



## The Effectiveness of Clean and Healthy Lifestyle Behavior Education in Preventing Scabies among Children at the Medan Juvenile Correctional Institution

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### Abstract

#### Keywords:

scabies, clean and healthy living behavior, health education, health promotion, juvenile correctional institution (LPKA)

Scabies is a contagious skin disease that remains a public health problem, particularly among children living in communal settings with high population density, such as Juvenile Correctional Institutions (Lembaga Pembinaan Khusus Anak/LPKA). Clean and Healthy Living Behavior (Perilaku Hidup Bersih dan Sehat/PHBS) plays an important role in preventing the transmission of scabies through changes in individual behavior. This study aimed to analyze the effectiveness of a community health promotive intervention through PHBS education in preventing scabies among children at LPKA Class I Medan. This study employed a quasi-experimental design with a pre-test and post-test group design. The research sample consisted of all 125 children residing at LPKA Class I Medan, selected using total sampling technique. The intervention comprised PHBS education delivered using PowerPoint presentation media. Data were collected before and after the intervention using a structured questionnaire assessing knowledge, attitudes, and practices related to PHBS for scabies prevention. Data analysis was performed using univariate and bivariate analyses, with the Wilcoxon Signed Rank Test applied due to non-normal data distribution. The results showed a significant increase in respondents' knowledge and attitudes following the PHBS educational intervention ( $p < 0.001$ ), as well as a significant improvement in scabies prevention practices ( $p = 0.010$ ). The greatest improvement was observed in the knowledge aspect, while changes in practice were relatively lower, possibly influenced by limitations in facilities and environmental conditions within the LPKA.

### INTRODUCTION

Scabies is a contagious skin disease caused by infestation with *Sarcoptes scabiei* var. *hominis* and remains a significant public health problem, particularly in low- and middle-income countries and among vulnerable pediatric populations. Globally, scabies accounts for hundreds of millions of cases each year, with prevalence tending to be higher among children due to increased exposure, immature immune systems, and environmental factors (Engelman et al., 2020). The disease not only causes intense pruritus but is also associated with risks of secondary bacterial infections such as impetigo, sleep disturbances, impaired learning processes, and social stigma. Consequently, scabies is classified as a neglected tropical disease that requires community-based control strategies (Mitchell et al., 2024). Evidence from systematic reviews and meta-analyses indicates that the prevalence of scabies among school-aged children and populations living in communal settings remains high and varies across regions, with pooled estimates ranging from approximately 10 to 15 percent or higher in certain

settings. These variations are influenced by local determinants such as housing density, personal hygiene, and the practice of sharing personal items (Girma & Abdu, 2024).

In Indonesia, studies conducted in boarding environments and closed institutions, including Islamic boarding schools and Juvenile Correctional Institutions (Lembaga Pembinaan Khusus Anak/LPKA), have reported high rates of scabies associated with shared sleeping arrangements, sharing of clothing and bedding, and inadequate sanitation conditions. These findings underscore that communal environments constitute high-risk settings for scabies transmission (Yulfi et al., 2022). In terms of prevention, Clean and Healthy Living Behavior (Perilaku Hidup Bersih dan Sehat/PHBS) as a national promotive strategy emphasizes personal hygiene, management of sleeping environments, sanitation, and systematic health education. This approach has been shown to contribute to a reduction in the risk of contagious skin diseases through improvements in personal hygiene and health-related behaviors (Utami et al., 2022).

Furthermore, various intervention studies have demonstrated that contextual health education tailored to the characteristics of institutional settings can effectively improve knowledge and preventive practices related to scabies. In addition, the sustainability of therapeutic interventions, such as mass drug administration, is enhanced when combined with behavior-strengthening measures through PHBS education, thereby reducing the risk of reinfestation (Nadyatul Husna et al., 2024).

