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SETIA-IMS: A PARTNER-BASED DIGITAL INTERVENTION TO IMPROVE SEXUALLY TRANSMITTED INFECTION SCREENING UPTAKE AMONG PREGNANT WOMEN IN RURAL BALI

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Abstract

Sexually transmitted infection (STI) screening is an essential component of antenatal care to prevent pregnancy complications and vertical transmission. However, screening coverage among pregnant women in rural areas, including Buleleng Regency, remains suboptimal, partly due to limited partner involvement. This study introduces SETIA-IMS (Suami Terlibat Aktif–IMS; Actively Involved Husband for STI Prevention), a partner-based intervention integrating a narrative-based educational mini series, digital reminders, couple counseling, and mutual commitment to improve STI screening uptake among pregnant women. This study aimed to evaluate the effectiveness of the SETIA-IMS intervention in increasing STI screening coverage in rural areas. A quasi-experimental study with a pretest–posttest control group design was conducted among 80 pregnant women in rural Buleleng Regency. The intervention group received the SETIA-IMS program for two weeks, while the control group received standard antenatal care. Data were analyzed using the chi-square test and paired t-test with a significance level of 0.05. STI screening coverage in the intervention group increased from 32.5% to 75.0%, whereas the control group increased from 30.0% to 42.5%, with a significant difference between groups (P-value=0.001; OR=4.50; 95%CI: 1.80–11.25). Knowledge and partner involvement also improved significantly in the intervention group (P-value<0.001). The SETIA-IMS intervention was effective in increasing STI screening coverage through strengthened partner involvement supported by digital and narrative-based educational strategies. This intervention has the potential to be integrated into antenatal care services to improve maternal health outcomes in rural settings.

Keywords: Partner involvemennt; Pregnant women; SETIA-IMS.

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1. INTRODUCTION

STI among pregnant women remain a significant global public health concern due to their adverse effects on maternal and neonatal health (1). STIs such as syphilis, Human Immunodeficiency Virus (HIV), and hepatitis B contribute to various pregnancy complications, including preterm birth, low birth weight, and vertical transmission from mother to child (2). The World Health Organization (WHO) reports that more than one million sexually transmitted infections occur every day worldwide, with a substantial proportion remaining undiagnosed, particularly in low- and middle-income countries (3). Therefore, STI screening during pregnancy is a critical strategy for reducing maternal and neonatal morbidity and mortality (4).

In Indonesia, STI screening has been integrated into antenatal care services through HIV, syphilis, and hepatitis B testing as part of the Triple Elimination Program aimed at preventing mother-to-child transmission The government has established a target coverage of 95% for the triple elimination program to reduce vertical transmission of infectious diseases. However, implementation challenges remain, resulting in suboptimal STI screening coverage among pregnant women, particularly in rural areas where access to healthcare services is limited and socio-cultural barriers persist. This situation reflects a gap between national policy objectives and actual healthcare practices at the community level (5).

The implementation of the Triple Elimination Program for HIV, syphilis, and hepatitis B among pregnant women in Buleleng Regency continues to face considerable challenges. According to data from the Buleleng District Health Office in 2025, HIV screening coverage among pregnant women reached 82.4%, syphilis screening coverage was 74.6%, and hepatitis B screening coverage was 78.1%. These achievements remain below the national target of 95–95–95 established for the Triple Elimination Program. Lower screening coverage is particularly evident in rural communities, where healthcare access is limited, partner involvement is inadequate, stigma surrounding STI examinations persists, and reproductive health education remains insufficient (4). These conditions indicate a substantial gap between national program targets and local implementation, highlighting the need for innovative interventions to improve STI screening coverage among pregnant women.

