

ORIGINAL ARTICLE

Information-motivation-behavioral-skills Model-based Training to Improve Community Cadres Behavioral Performance for Post-partum Hemorrhage and Pre-eclampsia Prevention

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ABSTRACT

Introduction: Postpartum hemorrhage and pre-eclampsia are the biggest causes of maternal death worldwide. The lack of health workers contributes to the under-detection of pregnancy risks. The informational-motivation-behavioral-skills model based on training theory is applied to increase cadres' performance to develop preventive behavior against postpartum hemorrhage and pre-eclampsia. The study aims to analyze the effects of training and the direct and indirect influence of cadres' knowledge, skills, and motivation on preventive behavior for pre-eclampsia and postpartum hemorrhage. **Materials and methods:** The quasi-experiment was conducted from October to December 2022 by taking an intervention group from the Muslimat NU organization and a control group of existing cadres. A total of 97 Muslimat NU were given training in preventing pre-eclampsia and postpartum hemorrhage while 91 control group cadres carried out routine activities. Knowledge and skills were measured before and after training, while behavior was measured twice over three months. Data were tested using the *Wilcoxon Test* and *Path Analysis* using *Stata software version 16.00*. **Results:** The intervention group's screening behavior remained relatively good until the third month, while the control group experienced a decline. Skills have a direct effect on preventive behavior ($b=0.43$; 95% CI= 0.29 to 0.57; $p<0.001$). Knowledge has an indirect effect on preventive behavior through skills ($b=0.47$; 95% CI= 0.36 to 0.58; $p<0.001$) as well as motivation ($b=0.14$; 95% CI= 0.01 to 0.26; $p=0.027$). **Conclusion:** The informational-motivation-behavioral-skills theory based on training is increasing the performance of community cadres to carry out preventive behavior for pre-eclampsia and postpartum hemorrhage.

Malaysian Journal of Medicine and Health Sciences (2025) 21(SUPP3): 141-148. doi:10.47836/mjmhs.21.s3.22

Keywords: IMB theory, Behavior, Pre-eclampsia, Postpartum hemorrhage, Religious-group approach

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INTRODUCTION

Globally, as many as 20 billion pregnant women are at risk of pregnancy, and it is estimated that 830 mothers die every day from preventable causes (1). Postpartum hemorrhage is the highest cause of maternal mortality (MMR), contributing 27.1% of maternal deaths worldwide, followed by pre-eclampsia occupying second place by contributing 15% of maternal deaths (2,3). In Indonesia, MMR indicates the success of development and women's welfare. The maternal mortality rate reflects the magnitude of health problems, resources and quality of services. Currently, the maternal mortality rate still reaches 305/100,000 live births, of

which 30% is caused by postpartum hemorrhage and 13% is pre-eclampsia (4). Maternal and child health problems that often arise in community settings related to maternal mortality are a lack of skilled human resources, low-quality ANC, and inadequate referral systems (5). In community areas, midwives are the central pillar of maternal and child health services. Apart from providing health services, midwives are also burdened with quite a lot of administrative activities. Providing additional trained health workers is also a consideration for the government regarding the enormous cost burden that must be borne (6). It is difficult for providers to cover the health needs of all pregnant women. The lack of skilled health personnel means that the health of pregnant women is not monitored well, so pregnant women may have risky pregnancies and go undetected. A community-based health promotion approach is an alternative solution amidst various limitations that exist in the community. One form of community-based health

promotion is assisting pregnant women by community cadres. The advantage of using Community Cadre is that these resources are taken from communities that have similar ethnic, linguistic, cultural, and socio-economic characteristics and life experiences with pregnant women, which makes it easier for cadres to interact and influence pregnant women to implement healthy behavior (7). Through assistance, cadres can monitor the health of pregnant women while providing a sense of security to pregnant women, and pregnant women can learn to change risky behavior and modify healthy lifestyles. Effective communication between cadres and health workers can be a bridge for health workers in monitoring the health of pregnant women (8).

