

ORIGINAL ARTICLE


Empowering Indonesian Fathers: The Impact of Online Lactation Education on Health Literacy and Breastfeeding Self-Efficacy

Memberdayakan Ayah Indonesia: Dampak Edukasi Laktasi secara Daring Terhadap Literasi Kesehatan dan Breastfeeding Self-Efficacy

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ABSTRACT

Background

Breastfeeding is vital for the health of both mothers and infants. However, only 51.5% of infants under six months are exclusively breastfed in Indonesia. Research has consistently demonstrated the positive impact of engaging fathers in breastfeeding programs, leading to improved breastfeeding outcomes. However, lactation education activities for fathers in Indonesia are limited. By measuring the impact of the intervention on fathers' health literacy and self-efficacy, this research aims to contribute to enhancing breastfeeding practices and support in Indonesia.

Methods

This quasi-experimental study aimed to evaluate the impact of online lactation classes on breastfeeding health literacy and fathers' self-efficacy. Participants (N=35) were randomly assigned to the treatment or control group, and pre-and post-tests were conducted. The intervention group received two-day online lactation education via Zoom, while the control group received a breastfeeding e-poster on WhatsApp. Data analysis involved univariate analysis for variable characterization and bivariate analysis using statistical tests such as Paired Sample T-Test, Wilcoxon, and Mann-Whitney tests, with a significance level of $p < 0.05$.

Results

The study's findings demonstrate the efficacy of the online lactation classes in the intervention group compared to the control group, as evidenced by significant improvements in fathers' health literacy ($p = 0.035$) and self-efficacy ($p = 0.005$) in supporting exclusive breastfeeding by their wives.

Conclusions

The research found that online breastfeeding classes for fathers positively affect their health literacy and self-efficacy in supporting breastfeeding. This approach was more effective than electronic posters via a WhatsApp group in increasing health literacy, but the signs positively affected fathers' self-confidence.

Keywords: Breastfeed-Supporting Fathers; Health Literacy; Paternal Breastfeeding Self-Efficacy

ABSTRAK

Latar Belakang

Menyusui merupakan intervensi yang sangat penting untuk kesehatan ibu dan bayi. Namun di Indonesia, hanya 51,5% bayi di bawah enam bulan yang disusui secara eksklusif. Penelitian secara konsisten menunjukkan dampak positif dari keterlibatan ayah dalam program menyusui, khususnya pada hasil menyusui yang lebih baik. Namun, kegiatan edukasi menyusui bagi ayah di Indonesia masih terbatas. Dengan mengukur dampak intervensi terhadap literasi kesehatan dan efikasi diri ayah, penelitian ini bertujuan untuk berkontribusi dalam meningkatkan praktik dan dukungan menyusui di Indonesia.

Metode

Studi kuasi eksperimen ini bertujuan untuk mengevaluasi dampak kelas laktasi secara daring terhadap literasi kesehatan dan efikasi diri ayah. Peserta ($N = 35$) dibagi secara acak dalam kelompok intervensi dan kontrol, dengan *pre dan post test*. Kelompok intervensi mendapatkan edukasi menyusui secara daring selama dua hari melalui Zoom, sedangkan kelompok kontrol mendapatkan materi menyusui melalui e-poster di WhatsApp. Analisis data dilakukan uji Paired Sample T-Test, Wilcoxon, dan Mann-Whitney, dengan tingkat kemaknaan $p < 0,05$.

Hasil

Hasil penelitian menunjukkan kelas laktasi secara daring lebih efektif meningkatkan literasi kesehatan ($p = 0,035$) dan efikasi diri ($p = 0,005$) ayah secara signifikan pada kelompok intervensi dibandingkan dengan kelompok kontrol dalam mendukung istri saat memberikan ASI eksklusif.

Kesimpulan

Penelitian ini menemukan bahwa kelas menyusui daring untuk ayah berpengaruh positif terhadap literasi kesehatan dan efikasi diri mereka dalam mendukung menyusui. Pendekatan ini lebih efektif daripada poster elektronik melalui grup WhatsApp dalam meningkatkan literasi kesehatan, tetapi poster elektronik berpengaruh positif terhadap efikasi diri ayah.

