

Conference Paper

Postnatal Complementary Care Training Model for Preeclampsy

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ABSTRACT

The highest cause of maternal death in Banyumas Regency, Indonesia in 2022 is preeclampsia during the postpartum period (66.7 percent). However, preeclampsia detection is only carried out if there are symptoms or complaints. Complementary therapies provide a new modality for preventing preeclampsia without having to wait for symptoms to appear. A preliminary study showed that 95.31 percent of midwife who applied complementary therapies had not received training. This research aims to develop a Postnatal Complementary Care Preeclampsia training model for midwives. This research is RnD. Analysis stage with in-depth interviews (6 midwives) and FGD (6 stakeholders). At the Design and Development stage, the training model was prepared and validated by four experts. In the implementation phase, training interventions were carried out on 66 midwives and evaluated using different tests. Results: (1) Analysis: it is necessary to strengthen midwife resources with training to improve the care of preeclampsia postpartum; (2) Design, and create a postnatal complementary care preeclampsia training model; (3) Development, V-Aiken's expert assessment results are in the very high category (mean 0.95) shows the model is valid; (4) Implementation, Independent T-test results show the difference in performance ($p\text{-value } 0.030 < 0.05$), Mann Whitney test results also show the difference in competence ($p\text{-value } 0.000 < 0.05$) which is higher in intervention group, (5) Evaluation, Wilcoxon test results showed ($P\text{ value } 0.006 < 0.05$) the training model was proven to reduce the incidence of preeclampsia in postpartum. The Postnatal Complementary Care Preeclampsia training model is feasible and can be applied as a training guide to improve the competency and performance of midwives to reduce the incidence of postpartum preeclampsia

Keywords: Postnatal, complementary care, preeclampsia, midwifery training

Introduction

The maternal mortality rate (MMR) due to preeclampsia reaches 14 percent worldwide. In line with this, data from the Indonesian Ministry of Health states that the main cause of maternal death in Indonesia is preeclampsia at 32 percent, which is characterized by early symptoms in the form of hypertension (Kemenkes RI, 2022). Data from the Central Java Provincial Health Service also shows that 50.7 percent of maternal deaths occur during the postpartum period, with the highest non-Covid cause being hypertension/preeclampsia at 16 percent (Prabowo, 2021). Banyumas Regency, as the district with the sixth highest maternal mortality rate in Central Java, continues to develop maternal health service programs. However, MMR during the postpartum period is still quite high, reaching 17 cases (70.8 percent) with the highest cause being preeclampsia (66.7 percent) (Dinkes Banyumas, 2022). Even though AKI due to preeclampsia

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during the postpartum period is quite high, there is no specific program to prevent and treat preeclampsia during the postpartum period.

The national policy of Postpartum Visits by midwives providing care includes checking vital signs, monitoring involution, monitoring the postpartum triad (bleeding, infection, and birth canal trauma), administering vitamin A capsules, recommending exclusive breastfeeding, and postpartum family planning services while early detection Preeclampsia is only carried out if there are signs of symptoms or complaints from the postpartum mother. This provides an opportunity for undetected cases of preeclampsia during the postpartum period. Therefore, it is necessary to take preventive measures without having to wait for signs of preeclampsia to appear. Shifting the paradigm of conventional and complementary midwifery services is becoming an important part of midwifery practice. The research results show that lavender aromatherapy, warm foot baths, gentle back massage, and physical therapy have been proven to be able to reduce/prevent the occurrence of preeclampsia (Wang et al., 2021; Zainiyah et al., 2019), Jahdi et al., 2016), Kianpour et al., 2016; Awad et al., 2019). However, it is not widely known and implemented due to limited human resources, especially midwives as the spearhead of maternal health services. The results of research by Muflihah et al. (2022) regarding the implementation of complementary midwifery therapy in Banyumas Regency in 2021, showed that of 192 midwives, only 8.85 percent implemented complementary therapy, but 95.31 percent had not participated in official training. However, until now there has been no complementary therapy training model to improve postnatal complementary competence and the performance of midwives to reduce cases of preeclampsia in postpartum mothers.

This research not only aims to find out the appropriate training model plan to increase the competency of midwives in Postnatal Complementary Care (PCo) Preeclampsia, but also to prove that the PCo Preeclampsia training model can increase the competency of midwives in PCo preeclampsia, improve midwife performance and reduce the incidence of preeclampsia.