The information Motivation Behavior Skill Theory Model (IMB theory) suggests that behavior can be formed if a person has good knowledge and skills and high motivation. IMB theory suggests that healthy behavior occurs because a person is well-informed, has high motivation and has skills that are relevant to the behavior (Fisher et al., 2009). The implementation of training-based IMB theory is by providing relevant information and skills to cadres related to detecting pre-eclampsia and postpartum hemorrhage through training. Cadres are trained to measure blood pressure, interpret the results of blood pressure and urine protein measurements, motivate ANC, and make referrals if necessary (9). Additionally, cadres must also have the skills to recognize signs of postpartum hemorrhage, such as shortness of breath and paleness, and measure the volume of postpartum bleeding visually (10). IMB theory has been proven effective in changing preventive behavior towards HIV (11), diabetes care mellitus (12), prevention of malaria in pregnant women using the long-lasting insecticide net (LLIN) technique (13), and preventive nutritional behavior in adolescents to prevent anaemia (14). IMB theory is relevant to many fields because this theory prioritizes information and skills that are appropriate to needs and easy to apply.

We conduct training for cadres regarding knowledge and skills in screening for the risk of postpartum hemorrhage and pre-eclampsia, and then cadres can educate pregnant women. The hope is that pregnant women will be able to recognize the risk factors that originate from themselves. Motivation in IMB theory acts as leverage that comes from oneself and society to carry out screening behavior (15). In implementing efforts to prevent postpartum hemorrhage and pre-eclampsia, community cadres need motivation from within themselves and the environment to be able to assist pregnant women. Self-motivation often comes from self-satisfaction with the outcome expectations of healthy pregnant women. Motivation from the environment can be obtained through family support, good acceptance from the community, and the existence of incentives (16,17). Knowledge and motivation have a direct influence on behavior and can also influence

behavior through the formation of good skills. Cadres who have the skills to detect the risk of pre-eclampsia and postpartum hemorrhage have tremendous potential to carry out preventive behavior. This study aims to analyze the effect of training on screening behavior and prove that IMB theory can improve cadre performance in implementing preventive behavior for postpartum hemorrhage and pre-eclampsia by analyzing the direct and indirect influence of knowledge, skills and motivation on preventive behavior. This study provides input to the government for additional strategies in developing community-based health promotion.

MATERIALS AND METHODS

Ethical Clearance

This study has received approval from the Research Ethics Committee, Faculty of Medicine, Sebelas Maret University 57/UN27.06.11/KEP/EC/2022. The application for informed consent, part of ethical eligibility, has undergone a review process from the ethics committee.

Population study

A quasi-experimental study was conducted involving a treatment group and a control group, which was conducted from October to December 2022. This study was carried out in Bojonegoro Regency involving all villages in three health centers, including Balen Health Center, Sumberejo Health Center, and Mejuwet Health Center. This study uses multivariate analysis with a sample size formula of $n = 15$ to 20 samples per variable (18). The variables analyzed included 4 variables, namely knowledge, skills, motivation, and risk screening behavior for postpartum hemorrhage and pre-eclampsia, so the minimum sample was 80 people/group. The intervention group was selected from the Muslimat Nahdhatul Ulama (NU) organization in Balen District. In Indonesia, the regional government establishes partnerships with various cross-programs and cross-sectors so that the use of the Muslimat NU organization in community empowerment becomes a potential that can be developed. The consideration for choosing the Muslimat NU organization is the unique characteristics that become organizational cultural values. The fundamental uniqueness of the Muslimat NU culture is "kyai centric", where Muslimat NU members submit and obey the orders of their leaders. Obedience to spiritual leadership is a way of life worth more than money or possessions (19,20). This unique cultural value underlies the selection of intervention group subjects. Together with the Chair of the Muslimat NU we selected members to be part of the intervention group sample according to the inclusion criteria. The sample selection criteria were members who held structural positions in each village in the research area. By handing over the sample selection to the chairman of the Muslimat NU it is hoped that its members will obediently participate in the research program as expected due to obedience to

the orders of the head of the organization. One hundred people from 23 villages in Balen District were selected with a relatively equal quota of 4 to 5 NU Muslimat administrators to be divided into the intervention group. When the training program was being implemented, 3 people did not attend and were considered dropouts, so the sample in the intervention group was 97 people. The control group was taken from health cadres who had been walking regularly. A total of 91 cadres from Sumberejo District consisting of 13 villages in the working area of the Sumberejo Health Center and 13 villages in the working area of the Mejuwet Health Center were taken as the control group. The control group was taken from all 91 health cadres in Sumbererjo District.