The urgency of this research is driven by three main factors. First, data from LPKA Class I Medan show that overcrowding exceeds capacity, which increases the risk of scabies transmission through direct and indirect contact. Wardani & Susilo (2022) reported that overcrowding in juvenile correctional institutions is a major risk factor for infectious diseases, including scabies. Second, children in LPKA have limited access to personal hygiene facilities, such as soap, towels, and clean clothes, which affects their ability to practice PHBS optimally. Third, untreated scabies can lead to complications such as impetigo, sleep disturbances, learning concentration disorders, and social stigma, which impact the rehabilitation process and social reintegration of children. Without effective educational intervention, the risk of scabies transmission in LPKA will continue to threaten children's health and the success of the rehabilitation program.

The novelty of this study lies in four aspects. First, this study is the first to examine the effectiveness of PHBS education for scabies prevention among children at LPKA Class I Medan using a quasi-experimental design. Second, this study used total sampling, involving the entire population of 125 children, avoiding selection bias common in studies using other sampling techniques. Third, this study comprehensively measured three behavioral domains (knowledge, attitudes, and practices), enabling the identification of the knowledge-practice gap. Fourth, this study was conducted post-COVID-19 pandemic (2023-2024), when awareness of hand hygiene and clean living behavior increased, providing a relevant temporal context for evaluating PHBS intervention.

The objectives of this study are to: (1) identify the demographic characteristics of children at LPKA Class I Medan (age, education level, length of stay); (2) measure the level of knowledge, attitudes, and practices of PHBS before the educational intervention (pre-test); (3) measure the level of knowledge, attitudes, and practices of PHBS after the educational intervention (post-test); (4) analyze differences in knowledge, attitudes, and practices before

and after the intervention using the Wilcoxon Signed Rank Test; and (5) evaluate the effectiveness of PHBS education in preventing scabies among children at LPKA Class I Medan.

The benefits of this research are theoretical and practical. Theoretically, this study enriches public health literature by providing empirical evidence on the effectiveness of PHBS education in a vulnerable population in a closed environment (LPKA). This study also tests behavior change theory (knowledge → attitudes → practices) in the context of facility limitations, identifying structural factors that hinder the translation of knowledge into action. Practically, this study provides evidence-based recommendations to LPKA Class I Medan and other LPKAs in Indonesia to integrate PHBS education as a routine program in the children's development curriculum. Furthermore, the results can be used by the Ministry of Law and Human Rights and the Ministry of Health to develop policies for infectious disease prevention in juvenile correctional institutions.

Thus, this study addresses the research question: "Is PHBS education effective in improving knowledge, attitudes, and practices related to scabies prevention among children at LPKA Class I Medan?" This study is limited to the male population at LPKA Class I Medan (all respondents were male) with a single-session PowerPoint-based educational intervention. The results are expected to serve as a foundation for developing sustainable health promotion programs in LPKA and as a reference for similar research in other juvenile correctional institutions in Indonesia

## **RESEARCH METHOD**

This study employed a quasi-experimental design with a pre-test and post-test group design to assess the effectiveness of Clean and Healthy Living Behavior (Perilaku Hidup Bersih dan Sehat/PHBS) education in the prevention of scabies. The study was conducted at the Class I Juvenile Correctional Institution (Lembaga Pembinaan Khusus Anak/LPKA) Medan over a one-month period, encompassing the stages of preparation, data collection, delivery of the educational intervention, and data analysis. The study population consisted of all children residing at LPKA Class I Medan during the study period. A total sampling technique was applied, involving all 123 respondents in the study.

The intervention consisted of PHBS education delivered through counseling sessions using PowerPoint presentation media, interactive discussions, and simulated demonstrations of personal hygiene practices. Data were collected before and after the intervention using a structured questionnaire comprising 30 items covering knowledge, attitudes, and practices related to PHBS for scabies prevention. Knowledge was assessed using multiple-choice questions, attitudes were measured using a Likert scale, and practices were assessed using a behavioral checklist.

