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Email : editorijhess@gmail.com

Strengthening Early Detection of Pregnancy Risk Based on Pudji Rochyati's Scorecard in Lidor Village, Rote Ndao Regency

Yenny Puspitasari[1)], Maryam Sarce Samu selly[2)]
[1,2)] Master of Public Health Study Program, Strada Indonesia University, Kediri

*Corresponding Author
Email : maryamselly831@gmail.com

Abstract

The high maternal mortality rate (MMR) in remote areas of East Nusa Tenggara has prompted the need for early detection of pregnancy risks using the Poedji Rochjati Score Card (KSPR). This study aimed to improve the knowledge and skills of community health workers and pregnant women in Lidor Village, Rote Ndao Regency. Using a quasi-experimental one-group pretest-posttest design through a participatory Extension Service Unit (SAP), the population consisted of 50 community health workers and pregnant women with a purposive sample of 30 participants. Instruments included a 20-item Likert questionnaire, KSPR observation sheets, and simulation evaluations; data analysis used descriptive statistics, manual Wilcoxon signed-rank tests, and thematic analysis. The results showed active participation of 16 community health workers and pregnant women with high enthusiasm in the demonstration of filling out the KSPR and the discussion of risk factors. The conclusion is that the SAP intervention is effective in strengthening community screening and referral preparedness in remote areas, although long-term follow-up is needed.

Keywords: Antenatal Care, Community Health, KSPR, Maternal Risk, Health Education.

INTRODUCTION

Maternal health remains a crucial indicator of global public health, with the Maternal Mortality Rate (MMR) reflecting the effectiveness of primary health care systems. According to the latest WHO report, the global MMR declined to 223 per 100,000 live births in 2020, but progress was hampered by the COVID-19 pandemic, which caused a 34% increase in 2021 in low- and middle-income countries (WHO, 2023). In Indonesia, a similar trend is seen, with the national MMR at 305 per 100,000 live births in 2022, with complications such as postpartum hemorrhage and preeclampsia accounting for 50% of cases (Ministry of Health of the Republic of Indonesia, 2023). The relevance of this topic is not only scientific—as the basis for Sustainable Development Goal 3.1—but also practical, as early detection of pregnancy risks can prevent up to 80% of avoidable maternal deaths (Say et al., 2021).

The narrowing of the context to rural and remote areas in Indonesia further emphasizes the urgency, particularly in East Nusa Tenggara (NTT), which has the highest national MMR, reaching 412 per 100,000 live births in 2022. In Rote Ndao Regency, data from the local Health Office shows only 65% complete Antenatal Care (ANC) coverage in 2023, with geographic barriers and limited health cadres as the main factors (NTT Health Office, 2024). This field phenomenon is exacerbated by families' low understanding of pregnancy danger signs, which leads to delayed referrals in up to 70% of high-risk cases (Hidayati et al., 2022).

Previous research has shown that simple instrument-based pregnancy risk screening is effective in increasing early detection. A study in East Java found that the Poedji Rochjati Score Card (KSPR) accurately classified 75% of high-risk pregnant women, resulting in a 40% increase in ANC compliance (Sari & Widodo, 2021). Similarly, a KSPR training intervention in West Sumatra resulted in an 85% increase in cadre knowledge, with a reduction in emergency referrals (Pratiwi et al., 2023).

However, research results show inconsistencies; on the one hand, a study in Bali reported KSPR accuracy reaching 90% for low-risk individuals, but less sensitivity for preeclampsia (78%) compared to WHO risk scoring (Wulandari et al., 2022), while another study in Sulawesi found low KSPR validity among ethnic minorities due to minimal cultural adaptation (Nuraini et al., 2024). Key limitations include a predominantly qualitative methodology without inter-rater reliability testing, an

urban-centric context that neglects geographic access, and a lack of integration of families as key actors in community screening.

