficacy, and social support [6].

This study modified these three factors simultaneously through nutrition education and evidence-based interventions for health workers in the form of prenatal breastfeeding education (PBE) and breastfeeding counseling (BC) skills for pregnant women. This study aims to increase knowledge and practice of BC skills to prepare expectant mothers and their partners for EBF.

Methods

Research design

Four health facilities in Kampar Riau Regency—Siak Hulu I Health Center, Siak Hulu II Health Center, Siak Hulu III Health Center, and Tambang Health Center—were used for the research. The first step was to observe the medical professionals and the third-trimester pregnant women who were only receiving regular prenatal care. At this point, the observed participants were referred to as the control group (group C). The health professionals were then instructed on nutrition interventions. Health professionals in Group A received training in prenatal breastfeeding, while those in Group B received instruction in BC.

The second stage of the study was a quasi-experimental study with a non-equivalent control group design, in which pregnant women received only the post-test while health workers received both pre- and post-tests [7]. Data for the control group were collected in June 2016, whereas data for the intervention group were collected from December 2016 to July 2017.

Respondents and variables

In this study, 148 third-trimester pregnant women and 60 medical professionals (midwives, nurses, and nutritionists) participated as respondents. The pregnant women aged between 19 and 38 years with a gestational age of 28–34 weeks. The sample size of pregnant women was obtained using a 5% significance degree, the 34% proportion of EBF based on the health profile of Kampar; test power of 95%; and the estimated sample of EBF research according to the Global nutrition target 2025 policy brief was a delta of 50%. The Medical and Health Research Ethics Commission of the Faculty of Medicine, Gadjah Mada University, Yogyakarta, granted ethical clearance for this study, and the respondents have completed informed consent forms as part of the process.

The independent variable in this study was nutrition education intervention, which consisted of PBE and BC training for health workers and the same training for pregnant women by health workers supervised by researchers. In addition to preparation, prenatal self-efficacy, EBF knowledge, and professional support for pregnant women, the dependent variables in this study included EBF knowledge and BC abilities for health professionals.

Research procedures

A total of 30 health workers, of which 7 were from Siak Hulu I Health Center, 8 from Siak Hulu II Health Center, 8 from Siak Hulu III Health Center, and 7 from Tambang Health Center, were tasked to recruit 148 third-semester pregnant women by consecutive sampling with a quota of each facility having 37 mothers. All health workers who participated in this study were then included in the second stage.

In the second stage, the grouping of the Health Centers was based on the profile of the Kampar District Health Office, with the following criteria: 1) Puskesmas coverage, number of visits, deliveries assisted by health personnel, and number of postpartum women receiving health services; 2) number of births and neonatal visits; 3) the number of villages in the two working areas of the Puskesmas is the same or adjacent and the distance to Pekanbaru is relatively the same. From this comparison, it is known that the Siak Hulu I Health Center is paired with the Siak Hulu II Health Center (Group A) and the Siak Hulu III Health Center is paired with the Tambang Health Center (Group B).

A total of 15 health professionals from each Health Center group are in charge of finding pregnant women to serve as respondents. Each Health Center was able to effectively recruit a total of 74 pregnant women, making a total of 444 pregnant women that participated in the survey.

Health workers in Group A received PBE training based on UNICEF/WHO Breastfeeding Promotion and Support in a Baby-Friendly Hospital-20 h Course 2006 and Baby-Friendly Initiative (BFI) Step 3, BCC, 2011, while Group B received BC based on WHO/UNICEF (2006) Infant and Young Child Feeding: An Integrated Course (Director's Guide, Trainer's Guide, Participant's Manual, Guidelines for Follow up) WHO, Geneva, and the WHO CDD Program, UNICEF. The researchers and the team acted as trainers and supervisors [8].

Trained health workers then provided training to pregnant women on PBE for Group A and BC for Group B. The PBE has four main components as follows: 1) presentation sessions (lectures) and skills training in small groups based on the BFI Step 3, BCC, 2011; 2) demonstration and video playback; 3) PBE module with the material title and skills form in the appendix; and 4) monthly home visits to identify problems and barriers to breastfeeding. Meanwhile, BC session consists of the following: 1) providing individual counseling based on the WHO CDD Program UNICEF, Breastfeeding a Training Course: Trainer's Guide and modules for pregnant women and 2) monthly home visits.