Intervention

Training on screening for pre-eclampsia and postpartum hemorrhage was given to the intervention group for 2 days with learning and practical activities. The intervention group was divided into 4 small groups consisting of 20 to 25 people/group, with each group receiving 1 facilitator with a basic master's education in midwifery and having received previous training. Learning was given in the form of simple theories about pre-eclampsia and postpartum hemorrhage. In contrast, practice was given through skills in measuring blood pressure, reading interpretation of blood pressure and urine protein measurement results, visually identifying blood volume, communication skills, and educational skills. The control group was not given training and carried out routine tasks. Both groups measured knowledge and skills for screening the risk of postpartum hemorrhage and pre-eclampsia before and after training.

In contrast, behavior was measured along with mentoring activities for pregnant women. After the training program was completed, both groups carried out screening behavior for pregnant women. Cadre behavior is evaluated at the first month and the end of 3 months. During the training, a special session was given to the head of the Muslimat NU to reinforce the intervention group in carrying out the screening program. We formed a WhatsApp group consisting of cadres, facilitators, and village midwives as a channel for coordination, consultation, and supervision. Muslimat NU cadres and control group cadres reported all findings related to the health of pregnant women to researchers and village midwives for follow-up.

Variable measure

The independent variables in this study are knowledge, skills and motivation, while the dependent variable is screening behavior for high risk of postpartum hemorrhage and pre-eclampsia. We developed a questionnaire to measure knowledge through a list of questions regarding basic knowledge of the risks of postpartum hemorrhage and pre-eclampsia. Questions are structured with dichotomous answers with a pattern of right and wrong

answers. If the answer is correct, score = 1; if the answer is wrong, score = 0. The motivation questionnaire uses a Likert scale based on favourable and unfavourable statements. The questionnaire assessment of favorable statements strongly agree = 4, agree = 3, disagree = 2, strongly disagree = 1. Meanwhile, unfavorable statements strongly agree = 1, agree = 2, disagree = 3, strongly disagree = 4. Skills are measured by using an observation sheet. We assess cadre skills including skills in measuring blood pressure, reading interpretation of blood pressure and urine protein measurement results, measuring blood volume visually, and communication skills. Skills are assessed according to score = 3 if the cadre can practice all skills well, can implement some skills with a score = 2, and can only implement one or fewer skills with a score = 1. Screening behavior variables are measured and documented through screening activities conducted by cadres, including recording the risk of postpartum hemorrhage and pre-eclampsia in pregnant women and providing education to pregnant women. A total of 4 enumerators assessed the behavior carried out by cadres. If all of the behavior is implemented and appropriate, it is given a score of 3; if only part of it is implemented and appropriate, it is given a score of 2; if only one or less or the activities carried out are not appropriate, it is given a score of 1. Validation of screening behavior carried out by cadres is with the pregnant mother's signature as proof that the cadre has assisted. Validity and reliability tests on the variables of knowledge, motivation and screening behavior used Cronbach's alpha with an average of 0.7, 0.7, and 0.9.

Statistical analysis

Demographic data characteristics, including age, parity, occupation and education, were analyzed descriptively and presented as a frequency table in percentage units. Bivariate analysis was carried out to measure the effect of training on cadres' abilities in risk screening behavior for postpartum hemorrhage and pre-eclampsia. Knowledge, skills and screening behavior of both groups were measured before and after the intervention using the *Wilcoxon Test* with a significance level of $\alpha = 5\%$. Likewise, the knowledge, skills and screening behavior of the intervention group were compared with the control group to assess the effectiveness of the training using the *Wilcoxon Mann-Whitney Test* with a significance level of $\alpha = 5\%$. The mean value indicates better or worse behavior. The greater the mean value, the better the behavior. Multivariate Analysis is used to analyze the relationship between variables simultaneously. *Path analysis* is used to analyze the influence of independent variables on the dependent variable simultaneously. *Path analysis* analyzes the direct and indirect influence of information variables obtained from measuring knowledge, motivation and skills on screening behavior simultaneously. Results are considered statistically significant if the value is $p < 0.05$. the *goodness of fit* of the *Path Analysis* model is based