Kata Kunci: Ayah ASI; Literasi Kesehatan Menyusui; Efikasi Diri Ayah

INTRODUCTION

For mothers and babies, breastfeeding has unrivalled health advantages. Breast milk is specially adapted to fulfil the health demands of a developing baby, making it the clinical gold standard for infant feeding and nutrition. Breastfeeding is the baby's first vaccine, lowering childhood disease risk, hospitalization, obesity, and short stature.¹ On the other hand, breastfeeding also benefits world health conditions. A series of Lancet publications state that breastfeeding offers significant health advantages to mothers and infants, regardless of whether they reside in high-income or low-income environments.² In Indonesia, if the breastfeeding program can be optimized, it can save up to US\$ 256 million in health costs.³

Even though 95.1% of children in Indonesia under two are breastfed, only 51.5% of infants under six months old are recommended exclusively breastfed by the World Health Organization (WHO). However, when further examined based on age, only 38.2% of infants received exclusive breastfeeding at 4-5 months.⁴ This figure is still below the target of the Ministry of Health in 2024, in which 60% of infants under six months are ideally exclusively breastfed.⁵

Factors strengthening breastfeeding include maternal desire, support, and experience, while negative expectations and lack of support weaken it.⁶ In 2019, at the commemoration of World Breastfeeding Week (WBW), WHO and UNICEF leaders stated that the role of fathers is significant for successful breastfeeding, especially when fathers are granted maternity leave so that they have more time for their families.⁷ Various studies have indicated that breastfeeding programs are more effective if they involve the husbands or husband's fathers.⁸⁻¹⁰ Studies highlighted that, with fathers' involvement, the early breastfeeding initiation rate increased from 39.6% to 81.2%⁹; a study in China showed a 20% reduction in the weaning rate.¹¹ Meanwhile, a study in Iran among mothers whose partners attended breastfeeding education training indicated that 94% of mothers were willing to continue breastfeeding for up to 6 months.¹² A systematic review of seven studies revealed that verbal encouragement, sensitivity to the mother's needs, assistance overcoming difficulties, and sharing household and childcare responsibilities positively influenced breastfeeding practices.¹³ Other studies found that including fathers in breastfeeding education programs improves breastfeeding outcomes, increasing breastfeeding rates.¹⁴

Numerous studies have also identified models of educational activities to involve fathers in breastfeeding programs. Some of these models include breastfeeding education with face-to-face meetings, including providing access to workbooks, videos, and websites⁸; educating fathers on breastfeeding in three sessions and providing brochures¹²; as well as a two-hour antenatal education session and postnatal support with IEC printed materials.¹⁰

Lactation education activities for fathers in Indonesia are limited. If available, they are usually part of pregnant or breastfeeding mother classes. At the same time, increased knowledge among fathers can help improve breastfeeding success. However, it turns out that measuring the increase in knowledge alone is not sufficient for intervention. Hence a concept that also measures the comprehension of information, including the ability to access health services, is required. Health literacy is a novel concept in health promotion that can describe various outcomes of health education and communication activities.¹⁵ It is important to consider health literacy when delivering health information, and health education programs should be tailored to enhance individuals' health literacy in accordance with their specific lifestyles.¹⁶ In addition, Enhancing individuals' health literacy can empower patients to make informed decisions, mitigate health risks, promote disease prevention, and enhance the overall quality of life.¹⁷ Mulyani¹⁸ mentioned that health literacy is a positive factor towards breastfeeding readiness. In the study conducted by Valero Chilleron¹⁹, it was found that there is a strong correlation between levels of health literacy and the promotion and maintenance of exclusive breastfeeding. Health literacy acts as a protective factor against the early cessation of breastfeeding. In a separate study, the findings said that mothers with adequate health literacy could prevent the decision to stop breastfeeding.²⁰ However, no studies precisely measure lactation education on fathers' health literacy, even though educational interventions have been shown to increase health literacy.²¹

