

## Comparison of Clean and Healthy Living Behavior Before and After Handwashing Promotion at Tahfidz One Qur'an Islamic Boarding School Jambi

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### ABSTRACT

**Introduction:** Clean and healthy living behavior (Perilaku Hidup Bersih dan Sehat, PHBS) is essential in improving public health, particularly through handwashing with soap (Cuci Tangan Pakai Sabun, CTPS), which has been proven to prevent infectious diseases effectively. However, this practice remains low in pesantren (Islamic boarding schools) due to limited knowledge and the absence of established habits. This study aims to compare the knowledge and attitudes of santri (students) towards CTPS before and after a health promotion program at Tahfidz One Qur'an Islamic Boarding School Jambi.

**Method:** This study applied a quasi-experimental one-group pretest-posttest design involving 64 students selected through convenience sampling. Data were collected using pretest and posttest questionnaires and analyzed with the Wilcoxon signed-rank test.

**Results:** The results showed a significant improvement in knowledge ( $P=0.000$ ), with an average increase of 3.64, and in attitudes ( $P=0.000$ ), with an average increase of 6.02.

**Conclusion:** The health promotion program effectively enhanced the understanding and shaped positive attitudes of the santri towards the practice of CTPS.

**Keywords:** Clean and healthy living behavior, handwashing with soap, health promotion



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## **Introduction**

Clean and healthy living behaviors (Perilaku Hidup Bersih dan Sehat, PHBS) are an important pillar in efforts to improve public health. A key indicator of PHBS is the habit of washing hands with soap (Cuci Tangan Pakai Sabun, CTPS),<sup>1</sup> which has been proven to be effective in preventing various infectious diseases (ie. diarrhea, infections and skin diseases).<sup>2</sup> World Health Organization (WHO) and United Nations Children's Fund (UNICEF) emphasized the urgency of washing hands with soap as a simple but highly effective preventive measure.<sup>3</sup>

Hand hygiene is very important because our hands are a living place for various microorganisms.<sup>4</sup> Price divided bacteria on the skin of the hands into two types, namely transient flora and resident flora.<sup>5</sup> Transient flora is on the surface of the skin and is easily exposed to pathogenic bacteria through contact with other people or contaminated environments. Meanwhile, resident flora lives in the deeper layers of the skin and cannot be completely removed.<sup>6</sup>

Although usually harmless, these microorganisms can become pathogenic if they enter the body, such as *Salmonella*, *Shigella*, or *Escherichia coli* bacteria that can cause diarrhea if they enter the digestive tract.<sup>5</sup> Therefore, hand hygiene must be maintained as an efficient step and prevention of infection transmission, both in health facilities and in daily activities.<sup>7</sup>

However, in many Islamic boarding schools, awareness and practice of washing hands with soap are still relatively low. Some of the factors that contribute to this low practice include lack of knowledge about the importance of hand washing, the availability of inadequate facilities, and habits that have not been formed.<sup>8</sup> Therefore, health promotion is very crucial to increase awareness and change the behavior of students in maintaining personal hygiene and health.<sup>9</sup>

Health promotion is an effort to strengthen people's insights, attitudes, and behaviors so that they can live a healthier life.<sup>10,11</sup> In Islamic boarding schools, health promotion of handwashing with soap can be carried out through various methods, such as counseling, demonstrations, and the provision of adequate facilities.<sup>12</sup>

The research is expected to be able to contribute to improving the quality of health in Islamic boarding schools with better implementation of PHBS.<sup>13</sup> The results of the research are also expected to be a reference for other Islamic boarding schools in developing effective health promotion programs. In addition, this research can add to the scientific literature related to the implementation of health promotion in the Islamic education environment.

## **Methods**

This study was a quasi-experimental analytical study using a pretest–posttest group design. The research was conducted in December 2024 at the One Qur’an Islamic Boarding School Jambi. The study population consisted of all students in the boarding school, with the affordable population being students present during the study period.

Samples were selected using a non-random convenience sampling technique. Inclusion criteria were students who were enrolled at the school, present at the time of data collection, and willing to participate. Exclusion criteria were students who were absent during the intervention or did not complete the questionnaire. The minimum sample size was calculated using a power analysis formula for a two-mean difference test, resulting in a required sample size of at least 64 participants.

