Original article:

Effectiveness of Cough Etiquette Education with Knowledge and Attitude of Implementing Cough Ethics in Yogyakarta High School Students

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Abstract

Introduction**:* Cough etiquette plays a crucial role in preventing the spread of respiratory infections, including respiratory viruses like influenza and COVID-19. High school students are an important target group for education on respiratory hygiene practices, as they are highly susceptible to respiratory infections and can act as potential vectors for transmission. Using proper coughing techniques can keep others at ease and prevent the spreading of sickness. ***Purpose**:* This study aims to examine how high school students in Yogyakarta, Indonesia, know about and behave toward coughing. ***Methods**:* This quantitative study uses a control group design with a quasi-experimental pre-test and post-test. High school students from Yogyakarta participated in this study as respondents. In the control group, there were 27 samples, whereas there were 29 in the treatment group. A questionnaire was used to collect the data, and the Wilcoxon test was used to analyze it. ***Findings**:* The test results on the level of knowledge about cough etiquette in the control group, knowledge about cough etiquette p = 0.791. In the treatment group, knowledge of cough ethics p = 0.032; this is a significant result. In attitudes about cough ethics, the value of p = 0.171 was obtained; this result was insignificant. ***Originality**:* The novelty of this research is an increase in knowledge about cough etiquette, which is expected to also increase adherence to cough etiquette. ***Conclusion: Education about cough etiquette is effective for increasing students' knowledge about cough etiquette.

Keywords: education, cough etiquette, knowledge, attitude

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Introduction

Cough etiquette is an infection control strategy created to reduce the spread of respiratory diseases via airborne or droplet routes. The policy applies to everyone, including medical staff, who exhibits sickness symptoms. However, it is especially targeted at patients and others accompanying patients to primary care who may have an undetected respiratory infection (CDC, 2023).

Everyone is expected to follow the rules for coughing and sneezing, especially when there is a risk of infection due to airborne transmission of germs in droplet nuclei. Covering the nose and mouth with a tissue, handkerchief, or upper arm is considered good cough etiquette to stop the virus from spreading infection. After disposing of tissues in an infectious waste container, wash hands. When someone coughs or sneezes, there are certain mannerisms they should follow to prevent the spread of respiratory illnesses to other people. Microorganisms can spread easily through

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airborne transmission, or by droplets, during colds and flu. The spread of illness will be lessened if these droplets can be stopped from spreading. Infectious respiratory droplets can be contained at the source with proper cough technique (Aprianti and Kailani, 2021).

The United States Centers for Disease Control and Prevention advises good cough manners as a main technique for preventing respiratory infections. When coughing, sneezing, or having a runny nose, one should cover their mouth and nose with a tissue, handkerchief, or upper sleeve of clothes. They should also throw away used tissues and wash their hands after touching respiratory fluids. It is crucial to follow correct cough etiquette since preschoolers are a vulnerable age group to respiratory infections, which greatly increase the risk of developing lower respiratory tract disease. Due to respiratory inflammatory reactions, 60% to 85% of adults and kids do not practice properly after coughing and sneezing (Kim and Oh, 2021).

This study aimed to analyze the relationship between cough etiquette education and the knowledge and attitudes of SMA N 11 Yogyakarta students about good and correct cough etiquette. After that, the student's knowledge and attitude toward cough ethics will improve, reducing the transmission of diseases caused by coughing and sneezing.

In existing research, the respondents varied widely and rarely were teenagers. In this study, the respondents were high school students who represent adolescents. Education carried out during adolescence is very important because, at this age, educational material will be easier to accept and will affect the next life. The implication of this research is the effect on knowledge and attitudes toward cough etiquette.

Literature Review

There is consensus in the literature that individuals should cover their mouth/nose with a single-use tissue when coughing or sneezing. It is also advocated in the guidance produced in response to the SARS-CoV-2 pandemic. Limited experimental evidence suggests that covering the mouth or nose with tissue may not completely inhibit the spread of respiratory droplets from coughs or sneezes, which is important for reducing the spread of microorganisms. This recommendation is consistent with the 2007 CDC isolation guidelines updated in 2019. There is consensus in the literature that used tissues should be disposed of immediately in the nearest appropriate waste bin (ARHAI Scotland Infection Control team, 2021).

