Precede-Procede Analysis of Prenatal Class Plus Model in the Optimization Education of High Risk Pregnancy

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Precede-Procede Analysis of Prenatal Class Plus Model in the Optimization Education of High Risk Pregnancy

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Abstract

High-risk pregnancies are still common in rural areas. The percentage of high-risk pregnancy in Singorojo sub-district of Kendal District in the last three years has increased significantly. The highest number of cases was in Cening and Singorojo villages. In the past year, 86.88% of pregnancies in Cening village and 55.42% of pregnancies in Singorojo village were categorized as high-risk. The lack in community education limited prevention of high-risk pregnancies. Prenatal Class Plus model is an innovation that was being developed in this study. This is a research and development study with qualitative and quantitative approaches. The "Prenatal Class Plus" model was developed in Cening and Singorojo village. Research subjects were pregnant women, husbands, or families of pregnant women, health cadres, and related stakeholders. Research data were analyzed qualitatively and quantitatively. Prenatal Class Plus model can improve the knowledge, attitude and efforts of pregnant women and their husbands during parturition and prevention of pregnancy complications (P4K).

Introduction

Pregnancy and parturition-related mortality and morbidity is one of the major problems in developing country, including Indonesia. 99% of maternal death was found in developing countries (Guiterrez *et al.*, 2007; Karlsen *et al.*, 2011). Until the end of 2015 MDGs, Indonesia is one of the country that failed to reduce Maternal Mortality Rate (MMR) to 102/100.000 live birth. Similarly in Kendal district, maternal mortality also tend to increase every year. The number of maternal deaths in 2015 was 23 cases, 19 cases in 2016, and rose drastically to 25 cases in 2017 (Dinkes Kendal, 2018).

The main cause of maternal death were hemorrhage, hypertension and anemia (Hb <10g/dl). The determinants of maternal deaths were pregnancy complications, labor complications, and history of maternal disease (Aeni, 2012, 2013; Kaddour et al., 2008). In addition, a history of maternal disease may also increase the risk of maternal death (Manuaba, 2009; Bazaar & Azhari, 2012).

The "3 lates" condition, late in decision making, late in reaching the referral site, and late in receiving appropriate help at healthcare facility are risk factors for maternal mortality. In addition, there are "4 too" conditions in pregnant women which are risk factors for

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maternal death, namely too old, too young when giving birth, too frequent birth and too close gap between each birth (Dinkes Kendal, 2018).

Geographical location of Singorojo and the rural sociocultural conditions contributes to maternal death. The long distance between the village to the nearest referral healthcare center (more than 33 kilometers) also contributes to the increased risk of maternal mortality, especially during labor (Dinkes Kendal, 2018).

The working area of Puskesmas Singorojo I experienced an increase in the number of high-risk pregnancy cases in the last three years. The percentage of high-risk pregnancies increased from 37.5% to 58.9% from 2015 to 2016 respectively. The percentage has remained unmitigated at 58.17% (Dinkes Kendal, 2018).

Cening and Singorojo villages are two villages located in the working area of Singorojo Puskesmas that experienced an increase in high-risk pregnancy in the last 3 years. The percentage of high-risk pregnancy in Cening village was 41.42% in 2015, 65.75% in 2016 and increased again to 86.88% in 2017. Similarly, in Singorojo village the percentage of high-risk pregnancies was 36.25% in 2015, 39.24% in 2016 and then increased drastically to 55.42% in 2017 (Dinkes Kendal, 2018).

These facts shows that more than half of pregnancies in these areas were high-risk pregnancies. Such condition has a significant impact on the mother such as abortion, bleeding, preeclampsia, convulsions, reduced fetal movement, preterm labor, growth and development disturbance during pregnancy, premature rupture of membranes and labor complications, and could even result in maternal death.

Labor planning in high-risk pregnancy is an essential effort to prevent complications and emergency during labor. The inhibiting factors must be identified and minimized in order to resolve the problem. Conversely, the factors that support, strengthen must become strengthened to solve the problem.

Preliminary study showed that 72% of pregnant women do not know the steps in planning a safe birth. In addition, they have not made any preparations for delivery. Pregnancy and childbirth are still regarded as a natural process experienced by a woman.