Several factors contribute to the low uptake of STI screening, including inadequate knowledge among pregnant women, low perceived susceptibility to infection, stigma associated with STIs, and limited social support (6,7). One important but often overlooked factor is partner involvement, particularly the role of husbands in supporting maternal health behaviors during pregnancy. Previous studies have demonstrated that partner involvement is significantly associated with increased utilization of antenatal care services and greater adherence

to health screening recommendations (8). Nevertheless, in many rural settings, male participation in maternal healthcare remains limited due to cultural norms and insufficient health education (9).

Partner-based interventions have emerged as a promising approach for improving reproductive health behaviors (10,11). Such interventions not only enhance knowledge but also strengthen emotional support and promote joint decision-making within families (12). Furthermore, advances in digital technology have created opportunities for the use of mobile-based educational media, including educational videos and text-message reminders, which have been shown to effectively increase engagement and adherence to healthcare services (13).

Despite these developments, studies integrating partner-based approaches with innovative digital media, such as educational mini-series combined with reminders and couple counseling, remain limited, particularly in the context of increasing STI screening among pregnant women in rural communities (15). Therefore, this study developed SETIA-IMS, a comprehensive intervention that combines narrative-based educational strategies, digital behavior reinforcement, and active partner engagement. This study aimed to evaluate the effectiveness of the SETIA-IMS intervention in improving STI screening coverage among pregnant women in rural areas of Buleleng Regency, Bali, Indonesia.

2. METHOD

This study employed a quasi-experimental design using a pretest–posttest control group approach to evaluate the effectiveness of the SETIA-IMS intervention in improving STI screening coverage among pregnant women. The study was conducted in the service areas of Sawan I Primary Health Center and Kubutambahan I Primary Health Center, Buleleng Regency, Bali, Indonesia.

The study population consisted of all pregnant women attending antenatal care visits in the two health center service areas during the study period, totaling 356 pregnant women, including 196 women from the Sawan I Primary Health Center service area and 160 women from the Kubutambahan I Primary Health Center service area. The sample size was calculated using a two-proportion comparison formula with a 95% confidence level and 80% statistical power, resulting in a minimum requirement of 36 participants per group. To account for potential dropouts, the sample size was increased to 40 participants in each group, yielding a total sample of 80 respondents.

Participants were selected using purposive sampling based on the following inclusion criteria: pregnant women in the first to third trimester, having a partner, able to communicate effectively, and willing to participate throughout the study period. To minimize information contamination between groups, the intervention and control groups were assigned based on different health center service areas. Pregnant

women from the Sawan I Primary Health Center service area were assigned to the intervention group (n = 40), whereas those from the Kubutambahan I Primary Health Center service area were assigned to the control group (n = 40).

The independent variable was the SETIA-IMS intervention, which consisted of a narrative-based educational mini-series, WhatsApp-based digital reminders, couple counseling sessions, and a shared commitment agreement between partners. The dependent variable was STI screening coverage. Additional outcome variables included STI-related knowledge and partner involvement.

Data were collected using a structured questionnaire that had been tested for validity and reliability. Validity and reliability testing were conducted among 30 pregnant women who were not included in the study sample. The validity test indicated that all questionnaire items had corrected item-total correlation values greater than 0.361 and were therefore considered valid. Reliability testing demonstrated Cronbach's alpha coefficients of 0.82 for the knowledge questionnaire and 0.87 for the partner involvement questionnaire, indicating good internal consistency.

STI-related knowledge was assessed using 15 multiple-choice questions with a total score ranging from 0 to 15. Partner involvement was measured using a Likert-scale instrument assessing emotional, informational, and instrumental support. STI screening status was determined based on the completion of HIV, syphilis, and hepatitis B screening tests, verified through medical records or the Maternal and Child Health (MCH) handbook.

The study was conducted in three phases: pretest, intervention, and posttest. During the pretest phase, baseline measurements of all study variables were collected from both groups. The intervention group subsequently received the SETIA-IMS program for two weeks, which included access to the educational mini-series, WhatsApp-based reminders, couple counseling during antenatal care visits, and reinforcement of mutual commitment between partners. Meanwhile, the control group received standard antenatal care services according to routine health facility procedures. Following completion of the intervention period, a posttest assessment was conducted to evaluate changes in knowledge, partner involvement, and STI screening coverage.