According to the study, the accurate answer rate was 61.5%, and the knowledge score for cough etiquette was 7.38 out of 12. The correct response rate among respondents was 85.3% for "cover with tissue paper or a handkerchief when coughing" and 20.7% for "cover with hand when coughing." The action item with the lowest score is coughing while wearing a mask. Additionally, knowledge and behavior have no statistically significant link (Jin and Kim, 2015).

Everyone is expected to follow the rules for coughing and sneezing, especially when there is a risk of infection due to airborne transmission of germs in droplet nuclei. Covering the nose and mouth with a tissue, handkerchief, or upper arm is considered good cough etiquette to stop the virus from spreading and to stop infection. After disposing of tissues in an infectious waste container, wash hands. When someone coughs or sneezes, there are certain mannerisms they should follow to prevent the spread of respiratory illnesses to other people. Infectious respiratory droplets can be contained using the proper cough technique (Aprianti and Kailani, 2021).

According to the study's findings, 86.0% of homemaker respondents correctly answered questions about cough ethics, and their average score for taking appropriate action was 33.65 out of 48, which was higher than the average for previous research. A low score, less than 50%, is assigned t covering one's nose when coughing in particular and to covering one's nose with the upper arm while coughing. The Centers for Disease Control and Prevention in the United States have emphasized proper nose-covering techniques. However, mothers sometimes need clarification or clarification about these techniques, which results in low rates of action on cough etiquette (Kim and Oh, 2021).

This study reported that 57.7% of respondents were observed sneezing or coughing into the air without covering their mouths or nose. It aligns with reports that some people cover their noses or mouths when coughing or sneezing. They reasoned that sneezing or coughing was an act that occurred spontaneously. Using a tissue to hold sneeze, cough, or runny nose is a phenomenon that has been going on for a long time. Tissue is very

useful; at this time, the study on the use of tissue was recorded at 20.8% of the respondents. The main reason for choosing tissue by respondents is practical (Olajuyin et al, 2019).

The report from a survey found that 67% of those answering telephone interviews in the USA frequently covered their mouth and nose with a tissue when coughing or sneezing during 2009. It also found 61% covered their mouth with their elbow or shoulder when coughing or sneezing (Wolf, 2020).

Metodology

This quantitative research uses a quasi-experimental pre-test and post-test control group design approach. Respondents in this study were 11th grade students of SMAN 11 Yogyakarta. Respondents are high school students because they represent teenagers and have similar intellectual abilities. The instrument in this research is a questionnaire. The number of samples in the control group was 27, in the treatment group 29. The treatment procedure was that after completing the pre-test, students were given counseling about cough etiquette in their respective classes. After attending the education, students were asked to fill out a post test, after the data was collected, data analysis was carried out using the Wilcoxon test. Permission for ethical eligibility for this research was issued by the research ethics committee of the Faculty of Medicine and Health Sciences number 075/EC-KEPK FKIK UMY/III/2.

Results

Below will be shown the characteristics of the respondents and the results of statistical tests of knowledge and attitudes about cough etiquette before and after education.

Characteristics of Respondents

Table 1. Characteristics of Respondents

Age	` Control Group	Intervention Group		
Frequency	Percentage	Frequency	Percentage	
16	11	40,7	15	51,7
17	16	59,3	1	48

Based on the table, it was found that the age characteristics of the respondents in the treatment group were mostly 16 years old, with a total of 15 respondents (51.7%), while the number of respondents' age characteristics in the control group were mostly 17 years old, with a total of 16 respondents (59 ,3%).

2. Statistical Test Results on Knowledge

Table 2. Statistical Test Results on Knowledge

Variable	Control Group			Treatment Group		
	n	Mean	SD	n	Mean	SD
Knowledge	27	8.89	892	29	8.62	1.049
before						
Education						
Kwowledge	27	8.85	1.099	29	9.03	1.49
after						
Education						
P	0.791**			0.032*		

*significant($p < 0,05$) **not significant ($p > 0,05$)

Based on the table above it is known that the average (mean) value of knowledge in the control group at the time of the pre-test was 8.89 then became 8.85 at the time of the post-test without being given education before the post-test. Whereas in the treatment group the average pre-test was 8.62, then education was given before the post-test and the average score was 9.03. In the control group, the p value was 0.791 (> 0.05), this result was not significant. In the treatment group, the p-value was 0.32 (< 0.05), this result was significant.