Material and Methods

This research model is RnD (Research and Development) with the ADDIE (Analysis-Design-Development-Implementation-Evaluation) approach (Rayanto, 2020). The sampling technique used was multistage random sampling. At the analysis stage, the qualitative research sample consisted of 6 midwives and 6 stakeholders, data was collected using in-depth interviews and FGD and analyzed using N-VIVO. At the Design and Development stage, data was collected by distributing questionnaires to 4 experts (consisting of an obstetrician gynecology specialist, maternal feto specialist, complementary obstetrician, educational technology expert, and linguist) and analyzed with V Aikens. At the implementation stage, the sample consisted of 66 midwives taken in proportion from 16 health centers with the highest maternal mortality rates in 2022 and divided into 33 midwives in the intervention group and 33 midwives in the control group. Data was collected using the PCo competency assessment sheet and analyzed, apart from univariate analysis using a frequency distribution to examine respondent characteristics, the data was also analyzed using Independent T-test (if the data is normally distributed) and Mann Withney (if the data is not normally distributed) at a significance level of 95% (alpha 0.05). At the evaluation stage, the sample consisted of 16 community health centers with the highest MMR due to preeclampsia in Banyumas Regency in 2022, data was collected using observation sheets of preeclampsia incidents/cases before and after 3 months of implementing the PCo preeclampsia training model and analyzed using Paired t-test (if the data is normally distributed) and Wilcoxon (if the data is not normally distributed) at a significance level of 95% (alpha 0.05). The complete research flow can be seen in Figure 1.

The permit to conduct this research was proposed by the Research and Community Service Institute of Harapan Bangsa University. The researchers apply research principles of anonymity, good and non-maleficence, autonomy, and justice. Explanation of background and research objectives, as well as information approval contained in questioner and observation form,

together-name with instruments. Participants are reminded of the beginning of the survey that process and complete the survey shows voluntary agreement to participate in learning. Anonymity and confidentiality were maintained throughout the study.

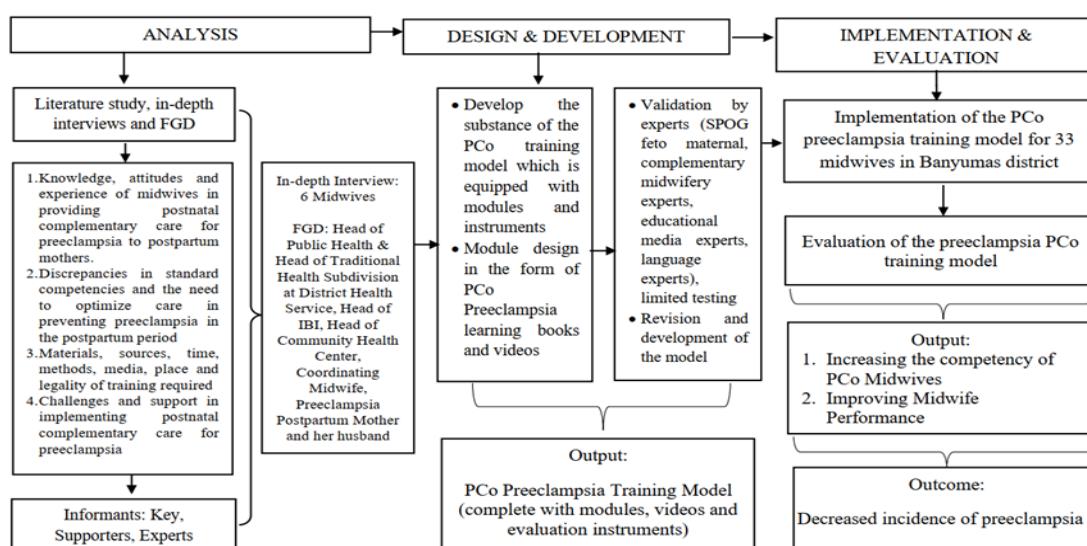


Figure 1. RnD research flow

Results and Discussion

Analysis stage

The results of the N-Vivo analysis found four major themes from the in-depth interview results and three major themes from the FGD results that complement each other, namely (a) knowledge, attitudes, work experience of midwives in managing preeclampsia and administering PCo to postpartum mothers, (b) discrepancies between standard competency with the need to optimize care in preventing preeclampsia during the postpartum period, (c) materials, sources, time, methods, media, place and legality of PCo preeclampsia training, (d) challenges/barriers and solution support in implementing the results of PCo preeclampsia training. Based on these results, it was formulated that it is necessary to strengthen midwife resources with training to improve the care of postpartum preeclampsia.

Design and development stage

The postnatal complementary care (PCo) preeclampsia training model product which is equipped with training modules and learning videos is prepared based on analysis of the results of in-depth interviews and FGDs. Next, at the development stage, an expert test was carried out and the results of V Aiken's assessment by four experts were in the very high category with an average value of 0.95, so the model was declared valid (Koestoro & Basrowi, 2006).

Implementation and evaluation stage

The characteristics of respondents in the implementation phase of the test, namely that the majority of midwives were aged more than 42 years (66.7%) in the intervention group and less than 42 years in the control group (57.6%). Most of the midwives had the lowest level of education, namely D3 Midwifery, in both the intervention (60.6%) and control (78.8%) groups. The majority of midwives' work experience was more than equal to 20 years (66.7%) in the intervention group and less than 20 years (63.6%) in the control group, which is shown in Table 1.