Data were analyzed using statistical software. Univariate analysis was performed to describe respondents' characteristics. Bivariate analysis using the chi-square test was conducted to examine differences in STI screening coverage between groups, while paired t-tests were used to assess changes in knowledge and partner involvement before and after the intervention. The magnitude of the intervention effect was estimated using Odds Ratios (OR) with 95% Confidence Intervals (CI). Statistical significance was established at $p < 0.05$.

This study received ethical approval from the Research Ethics Committee of Sekolah

Tinggi Ilmu Kesehatan Buleleng under approval number 072/EC-KEPK-SB/XII/2025. Written informed consent was obtained from all participants prior to their enrollment in the study

3. RESULTS AND DISCUSSION

Results

A total of 80 respondents participated in this study (Table 1), consisting of 40 pregnant women in the intervention group and 40 pregnant women in the control group. Based on the analysis of baseline characteristics, no statistically significant differences were found between the two groups (P-value > 0.05). This finding indicates that both groups had relatively homogeneous baseline characteristics and were therefore comparable for evaluating the effectiveness of the SETIA-IMS intervention.

Table 1. Characteristics of Respondents

Variable	Intervention n (%)	Control n (%)	P-value
Age (mean±SD*)	27.8 ± 5.2	28.1 ± 4.9	0.812
Education			
Primary Education	10 (25.0)	12 (30.0)	0.793
Secondary Education	21 (52.5)	20(50.0)	
Higher Education	9 (22.5)	8 (20.0)	
Pregnancy Status			
Primigravida	18 (45.0)	20(50)	0.654
Multigravida	22 (55.0)	20(50)	
Gestational Age			
First Trimester	12 (30.0)	11 (27.5)	0.801
Second–Third Trimester	28 (70.0)	29 (72.5)	

*Sources: Primary Data, 2026 *SD = Standard Deviation*

Most respondents had secondary-level education and were in the second or third trimester of pregnancy. The characteristics of participants in both the intervention and control groups were relatively balanced, thereby minimizing potential bias in the study findings.

Table 2. Changes in STI Screening Coverage Before and After the Intervention

Group	Pretest n (%)	Posttest n (%)	P-value
Intervention	13 (32.5)	30 (75.0)	0.001
Control	12 (30.0)	17 (42.5)	0.083

Sources: Primary Data, 2026

The analysis showed that STI screening coverage in the intervention group increased significantly following the implementation of the SETIA-IMS program (Table 2), from 32.5% to 75.0% (P-value = 0.001). In contrast, the control group experienced only a modest increase from 30.0% to 42.5%, which was not statistically significant (P-value = 0.083). These findings indicate that the SETIA-IMS intervention effectively improved pregnant women's adherence to STI screening.

Table 3. Comparison of STI Screening Coverage Between Groups After the Intervention

Variable	Intervention n (%)	Control n (%)	OR (95% CI)	P-value
STI Screening	30 (75.0)	17 (42.5)	4.50 (1.80-11.25)	0.001

Sources: Primary Data, 2026

Pregnant women who received the SETIA-IMS intervention were 4.5 times more likely to undergo STI screening than those in the control group (OR = 4.50; 95% CI = 1.80–11.25) (Table 3). This finding suggests that partner involvement through digital education and couple counseling plays a significant role in promoting STI screening behaviors among pregnant women.

Table 4. Changes in STI Knowledge and Partner Involvement

Variable	Intervention (Mean±SD) (Pre-Post)	Control (Mean±SD) (Pre-Post)	P-value
Knowledge	8.2±1.8 – 13.5±1.5	8.0±1.9 – 9.5±1.7	0.004
Partner Involvement	22.1±3.2 – 31.8±2.9	21.9±3.1 – 24.3±3.0	0.001

Sources: Primary Data, 2026

The intervention group demonstrated significant improvements in both STI-related knowledge and partner involvement compared with the control group (Table 4). These findings suggest that a partner-based approach combined with digital media can enhance pregnant women's understanding of STI prevention and increase partner support for STI screening during pregnancy.