The independent variable was counseling about handwashing, while the dependent variable was students’ knowledge of handwashing. Knowledge was measured using 10 questions scored from 0 to 10, and attitudes were measured using 10 Likert-scale statements. The intervention consisted of health promotion education about handwashing, followed by pretest and posttest assessments.

The main research instrument was a structured questionnaire on knowledge and attitudes toward handwashing with soap. Data collection was carried out primarily through the distribution of paper-based questionnaires, preceded by informed consent. Respondents were asked to fill in their identities and answer knowledge questions before and after the intervention. Interventions are provided in the form of counseling on PHBS in the school environment. The research follows ethical procedures by guaranteeing the confidentiality of identity and consent to voluntary participation.<sup>14</sup>

Data were analyzed using SPSS version 26.0 (IBM, USA) with paired t-tests to assess differences between pretest and posttest scores. Data analysis was carried out univariate and bivariate; The paired T-test was used for normal data and the Wilcoxon signed-rank test for abnormal data, with a significance level of  $P < 0.05$ . The results were analyzed using statistical software and presented in the form of a table and a pretest and posttest comparison narrative.<sup>15</sup>

## **Result**

### **Characteristics of research subjects**

Table 1 shows the baseline characteristics of study subjects. Majority of respondents were female. Meanwhile, the other 22 people (34.4%) were male.

**Table 1.** Distribution and frequency of research subject characteristics by gender.

Gender	Quantity (n)	Frequency (%)
Man	22	34.4
Woman	42	65.6
<b>Total</b>	<b>64</b>	<b>100</b>

### Comparison of pretest and posttest scores of CTPS knowledges at the Tahfidz One Qur'an Islamic Boarding School Jambi

At the Tahfidz One Qur'an Islamic Boarding School in Jambi, the knowledge scores of students before and after the handwashing intervention were analyzed. To ensure the validity of further statistical testing, a normality test was performed using the Kolmogorov–Smirnov method. The results are presented in Table 2. The normality test showed that the significance for the pre-test of knowledge obtained was  $0.200 > 0.05$  and the significance of the post-test of knowledge was obtained at  $0.000 < 0.05$ . This means that the data from the post test result was not distributed normally and then carried out with an alternative to the paired T test, namely the Wilcoxon signed-rank test.

**Table 2.** Normality test with Kolmogorov-Smirnov of knowledge questionnaire.

Knowledge	n	P-value
Pre-test	64	0.200
Post-test	64	0.000

Since the normality test did not meet the assumptions for parametric analysis, the Wilcoxon signed-rank test was used to compare pretest and posttest scores of CTPS knowledge. The results are shown in Table 3. A *P*-value of 0.000 ( $P < 0.05$ ) was obtained. This means that the average knowledge before and after the handwashing promotion at the Tahfidz One Qur'an Islamic Boarding School Jambi was significantly different. The results also showed that there was an average increase of 3.64, from 5.72 to 9.36 score points.

**Table 3.** Results of pre and posttest CTPS knowledge comparison analysis.

Knowledge	n	Mean	Difference	P-value
Pre-test	64	5.72	3.64	0.000
Post-test	64	9.36		

## Comparison of pretest and posttest scores of CTPS attitude at the Tahfidz One Qur'an Islamic Boarding School Jambi

The students' attitudes toward CTPS were also assessed before and after the intervention. To determine whether the data met the assumption of normality, a Kolmogorov–Smirnov test was conducted. The results are presented in Table 4. The results of the normality test were obtained which showed that the significance for the pre-test of knowledge obtained was  $0.001 < 0.05$ , which means that both data results were not distributed normally and were carried out with an alternative to the paired T test, namely the Wilcoxon signed-rank test.

**Table 4.** Normality test with Kolmogorov-Smirnov of attitude questionnaire.

Attitude	n	P-value
Pre-test	64	0.001
Post-test	64	0.000

Since the normality test indicated that the data did not follow a normal distribution, the Wilcoxon signed-rank test was applied to compare pretest and posttest scores. The results are shown in Table 5. A *P*-value of 0.000 ( $P < 0.05$ ) was obtained. This means that the attitude before and after is significantly different in the promotion of handwashing at the Tahfidz One Qur'an Islamic Boarding School Jambi. The results also showed that there was an average increase of 6.02, from 32.78 to 38.80 score points.