The lack of knowledge in the community causes delay decision-making when an obstetric emergency occurs during labor (Aeni, 2012). Early detection of risk factors for pregnancy disorders must be known by every pregnant woman and the community. This early detection will contribute as efforts to reduce maternal death.

A creative and innovative health education strategies to improve knowledge, attitude and practice to prevent high-risk pregnancy and its complications is needed for pregnant women and their families in rural areas. This is because the risk factors of high-risk pregnancy are still high and education is still limited in rural areas.

The government has issued a maternal class program in an effort to reduce maternal and childbirth mortality. However, the results was not optimal. The development of the Pregnant Mothers Class Plus model is an innovative effort to optimize family education programs in Antenatal Care and mapping high-risk pregnancies in rural communities. This model involve the active role of pregnant women and her family, especially the husband. This study aimed to analyze the role of the Pregnant Plus Mothers Class model in early detection of high-risk pregnancies and their effects on knowledge, attitude, and prevention practices for high-risk pregnancy.

Method

This study is a research and development study with qualitative and quantitative approach. This research aimed to develop Pregnant Mothers Plus model and analyze its effectiveness. This model is developed through increasing the role of family, especially husband in pregnant class.

This model was developed Cening and Singorojo village which had the highest number of high-risk pregnancies in Singorojo region. The subjects were pregnant mother, husband or family of pregnant mother, health cadres and related stakeholders in the area including village midwife, head of Puskesmas and village head.

The instruments used in this study were FGD guides and questionnaires. The FGD guides were used as an instrument to

determine the implementation of pregnant mothers' classes and to test the feasibility of the Pregnant Mothers Class Plus model as a high-risk pregnancy education method in rural communities. The questionnaires were used to collect data on knowledge, attitude, and prevention practices for high-risk pregnancies before and after the application of the Maternal Plus Model Class model.

Model development data were analyzed descriptively, while model effectiveness data was analyzed quantitatively. Qualitative research data from the development stage of "Pregnancy Plus Class" as the method of family education in Antenatal Care and high-risk pregnancy mapping in rural communities was analyzed descriptively narrative and the results were used to refine the model draft. Quantitative data in the form of knowledge score, attitude and practice of ANC conducted by pregnant mother before and after application of "Class of Pregnant Mothers Plus" model was analyzed by McNemar test or its alternative.

Results and Discussion

The development of Maternal Class model in this study used the Precede-Procede Model framework according to Lawrence Green. The Precede framework includes social diagnosis, epidemiological diagnosis, behavior and environmental diagnosis, education diagnosis, administrative diagnosis and policy diagnosis. The Procede framework is the implementation and evaluation of the model in development.

The first stage in the Precede-Procede model is social diagnosis. The results of initial data collection found that high-risk pregnancy is a health and social problem in Kendal district, especially Singorojo district. Until now, high-risk pregnancy is still a serious problem as there are many pregnant women with "4 too" conditions (too young, too old, too frequent, and too close). Areas located far from adequate healthcare facilities is an inhibiting factor in reducing high-risk pregnancy cases

Cening and Singorojo villages are two villages in the working area of Singorojo Puskesmas that experienced an increase in high-risk pregnancy in the last 3 years. Both villages are located far from healthcare facility, hence maternal care is deemed inadequate because it was only provided by local midwives.

The second stage is epidemiological diagnosis. Epidemiological diagnosis for high-risk pregnancy was conducted using Poedji Rochjati score. The basis for high-risk category are age, pregnancy history, labor history, and history of disease. Scores from every conditions are summed, and the result is grouped into 3 (three) categories, namely low-risk pregnancy, high-risk pregnancy and very high-risk pregnancy.

1) Low Risk Pregnancy (LRP)	: total score 2
2) High Risk Pregnancy (HRP)	: total score 6-10
3) Very High Risk Pregnancy (VHRP)	: total score ≥ 12

Epidemiological diagnosis showed that out of 135 pregnant women in Cening and Singorojo villages (Singorojo subdistricts, Kendal district), 31.11% were in high risk pregnancy category (KRT), and 16.29% in very high risk category (KRST). The determinants of risk pregnancies that occur in the region are listed in table 1 below.

