



Original Article

Booklet-based menstrual hygiene education and its effect on knowledge and attitudes of women

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A B S T R A C T

Background: Menstrual hygiene is a crucial aspect of reproductive health, particularly for women of reproductive age (WRA) in correctional institutions where access to health education is often limited.

Purpose: This study aimed to evaluate the effectiveness of booklet-based education in improving knowledge and attitudes of WRA regarding menstrual hygiene at the Women's Correctional Facility in Pekanbaru City.

Method: A quasi-experimental one-group pretest–posttest design was conducted involving 70 respondents selected through purposive sampling. Data were collected using validated questionnaires and analyzed with the Wilcoxon Signed-Rank Test.

Results: Respondents' knowledge increased from 68.6% to 95.7%, and positive attitudes from 71.4% to 95.7% after the intervention ($p < 0.001$).

Conclusion: Booklet-based education significantly improved menstrual hygiene knowledge and attitudes among incarcerated women, supporting its use as a sustainable and scalable reproductive health education strategy in correctional facilities.

INTRODUCTION

Reproductive health is a fundamental component of quality of life for women of reproductive age (WRA). One essential aspect of reproductive health is menstrual hygiene management (MHM), which plays a pivotal role in preventing infections, maintaining physical comfort, and supporting overall well-being. Inadequate menstrual hygiene has been associated with reproductive tract infections, poor school or work attendance, and reduced quality of life for women worldwide.^{1,2}

According to WHO and UNICEF, an estimated 500 million women and girls globally lack adequate facilities for menstrual hygiene, and this unmet need is particularly evident in low- and middle-income countries. In Indonesia, surveys have reported that up to 40% of women face challenges in practicing proper menstrual hygiene due to limited access to information, facilities, and stigma.^{3,4}

Educational interventions have been widely recognized as effective strategies to improve knowledge and attitudes toward menstrual hygiene. Booklets, in particular, are

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practical, easy to distribute, and user-friendly educational tools. Several studies have demonstrated that booklet-based interventions significantly increase knowledge and promote positive attitudes regarding reproductive health.⁵⁻⁷ For instance, reported that booklet use improved knowledge scores by up to 75% and attitudes by 82%,⁸ while highlighted their practicality and accessibility. However, most of these interventions have been tested in the general population, with little emphasis on marginalized groups.⁹

Female prisoners represent a particularly vulnerable population, as they often face limited access to reproductive health information, inadequate sanitation facilities, and restricted opportunities for health promotion.¹⁰ Previous studies have noted the lack of systematic reproductive health education in correctional institutions.^{11,12} Yet, there is little or no quantitative evidence on the effectiveness of booklet-based interventions in improving menstrual hygiene knowledge and attitudes among incarcerated women. This gap highlights the need for targeted research in this setting.

The present study addresses this gap by evaluating the effectiveness of a booklet-based educational intervention on menstrual hygiene among incarcerated women of reproductive age in Pekanbaru City Women's Prison. Unlike previous studies focusing on the general population, this research examines a unique and underserved population with very limited access to health information. By doing so, this study provides novel insights into the applicability, relevance, and adaptability of booklet-based health education for correctional settings.

Therefore, the objective of this study is to assess the effectiveness of booklet-based menstrual hygiene education in improving knowledge and attitudes among incarcerated women in Pekanbaru.¹³ The findings are expected to contribute to the scientific literature on inclusive reproductive health education for vulnerable populations and inform policymakers and health institutions in designing sustainable, evidence-based interventions.

METHOD

Study Design

This study employed a quasi-experimental one-group pretest–posttest design.¹⁴

Setting and Respondents

The study was conducted at the Pekanbaru City Women's Correctional Institution (Lapas) between May and June 2025. The study population comprised 324 women of reproductive age incarcerated at the institution. A total of 70 respondents were recruited using purposive sampling based on feasibility and availability. The inclusion criteria were: (1) aged 15–49 years, (2) currently serving a sentence, (3) able to read and comprehend the booklet, and (4) provided informed consent to participate.

Variables, Instrument, and Measurement

The study involved an educational intervention using a menstrual hygiene booklet. The primary outcomes were participants' knowledge and attitudes toward menstrual hygiene. Data were collected using a self-administered questionnaire adapted from Ony Devega (2019), which had been previously validated and demonstrated acceptable reliability (item–total correlation > 0.5; Cronbach's $\alpha = 0.82$). The questionnaire comprised 20 items across two domains: knowledge (10 items) and attitudes (10 items).

Experimental Procedure

The research procedure was conducted in three stages: preparation, implementation, and evaluation. In the preparation stage, ethical approval and research permits were obtained, and coordination with prison authorities was established. In the implementation stage, respondents completed a pretest questionnaire to assess baseline knowledge and attitudes, followed by the delivery of the booklet-based intervention. A short counseling session was conducted to explain the content, after which respondents were allowed to review the booklet independently. In the

evaluation stage, a posttest questionnaire using the same instrument was administered to assess changes in outcomes.