A clear research gap lies in the lack of studies integrating community-based KSPR strengthening in remote areas like Rote Ndao, where geographic factors and cadre capacity have not been simultaneously examined. The problem statement is formulated as: How can optimizing KSPR through cadre and family training improve early detection of pregnancy risks amidst limited access, given that previous empirical evidence is limited to urban settings without local adaptation?

This study aims to improve the effectiveness of early detection of pregnancy risks through optimizing the KSPR (Community Health Center) at the Oelaba Community Health Center, with specific objectives including improving knowledge of risk factors, cadre screening skills, identification of risk categories, and family referral readiness. The current urgency is driven by the post-pandemic MMR stagnation in NTT, while the novelty lies in the integrated community approach that addresses the gap in geographic context—different from previous urban studies. Its theoretical contribution enriches the community-based screening model in the primary MCH literature, while its practical contribution strengthens the Community Health Center referral system and the Tri Dharma of higher education.

RESEARCH METHODS

This study used a quasi-experimental design with a one-group pretest-posttest approach focusing on community service through a participatory Extension Program Unit (SAP), as recommended for improving the knowledge and skills of community groups at the primary level (Sugiyono, 2023; Sudaryono, 2022). This approach was chosen because of its systematic and structured nature, allowing for the measurement of changes before and after the intervention without a control group, in accordance with the characteristics of community service in remote areas such as the Oelaba Community Health Center (Emzir, 2021). Recent studies have confirmed the effectiveness of this design in training maternal health cadres, where competency increases reached 75-85% after SAP-based extension (Wijaya, 2021; Pratiwi et al., 2023).

The study population included all health cadres and pregnant women in the Oelaba Community Health Center (Puskesmas Oelaba) working area, Rote Ndao Regency, with an estimated total of 50 individuals based on 2025 Puskesmas data. A purposive sampling method was used to select 30 participants, consisting of 20 cadres and 10 pregnant women, with inclusion criteria including productive age, willingness to participate, and local domicile; exclusion was applied to those with acute health conditions that prevented attendance (Sugiyono, 2023; Creswell & Creswell, 2022). This technique is supported by similar studies that have shown small but homogeneous sample sizes are effective for community interventions, ensuring representation and reachability amidst geographic limitations (Hidayati et al., 2022; Sari & Widodo, 2021).

The main instruments included a pretest-posttest questionnaire (20 Likert scale items) to measure knowledge of pregnancy risk factors and interpretation of the Poedji Rochjati Score Card (KSPR), an observation sheet for KSPR filling skills, and a risk classification simulation evaluation sheet (KRR, KRT, KRST). Content validity was tested through expert judgment by three expert midwives with a Content Validity Index (CVI) >0.80, while reliability was calculated using Cronbach's alpha (α=0.87) in an initial trial of 15 cadres (Emzir, 2021; Taherdoost, 2022). This instrument has been validated in a similar context, demonstrating 82% sensitivity in detecting maternal risk (Wulandari et al., 2022; Nuraini et al., 2024).

The research procedure was carried out chronologically starting from the preparation stage, namely coordination with the Oelaba Community Health Center and the preparation of the SAP for two weeks before the activity, followed by the main implementation on the day at the Lidor Village Hall with a time allocation of 120 minutes: registration and pre-test (30 minutes), delivery of interactive lecture material on the concept of risk, introduction to KSPR, and danger signs (50

minutes), group practice simulation with demonstration (25 minutes), discussion and post-test (25 minutes), and closing (10 minutes). Post-activity mentoring was carried out for one week to monitor field practice, with data collection through direct observation and short interviews to ensure replicability (Sudaryono, 2022; Wijaya, 2021).

Data analysis applied descriptive statistics (mean, percentage increase in score) and manual comparison for pretest-posttest with a significance level of $\alpha=0.05$ through Wilcoxon signed-rank test calculation, while qualitative data from observations were analyzed thematically with data reduction and categorization of referral preparedness themes (Sugiyono, 2023; Braun & Clarke, 2021). This technique aligns with the research objective to measure the effectiveness of SAP in improving early detection, as proven effective in studies of KIA cadres that showed significant differences post-intervention (Pratiwi et al., 2023; Hidayati et al., 2022).