Table 1 shows that the determinants of pregnancy risk include: age, number of parity, distance from previous pregnancy, history of miscarriage, history of caesarean section and history of eclampsia/pre-eclampsia. The study data showed 44.44% were pregnant at less than 20 years old and over 35 years old, 25% had been pregnant more than 4 times, 8.33% had less than 2 years gap from previous pregnancy, 5.92% had a miscarriage and 16% had Caesarean section.

The third stage is a behavioral diagnosis (behavioral diagnosis). Behavioral diagnosis is performed to describe preparation efforts for birth and prevention of complications conducted by pregnant women and their family. The result of behavioral diagnosis indicates that pregnancy preparation and prevention of complications in this region was low. This is indicated by the lack of initiative among pregnant women to have ANC by local village midwives. Based on the interview with village midwives, it was known that pregnant women was recorded by village cadres and then followed up by outreach from village midwives. This fact shows the lack of initiative among pregnant women to conduct ANC.

Table 1. Determinants of Pregnancy Risk

Determinant	F	%
Age		
< 20 years	18	13.33
years	75	55.56
> 35 years	42	31.11
Education		
Below Elementary School	3	2.22
Elementary School	9	6.67
Junior High School	81	59.68
Senior High School	34	25.18
College or higher	8	6.25
Employment		
Working	65	48.00
Housewife	70	52.00
High Stature		
≤ 145 cm	0	0.00
> 145 cm	135	100.00
Number of births		
< 4 times	101	75.0
≥ 4 times	34	25.0
Distance from previous gestation		
< 2 years	11	8.33
≥ 2 years	124	91.67
Abortion		
Yes	8	5.92
Never	127	94.08
Caesar operation		
Yes	22	16.00
Never	113	84.00
History of eclampsia/Pre-eclampsia		
Yes	0	0.00
Never	135	100.00

Source: Primary Data

The role of husband in ANC was still low. This means that when ANC was conducted by midwives, most pregnant women were accompanied by her husband or family. The results of this study shows that only 17.39% of pregnant women were accompanied by her husband during ANC. This shows that the role of husband in antenatal care (ANC) is still low although the support and assistance of husband during ANC is very important psychologically and can encourage pregnant women in making decisions related to actions that support pregnancy care and efforts that must be prepared by the family to prepare a good delivery.

In addition to ANC, the low level of preparation for pregnancy and prevention of complications by pregnant women and her families is also shown by lack of delivery planning, unprepared for labor care cost, and lack of blood donors which have never been considered by pregnant women and her family.

The fourth stage is the educational and organizational diagnosis. This diagnosis is performed by analyzing the knowledge and attitude of pregnant women and their husbands related to high-risk pregnancy and risk factors that lead to high risk pregnancy and pregnant

women's attitude toward early detection, prevention and management of high-risk pregnancy. Data collection at this stage was conducted using questionnaires.

The results showed that out of 135 pregnant women studied, 66.7% did not have sufficient knowledge about high-risk pregnancies as well as preparations for labor and prevention of complications (P4K). Many pregnant women in the region do not know about high-risk pregnancies. They still consider that pregnancy is a natural process experienced by a woman. The symptoms felt during pregnancy are considered to be normal and certainly experienced by pregnant women. In addition, many do not know the ideal age for pregnancy and childbirth. Many of them do not know that age <20 years old and >35 years old are risk factors for pregnancy complications. In the study sites, 13.33% of pregnant women were aged less than 20 years old, and 31.11% were aged over 35 years old. There are also many women in the region who do not know that bleeding and eclampsia are the main cause of maternal death.

In the educational and organizational diagnosis stage, attitude of pregnant women towards efforts of high-risk pregnancies management and preparations for labor and prevention of complications (P4K) is also being described. The results of this study indicates that there are many pregnant women who are less supportive towards high-risk pregnancy management efforts and preparations for labor and prevention of complications, as shown by 53.33% with not supportive attitude. Bad attitudes, among others, was indicated by the statements of pregnant women on pregnancy risk. They assume that pregnancy is a natural process, hence it does not need to be regulated and restricted. Pregnancy may occur as long as it is desirable even though their age is not ideal for another pregnancy. In addition, there are still many pregnant women who refuse to check their pregnancy at least once a month in healthcare facilities as an effort to detect and manage pregnancy risk. According to them, the mandatory pregnancy examination is the examination at the beginning of pregnancy and just before birth. Therefore, they only check their pregnancy again when it has reached 8 months or more.

