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ORIGINAL RESEARCH

THE EFFECT OF EDUCATION ON THE LEVEL OF KNOWLEDGE OF SELF-MEDICATION OF COMMON COLD IN STUDENTS OF SENIOR HIGH SCHOOL OF AR RIDWAN JATILUHUR ISLAMIC BOARDING SCHOOL, BEKASI CITY

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Abstract

Background: Self-medication is commonly practiced to manage minor health complaints that do not require medical examination, thereby reducing the burden on healthcare services. The common cold is among the most frequent conditions treated through self-medication. Educational interventions are essential to improve knowledge regarding appropriate self-medication practices for the common cold. **Purpose**: This study aimed to evaluate the effect of education on the knowledge level of high school students at Ar Ridwan Islamic Boarding School regarding self-medication for the common cold. **Results**: This research employed a non-experimental descriptive design with a one-group pre-test–post-test approach, using a structured questionnaire. **Results**: A total of 57 respondents participated in the study. Data were analyzed using the Wilcoxon Rank Test. The majority of respondents were female (53%), aged 17–19 years (56%), in grade XI (58%), and majoring in science (44%). Prior to the educational intervention, most respondents demonstrated poor knowledge (60%). Following the intervention, knowledge improved significantly, with 82% achieving a good category. The Wilcoxon Rank Test showed a statistically significant difference ($p = 0.000$; $p < 0.05$) between pre-test and post-test scores. **Conclusion**: This study demonstrates that educational interventions significantly improve students' knowledge of self-medication for the common cold. Strengthening health education programs in schools may enhance rational self-medication practices among adolescents.

Background

Self-medication, or swamedication, is a common health-seeking behavior among Indonesians, in which individuals use drugs purchased without a physician's prescription to treat various complaints or symptoms (1). This practice is often influenced by community habits and sources of information such as advertisements, drug brochures, or advice from family and peers (2). According to the Central Statistics Agency (3), 79.74% of the Indonesian population practiced self-medication, with the prevalence in West Java reaching 80.62%.

Self-medication is generally chosen because the condition is perceived as non-severe, medications are easily accessible, no medical consultation is required, and treatment can be obtained quickly, conveniently, and at a relatively low cost (4). However, inappropriate self-medication remains a concern. The 2018 Basic Health Research (Riskesdas) reported that among 103,860 people practicing self-medication, 35.7% used prescription-only medicines, and between 27.8% and 86.1% reported the use of over-the-counter antibiotics.

Self-medication is often applied to manage minor illnesses such as the common cold, fever, dyspepsia, diarrhea, pain, helminthiasis, and skin disorders . The common cold is a frequent upper respiratory tract infection characterized by nonspecific symptoms, which may vary depending on individual immune response. Common manifestations include fever, nasal congestion or rhinorrhea, sneezing, and either a productive or dry cough (5). Although generally self-limiting, these symptoms may interfere with daily activities, leading individuals to seek symptomatic treatment (1).

Previous studies have highlighted knowledge gaps in self-medication practices. Laili et al. (2021) found that common problems in the self-treatment of colds included inappropriate drug selection, lack of awareness of the underlying causes, and limited understanding of both pharmacological and non-pharmacological management. In their study, knowledge levels among respondents varied, with 38.5% categorized as moderate and 59.6% as high.

Method

This study employed a non-experimental descriptive research method with a one-group pre-test–post-test design. Measurements were taken before and after the provision of educational intervention. The research was conducted from March to May 2024 at Ar Ridwan Islamic Boarding School, Jatiluhur, Bekasi City. The study population consisted of all students of Ar Ridwan Islamic Boarding School enrolled in grades X, XI, and XII, including both science and social science majors as well as those without a designated major, who met the inclusion criteria. A total of 57 respondents participated in the study. The sampling method used was non-probability purposive sampling, in which participants were selected based on specific criteria. The inclusion criteria were: (1) willingness of students to participate as respondents, (2) age between 14–19 years, (3) currently experiencing or having experienced common cold symptoms, and (4) completion of the questionnaire in full. The exclusion criterion was incomplete questionnaire responses. Data collection instruments consisted of pre-test and post-test questionnaires, educational leaflets, and PowerPoint presentations to support respondents' comprehension of the material delivered. The questionnaires for both pre-test and post-test contained identical items to measure changes in knowledge. Ethical approval for this study was obtained from the Ethics Committee under reference number EC.101/KEPK/STKBS/VI/2024. Validity and reliability testing of the research instruments were conducted using Microsoft Excel and SPSS version 26.