on the *Chi-square* > 0.05, the *Root Mean Square Error of Approximation (RMSEA)* < 0.08, the *standardized Root Mean Square residual (SRMR)* 0.000, the *CFI* and *TLI* values > 0.90. Data was tested using *Stata software Version 16.00*.

RESULTS

Respondent characteristic

The characteristics of the respondents are shown in Table I. The age distribution of the intervention group and the control group was dominated by those aged 36-55 years, namely 78 people (80.4%) in the intervention group and 57 people (62.7%) in the control group. Regarding education, the intervention group was dominated by primary education consisting of elementary and junior high school, namely 47 people (48.4%). The control group was dominated by secondary education, namely 56 people (61.5%). According to the work, the majority of both groups did not work, that is, 57 people (59.9%) in the intervention group and 59 people (64.8%) in the control group. Based on the number of children in the two groups, the majority were multiparity with more than two children, namely 69 people (71.1%) in the intervention group and 78 people (85.7%) in the control group.

Table I: Demographic data of both Community Cadre intervention group and control group

Variable	Intervention		Control	
	n	%	n	%
Cadre's Age				
20-35	7	7.2	31	34.1
36-55	78	80.4	57	62.7
56-65	12	12.4	3	3.3
Cadre's education				
Basic education	47	48.4	25	27.7
Middle education	43	44.3	56	61.5
High education	7	7.2	10	11
Cadre's Job				
Job	40	41.2	32	35.1
Jobless	57	59.9	59	64.8
Parity				
≤ 2	5	5.2	4	4.4
Multiparity	69	71.1	78	85.7

Training effect

We used bivariate analysis to measure the effect of training on risk screening behavior for postpartum hemorrhage and pre-eclampsia in cadres. Analysis within groups was tested using the Wilcoxon test and is shown in Table II. In the treatment group, there were differences in knowledge and skills in screening for the risk of pre-eclampsia and postpartum hemorrhage before and after training, which was statistically significant at $p < 0.0001$. There was an increase in the average knowledge unit value after training of 15.75 compared to 12.29 before training. There was an increase in the average skill score after training of 5.87 compared to 2.36 before training. It shows that both the knowledge and skill variables after training are better than before.

The behavioral variable shows that it is not statistically significant, $p = 0.991$. Behavior was observed a month and 3 months after treatment. The results show that the average of the first and second observations is relatively the same. It shows that the screening behavior carried out by cadres is relatively constant or continues to be carried out with relatively the same quality even though 2 months have passed. The control group showed skills and behavior before and after observation, which were not statistically significant $p > 0.05$. It indicates that skills and behavior do not show changes. Meanwhile, the knowledge variable is statistically significant at $p < 0.001$, with the average observation afterward being better.

Table II explains the bivariate analysis within groups. The intervention group shows that knowledge and skills after training are better than before, and behavior of postpartum and preeclampsia screening tends to be stable for up to 3 months. Meanwhile, in the control group there were no differences in skills even though knowledge increased. Behavior tends to decline after 3 months.

Table II: Bivariate analysis within group

Variable	Intervention group			Control group		
	Mean ± SD		p	Mean ± SD		p
	Before	After		Before	After	
Knowledge	12.29 ± 3.48	15.75 ± 2.46	0.000	11.56 ± 2.95	12.78 ± 2.97	0.000
Skill	2.36 ± 1.4	5.87 ± 0.33	0.000	4.26 ± 1.67	4.54 ± 1.47	0.086
Behavior*	19.9 ± 1.96	19.74 ± 2.89	0.991	17.65 ± 3.7	16.93 ± 4.42	0.336