Discussion

The findings of this study demonstrate that the SETIA-IMS intervention significantly improved STI screening coverage among pregnant women in rural communities. The substantial increase observed in the intervention group suggests that although STI screening has been integrated into antenatal care services, its implementation still requires reinforcement through innovative and context-specific approaches. This finding is consistent with global reports indicating that inadequate detection of STIs among pregnant women remains a major challenge in preventing pregnancy complications and vertical transmission (15).

The effectiveness of the intervention can largely be attributed to partner involvement, which served as a key component of the SETIA-IMS program. Previous studies have shown that husband involvement enhances the utilization of maternal healthcare services, including adherence to recommended health examinations during pregnancy (17). Partner support influences healthcare decision-making, particularly in rural communities where social and cultural norms continue to shape maternal health behaviors (17). The significant increase in partner involvement observed in this study likely contributed to the improved uptake of STI screening (18)

The narrative-based educational mini-series incorporated into the SETIA-IMS intervention also played an important role in enhancing educational effectiveness compared with conventional health education methods. Storytelling-based education enables participants

to relate health messages to real-life situations, making the information more contextual, emotionally engaging, and memorable (19). Furthermore, the integration of WhatsApp-based reminders provided continuous behavioral reinforcement. Previous (20). Previous evidence has demonstrated that mobile health interventions effectively improve adherence to healthcare services, particularly in maternal and reproductive health settings (23).

The significant increase in STI-related knowledge among participants in the intervention group further supports behavioral change toward STI screening. According to health behavior theories, knowledge serves as a predisposing factor for the adoption of positive health behaviors. However, knowledge alone is insufficient without adequate social support and access to healthcare services (22). Therefore, the multimodal approach employed in SETIA-IMS, combining education, partner support, and digital reinforcement, appears to be more effective in facilitating behavioral change.

Access to and utilization of healthcare services also contribute to successful STI screening implementation. Previous studies have shown that antenatal care utilization is influenced by individual, social, and health system factors, including family support and service availability. Community-based interventions involving partners have been associated with significant improvements in maternal health outcomes (23). Therefore, integrating partner-based strategies and digital technology into antenatal care services represents a promising approach for increasing STI screening coverage.

Despite the significant effectiveness observed, this study has several limitations. The quasi-experimental design may not fully control for external confounding variables, and the intervention period was relatively short. Future studies are therefore recommended to employ randomized controlled trial designs with longer follow-up periods to evaluate the sustainability of intervention effects.

Overall, the SETIA-IMS intervention demonstrates considerable potential as an innovative strategy for improving STI screening coverage among pregnant women, particularly in rural settings. This approach not only strengthens the implementation of existing maternal health programs but also addresses the need for more contextual, participatory, and technology-enhanced healthcare interventions.

4. CONCLUSIONS

The SETIA-IMS (Actively Involved Husband for STI Prevention) intervention was effective in increasing Sexually Transmitted Infection (STI) screening coverage among pregnant women in rural areas of Buleleng Regency. By integrating a narrative-based educational mini-series, digital reminders, couple counseling, and mutual commitment, the intervention significantly improved STI-related knowledge, partner involvement, and adherence to STI screening. These findings suggest that SETIA-IMS may serve as a promising partner-based approach to support antenatal care services

in rural primary healthcare settings. As the intervention utilizes widely accessible digital communication platforms, it has the potential to be integrated into routine antenatal care programs. Further studies involving larger populations, longer follow-up periods, and implementation and cost-effectiveness evaluations are recommended to assess its scalability and long-term impact.

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