Table 1. Characteristics of implementation stage respondents

Intervention group			Control group		
	Frequency	(%)		Frequency	(%)
Ages (Years old)			Ages (Years old)		
<42	11	33,3	<42	19	57,6
≥ 42	22	66,7	≥ 42	14	42,4
Total	33	100	Total	33	100
Last education			Last education		
D3	20	60.6	D3	26	78.8
D4	6	18.2	D4	5	15.2
Profesi	7	21.2	profesi	2	6.1
Total	33	100.0	Total	33	100.0
Work experience (years)			Work experience (years)		
<20	11	33,3	<20	21	63,6
≥ 20	22	66,7	≥ 20	12	36,4
Total	33	100	Total	33	100

The analysis at the implementation stage used a quasi-experimental method with a pretest and posttest with a control group design. Before the different test, a normality test was carried out using Komogorov-Smirnov and it was discovered that the competency variable data was not normally distributed, while the performance variable data was normally distributed. The results of the competency difference test were carried out using Mann Whitney because the data was not normally distributed, and the results can be seen in Table 2.

Table 2. Mann Whitney difference test implementation stage

Test statistics	
	Competency
Mann-Whitney U	203,000
Wilcoxon W	746,000
Z	-4,428
Asym. Sig. (2-tailed)	0,000

Table 2 shows the results of the Mann-Whitney test which also shows that there is a difference in competence between the control and intervention groups ($p\text{-value } 0.000 < 0.05$) with a mean difference between groups of 20.7 which is higher in the intervention group. Meanwhile, the test for differences in midwife performance uses the independent T-test because the data is normally distributed, and the results can be seen in Table 3.

Table 3. Results of independent T-test analysis for the implementation stage

Levene's Test for Equality of Variances		t-test for Equality of Means							
		95% CI of the Difference							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
performance	Equal variances assumed	0,437	0,511	-2,217	64	0,030	-11,394	-21,659	-1,129
	Equal variances not assumed			-2,217	63,793	0,030	-11,394	-21,660	-1,128

Based on Table 3, the Independent T-test shows that there is a difference in performance between the control and intervention groups ($p\text{-value } 0.030 < 0.05$) with a mean difference between groups of 11.394 which is higher in the intervention group. Evaluation stage, apart from making improvements according to the evaluation results at each stage, analysis was also carried out using different tests to see the effect of the training model on reducing the incidence of preeclampsia. The results of the normality test show that the data is not normally distributed, so the analysis uses Wilcoxon and the results can be seen in Table 4.

Table 4. Results of analysis of reducing the incidence of preeclampsia

	Shapiro-Wilk		Wilcoxon Signed Ranks Test		
	Statistic	df	Sig.	Z	Asymp. Sig. (2-tailed)
Pre-Post Preeclampsia	.855	16	.016	-2.745b	.006

The Wilcoxon test results show a P value of $0.006 < 0.05$, which means that the Postnatal Complementary Care (PCo) Preeclampsia training model has been proven to reduce the incidence of preeclampsia in postpartum mothers. Based on the evaluation of each stage, the Postnatal Complementary Care (PCo) Preeclampsia training model is feasible and can be applied as a training guide to improve the competence of PCo preeclampsia and the performance of midwives to reduce the incidence of preeclampsia in postpartum women.

The PCo Preeclampsia training model design

The results of the needs identification show that the MMR prevention program in Banyumas Regency still requires appropriate methods. Activities to reduce MMR are mostly centered on clinical services, so they are not yet directly targeted at complementary midwifery services. Health workers, especially midwives, need appropriate complementary midwifery service skills to prevent and treat preeclampsia in postpartum women, which will affect performance in handling postpartum cases with preeclampsia. In line with WHO recommendations regarding efforts to implement the Traditional Medicine Strategy through the use of complementary services for human-centered health and promoting the safe and effective use of complementary services through regulations, research, and integration of products into the health system as appropriate (WHO, 2013). So, it was agreed that the strategy for reducing postpartum preeclampsia in Banyumas Regency was to provide PCo training for midwives. The validation results of the training model which was equipped with learning modules and videos by experts showed an Aiken's V value of 0.95 (very high), so the PCo preeclampsia training model developed was declared valid and suitable for use.

The PCo preeclampsia training model can improve midwives' competence in providing PCo Preeclampsia.

The results of the analysis showed that the characteristics of midwife respondents were that the majority of midwives were aged more than 42 years (66.7%) in the intervention group and less than 42 years in the control group (57.6%). Age has a significant influence on midwife performance. Some perceptions about older workers are that they are less creative, less flexible, more resistant to change, and not interested in training (Bertolino et al., 2013).