p-value by Wilcoxon-Test

*Behavior was observed in the first month after training and after 3 months

Analysis between groups is shown in Table III. The *Mann-Whitney Test* was performed to compare screening behavior in the two groups. In the situation before treatment, the knowledge variable between the two treatment and control groups did not show a difference with p -value = 0.135. Meanwhile, the skills and behavior variables show significant differences. The control group showed a higher mean value than the treatment group, 4.26 compared to 2.36 and statistically significant $p < 0.001$. It shows that the screening skill variable in the initial condition of the control group was better than that of the treatment group. Screening behavior variables were measured after the intervention was implemented. The average behavior of the treatment group was 19.9, higher than the control group's 17.65 and was statistically significant at $p < 0.001$. It shows that the behavior in the treatment group was better than the control group. Conditions after treatment showed that all variables of knowledge, skills and screening behavior at high risk of pregnancy, pre-eclampsia and postpartum hemorrhage in the treatment group had a higher average than the treatment group and were statistically significant at $p < 0.001$. It shows that after treatment, the knowledge, skills and screening behavior in the treatment group were better than the control group.

Table III: Bivariate analysis between group

Variable	Before			After		
	Mean $\pm$ SD		p	Mean $\pm$ SD		p
	Intervention	Control		Intervention	Control	
Knowledge	12.29 $\pm$ 3.48	12.78 $\pm$ 2.95	0.135	15.75 $\pm$ 2.46	12.78 $\pm$ 2.97	0.000
Skill	2.36 $\pm$ 1.4	4.26 $\pm$ 1.67	0.000	5.87 $\pm$ 0.33	4.54 $\pm$ 1.47	0.000
Behavior*	19.9 $\pm$ 1.96	17.65 $\pm$ 3.7	0.000	19.74 $\pm$ 2.89	16.93 $\pm$ 4.42	0.000

p-value by Mann-Whitney Test

*Behavior was observed in the first month after training and after 3 months

Table III explains that there is no difference in knowledge between the two groups, while the intervention group's postpartum hemorrhage and preeclampsia risk screening skills and behavior are better than the control group.

Implementation of IMB Theory to screening behavior

The *Path Analysis* model shows good *goodness of fit* with the sample data ($\chi^2 = 86,768 \geq 0.05$; $RMSEA = 0.000 < 0.08$; $CFI = 1,000 > 0.90$; $TLI = 1,000 > 0.90$; and $SRMR = 0.000 < 0.05$). Figure 1 shows the direct and indirect influence of knowledge, skills and motivation variables on behavior simultaneously. The results of the influence are shown in Table IV, which shows that preventive skills for pre-eclampsia and postpartum hemorrhage have a direct effect on preventive behavior and are statistically significant. Cadres who have good preventive skills will increase preventive behavior 0.43 times compared to cadres who have poor skills ($b = 0.43$; $CI\ 95\ \% = 0.29\ to\ 0.57$; $p < 0.001$). Knowledge has an indirect effect on preventive behavior through skills and is statistically significant ($b = 0.47$; $95\% CI = 0.36\ to\ 0.58$; $p < 0.001$). Likewise, motivation has an indirect effect on behavior and is statistically significant ($b = 0.14$; $95\% CI = 0.01\ to\ 0.26$; $p = 0.027$).

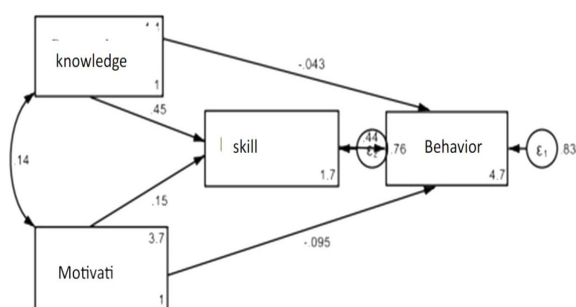


Figure 1: The Informational-Motivation-Behavioral Theory Model (IMB Theory). The IMB theory explains that knowledge, skills, and motivation influence the formation of health behavior. Knowledge and motivation can directly influence behavioral change or can indirectly influence through skills.