Data Analysis

This study employed both univariate and bivariate analyses. The univariate analysis was conducted to describe the characteristics of respondents and each research variable, including gender, age, grade level, major, and respondents' knowledge levels before and after the educational intervention. The results are presented as frequency distributions and percentages in tabular form.

Bivariate analysis was performed to examine the effect of education on students' knowledge of common cold self-medication at Ar Ridwan Islamic Boarding School, Jatiluhur, Bekasi City. Normality testing was carried out using the One-Sample Kolmogorov–Smirnov test. As the

data did not meet the assumption of normality, a non-parametric statistical test, the Wilcoxon Signed-Rank Test, was used to analyze differences between pre-test and post-test scores.

Results

The research questionnaire used has been tested for validity on 20 respondents, based on the results of statistical tests, the questionnaire has met the validity test requirements of r count > r table (0.444) (Sugiyono, 2020). Reliability test, the knowledge level questionnaire meets the reliability requirements of Cronbach alpha 0.896 (> 0.700) (7). So the questionnaire can be used in research for data collection.

Table 1. Respondent Sociodemographics

No	Respondent Characteristics	Frequency	%
1.	**Gender**		
	Woman	27	47
	Man	30	53
2.	**Age**		
	14-16	25	44
	17-19	32	56
3.	**Class**		
	X	13	23
	XI	33	58
	XII	11	19
4.	**Major**		
	IPA	25	44
	IPS	19	33
	No Major	13	23

Respondents' sociodemographics include gender, age, class, and major. Based on Table 1, it was conducted on 57 respondents who met the inclusion criteria, it was found that the majority of respondents were female (30 respondents) (53%), the majority of respondents were aged 17-19 years (32 respondents) (56%), the majority of respondents were in grade XI (33) (58%), and the majority of respondents were in science majors (25) (44%).

Table 2. Results of Respondents' Knowledge Level

Category	Knowledge	
	Pre test	***Post test***
Good	0 (0%)	47 (82%)
Enough	23 (40%)	10 (18%)
Poor	34 (60%)	0 (0%)
Total	57 (100%)	57 (100%)

The results of the study in Table 2 show that pre-education respondents had knowledge in the good category, namely 0 respondents (0%), sufficient category, namely 23 respondents (40%), and poor category, namely 34 respondents (60%). Post-education, respondents' knowledge

increased with the good category, namely 47 respondents (82%), sufficient category, namely 10 respondents (18%), and poor category, namely 0 respondents (0%).

Bivariate Analysis Results

The bivariate analysis in this study will identify the effect of education on the knowledge of common cold self-medication in respondents of SMA Pondok Pesantren Ar Ridwan Jatiluhur using the normality test as a requirement for quantitative analysis (with n = 30) (8), and can be continued to bivariate analysis, namely the Wilcoxon Rank Test. The data needed for bivariate analysis are the results of the pre- and post-education questionnaires.

Table 3. Normality Test

	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
Pre test Knowledge	0,227	57	0,000
Post tes Knowledge	0,296	57	0,000

Based on Table 3, this study used the one-sample Kolmogorov-Smirnov test because the sample size was more than 50 (9). The results indicate that if the sig. value is >0.05, the data is normally distributed. If the sig. value is <0.05, the data is not normally distributed. The Kolmogorov-Smirnov table above shows that the sig. value is 0.000. Therefore, it is concluded that the normality test is not normally distributed. Therefore, the next test is a non-parametric test, namely the Wilcoxon test. The Wilcoxon Signed Rank test is a non-parametric test used to analyze the differences between two paired ordinal-scale data that are not normally distributed (10).

Tabel 4. *Wilcoxon Singed Rank Test*

		Ranks		
		N	*Mean Rank*	*Sum of Ranks*
Post test Knowledge - *Pre test* Knowledge	*Negative Ranks*	0[a]	,00	,00
	Positive Ranks	57[b]	29,00	1653,00
	Ties	0[c]		
	Total	57		

a. Post test Knowledge < Pre test Knowledge

b. Post test Knowledge > Pre test Knowledge

c. Post test Knowledge = Pre test Knowledge

Based on Table 4, it can be seen that the N in the negative ranks between the pre-test and post-test is 0, both in the N value, Mean ranks, and Sum of ranks. This value of 0 means there is no decrease from the pre-test value to the post-test value. The N in the positive ranks is 57, meaning that 57 respondents experienced an increase in knowledge of self-medication for the common cold. The mean rank or average increase is 29.00. The positive sum of ranks is

1653.00. Ties or similarities in pre-test and post-test values, the tie value is 0, so it is said that there are no similar values between the pre-test and post-test.