The majority of midwives' work experience was more than equal to 20 years (66.7%) in the intervention group and less than 20 years (63.6%) in the control group. According to Adriansyah (2017), it is stated that the longer someone works in an organization, the more experienced that person is so their work skills are better. The results of this study also showed that the majority of midwives had a minimum education of D3 Midwifery in both the intervention (60.6%) and control (78.8%) groups. Education influences the learning process, the higher a person's education, the easier it is for that person to receive information, and the more information that comes in, the more knowledge they gain about health (Wawan & Dewi, 2019). Education can influence a

person's competence, because the higher a person's education, the greater their desire to utilize their knowledge and skills in carrying out their duties (Siagian, 2019).

The results of the Mann-Whitney test also showed that there was a difference in competence between the control and intervention groups ($p\text{-value } 0.000 < 0.05$) with a mean difference between groups of 20.7 which was higher in the intervention group. This means that the PCo Preeclampsia training model has a positive effect on increasing the competence of PCo preeclampsia. Training is an organizational policy to improve the capabilities and skills of the organization's human resources to face future challenges. Midwives who receive training by their field will increase their knowledge, and the better their competence, this condition can improve the performance of midwives in providing services according to standards so that service coverage can meet the expected targets (Syafri & Alwi, 2019).

The PCo preeclampsia training model can improve midwives performance

Independent t-test results showed that there was a difference in performance between the control and intervention groups ($p\text{-value } 0.030 < 0.05$) with a mean difference between groups of 11.394 which was higher in the intervention group. Training influences the performance of midwives, this is because training will form the basis by increasing the skills and knowledge needed to improve performance or develop the potential of midwives in the future (Telaumbanua & Absah, 2021). Training can provide knowledge and teaching on things that previously could not be done, complementary health approaches are practiced to maintain health and well-being and are used alongside conventional medicine.

The PCo preeclampsia training model can reduce the incidence of preeclampsia

The results of the Wilcoxon test analysis showed a decrease in the incidence of preeclampsia before and after 3 months of PCo preeclampsia training model intervention ($p\text{-value } 0.006 < 0.05$). The PCo Preeclampsia training model provides competency for midwives to be able to carry out complementary midwifery care which is a combination of three types of complementary therapy, namely lavender aromatherapy, warm foot bath, and slow stroke back massage to prevent and reduce the incidence of preeclampsia. These three therapies are quite easy and do not take a long time but have the effect of reducing high blood pressure and preeclampsia in postpartum mothers.

Inhaled lavender aromatherapy will be bound by the molecules of the olfactory nerve cells (epithelium), and then sent to the hypothalamus in the cerebral cortex (temporal lobe). The temporal lobe is related to the limbic system, namely the part of the brain whose main structures are the amygdala, hippocampus, anterior thalamus, and hypothalamus. The amygdala regulates emotional responses so that it contributes to the cerebral cortex to lower blood pressure, and has a calming effect on the nervous system (Kianpur et al., 2016).

Warm foot baths with warm water ($37\text{--}38.5^\circ\text{C}$) and a mixture of magnesium sulfate salts which are safe for postpartum mothers, will stimulate the nerve sensors in the feet, causing vasodilation of blood vessels and lymph which can increase blood circulation so that it is effective in reducing swelling in preeclamptic mothers (Zainiyah et al., 2019). This also causes a baroreceptor reflex which stimulates parasympathetic nerve activity thereby reducing ventricular pressure. When the ventricles relax, blood flow is smooth, thereby reducing diastolic pressure. The absorption capacity of magnesium salts through the skin when soaking the feet reaches 1% (30 grams in three liters of warm water). Transdermal absorption of magnesium will increase blood magnesium levels which causes vasodilation, anti-inflammation, and reduced blood pressure (Udani et al., 2022).

Touch/massage has a relaxing effect on muscles, tendons, and ligaments. This increases the activity of parasympathetic nerves to release the neurotransmitter acetylcholine which causes systemic vasodilation, thereby reducing heart muscle contractions and resulting in a decrease in blood pressure. Massage also reduces the secretion of norepinephrine hormones and ADH so that it can increase endorphin hormones which results in lowering blood pressure (Jahdi et al, 2016).

The results of this study strengthen previous studies conducted by Rini et al. (2023) regarding complementary and alternative treatments for postpartum preeclampsia that can optimize the management of postpartum preeclampsia under the guidance of a midwife.

Conclusion

The PCo preeclampsia training model developed is valid and can be used as a PCo preeclampsia training guide for midwives. The PCo Preeclampsia training model can increase the competency of midwives in Postnatal Complementary Care for preeclampsia and improve the performance of midwives in efforts to reduce the incidence of preeclampsia by implementing Postnatal Complementary Care for preeclampsia. In the end, the Postnatal Complementary Care Preeclampsia training model can reduce the incidence of preeclampsia.

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