**Table 5.** Results of pre and posttest CTPS attitude comparison analysis.

Attitude	n	Mean	Difference	P-value
Pre-test	64	32.78	6.02	0.000
Post-test	64	38.80		

## Discussion

### Characteristics of research subjects

Most respondents were women with percentage of 65.6%. In line with Elmaghfuroh and Hidayat with a similar research topic, namely related to PHBS education in pesantren with the majority of respondents being female students as many as 48 people (64%).<sup>16</sup> In general, women are often associated with traits such as being more meticulous, compliant with rules, more organized, and having a high level of empathy, which contributes to their tendency to carry out PHBS more consistently than men.<sup>17</sup> However, maintaining health is a universal responsibility that is not limited to just one gender. All individuals have the same rights and

obligations.<sup>9</sup>

### **Comparison of pretest and posttest scores of CTPS knowledges at the Tahfidz One Qur'an Islamic Boarding School Jambi**

There was a significant difference in average knowledge between before and after the handwashing promotion at the Tahfidz One Qur'an Islamic Boarding School in Jambi with an average increase of 3.64 from 5.72 to 9.36 score points. A significant increase in students' knowledge about hand washing practices after a health promotion intervention at the Tahfidz One Qur'an Islamic Boarding School in Jambi shows the effectiveness of the health promotion program in increasing awareness of the importance of hand hygiene. In line with Budiwibowo, the knowledge of hand washing before and after the provision of handwashing health promotion is significantly different.<sup>18</sup>

Health promotion regarding CTPS aims to increase a person's understanding of being able to apply handwashing behaviors correctly and consistently in daily activities.<sup>19</sup> Notoatmodjo explained that the acceptance and sustainability of a new behavior is greatly influenced by the level of individual knowledge. This knowledge is formed through a learning process that involves a variety of media or educational tools, so that individuals can more easily understand and adopt the health behaviors conveyed, including CTPS behavior.<sup>12</sup> Knowledge about CTPS needs to be taught consistently both in the school environment, at home, and in public facilities. Individuals who have adequate knowledge tend to respond positively to a health measure. This happens because insight-based behavior has a tendency to be sedentary, considering that knowledge plays a role as the main basis in the formation of behavior.<sup>20</sup>

### **Comparison of pretest and posttest scores of CTPS attitudes at the Tahfidz One Qur'an Islamic Boarding School Jambi**

There was a significant difference in average attitude between before and after the promotion of handwashing at the Tahfidz One Qur'an Islamic Boarding School Jambi with an average increase of 6.02 from 32.78 to 38.80 score points. A significant increase in students' attitudes towards handwashing practices after health promotion interventions at the Tahfidz One Qur'an Islamic Boarding School Jambi shows the effectiveness of health promotion programs in forming positive health behaviors. In line with Khairunnisa et al., where the attitude of washing hands before and after the provision of health promotion is significantly different.<sup>9</sup>

Attitudes reflect an individual's tendency to respond similarly to a particular stimulus.<sup>21</sup> Attitude is a form of internal response that has not yet been realized in real action, which arises

as a result of interaction with a certain stimulus or object.<sup>22</sup> Responses in both positive and negative forms can potentially form behaviors.<sup>23</sup> That reflect acceptance or rejection of health measures, including CTPS behavior.<sup>24</sup> The attitude of students towards the practice of CTPS plays an important role in influencing their tendency to do such actions.<sup>25</sup> Attitude reflects the readiness of an individual to respond to an invitation or information, so that it is an early indicator of the willingness to behave in accordance with their knowledge and values.<sup>26</sup>

### **Conclusion**

The results of the study showed that there was a significant difference between the knowledge and attitude of students about washing hands with soap before and after being given a health promotion program. The average increase in students' knowledge reached 3.64 points, while the average increase in attitude reached 6.02 points. These findings indicate that health promotion programs have proven to be effective in improving both students' knowledge and attitudes regarding the importance of CTPS.

### **Conflicts of Interest**

The authors declare no conflict of interest regarding the publication of this manuscript.

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