Data analysis

The pre-test and post-test were carried out by distributing questionnaires adopted from previous research to determine the intentions and knowledge of breastfeeding, prenatal self-efficacy, and support for prenatal breastfeeding preparation. The intervention effectiveness was assessed by a comparative test to compare the intervention group and the control group, T-test, one-way ANOVA test, post hoc test, and chi-square test at a significance level of 95% ($p < 0.05$).

Result

Characteristics of respondents

Health professionals and pregnant women in their third-trimester were the respondents in this study. No significant variations in features were found between the groups of pregnant women according to the chi-square test. The description of each group of respondents can be seen in Table 1 and Table 2.

Table 1. Characteristics of health worker respondents at both stages of the study

Characteristics	First Stage		Second Stage	
	Following the initial stages (Control/C) (n = 30)	Did not follow the initial stage (n = 30)	Intervention A (n = 30)	Intervention B (n = 30)
Age				
25–30	18 (60%)	17 (56.7%)	18 (60.0%)	17 (56.7%)

Characteristics	First Stage		Second Stage	
	Following the initial stages (Control/C) (*n* = 30)	Did not follow the initial stage (*n* = 30)	Intervention A (*n* = 30)	Intervention B (*n* = 30)
31–35	9 (30%)	9 (30.0%)	8 (26.7%)	10 (33.3%)
36–40	3 (10%)	4 (13.3%)	4 (13.3%)	3 (10.0%)
Education				
Associate Degree in Nursing	4 (13.3%)	-	2 (6.7%)	2 (6.7%)
Associate Degree in Nutrition	4 (13.3%)	-	2 (6.7%)	2 (6.7%)
Associate Degree in Midwifery	22 (73.3%)	30 (100%)	26 (86.7%)	26 (86.7%)
Occupation				
Not a Midwife	8 (26.7%)	-	4 (13.3%)	4 (13.3%)
Midwife	22 (73.3%)	30 (100%)	26 (86.7%)	26 (86.7%)
Status				
Married	28 (93.3%)	27 (90.0%)	27 (90.0%)	28 (93.3%)
Unmarried	2 (6.7%)	3 (10.0%)	3 (10.0%)	2 (6.7%)
Address				
Outside the scope of the health center	12 (23.3%)	-	6 (20.0%)	6 (20.0%)
Inside the scope of the health center	24 (67.7%)	30 (100%)	24 (80.0%)	24 (80.0%)

Table 2. Characteristics of pregnant women respondents

Characteristics	Intervention A (*n* = 148)	Intervention B (*n* = 148)	Control (C) (*n* = 148)	*p*-value
Education level				0.28
Low	84 (30.5%)	96 (34.9%)	95 (34.5%)	
High	64 (37.9%)	52 (30.8%)	53 (31.4%)	
Occupation				0.26
Worker	35 (23.6%)	38 (25.7%)	47 (31.8%)	
Non-worker	113 (76.4%)	110 (74.3%)	101 (68.2%)	
Income				0.32
Low	126 (85.1%)	132 (89.2%)	134 (90.5%)	
High	22 (14.9%)	16 (10.8%)	14 (9.5%)	
Nanny/Sitter				0.20
Absent	112 (75.7%)	106 (71.6%)	98 (66.2%)	
Present	36 (24.3%)	42 (28.4%)	50 (33.8%)	
Number of children				0.09
Primipara	92 (62.1%)	105 (70.9%)	108 (73.0%)	
Non-primipara	56 (37.9%)	43 (29.1%)	40 (27.0%)	

Chi-square test

A paired *t*-test was used to analyze the findings of the pre-test and post-test administered by health professionals, and it revealed a significant difference between the mean scores for breastfeeding knowledge and BC skills before and after the intervention (Table 3).