A person generally tends to perform certain things optimally when they have confidence. A man is believed to show his optimal effort to be responsible for his family when he feels he can take care of his family. This self-confidence is known as self-efficacy. Moreover, studies in several countries have proven that increasing fathers' knowledge of breastfeeding affects their involvement in breastfeeding.²²⁻²⁴ Additionally, the breastfeeding self-efficacy score increased the mothers' ability to achieve exclusive breastfeeding.²⁵⁻²⁷ Consequently, the success of exclusive

breastfeeding among working mothers relies on the crucial involvement of husbands and healthcare professionals, providing tangible and direct support throughout the stages of pregnancy to lactation.²⁸ Another study stated that breastfeeding education programs for fathers could increase support for exclusive breastfeeding.²⁹ From these studies, we learn that before supporting their wives to breastfeed, husbands must first believe in themselves to provide breastfeeding support, referred to as paternal breastfeeding self-efficacy.³⁰

In October-December 2020, researchers conducted a straightforward survey involving 266 fathers who follow the Instagram account @ID_AyahASI. The findings revealed that 82% of these fathers had never attended lactation education classes. Additionally, 52% reported having no contact with a breastfeeding counsellor and lacked knowledge about their whereabouts. These results demonstrate that many fathers remain uninformed about breastfeeding and face challenges accessing appropriate breastfeeding support.

This study represents a unique attempt to address the low rate of exclusive breastfeeding in Indonesia by evaluating the effectiveness of online breastfeeding classes for fathers, aiming to improve fathers' health literacy and self-efficacy in supporting exclusive breastfeeding wives and ultimately increase exclusive breastfeeding coverage while reducing stunting rates.

METHODS

This experimental study used a quasi-experimental design with a nonequivalent control group and pre-and posttest approaches. A pretest was provided to the intervention and control groups to determine respondents' condition before treatment. After the treatment, A posttest was presented to determine the respondents' condition.

The study aimed to investigate the impact of online lactation classes on breastfeeding health literacy and fathers' self-efficacy in supporting breastfeeding wives. It was conducted from June 2022 to July 2022 and targeted fathers who followed the @id_ayahasi Instagram account. A non-probability sampling technique, specifically consecutive sampling, was employed to select the participants.

The total number of registrants for the study was approximately 120. However, only a small number of individuals met the inclusion criteria. Eventually, 18 respondents were assigned to the treatment group, which received online lactation classes through the Zoom application. In comparison, 17 respondents were assigned to the control group, which received an electronic poster via a WhatsApp group. The registration process took place online through the @ID_AyahASI Instagram account.

To ensure internal validity control in sample selection and grouping, randomization was performed to determine the allocation of participants to either the control or treatment group. The randomization process was carried out using the website www.randomlists.com. Pretest and posttest assessments were conducted in experimental and control groups to measure health literacy and self-efficacy. The pretest measured the baseline levels of these variables before the intervention, while the posttest was conducted after the completion of the respective treatments. These assessments aimed to evaluate the effectiveness of the interventions in enhancing the

research variables and determine which treatment was more effective in achieving the desired outcomes.

The inclusion criteria set out in this study were: (1) a father with a child aged 0-6 months who were still exclusively breastfeeding; (2) a father who was a follower of the @id_ayahasi Instagram account; (3) a father who had never attended any breastfeeding classes; (4) a father who completed a registration form; (5) a father who was willing to become a respondent by signing the informed consent form, (6) a father who could communicate well, read and write; and (7) a father who had a computer or smartphone. After going through the registration and selection process with the inclusion criteria, a research sample of 35 people was obtained.

A research instrument in the form of a breastfeeding-related health literacy questionnaire was used in this study and was an adaptation of the HLS-EU-Q16 questionnaire.³¹ The test results on the health literacy questionnaire related to breastfeeding originated from 16 questions, and there were seven invalid questions with r count < 0.707 , namely question number 1, 3, 5, 8, 9, 11, and 13. The seven invalid questions were eliminated, and test reliability was conducted on the remaining nine questions with Cronbach Alpha testing. The results were considered valid, with a reliability test result of 0.969. The questionnaire on fathers' self-efficacy in supporting exclusive breastfeeding wives consisted of 14 statements with a Likert scale suggested by Dennin et al. The reliability test results showed a Cronbach's alpha value of 0.91, indicating reliability.³⁰

The data analysis technique was carried out using two methods, namely univariate analysis and bivariate analysis. The univariate analysis aims to explain or describe the characteristics of each variable studied. In this study, the analyzed univariate data consisted of age, the number of children, education, occupation, and delivery method. The study conducted bivariate analysis on two variables to determine their relationship, with a significance level 0.05. This statistical technique was used to examine the correlation between the variables and assess their influence on each other. The statistical tests used in the bivariate analysis included the Paired Sample T-Test, Wilcoxon, and Mann-Whitney test. The Paired Sample T-Test was employed for comparing means, while the Wilcoxon and Mann-Whitney tests were conducted in response to the non-normal distribution of the data. These tests were selected as appropriate statistical methods for analyzing the dataset with deviations from normality.