Data analysis was carried out using univariate analysis to describe respondents' characteristics and the distribution of knowledge, attitude, and practice scores. Bivariate analysis was conducted to evaluate differences in scores before and after the intervention. As the data were not normally distributed, the Wilcoxon Signed Rank Test was applied, with a significance level set at  $p < 0.05$ .

## **RESULTS AND DISCUSSION**

## Result of the univariat test

### A. Respondent data of children residing at LPKA Class I Medan who agreed to participate in the entire research process.

**Table 1. Characteristics of Respondents (n=125)**

Variable	Category	Total
Age (Years)	14	6
	15	19
	16	36
	17	50
	18	14
Sex	Male	125
	Female	0
Educational level	Elementary school	18
	Junior high school	57
	Senior high school	48
	Others	2
Lenght of stay at LPKA	< 6 months	104
	> 6 months	21

### B. Respondents' responses to the questionnaire prior to the educational intervention (Pre-test data)

**Table 2. Distribution of Knowledge, Attitudes, and Practices (Pre-test, n=125)**

Variable	Category	Total
Knowledge regarding Clean and Healthy Living Behavior (PHBS) and Scabies	Good	38
	Fair	52
	Poor	35
Respondents' attitudes toward Clean and Healthy Living Behavior (PHBS)	Good	9
	Fair	107
	Poor	9
Practices in implementing Clean and Healthy Living Behavior (PHBS)	Good	82
	Fair	22
	Poor	21

The baseline assessment results indicated that respondents' level of knowledge regarding Clean and Healthy Living Behavior (PHBS) and scabies prevention varied, with the majority falling into the fair category, while the proportions of respondents with good and poor knowledge were relatively balanced. Attitudes toward PHBS were predominantly categorized as fair, with only a small proportion of respondents demonstrating either good or poor attitudes. In terms of practice, most respondents had already demonstrated good implementation of

PHBS. These findings suggest the presence of a gap between knowledge and practice and highlight the need to strengthen knowledge as a foundation for improving attitudes and reinforcing PHBS practices in scabies prevention efforts.

**C. Respondents' responses to the questionnaire after the educational intervention (Post-test data)**

**Table 3. Distribution of Knowledge, Attitudes, and Practices (Post-test, n=125)**

Variabel	Kategori	Jumlah
Knowledge regarding Clean and Healthy Living Behavior (PHBS) and Scabies	Good	102
	Fair	21
	Poor	2
Respondents' attitudes toward Clean and Healthy Living Behavior (PHBS)	Good	67
	Fair	58
	Poor	0
Practices in implementing Clean and Healthy Living Behavior (PHBS)	Good	87
	Fair	37
	Poor	1

The post-intervention assessment demonstrated a clear improvement across all measured variables following the PHBS educational intervention. The majority of respondents achieved a good level of knowledge, accompanied by a marked reduction in the proportion of respondents with poor knowledge to a minimal level. Attitudes toward PHBS showed a positive shift, characterized by an increase in the good attitude category and the absence of respondents with poor attitudes. In terms of practice, most respondents implemented PHBS appropriately, with only a small proportion remaining in the fair or poor practice categories. Overall, these findings indicate that PHBS education is effective in enhancing knowledge, fostering positive attitudes, and improving scabies prevention practices among children in the LPKA setting.

**Result of the normality test**

**D. Results of the normality test for the pre-test and post-test research variables**

**Table 4. Kolmogorov-Smirnov Normality Test Results**

	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Respondents' knowledge (pre-test)	.208	125	<.001

Respondents' attitudes (pre-test)	.428	125	<.001
Respondents' practices (pre-test)	.403	125	<.001
Respondents' knowledge (post-test)	.491	125	<.001
Respondents' attitudes (post-test)	.359	125	<.001
Respondents' practices (post-test)	.437	125	<.001

The results of the Kolmogorov–Smirnov normality test showed that all research variables, both in the pre-test and post-test phases (knowledge, attitudes, and practices), had significance values  $< 0.05$ , indicating that the data were not normally distributed. Therefore, bivariate analysis did not employ the parametric paired *t*-test but instead used the non-parametric Wilcoxon Signed Rank Test.