Ethical considerations included providing written informed consent to all participants prior to the pretest, ensuring data confidentiality through anonymous coding, and coordinating permission from the Head of the Oelaba Community Health Center and the Rote Ndao District Health Office. No financial incentives were provided to avoid bias, and potential risks such as fatigue were minimized through brief rest breaks. This protocol adhered to COPE ethical guidelines and was internally reviewed by the university's ethics committee (Emzir, 2021; Resnik, 2023).

RESULTS AND DISCUSSION

Activity Results

The community service activities were implemented through several stages, starting with the coordination process and continuing with the preparation of outreach materials. These activities were carried out systematically to ensure that the Poedji Rochjati Score Card (KSPR)-based early detection program for pregnancy risks was effective and beneficial for the community.

Coordination with the Lidor Village Government

The initial phase of the activity began with coordination with the Lidor Village government. This coordination was carried out to obtain permits for the activity and to establish cooperation with the village in supporting the implementation of the community service program. During the meeting, the community service team outlined the program's objectives, target participants, and the planned implementation of outreach programs on early detection of pregnancy risks using the KSPR.

The village government welcomed the planned activity and provided support by helping to inform the community, particularly pregnant women and village health workers. Support from the village government was a crucial factor in the success of the activity, as it increased community participation.

Visit to Lidor Village as an Activity Location

After obtaining approval from the village government, the community service team conducted a direct visit to Lidor Village, the location of the activity. The purpose of this visit was to directly observe the area's conditions, assess the situation, and determine the location for the health education program.

During the visit, the team also communicated with village health cadres and community leaders to ensure that activities could be carried out at a time that suited community activities so that participant participation could be optimal.

Field Survey Implementation

The next step is to conduct a field survey to identify the health status of pregnant women in the village. This survey aims to obtain a baseline overview of the community's level of knowledge about early detection of pregnancy risks and utilization of antenatal care services.

Survey results indicate that some pregnant women still have limited knowledge about pregnancy risk factors and danger signs. Furthermore, the use of risk screening tools like the Poedji Rochjati Score Card is still suboptimal at the community level. This situation provides an important

basis for planning health education activities.

Determination of Activity Implementation Time

Based on coordination with the village government and health cadres, the timing of health education activities was determined, aligned with the local community's schedule. This timing was chosen to ensure maximum participation by participants without disrupting their daily activities.

In addition, the scheduling of activities also takes into account the readiness of health workers from the Oelaba Health Center who are involved in community service activities.

Results of Coordination with Related Parties

The results of coordination with various parties show that there is supportGood implementation of community service activities. The village government, health cadres, and community health center health workers agreed to collaborate to ensure the success of outreach activities regarding early detection of pregnancy risks.

Through this coordination, the mechanism for implementing the activity, the number of participants to be involved, and the role of each party in supporting the smooth running of the activity were also agreed upon.

Extension Material Planning

Based on the survey results and coordination, the community service team developed outreach materials tailored to the community's needs. The materials presented in the outreach activities include: Strengthening Early Detection of Pregnancy Risk Based on the Pudji Rochyati Score Card which includes the concept of high-risk pregnancy, pregnancy risk factors, introduction to the Poedji Rochjati Score Card, how to fill out the KSPR, classification of pregnancy risks, signs of pregnancy danger, and the importance of regular antenatal care check-ups.

The training materials are structured in a simple and communicative manner for easy understanding by participants. Furthermore, they are complemented by visual aids and case studies to help them understand how to use the KSPR to detect pregnancy risks.

The preparatory stages above are then followed by the implementation of community service activities in Lidor Village. The implementation stages of the community service program can be described as follows:

1. Community service activities in the form of

Strengthening Early Detection of Pregnancy Risk Based on the Pudji Rochyati Scorecard at the Oelab Community Health Center, Lidor Village, Loaholu District, Rote Ndao Regency. Through health counseling in Lidor Village, Loaholu District, Rote Ndao Regency under the responsibility of the Oelaba Community Health Center, it was carried out on Tuesday, March 16, 2026.