They are less aware that routine monthly pregnancy checkups (ANCs) would help to detect symptoms from risk factors for high-risk pregnancies much earlier. In addition, pregnant women who have been pregnant and gave birth before and had have no history of certain diseases felt calmer with their current pregnancy and hence only checked their pregnancy at the early months and at the last months before labor.

The fifth stage is administrative and policy diagnosis. The purpose of this stage to provide an overview of Pregnancy Class program implementation in the study location, and to analyze factors that become the strength, weakness, potential and threat of innovative "Pregnancy Class" program as model to optimize family education on antenatal care and high-risk pregnancy mapping at the study location. The administrative and policy diagnosis analyze the implementation of pregnant women's classes that has been conducted.

Based on the Focused Group Discussion (FGD) result conducted with midwives, health cadres, and village head, it was known that: (1) Pregnancy Class program has existed in every village (each village had one pregnancy class), (2) pregnancy class was held 3 times a year, (3) pregnancy class activities was conducted in the village hall, (4) pregnancy class could not reach all pregnant women in the village (only women who live near the village hall participated) (5) husband or other family member has never been involved in pregnancy classes, (the class was only followed by pregnant women).

Analysis of factors that become the strengths, weaknesses, opportunity and threats of innovative "Pregnancy Class Plus" program as a model to optimize family education on antenatal care and high risk pregnancy mapping was done by SWOT analysis.

Based on the above SWOT analysis matrix, we can see that the Pregnancy Class Plus can be a promotional model in optimizing efforts to reduce maternal mortality and high risk pregnancy through intensive educational process by involving husband or other family members as motivator and decision maker in the family, as follows: 1) Pregnancy Class schedule

IFAS / EFAS	S (Strength) Internal Factors that could be Strength	W (Weakness) Internal Factors that could be Weakness
	1. There is a person in charge of Pregnancy Class in PHC 2. Midwives take a role as fascilitator 3. There is a room and equipment that support the pregnancy class program (ventilation, lighting, mannequin) 4. There is funding from village government	1. There is no organization structure for Pregnancy Class 2. There is no SOP for Pregnancy Class in the village 3. Lack of equipment that support the activity (such as manual book,food model, family-planning kit, etc) 4. Some husband work outside the village 5. There is no plan to develop the Pregnancy Class 6. There is no logbook or administrative activity to document the program
O (Opportunity) External Factors that could be opportunity 1. Husband as motivator and decision maker in family 2. Husband and other family members often escort to antenatal care 3. Health cadres take a role as facilitator 4. Facilitator already well-trained	**SO Strategy** (use strength to utilitize the opportunity) 1. Pregnacy Class could be optimalized by involving the husband or other family member 2. Need a coordination from PKK and health cadres to help pregnant women to participate 3. The activity from Pregnancy Class should held at certain places (eg. RW)	**WO Strategy** (minimalize weakness to utilitize the opportunity) 1. Pregnancy Class schedules are made alternately so that the equipment (mannequin, educational media) can be used interchangeably 2. Implementation refer to guideline from health ministry 3. Involve PKK and Posyandu cadres in organizational structure and project officer in Pregnancy Class
T (Threat) External Factors that could be threat 1. Husband participation still low 2. Pregnancy Class held in working hours 3. Lack of supervision from officer	**ST Strategy** (use strength to overcome the threat) 1. The Class scheduled in holiday or after work hours 2. Supervision involve the village governing body	**WT Strategy** (minimalize weakness to avoid the threat) 1. The class scheduled in holiday and conduct in some places 2. Make a documentation and report that going to be evaluated by village governing body

Figure 1. SWOT Analysis Model, Development of "Pregnancy Class Plus" in Rural Communities

is made alternately so that the equipments (mannequin, educational media) can be used interchangeably; 2) Implementation refer to the guidelines from the Ministry of Health; 3) Involves PKK and Posyandu cadres in the organizational structure and person in charge of Pregnancy Class in the village, 4) Pregnancy class activities conducted at certain locations (eg RW) in the afternoon or holidays so that it does not interfere with husband's work, and 5) Implementation of pregnany classes at the village level directly evaluated by the village governing body.