### Result of the bivariat test

#### E. Results of the bivariate analysis using the Wilcoxon Signed Rank Test on respondents' knowledge levels before and after the intervention (pre-test and post-test)

**Table 5. Wilcoxon Signed Rank Test Results for Knowledge (Pre-test vs Post-test)**

<i>Wilcoxon Signed Rank Test</i>					
		N	Mean Rank	Sum of Ranks	Asymp. Sig. (2-tailed)
Respondents' knowledge (post-test) – respondents' knowledge (pre-test)	<i>Negative Ranks</i>	6 <sup>a</sup>	27.00	162.00	.000
	<i>Positive Ranks</i>	75 <sup>b</sup>	42.12	3159.00	
	<i>Ties</i>	44 <sup>c</sup>			
	<i>Total</i>	125			

Based on the results of the Wilcoxon Signed Rank Test, there was a change in respondents' knowledge scores following the PHBS educational intervention. The analysis showed that 65 respondents (52.0%) experienced an increase in knowledge scores (positive ranks), while only 4 respondents (3.2%) showed a decrease in knowledge scores (negative ranks). In addition, 56 respondents (44.8%) had unchanged knowledge scores between the pre-test and post-test (ties). The mean rank in the group that experienced an increase (35.18) was higher than that in the group that experienced a decrease (32.00), indicating that the changes were predominantly characterized by increased knowledge after the intervention. The significance test yielded a p-value  $< 0.001$  ( $p < 0.05$ ), indicating a statistically significant difference between knowledge scores before and after the educational intervention. Therefore, the PHBS educational intervention was proven to be effective in improving the knowledge of children at LPKA Class I Medan regarding scabies prevention.

**F. Results of the bivariate analysis using the Wilcoxon Signed Rank Test on respondents' attitude levels before and after the intervention (pre-test and post-test)**

**Table 6. Wilcoxon Signed Rank Test Results for Attitudes (Pre-test vs Post-test)**

<i>Wilcoxon Signed Rank Test</i>					
		N	Mean Rank	Sum of Ranks	Asymp. Sig. (2-tailed)
Respondents' attitudes (post-test) – respondents' attitudes (pre-test)	<i>Negative Ranks</i>	4 <sup>a</sup>	32.00	128.00	<.001
	<i>Positive Ranks</i>	65 <sup>b</sup>	35.18	2287.00	
	<i>Ties</i>	56 <sup>c</sup>			
	<i>Total</i>	125			

The results of the Wilcoxon Signed Rank Test indicated an improvement in respondents' attitude scores following the PHBS educational intervention. A total of 65 respondents (52.0%) experienced an increase in attitude scores, 4 respondents (3.2%) experienced a decrease, and 56 respondents (44.8%) showed no change. The higher mean rank observed in the improvement group compared to the decrease group indicates that the score changes were predominantly characterized by improved attitudes. The significance test yielded a p-value  $< 0.001$ , indicating a statistically significant difference in attitude scores before and after the intervention. Therefore, PHBS education was effective in improving the attitudes of children at LPKA Class I Medan regarding scabies prevention.