The Ethics Commission of the Faculty of Medicine, Universitas Trisakti, Number: 036/KER/FK/V/2022, issued the research permit.

RESULTS

Table 1. Frequency Distribution of Respondents' Characteristics

Respondents Characteristics	Respondent Group		Total
	Treatment n=18 (%)	Control n=17 (%)	
Age			
Young (< 30 years)	13 (72.2)	7 (41.2)	20 (57.1)
Old (≥ 30 years)	5 (27.8)	10 (58.8)	15 (42.9)
Number of Children			
>2 Children	0 (0.0)	1 (5.9)	1 (2.9)
1-2 Children	18 (100.0)	16 (94.1)	34 (97.1)
Education			
Low (SD, SMP, SMA)	2 (11.1)	2 (11.8)	4 (11.4)
High (D3-S1, S2-S3)	16 (88.9)	15 (88.2)	31 (88.6)
Employment			
Permanent	17 (94.4)	17 (100)	34 (97.1)
Temporary	1 (5.6)	0 (0)	1 (2.9)
Childbirth Method			
Cesarean	9 (50.0)	5 (29.4)	14 (40.0)
Per Vaginal	9 (50.0)	12 (70.6)	21 (60.0)

Table 1 shows that out of 35 respondents, 20 (57.1%) are young, and 15 (42.9%) are old. The intervention group is dominated by young male respondents, with as many as 13 respondents (72.2%), while the majority in the control group are elderly, with ten respondents (58.8%). It can also be observed that the most significant proportion of respondents is fathers with 1-2 children, namely 34 respondents (97.1%). In the intervention group, all 18 respondents (100%) have 1-2 children, and the majority of respondents in the control group, 16 (94.1%), also have 1-2 children.

Regarding education level, this study was dominated by fathers with higher education, with as many as 31 respondents (88.6%). Both the intervention group (16 respondents, 88.9%) and the control group (15 respondents, 88.2%) were dominated by respondents with higher education. Regarding occupation, respondents with permanent jobs in the intervention group (17 respondents, 94.4%) and the control group (17 respondents, 100%) dominated the study. At the same time, only one respondent (5.6%) has no permanent job and is in the intervention group. Table 1 also shows that in the intervention group, there were nine respondents (50%) whose wives gave birth either by normal delivery or by cesarean section. Meanwhile, in the control group, from 17 respondents, five respondents (29.4%) stated that their wives gave birth normally, and the wives of the remaining 12 (70.6%) went through caesarean delivery.

Table 2. Respondents' Health Literacy Level

Variable	Group	Test	Category	n	%
Health Literacy	Treatment	Pretest	Insufficient	9	50.0
			Problematic	5	27.8
			Sufficient	4	22.2
			Perfect	0	0.0
		Posttest	Insufficient	3	16.7
			Problematic	6	33.3
			Sufficient	5	27.8
			Perfect	4	22.2
	Control	Pretest	Insufficient	7	41.2
			Problematic	7	41.2
			Sufficient	3	17.6
			Perfect	0	0.0
		Posttest	Insufficient	4	23.5
			Problematic	6	35.3
			Sufficient	5	29.4
			Perfect	2	11.8

Table 2 shows that the intervention group's health literacy pretest score is dominated by insufficient health literacy (50% of respondents). In the posttest results, the respondents' health literacy showed an increase; four respondents (22.2%) were in a perfect category, and the number of respondents in the insufficient category decreased from nine to merely three (16.7%). Meanwhile, the data in Table 2 also shows that the control group's pretest score of health literacy is dominated by the insufficient category with seven respondents (41.2%) and the problematic category with seven respondents (41.2%). The posttest results also show that there is a slight increase in the respondents with perfect health literacy categories (2 respondents or 11.8%) and a decrease in the insufficient category from seven respondents to four respondents (23.5%) and the problematic category from the beginning seven to six respondents (35.3%).