Tabel 5. *Uji Wilcoxon Statistik*

Statistic Test	
Post test Pengetahuan –	*Pre test* Pengetahuan
Z	-6,586
Asymp. Sig. (2-tailed)	0,000

From the results of Table 5, the significant value of respondents' knowledge in the pre-test and post-test was obtained, namely Sig. (2-tailed) 0.000 (<0.05). The result of *H*0 was rejected and *H*1 was accepted, meaning that there was an effect of providing education on respondents' knowledge of self-medication for common colds.

Discussion

Based on the research conducted at Ar Ridwan Jatiluhur Islamic Boarding School, Bekasi City, data were obtained from 57 student respondents. Table 1 presents the characteristics of respondents, including gender, age, grade level, and major. The majority of respondents were female, which aligns with reports that many parents prefer to send their daughters to Islamic boarding schools due to concerns about the increasing cases of sexual violence against women, particularly adolescents (11).

In terms of age, most respondents were between 17 and 19 years, compared with those aged 14 to 16 years. This is because more students aged 17–19 live in the school dormitory. According to Hamali (2016), adolescence in this age range is characterized by increasing independence and responsibility, with religious education playing an important role as a life guide.

Regarding grade level, the largest proportion of respondents were in grade XI, followed by grades X and XII. In the 2023/2024 academic year, affirmative admission pathways in public schools attracted more students from economically disadvantaged families and students with disabilities, leading to a lower number of respondents in grade X. In grade XII, the lower number of respondents was partly due to the COVID-19 pandemic in the 2021/2022 academic year, during which homeschooling became a more common choice (13).

Based on majors, most respondents were enrolled in the science program compared with the social sciences or undeclared majors. Science is generally considered more attractive to students and parents, resulting in higher enrollment (14).

Table 2 shows that prior to education, respondents had generally poor knowledge of self-medication for common colds. Following the educational intervention, which employed leaflets and PowerPoint slides, knowledge levels improved to the “good” category. Education was provided through counseling sessions using both printed and electronic media after respondents completed the pre-test questionnaire. This process resulted in a measurable increase in knowledge. Several background factors such as age, grade level, and major may have influenced respondents’ knowledge (15). These findings are consistent with previous

research (16), which also demonstrated that educational interventions using leaflets and PowerPoint presentations significantly improved knowledge.

Normality testing was conducted using the One-Sample Kolmogorov–Smirnov test, given the sample size was greater than 50 (Adiputra et al., 2021). A significance value >0.05 indicates normal distribution, whereas a value <0.05 indicates non-normal distribution. As shown in Table 3, the data were not normally distributed ($p < 0.05$), and therefore, the Wilcoxon Signed-Rank Test was used for further analysis.

The results of the Wilcoxon Signed-Rank Test are presented in Table 4. None of the respondents showed a decrease in knowledge (negative ranks = 0), while all 57 respondents demonstrated an increase (positive ranks = 57). No ties were found between pre-test and post-test scores. As shown in Table 5, the p-value for knowledge was 0.000 (<0.05), indicating a statistically significant difference between pre-test and post-test scores. This suggests that educational interventions using leaflets and PowerPoint presentations significantly improved respondents' knowledge about self-medication for common colds. These findings are consistent with previous research (Sari et al., 2021) on the effect of leaflets on knowledge and attitudes regarding self-medication for dysmenorrhea, which also reported a significant increase in knowledge ($p = 0.000$).

The results of this study confirm that education plays a crucial role in improving students' knowledge. Leaflets and PowerPoint presentations are simple, cost-effective, and widely accessible educational tools that facilitate the dissemination and acceptance of health information (Martina et al., 2021). Leaflets combine concise text and illustrative images, which can attract attention and foster knowledge retention. Similarly, PowerPoint presentations, through their visual design and animations, enhance audience engagement and support memory recall (17).

Conclusion

The conclusion of this study is the characteristics of students at Ar Ridwan Jatiluhur Islamic Boarding School in Bekasi City with the gender category being mostly female, the majority age category is 17-19, in the class level category the majority are in class XI, and the majority majors are in science. Measurement of the level of respondents' knowledge about self-medication for common cold in pre-education respondents is in the poor category (60%) and post-education there is an increase to the good category (82%). Analysis using the Wilcoxon Rank Test obtained a significant value of 0.000 (<0.005) indicating the influence of providing education on the level of knowledge of students at Ar Ridwan Jatiluhur Islamic Boarding School in Bekasi City.

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