**G. Results of the bivariate analysis using the Wilcoxon Signed Rank Test on respondents' practice levels before and after the educational intervention (pre-test and post-test)**

**Table 7. Wilcoxon Signed Rank Test Results for Practices (Pre-test vs Post-test)**

<i>Wilcoxon Signed Rank Test</i>					
		N	Mean Rank	Sum of Ranks	Asymp. Sig. (2-tailed)

Respondents' practices (post-test) – respondents' practices (pre-test)	<i>Negative Ranks</i>	26 <sup>a</sup>	23.17	602.50	.010
	<i>Positive Ranks</i>	35 <sup>b</sup>	36.81	1288.50	
	<i>Ties</i>	64 <sup>c</sup>			
	<i>Total</i>	125			

The results of the Wilcoxon Signed Rank Test demonstrated a statistically significant change in respondents' scabies prevention practices following the PHBS educational intervention. A total of 35 respondents (28.0%) experienced an improvement in their practices, 26 respondents (20.8%) experienced a decline, and 64 respondents (51.2%) showed no change. The higher mean rank in the group that experienced improvement compared to the group that experienced decline indicates that changes in practices tended to be oriented toward improvement, although the magnitude was lower than that observed for knowledge and attitude variables. The significance test yielded a  $p$ -value  $< 0.05$ , indicating a statistically significant difference in practices before and after the intervention. Therefore, PHBS education had a significant effect on improving scabies prevention practices among children at LPKA Class I Medan.

### Discussion

The results of this study indicate that the Clean and Healthy Living Behavior (Perilaku Hidup Bersih dan Sehat/PHBS) educational intervention had a significant effect on improving knowledge and scabies prevention practices among children residing at LPKA Class I Medan. Based on the Wilcoxon Signed Rank Test, there was a highly significant increase in knowledge scores ( $p < 0.001$ ), with the majority of respondents exhibiting positive ranks. This finding confirms that educational approaches involving direct explanation and visual media are effective strategies for strengthening conceptual understanding of the etiology and prevention of contact-based diseases in communal settings. These results are consistent with the findings of Lubis and Siregar (2022) and Yulfi et al. (2022), who reported that health education significantly improves knowledge in densely populated populations such as elementary school students and Islamic boarding school residents, where low baseline knowledge is a major risk factor for disease transmission.

Although a statistically significant difference was also observed in the practice domain before and after the intervention ( $p = 0.010$ ), the magnitude of change was lower than that observed in the knowledge domain. This phenomenon is consistent with studies by Fitriani et al. (2022) and Rahman et al. (2024), which highlight the presence of a knowledge–practice gap. Despite improved understanding among the children, the translation of knowledge into actual behavioral change is often hindered by structural factors, such as limited sanitation facilities, high housing density within the LPKA, and habitual sharing of personal items. Therefore, improvements in practice depend not only on individual cognition but are also strongly influenced by environmental support that enables the application of healthy behaviors.

Overall, this study reinforces the evidence that PHBS education plays a vital promotive role; however, it is insufficient to ensure long-term behavioral change without adequate infrastructural support. Referring to a global study by Mitchell et al. (2024), scabies control in high-risk settings requires a comprehensive approach that integrates hygiene education with

improvements in sanitation access and systematic case management. Consequently, interventions at LPKA Class I Medan should not be limited to educational efforts alone but should be accompanied by institutional policies aimed at improving sanitation facilities to support the sustainability and effectiveness of scabies prevention practices.

## CONCLUSION

Based on the study results, Clean and Healthy Living Behavior (Perilaku Hidup Bersih dan Sehat/PHBS) education was proven to be effective in preventing scabies among children residing at the Class I Juvenile Correctional Institution (LPKA) Medan. The educational intervention resulted in a statistically significant improvement in respondents' knowledge regarding the causes, transmission, and prevention of scabies, as demonstrated by the Wilcoxon test results ( $p < 0.001$ ). In addition, a significant change in scabies prevention practices was observed after the intervention ( $p = 0.010$ ), although the magnitude of improvement was lower than that observed for knowledge.

These findings indicate the presence of a knowledge–practice gap, in which increased knowledge is not fully translated into behavioral change, likely influenced by external factors such as limited sanitation facilities, personal hygiene resources, and institutional policies. Overall, PHBS education represents an important and relevant promotive strategy that should be implemented sustainably as a routine educational program to support scabies prevention in communal settings such as LPKA.

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