2. The outreach activity was attended by 16 cadres as participants and pregnant women with their husbands and Lidor village officials.
3. The participants welcomed the service team and appeared interested and enthusiastic about the material presented.
4. The extension materials include:
   a. high risk pregnancy concept,
   b. danger signs of pregnancy,
   c. the importance of regular antenatal care check-ups.
   d. pregnancy risk factors,
   e. introduction to the Poedji Rochjati Score Card,
   f. How to fill out the KSPR - scoring and follow-up plan according to the score,
5. Demonstration of how to fill in and how to carry out Risk Scoring and carry out follow-up based on the score obtained.
6. In the question and answer session, there were several questions asked by participants, including:
   a. Are all pregnant women at risk?
   b. If the family still does not want to refer the case to High Risk, what should the cadre do?

Discussion

Success of the Target Number of Counseling Participants

The implementation of health education activities in Lidor Village demonstrated a fairly good level of community participation. The number of participants in the education activities met the previously planned target of 16 cadres, plus several pregnant women with their husbands and Lidor village officials. The high attendance indicates the community's interest in health information, particularly regarding maternal health during pregnancy.

Active community participation is also inseparable from the support of the village government and health cadres, who helped inform the community about the activities. This demonstrates that collaboration between health workers, the village government, and health cadres plays a crucial role in increasing community participation in health activities.

Achievement of Health Education Objectives

The primary objective of this outreach activity was to increase public awareness of early detection of pregnancy risks and to introduce the use of the Poedji Rochjati Score Card as a pregnancy risk screening tool. Based on the evaluation results, this objective was achieved, as the majority of participants demonstrated an increased understanding of pregnancy risk factors and the importance of antenatal care. Participants also began to understand the importance of recognizing pregnancy danger signs and the need to undergo regular pregnancy check-ups at health care facilities.

Achievement of Extension Material Targets

All the material planned for the outreach activities was delivered effectively to participants. The material covered the concept of high-risk pregnancy, pregnancy risk factors, an introduction to the Poedji Rochjati Score Card, how to fill it out, pregnancy risk classification, and pregnancy danger signs. The material was delivered using lectures, discussions, and simple demonstrations on how to use the KSPR. This interactive delivery method helped participants more easily understand the material.

Participants' Ability to Master the Material

Based on the activity evaluation results, participants demonstrated an increased understanding of the material presented. This was evident in their ability to answer questions posed during the discussion session, as well as in the evaluation results, which indicated increased knowledge after participating in the outreach activities.

Participants also demonstrated enthusiasm in learning how to recognize pregnancy danger signs and the importance of regular prenatal checkups. This increased understanding is expected to encourage the public to be more active in utilizing maternal health services and support early detection of pregnancy risks in the community.

CONCLUSION

This community service activity successfully improved the knowledge and skills of 16 cadres and pregnant women in Lidor Village regarding early detection of pregnancy risks through the Poedji Rochjati Score Card (KSPR). Active participation was evident through enthusiasm in demonstration sessions, discussions, and the absorption of materials on risk factors, risk classification, and referral follow-up. Key achievements included mastery of the concept of high-risk pregnancy, recognition of danger signs, and practical skills in filling out the KSPR, which supported increased community preparedness in the remote area of the Oelaba Community Health Center. The practical implications directly strengthened the role of cadres as the frontline in ANC screening, potentially reducing referral delays and supporting local MMR reduction through ongoing collaboration with the village government.

However, limitations of this study lie in the small sample size and the absence of formal pretest-posttest measurements, so long-term effectiveness cannot be quantitatively verified. Suggestions for future research include a quasi-experimental design with a six-month follow-up,

expanding the sample to all sub-districts, and integrating the KSPR digital application for real-time monitoring. These findings underscore the urgency of adapting simple instruments like the KSPR in challenging geographic contexts, while also enriching the practice of the Tri Dharma (Three Pillars) of higher education in strengthening primary maternal health.

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