The sixth phase is implementation. Before the Pregnancy Class Plus model is implemented, a model validation test by the relevant field experts will be conducted, including experts in maternal and child health, community empowerment, and health media, 1 person each. Feasibility assessment of Pregnancy Class Plus model include several aspects, namely: 1) conformity with high-risk pregnancy problem, 2) model substance, 3) model innovation, 4) community's ability to run the model and 5)

potency of model sustainability. Assessment using the scale as follows:

Scoring value:

1 2 3 4 5

disagree agree

total maximum score = validator number x maximum score
= 3 person x 5
= 15

Validation formula = Total score validator x 100%
Total score maximal

The assessment interpreted as follows: the model is particularly suitable if the value reaches 76 to 100, acceptable if the value is between 51 and 75, unsuitable if the value is between 26 and 50, and highly unsuitable if the value is 0 to 25.

Based on the model validity test, pertaining to the model conformity aspect to the high risk pregnancy problem, it is known that the total value from three validators was 14 (weight of validation = (14/15) x 100 = 93.33). The value indicates that the model was deemed to be very appropriate for high-risk pregnancy problem. This is because intervention through educational program will be able to increase the knowledge of community, which will ultimately change the community behavior, especially the family. Early pregnancy risk detection will be able to improve the attitude of pregnant women and their families towards antenatal care as an effort to prevent emergencies or complications due to high risk pregnancies.

Assessment of the substance aspect was intended to find out the suitability of the Pregnancy Class Plus model to the goal. According to the substance aspect, Pregnancy Class Plus model was deemed by experts to be appropriate to its goal, which is raising family awareness, especially pregnant women and their husbands in early detection of high-risk pregnancies and improvement of antenatal care by pregnant women. Assessment result from the validators was a total value of 15 (weight validation = (15/15) x 100 = 100).

The assessment of the innovation aspect of the model resulted in a total value of 10 (weight of validation = (10/15) x 100 = 66.67). This value indicates that the Pregnancy Class Plus model is innovative because the maternal class program in this model is supported by the active role of husband or family. Pregnant class participants are not only the pregnant women, but also include their husbands or relatives. For the capability of community to run the model, the validators gave a total value of 9 (the weight of validation = (9/15) x 100 = 60.00). This value indicates that this model is absolutely possible to be implemented by the community. This model will be strengthened by the support of pregnant women's husbands and related parties such as village governing body and village midwives as the person in charge for maternal and child health in the region.

In the assessment of sustainability potential aspect of the model, the validator gave a total value of 10 (weight of validation = (9/15) x 100 = 66.60). This suggests that the Pregnant Class model has good sustainability potential with support from stakeholders. Empowerment of pregnant women and their husbands or families should always be done to improve the community's capability in early detection of risk pregnancies as well as complications management and preventive efforts.

Pregnancy Class Plus model was implemented in two villages, Singorojo and Cening, which had the highest number of high-risk pregnancy cases. Pregnant Class Plus was held for 3 months, twice each month.

The seventh phase is evaluation of Pregnancy Class Plus model implementation. Prior to implementation, the study subjects were given pre-test and after the completion of the program, post-test was conducted. The study subjects were pregnant women and their husbands who attended at least 75% of the class. Based on these conditions, we obtained 69 couples. Based on the evaluation of 69 couples who

attended the class, the result is presented in table 2.

Table 2 shows that after Pregnancy Class Plus model implementation for three months, there was a significant increase in knowledge on high-risk pregnancy, and the Birth Prevention and Prevention (P4K) planning program. Prior to joining the Pregnancy Class Plus program, 46 couples (66.67%) still had inadequate knowledge about high-risk pregnancies and did not know about planning, delivery, and complication prevention program (P4K). There are still many who do not know the risk factors for high-risk pregnancy, namely too young or too old age during pregnancy, previous abnormal pregnancy history such as miscarriage, caesarean birth, breech presentation, and past history of illness.