Table IV: Direct and indirect effect of knowledge, skill, and motivation to behavioral prevention of preeclampsia and hemorrhage postpartum

Dependent variable	Direct effect	Independent variable	b	p	95% CI
Preventive behavior		Skill	0.43	0.000	0.29-0.57
		Knowledge	0.47	0.000	0.36-0.58
		Motivation	0.14	0.027	0.01-0.26
Chi Square	>0.05				
RMSEA	0.000				
CFI	1.000				
TLI	1.000				
SRMR	0.000				

DISCUSSION

This study proves that the training program is efficacious in improving the performance of postpartum hemorrhage and pre-eclampsia screening behavior among cadres. Initial knowledge in both groups is relatively the same. The intervention group came from an Islamic religious organization, one of the government's collaborative partners, which consistently receives information about the latest health policies. Meanwhile, the control group is cadres who have been running and carrying out routine tasks. Meanwhile, in the initial condition, the control group's skills were better than the intervention group. It can be understood that existing cadres have carried out their duties for a long time and are familiar with the skills that must be possessed to carry out preventive behavior. The training program proved that the knowledge and skills of the intervention group were better than the control group. Training is carried out directly to accommodate cadre characteristics such as literacy level, attitudes, values and mental capacity to carry out preventive behavior (21). Cadres are trained in screening skills until they can practice them independently. Cadre skills that are directly observed provide information on their ability to carry out their duties. It was proven that the intervention group's screening behavior was also better than the control group. Even during the second observation, after the intervention lasted 3 months, the behavior was still implemented well, while the control behavior showed a decline.

This study also proves that the IMB theory forms preventive behavior for pre-eclampsia and postpartum hemorrhage in cadres through increasing knowledge, skills and motivation. Cadres with good preventive knowledge will have stronger motivation and better skills in preventive action. Cadres who have good skills

tend to carry out preventive behavior better. On the other hand, someone who is not well-informed and does not have skills tends to produce unhealthy behavior (10). Cadres must have the skills to measure blood pressure and read the interpretation. Pre-eclampsia can be detected as early as 20 weeks gestation. However, the awareness of pregnant women developing pre-eclampsia can be monitored early if, at a gestational age of less than 20 weeks, the diastolic blood pressure shows 80–<90mmHg (22). Often, a diastolic blood pressure of 80 mmHg is still considered normal even though it is actually a risk factor for developing pre-eclampsia. If the cadre's screening skills are good, they will be able to monitor the health of pregnant women and make the right decisions if pregnant women need help. Skills are also taught to recognize physical signs and complaints of pregnant women. Cadres can be aware of swelling on a pregnant woman's face, hands, and feet, visual disturbances, abdominal pain, nausea, vomiting, and slow fetal movements as signs of pre-eclampsia. They can immediately report this to the midwife (23). The social culture that develops in society considers postpartum blood to be dirty blood that must be expelled. Cadres must be able to correct this belief because puerperal blood that comes out >500cc per day is an indication of postpartum hemorrhage. In a community setting, it is not easy to measure blood volume using tools. Therefore, cadres must be able to measure it visually using a sanitary pad (24). Suppose cadres can identify the amount of blood coming out and recognize physical symptoms such as weakness, paleness, and shortness of breath. In that case, cadres can provide education and report the condition of postpartum mothers to prevent complications (25). Lack of recognition of risks, late treatment, and late seeking of help are the biggest causes of death due to postpartum hemorrhage. Prevention of pre-eclampsia and the postpartum hemorrhage must begin when pregnant women carry out ANC. However, lack of resources, education, family support, and culture are often problems of ANC non-adherence (26). In Indonesia, older pregnant women or unmarried pregnant women are considered a disgrace and a sin. It reduces the motivation of pregnant women to carry out ANC because they are embarrassed, so cadres play the role of providing education on the importance of ANC, providing assistance, and monitoring the health developments of pregnant women. In implementing preventive behavior, motivation plays an important role for cadres. Motivation is a force that originates within humans that is direct and persistent to achieve goals (27). Environmental support, such as good acceptance in the community, provision of facilities, government support, and incentives, are factors that strengthen motivation for cadres in screening behavior (5,16). Preventive behavior for pre-eclampsia and postpartum hemorrhage includes providing education and recording the risk factors that exist in pregnant women, motivating pregnant women to carry out antenatal care, and providing assistance from the time the mother is pregnant until the end of