Table 3. Respondents' Self Efficacy

Variable	Group	Test	Category	N	%
Self Efficacy	Treatment	Pretest	Low	0	0.0
			Moderate	6	33.3
			High	12	66.7
		Posttest	Low	0	0.0
			Moderate	2	11.1
			High	16	88.9
	Control	Pretest	Low	0	0.0
			Moderate	3	17.6
			High	14	82.4
		Posttest	Low	0	0.0
			Moderate	2	11.8
			High	15	88.2

Meanwhile, Table 3 shows that respondents dominate the self-efficacy pretest scores in the intervention group with high self-efficacy (66.7%). In the posttest results, respondents' self-efficacy increased, with 88.9% indicating high self-efficacy. In addition, Table 3 also shows that respondents dominate the self-efficacy pretest scores in the control group with high self-efficacy (82.4%). In the posttest results, respondents' self-efficacy increased, with 88.2% of respondents indicating high self-efficacy.

Table 4. Intervention Group Pretest-Posttest Test Results

Group	Variable	Test	Average	p-Value	Result
Treatment	Health Literacy	Pretest	26.749	0.001	Ho rejected
		Posttest	35.802		
	Self Efficacy	Pretest	52.444	0.000	Ho rejected
		Posttest	61.056		
Control	Health Literacy	Pretest	28.649	0.105	Ho accepted
		Posttest	32.571		
	Self Efficacy	Pretest	55.294	0.057	Ho rejected
		Posttest	57.765		

Based on the results of hypothesis testing, the average score of respondents' health literacy and self-efficacy after treatment in the intervention group is higher than before. Based on Table 4, the results of the Paired Sample T-test on health literacy and fathers' self-efficacy before and after treatment have a significant value (p-value) of less than 0.05 ($p < 0.05$).

The findings indicate significant differences in fathers' health literacy and self-efficacy in supporting exclusive breastfeeding before and after the treatment (pretest and posttest). Before the intervention, the treatment and control groups displayed similar health literacy and self-efficacy levels, indicating an equivalent baseline. This foundational equivalence ensures a fair comparison between the groups throughout the intervention.

Table 4 also explains that the average score of fathers' health literacy and self-efficacy in the control group after being provided with conventional treatment is higher. Based on Table 4, the Wilcoxon test results on health literacy before and after treatment have a significant value (p-value) of more than 0.05 ($p > 0.05$). Thus, it can be stated that the control group has no difference in fathers' health literacy in supporting the wives to breastfeed exclusively before treatment (pretest) and after treatment (posttest).

Table 5. Online Lactation Class Effectiveness Test Results

Variable	Group	N-Gain	p-Value	Result
Health Literacy	Control	0.166	0.035	Ho rejected
	Treatment	0.347		
Self Efficacy	Control	-0.014	0.005	Ho rejected
	Treatment	0.460		

Based on Table 5, the results of the Mann-Whitney test have a significant value (p-value) of less than 0.05. Thus, it can be stated that there is an effective influence of online classes in the intervention group with the control group on health literacy and fathers' self-efficacy in supporting exclusive breastfeeding. The N-Gain values were utilized to assess the impact of the treatment. For Health Literacy, the treatment group demonstrated a higher N-Gain (0.347) than the Control group (0.166), indicating a more significant improvement. Similarly, the treatment group showed a substantial N-Gain (0.460) for Self Efficacy, while the Control group exhibited a slight decline (-0.014). The analysis of N-Gain values revealed that the treatment group showed significantly higher improvements in Health Literacy (0.347 vs 0.166) and Self Efficacy (0.460 vs -0.014) than the Control group.

DISCUSSION

Health literacy was initially introduced in the 1970s and slowly began to develop in various parts of the world. Health literacy, being a new concept, should be considered while delivering health information, and health education programs must enhance health literacy tailored to address individuals' lifestyles.³² When compared with knowledge, health literacy is more comprehensive in assessing the various skills and competencies that people develop to seek, understand, evaluate, and use health information and concepts to make informed choices, reduce health risks, and improve quality of life.³³

The instrument for measuring fathers' health literacy in supporting breastfeeding wives was developed to meet research needs. The breastfeeding-related health literacy questionnaire instrument used in this study is an adaptation of the HLS-EU-Q16 questionnaire.³¹ It is a short version of the HLS-EU-Q47 questionnaire containing eight breastfeeding-related questions.