Data Analysis

Data were analyzed quantitatively using SPSS version 27. Normality was tested with the Shapiro-Wilk test, and because the data were not normally distributed, the Wilcoxon Signed-Rank Test was applied to compare pre- and post-intervention scores. A p-value of <0.05 was considered statistically significant.

Ethical Consideration

Ethical approval was obtained from the Institutional Review Board of Payung Negeri Health Institute, Pekanbaru (Approval No. 014/IKES PN/KEPK/V/2025). All participants provided written informed consent prior to participation.

RESULTS

This study involved 70 women of reproductive age. Most respondents were 24–27 years old (28.6%), and the majority experienced menarche at 12 years old (44.2%), indicating that participants were within the normal reproductive phase. Before the intervention, most respondents had low knowledge (68.6%) and negative attitudes (71.4%) toward menstrual hygiene, suggesting that access to menstrual health information was still limited. These findings describe that the participants generally had basic reproductive characteristics but lacked adequate awareness and understanding of menstrual hygiene management prior to the educational intervention.

After receiving the booklet-based education, there was a notable improvement in both knowledge and attitudes. The proportion of respondents with high knowledge and positive attitudes increased to 95.7%, reflecting the effectiveness of the educational material. Statistical analysis using the Wilcoxon Signed-Rank Test showed a significant difference ($p < 0.001$) between pre- and post-test results, confirming that the booklet successfully enhanced menstrual hygiene awareness among women in correctional institutions. The detailed comparison of pre- and post-intervention results is presented in Table 1.

Table 1. Knowledge and Attitudes Toward Menstrual Hygiene Before and After Booklet-Based Education

Variable	Pre-test	Post-test	p-value
Knowledge			
Low	48 (68.6%)	3 (4.3%)	<0.001
High	22 (31.4%)	67 (95.7%)	
Attitude			
Negative	50 (71.4%)	3 (4.3%)	<0.001
Positive	20 (28.6%)	67 (95.7%)	

DISCUSSION

This study demonstrated that booklet-based education significantly improved the knowledge and attitudes of women of childbearing age at Pekanbaru Women's Prison regarding menstrual hygiene. After the intervention, the majority of respondents exhibited higher knowledge and more positive attitudes, and statistical analysis confirmed significant differences between pre- and post-test results. These findings indicate that booklets are an effective medium for reproductive health education in correctional settings.

The present findings are consistent with previous studies showing that health education interventions enhance menstrual hygiene knowledge and attitudes.^{15,16} Research in different populations also confirms the utility of booklets as effective, practical, and accessible tools for reproductive health literacy, particularly in contexts with limited educational resources.^{17,18} Similar results have been reported in Indonesia and abroad, where booklet-based programs improved adolescent knowledge about iron tablet consumption,¹⁹ menstrual hygiene attitudes,⁸ and hygiene practices in structured programs in India and Uganda.^{20,21} These results reinforce the conclusion that booklets are a versatile and effective educational medium across diverse populations. However, some studies have suggested that booklets may be less effective when provided without supportive counseling or opportunities for discussion, highlighting the importance of combining booklets with interactive health education strategies.

The improvement observed in this study can be explained by established theories of health education and behavior change. Knowledge and behavior are influenced by attention, experience, and reinforcement, and multisensory learning tools such as booklets facilitate deeper understanding than verbal instruction alone.²²⁻²⁴ The Health Belief Model provides further justification, as perceptions of susceptibility, severity, benefits, and self-efficacy shape health behaviors.^{25,26} In this study, booklets offered structured, visual, and practical information that enabled incarcerated women to transform prior experiences of menarche into accurate knowledge, correcting misconceptions and supporting positive behavioral intentions.²⁷⁻²⁹

The booklet also provided a culturally acceptable, non-threatening, and accessible medium for women with limited access to health services in prison settings.³⁰ For correctional institutions, routine distribution of booklets may strengthen reproductive health literacy, support nurses in their role as educators, and offer policymakers cost-effective evidence to design sustainable menstrual health education programs for vulnerable populations. This study has several limitations. The one-group pretest-posttest design without a control group restricts causal inference and raises the possibility of confounding factors. The short follow-up period did not allow evaluation of whether changes were sustained over time or translated into

behavioral change. Moreover, the study was limited to a single prison and relied on self-reported outcomes, which may be affected by social desirability bias.

CONCLUSIONS AND RECOMMENDATION

This study demonstrated that booklet-based education significantly improved the knowledge and attitudes of incarcerated women regarding menstrual personal hygiene, with statistical analysis confirming highly significant improvements. These findings indicate that booklets are an effective, low-cost, and practical tool for reproductive health education in correctional settings, successfully achieving the study objective. To maximize its impact, scaling up booklet-based education to other prisons is recommended, alongside integration into national health and correctional policies under the Ministry of Law and Human Rights and the Ministry of Health to ensure sustainability and broader accessibility. Future research should adopt randomized controlled designs, include multiple sites, and extend follow-up periods to determine whether improvements in knowledge and attitudes translate into long-term behavioral change.

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