Table 3. Paired t-test results between pre-test and post-test in the second stage

	Mean (*SD*)	Difference (*SD*)	CI 95%	*p*-value
Group A				
Knowledge (post-test)	81.10 (10.07)	31.50 (20.52)	23.84–39.16	<0.001*
Knowledge (pre-test)	49.60 (21.01)			
Breastfeeding Counseling skill (post-test)	80.33 (7.80)	33.37(18.24)	26.56–40. 18	<0.001*
Breastfeeding Counseling skill (pre-test)	46.97 (15.06)			
Group B				
Knowledge (post-test)	68.80 (15.44)	22.20 (31.45)	10.46–33.94	0.001*
Knowledge(pre-test)	46.60 (21.45)			
Breastfeeding Counseling skill(post-test)	77.40 (12.71)	28.97 (22.75)	20.47–37.46	<0.001*
Breastfeeding Counseling skill(pre-test)	48.43 (16.70)			

Paired *t*-test; The difference between pre-test and post-test.

The intention was divided into "yes" and "no," with answers other than yes (Undecided and No) being included in the "no" group, to obtain the relative risk value. The results of the chi-square test showed a significant relationship between the group of third-trimester pregnant women with the intention of EBF, as presented in Table 4.

Table 4. The relationship between pregnant women in their third-trimester with the intention of exclusive breastfeeding

	Intention of exclusive breastfeeding				OR (IK 95%)	*p*-value
	No		Yes			
	n	%	n	%		
Group A	39	26.4	109	73.6	6.83 (4.10–11.36)	<0.001*
Control (C)	105	70.9	43	29.1		
Total	144	48.6	152	51.4		
Group B	84	56.8	64	43.2	1.86 (1.15–3.01)	0.01*
Control (C)	105	70.9	43	29.1		
Total	189	63.9	107	36.1		
Group A	39	26.4	109	73.6	3.67 (2.25–5.98)	<0.001*
Group B	84	56.8	64	43.2		
Total	123	41.6	173	58.4		

Chi-square test

Table 5 demonstrates a significant difference in the mean scores for breastfeeding knowledge, prenatal self-efficacy, and support for prenatal breastfeeding preparation between the intervention groups of pregnant women ($p < 0.05$).

Table 5. Comparison of mean scores of knowledge, prenatal self-efficacy, and support for breastfeeding preparation between the groups of pregnant women

	Mean (*SD*)			*p*-value
	Control(C)	Group A	Group B	
Knowledge	53.59 (20.30)	75.56 (9.20)	66.84 (15.46)	<0.001*
Prenatal self-efficacy	53.23 (21.81)	68.05 (12.23)	64.00 (14.88)	<0.001*
Support for breastfeeding preparation	47.56 (27.92)	66.58 (21.78)	55.95 (24.83)	<0.001*

The difference in the mean scores of breastfeeding knowledge, prenatal self-efficacy, and support for prenatal breastfeeding preparation in the two groups of pregnant women is presented in Table 6.

Table 6. Post hoc analysis for the score of knowledge, prenatal self-efficacy, and support for breastfeeding preparation between groups of pregnant women

	Group	Mean difference CI 95%	*p*-value
Knowledge	GROUP B vs. GROUP C	13.26(8.22–18.30)	<0.001*
	GROUP A vs. GROUP C	21.97(17.56–26.38)	<0.001*
	GROUP A vs. GROUP B	8.72 (5.16–12.27)	<0.001*
Prenatal self-efficacy	GROUP B vs. GROUP C	10.77 (5.55–15.99)	<0.001*
	GROUP A vs. GROUP C	14.82 (9.87–19.76)	<0.001*
	GROUP A vs. GROUP B	4.05 (0.24–7.85)	0.03*
Support for breastfeeding preparation	GROUP B vs. GROUP C	8.39 (1.02–15.77)	0.02*
	GROUP A vs. GROUP C	19.02(12.03–26.01)	<0.001*
	GROUP A vs. GROUP B	10.63 (4.11–17.15)	<0.001*

Tamhane's post hoc test. Number of subjects per group was 148

Discussion

It has been demonstrated that professional nutrition education increases breastfeeding knowledge and BC abilities of health professionals, enabling them to provide pregnant women with maternal nutrition education. Furthermore, PBE and BC to mothers aim to improve their knowledge, skills, and attitudes toward breastfeeding activities. The education was given in structured small informal groups or individually.