The results showed an increase in the average health literacy score in the intervention and control groups after being given treatment through a classroom approach via the Zoom application or a WhatsApp group broadcast. This shows that the distance learning approach can increase breastfeeding health literacy among fathers. With a different method, Aller et al.³⁴ have proved that health literacy materials can be promoted online for groups of students for one semester.

Interesting facts can be seen in the pretest results in both groups. Table 2 shows that insufficient and problematic categories dominate the health literacy scores in the intervention group (50%) and the control group (41.2%). This contrasts with the study conducted by Anisah et al.³⁵, which stated that Instagram usage contributes to increased health literacy. Another study stated that health-related social media use affects respondents' health behavioral intentions.³⁶ Suppose the sufficient and problematic categories dominate the results of the health literacy pretest. In that case, it is believed that the information provided through the @id_ayahasi Instagram account has not been able to improve the health literacy of its followers.

In general, the profiles of respondents in both groups are almost similar, except for the age category and delivery method. For example, respondents at younger ages dominated (72.2%) in the intervention group compared to the control group (41.2%). It is possible that many young people in the intervention group were encouraged to learn new things. Regarding education, both groups are dominated by respondents with higher education (88.9% in the intervention group and 88.2% in the control group). A study in America stated that the higher the level of education, the higher the health literacy.³⁷

The treatment in the control group was carried out by providing information on exclusive breastfeeding through an electronic poster (e-poster) without interaction or discussion through a WhatsApp group. The study results showed an increase in the average health literacy score in the control group after being given treatment through the WhatsApp group. However, this approach did not present a significant difference between before and after treatment, suggesting that the WhatsApp group method is ineffective in increasing breastfeeding health literacy. These results indicate that solely providing information through a static electronic poster without active engagement and discussion might not substantially improve breastfeeding health literacy. It is possible that the lack of interactive communication and personalized support in the WhatsApp group hindered the participants' ability to comprehend and internalize the provided information fully.

Based on the results in the control group, this study has proven that the online breastfeeding class approach for fathers through the Zoom application is more effective than the WhatsApp group approach in improving health literacy. Fernandez-Gutierrez *et al.*³⁸ conducted a different form of the experiment using a smartphone application, and the study's results highlighted that providing information online through a mobile phone application could improve health literacy.

In the context of breastfeeding, self-efficacy refers to a mother's perceived ability to breastfeed a baby and is a prominent variable in the duration of the breastfeeding process since it predicts whether a mother chooses to breastfeed, how much effort she will expend, whether she will improve her breastfeeding ability, whether she will beat negative mindsets, and how she will emotionally respond to breastfeeding difficulties.³⁹ In simple terms, Dennis & Faux stated that breastfeeding self-efficacy is a mother's confidence in her ability to breastfeed.⁴⁰ In Malawi, the validity and reliability of the Paternal Breastfeeding Self-Efficacy Scale-Short Form were confirmed as a suitable tool to evaluate fathers' confidence in supporting breastfeeding mothers.⁴¹

Breastfeeding self-efficacy is often associated with a mother figure since only mothers can breastfeed, and many studies have proven that a good mother's self-confidence can increase breastfeeding success. There are not many studies linking fathers' self-efficacy to supporting breastfeeding. Dennis *et al.*³⁹ have developed an instrument to measure fathers' self-efficacy in supporting breastfeeding to examine the phenomenon.

The results of this study indicated that before the treatment, most of the respondents were in the high category, both in the intervention group (66.7%) and the control group (82.4%). This shows that the self-confidence of the majority of respondents in supporting their breastfeeding wives is satisfactory even before treatment. The information on breastfeeding obtained when following the @id_ayahasi Instagram account may help increase respondents' self-efficacy. However, this study did not analyze the duration of respondents being followers of AyahASI Indonesia's

Instagram account; therefore, it cannot determine how profound the influence of the information on Instagram is in increasing fathers' self-confidence.