the postpartum period. Pre-eclampsia is the occurrence of hypertension that appears in pregnant women who previously had normal blood pressure and is accompanied by the appearance of protein urine (28,29). In conditions without proteinuria, pre-eclampsia occurs accompanied by signs of damage to the liver, nervous system, hematological system, and kidneys (28,30). The onset of pre-eclampsia occurs during the antenatal care period and can also occur 48 hours to 6 weeks after giving birth, placing pregnant women at risk throughout the perinatal period (31). Cadre assistance cannot be separated from preventive behavior. Assistance with home visits to provide motivation and pregnancy health counselling (32). Low community literacy means that people are less independent in accessing pregnancy health information, so they need assistance from cadres (33). In this study, the IMB theory construct proves that knowledge, motivation and skills influence preventive behavior for pre-eclampsia and postpartum hemorrhage. This theory suggests providing education relevant to the knowledge and skills needed to support preventive behavior change (14). In IMB theory, knowledge and motivation can have a direct or indirect effect on behavior, but in this study, knowledge and motivation have an indirect effect on behavior through preventive skills. cadres must have special skills in identifying risk factors for pre-eclampsia and postpartum hemorrhage to behavior screening. The weakness of the IMB theory is that it is not able to evaluate the impact of long-term training, so follow-up must still be carried out periodically (14). Another weakness of the IMB theory is that it does not include social demographics such as age, occupation, education level, parity, income, economy and employment in relation to behavior changes (13). However, in Indonesian culture, people will respect older people. Most of both groups are 36-55 years old, whereas pregnant women will view cadres as older and more experienced people who will more easily influence behavior change (34). Most cadre groups do not work, so they have relatively ample time to make home visits. Considering that the potential role of cadres can be optimized, health workers, especially midwives as supervisors of pregnant women's health, must have good knowledge and skills regarding preventing pre-eclampsia and postpartum hemorrhage from being transferred to cadres as a sustainable collaboration (34).

These findings have implications for community empowerment innovation programs involving religious organizations. Muslimat NU with a large congregation and high obedience character can be a trained resource that can reach a wide area, so that the government can consider cooperation with the Muslimat NU organization by actively involving Muslimat NU in the program to assist pregnant women. For pregnant women, the existence of Muslimat NU is a support system in undergoing pregnancy with a sense of greater security and monitoring. This program provides early warning to cadres and pregnant women in preventing

high-risk pregnancies and indirectly as a program to reduce maternal mortality.

CONCLUSION

Our findings prove that training-based IMB theory is efficacious in improving cadre performance in preventive behavior for pre-eclampsia and postpartum hemorrhage. Increasing preventive behavior performance is influenced by relevant knowledge, appropriate skills, and motivation from oneself and the environment. The weakness of this research is that it cannot explain how long the training effect will be maintained and influence cadre behavior. We conducted the research for three months, so we cannot yet be sure whether the knowledge, skills, and screening behavior of cadres will be retained well and consistently if cadres accompany pregnant women during their pregnancy. Therefore, it is necessary to follow up to refresh the knowledge and skills of cadres to maintain and improve the performance of cadre preventive behavior. This study also has weaknesses in the study design. We were unable to control the behavior of the control group. The closeness of the control group cadres who have accompanied pregnant women since the beginning and the control group cadres knowing that their performance is being assessed will likely show different behaviors from those carried out daily so that it can affect the results of the study. This study was conducted on Muslimat NU cadres, and these results can be generalized to Muslimat NU in other locations in Bojonegoro Regency and Indonesia as an additional strategy to meet the need for trained health resources to support reducing maternal mortality in Indonesia.

ACKNOWLEDGEMENT

Thanks are expressed to Prof. Ari Natalia Probandari, head of the public health study program at Universitas Sebelas Maret, Indonesia, Stikes Rajekwesi Bojonegoro, the facilitators and enumerators who helped with the training and data collection process.

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