This is consistent with studies by Kramer (2001), who found that creative teaching opportunities can enhance the understanding of breastfeeding, clinical behavior, and confidence of pediatricians (9). Educating hospital staff for 3 days is proven to increase adherence to maternity care practices and breastfeeding rates (10). Educational sessions that reviewed the benefits of breastfeeding, breastfeeding principles, myths, common problems, solutions, and skills training appeared to have the greatest single effect (4-5).

Health workers have a major influence on the decision and desire of mothers to breastfeed (3). The BC training for health workers can improve their understanding of counseling. In counseling, the mother's sentiments are attempted to be understood, and the mother is assisted in making decisions.

In this study, pregnant women who received PBE and BC had a higher average knowledge score than pregnant women who only received routine antenatal care. The intention is the key to success for EBF. With the intention, the mother will think optimistically and create positive energy that can affect the readiness of all breastfeeding organs.

Mothers will be more inclined to deliver and practice EBF if their awareness and understanding of the subject are improved. According to the BFHI guidelines (2010), educating

expectant mothers about the benefits and procedures of breastfeeding will raise breastfeeding rates, which will ultimately enhance public health (11). This is in line with the results of this study, which found that 43.2% of expecting women who got the training intended to breastfeed exclusively, while 71% of mothers who did not receive the training expressed uncertainty or did not wish to do EBF.

The intention is the key to success in giving EBF. With the intention, the mother will think optimistically and create positive energy that can affect all nursing organs. Decisions about infant feeding methods are often made early in pregnancy, even before the second trimester.

This study proves that the professional support of health workers increased support for breastfeeding preparation (difference 19.02 95% CI) compared to those who only receive antenatal care (difference 10.63 95% CI). Additionally, it was discovered that pregnant women who received BC had higher average scores of support for breastfeeding preparation than those who only received regular antenatal care (8.39 95% CI difference).

Women should be encouraged to discuss their nursing objectives and any perceived obstacles throughout pregnancy. Future parents need to verbalize and address the emotions involved in the decision to breastfeed. It is important to investigate and debunk breastfeeding myths and misconceptions. Providing information, reassurance, and assistance to overcome perceived difficulties will help in building self-confidence. Mothers who have strong self-esteem can withstand the pressure of breastfeeding (1).

Pregnant women who got prenatal breastfeeding training scored higher in prenatal self-efficacy than pregnant women who received BC (4.05 95% CI difference) and pregnant women who did not receive both (14.82 95% CI difference). Furthermore, pregnant women who received BC had a higher prenatal self-efficacy score compared to pregnant women who only received routine antenatal care (10.77 95% CI difference).

If there are breastfeeding issues, stress could be reduced by thinking positively about pregnancy and avoiding negative thoughts. Provide understanding and guidance that pregnancy does not limit a mother, and they can consult with experts if they have any obstacles. It is advised that pregnant women engage in all of their favorite activities as it will help them stay happy and peaceful within, which will help in their milk production. Mothers will be more motivated and intend to breastfeed exclusively if they have a better understanding of breastfeeding and lactation management [11].

Conclusion

Health workers scored higher on knowledge and ability tests for BC than the control group after receiving PBE or BC. To increase the commencement and duration of EBF, it is desired that the implementation of professional education and mother education can be enhanced and continued to the level of breastfeeding preparation for pregnant women and nursing mothers. Thus, this present study will give implications, including improve the knowledge of prenatal education (PBE) or breastfeeding counselling and enhance the prenatal self-efficacy due to prenatal breastfeeding preparation compared to pregnant women with routine antenatal. There were two limitations in this study, including the number of health facilities and the sampling design. Of 28 health facilities in Kampar Riau Regency, only 4 healt facilities chosen. In addition, some of the control group (Group C) was involved again in the second stage as the research subject in intervention group (Group A and B). For further research, the professional education and mother education should be continued to the breastfeeding preparation to enhance the initiation and duration of exclusive breastfeeding.

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