Based on the results of this study, it was proven that there is an increase in the average score of self-efficacy after treatment, both in the intervention and control groups. The treatment in the intervention group was conducted through an online structured learning class method (with Zoom) with topics concerning exclusive breastfeeding. Several factors in an online learning approach can affect increasing self-efficacy, including experience and knowledge when learning online, feedback and appreciation for participants, communication and interaction, as well as motivation and attitudes of learners.⁴² Among the abovementioned factors, this study accommodated at least three factors. First, the participants responded that much new information was obtained from the online breastfeeding class, indicating new experiences and knowledge gained. Second, feedback and rewards were also received by participants, either in the form of certificates or internet data packages, to participants who completed the classes and filled out the pretest and posttest. Lastly, there was communication and interaction during the class. Participants were given sufficient time to ask questions and interact with other participants. Referring to a study by Peechapol et al.⁴², the online breastfeeding class approach increases fathers' self-efficacy. And conversely, self-efficacy plays a major role in online learning, especially in situations of a pandemic like COVID-19.⁴³

The intervention was conducted in the control group with an electronic poster disseminated through a WhatsApp group. The study results showed that the intervention with educational posters in the WhatsApp group increased the average father's self-efficacy score, and there was a significant difference before the intervention. In a different group, Abbass-Dick et al.⁸ found that breastfeeding self-efficacy can be improved by postnatal books and video screenings and through support during the postpartum period via websites, letters, and telephones. A study in Turkey also proved that self-efficacy could be enhanced by education combined with counselling via WhatsApp.⁴⁴

Research has proven that the online breastfeeding class approach for fathers through the Zoom application is more effective than the control group in increasing fathers' self-efficacy. A study by Aldhahi supported these findings, demonstrating that using the Zoom application in online learning was more effective than the WhatsApp group application in increasing student learning self-efficacy.⁴³

This research acknowledges several limitations, including challenges in ensuring timely completion of posttests in online treatments, prolonged data collection due to respondents' busy schedules, the lack of measurement of the impact of online breastfeeding classes on exclusive breastfeeding until the child reaches six months, a limited sample size, and scarcity of literature on breastfeeding health literacy and self-efficacy among fathers. Caution is necessary when generalizing the findings and accurately representing the actual conditions.

The clinical implication of this study is that online lactation education for fathers can improve their health literacy and self-efficacy in supporting exclusive breastfeeding among their wives. The findings suggest that incorporating fathers in breastfeeding education programs can be a beneficial strategy to increase exclusive breastfeeding rates. Healthcare professionals should consider involving fathers in breastfeeding education programs to improve the success of exclusive breastfeeding practices.

The findings of this study can serve as valuable information for future researchers to conduct further studies in a broader context, both in terms of sample size and approach. For example, future research could measure the understanding of breastfeeding information resulting from following the @ID_AyahASI Instagram account, which also focuses on breastfeeding topics. Additionally, further research can explore the impact of online breastfeeding classes on changes in the husband's behavior and the success of exclusive breastfeeding after the baby reaches six months.

CONCLUSION

In conclusion, this study sought to address the critical gap in comprehensive lactation education activities for fathers in Indonesia and aimed to contribute to the ongoing discussion on improving breastfeeding practices. Through the evaluation of online breastfeeding classes, this research successfully enhanced fathers' knowledge, health literacy, and self-efficacy in supporting exclusive breastfeeding.

The findings underscore the significance of actively involving fathers in breastfeeding programs, highlighting their potential to positively impact exclusive breastfeeding rates and maternal and infant health outcomes. Moreover, this study provides valuable insights for policymakers, healthcare professionals, and researchers, emphasizing the need to prioritize and invest in father-inclusive breastfeeding interventions.

Further research is warranted to explore and refine strategies that effectively engage fathers and promote sustained exclusive breastfeeding practices. By recognizing the importance of fathers' roles and addressing the identified gap, this study contributes to advancing knowledge. It offers actionable recommendations to foster positive changes in breastfeeding support and policies.

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AUTHORS CONTRIBUTION

SH and KP are responsible for drafting concepts, analyzing data, interpreting data, preparing papers, and revising the final manuscript for publication. TN and APD are responsible for ensuring the references are from the last five years, while ARH is in charge of creating research designs, collecting data, analyzing data, and interpreting data, as well as overseeing the data collection in the field.

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CONFLICT OF INTEREST

All authors declare that they have no conflicts of interest.

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