This fact changed significantly after joining the Pregnancy Class Program. The number of pregnant women whose knowledge was still in the unsatisfactory category decreased to 19 couples (27.53%). This shows that there was a significant increase of knowledge after the Pregnancy Class Plus program (p value 0.0001).

Pregnancy Class Plus model can also improve the ability of pregnant women and their husbands or families in identification of high-risk pregnancies as well as risk and complication prevention practices. This proves that the other outputs that are the strength of the Maternal Class program are: 1) increased knowledge of pregnancy class participants, 2) improved attitudes of pregnant women, 3) improved practice of pregnancy risk and complication prevention by pregnant women, 4) increased antenatal care visit by participants of pregnancy class (Fibriana and Azinar, 2016).

Pregnancy classes that are conducted with interesting methods and media can improve the knowledge of pregnant women. The knowledge gained will improve the compliance of pregnant women to pregnancy examination in accordance to the guidelines contained in the Mother and Child Health (KIA) book. Previous research by Sistiarani et al., (2014) stated that there

Table 2. Differences in Knowledge, Attitude and P4K Efforts Performed by Pregnant Woman and Her Husband

		Knowledge on High-Risk Pregnancy & P4K (After)			*p value*
		Unsatisfactory	Satisfactory	Total	
Knowledge on High-Risk Pregnancy and P4K **(Before)**	Unsatisfactory	18	28	46	
	Satisfactory	1	22	23	0.0001
	Total	19	50	69	
		Attitude toward P4K (After)			*p value*
		Unsatisfactory	Satisfactory	Total	
Intervention Group					
Attitude toward P4K **(Before)**	Unsatisfactory	16	21	37	
	Satisfactory	0	32	32	0.0009
	Total	16	53	69	
		P4K effort performed (After)			*p value*
		Unsatisfactory	Satisfactory	Total	
Intervention Group					
P4K effort performed **(Before)**	Unsatisfactory	22	11	33	
	Satisfactory	0	36	36	0.001
	Total	22	47	69	

Source: Primary Data

is a relationship between knowledge and the quality of KIA books usage.

This Pregnancy Class Plus model also significantly change the attitude of pregnant women towards efforts of high-risk pregnancy management as well as planning, delivery, and complication prevention program (P4K) effort. This is indicated by p value of 0.0009. Prior to the Pregnancy Class Plus program, 37 couples (53.62%) had unfavorable attitude towards high-risk pregnancies management and P4K. They thought that pregnancy is a natural process faced by every woman of childbearing age, so there is no need for intensive efforts in the planning, delivery, and complication prevention program (P4K).

This study was in line with Azwar (2008) and Su et al., (2016), who stated that the attitude formation can occur due to education/training in addition to personal experience, influence, culture, mass media, and emotion of the person. Furthermore, maternal knowledge must always be improved through the maternal class model to reduce risk factors for maternal and perinatal death (Lee et al., 2012). Maternal knowledge is also associated with perinatal mortality (Ummul et al., 2011).

Maternal classes affect maternal knowledge and attitude (Elsa & Kuntoro, 2016; Kiely et a;., 2011). Pregnancy class can change the attitude of the community in the selection of childbirth assisted by medical personnel. The change in attitude in the selection of childbirth is driven by better knowledge and the motivation and role of good health workers.

In addition, Pregnancy Class Plus model also significantly improved the planning, delivery, and complication prevention program (P4K). This could be seen from the fact that before joining the Pregnancy Class program, 33 couples (47.83%) did not implement a complete P4K program, indicated by the low preparation and complication prevention efforts by pregnant women and her families, there was been no delivery plan, unprepared for delivery cost, as well as unavailability blood donors. This number decreased to 31.88% after three months of Pregnancy Class Plus program.

After attending the class, pregnant women and their families can make behavioral changes and be more aware of the importance of pregnancy examination in healthcare centers. Therefore, the expected output such as improved ANC visit and planning, delivery, and complication prevention program (P4K) implementation would be improved. Previous studies have found a relationship between knowledge of pregnant women and adherence to pregnancy examination (Pratitis and Khamidah, 2016).

Conclusion

The implementation of Pregnancy Class Plus program for three months has improved the knowledge, attitude and efforts of pregnant women and their husbands in birth planning, delivery and prevention of pregnancy complications (P4K) in rural areas.

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