Statistical Test Results on Attitude

Table 2. Statistical Test Results on Attitude

Variable	Control Group			Treatment Group		
	n	Mean	SD	n	Mean	SD
Attitude before	27	33.59	3.489	29	32.38	2.395
Education						
Attitude after	27	32.96	4.165	29	33.59	3.213
Education						
P	0.199*			0.171*		

* < 0.05 = not significant

According to the aforementioned data, the average attitude score in the control group during the pre-test and during the post-test was 33.59 and 32.96, respectively. In contrast, the pre-test and post-test averages for the therapy group were 32.38 and 33.59 respectively. In the control group, the p value was 0.199 (> 0.05), this result was not significant. In the treatment group, the p-value was 0.171 (> 0.05), this result was not significant

Discussion

Without receiving education before the post-test, the average (mean) value of knowledge in the control group decreased from 8.89 during the pre-test to 8.85 during the post-test. On average, the control group's pre-test attitude score was 33.59, and the post-test attitude score was 32.96. The average for the treatment group was 32.38 for the pre-test and 33.59 for the post-test, although it is important to compare this number to research from other nations.

Cough droplets primarily carry out the infection cycle that spreads respiratory diseases. Infected people cough up various-sized droplets into the air during the transmission process. When droplets develop in the mucus lining the airways of an infected patient exposed to high-speed coughing airflow, infectious respiratory pathogens—viruses, bacteria, or fungi—are spread into the external environment (Zayas et al., 2013). The recommended control methods to stop the spread of respiratory infections include cough hygiene and respiratory care. In terms of limiting exposure to other persons, using surgical masks as a source of control has not been calculated (Kusbaryanto & Listiowati, 2017).

The 2017 PHC of C annual report lists a need for progress in patient communication, information, and education around cough etiquette (IEC) as one of the facility's issues. Of 3,069 patients, only 2,174 (70.84%) of the target population achieved this. Lectures on proper coughing techniques can be useful for increasing awareness of this issue. Lectures on proper coughing technique can be useful for increasing awareness of this issue. The knowledge score can be raised using counseling interventions. According to this study, teaching patients proper coughing technique can help them become familiar with it. Inhibiting the transmission of aerosols with proper cough techniques can also minimize the risk of airborne illnesses (Prihanti et al., 2021).

Based on research on the relationship between individual characteristics, environmental hygiene and sanitation practices with tuberculosis

incidence in North Sumatra Semarang District with 30 respondents from research on the habit of not closing mouth when coughing (56.7%) and the habit of throwing phlegm anywhere (86.7%). From this study, it can be concluded contact history of patients with pulmonary tuberculosis at home and the work environment are risk factors for pulmonary tuberculosis. Efforts to overcome nursing problems in TB patients are carried out to increase patient support as the main support for families and health workers. Interventions carried out by patients as agents for themselves are known as self-care (Tri Wahyuni et al, 2020).

The most frequent conduct is failing to use personal protective equipment, including masks and CTPS. Because it lowers the incidence of disease from the environment compared to washing hands with alcohol-based fluids, it is advised to use soap and water to wash your hands. Fulfillment Additionally, proper infrastructure is required to reduce cough transmission, particularly in school settings. That refers to using common sense safety measures in healthcare facilities, starting with the health professionals in charge of health services, applied in daily operations, especially when on duty. You can sneeze or cough into your elbow sleeve if you don't have a tissue handy. If any liquid leaks from your nose, use a tissue or blow it into the toilet or another designated area with antiseptic liquid (Utami et al., 2020).

Covid-19 coronavirus attacks the respiratory tract and spreads from infected people to healthy people. Diseases accompanied by reactions to cough like Tuberculosis. Droplets can transmit asthma, pneumonia, ARI and COVID-19. Easy droplets spread through tiny droplets from the nose or mouth. When someone is infected, the virus is sneezed or coughed up, then landed on an object or touched surfaces and people touching the eyes, nose or mouths (Widiono et al., 2022).

When coughing, follow Cough Ethics by covering your mouth and nose with a tissue or your sleeve to prevent the spread of bacteria to other people and the environment. The basic objective of preserving cough etiquette is to make those nearby comfortable and stop a disease from spreading extensively through free air (droplets). These droplets may include contagious microorganisms that could spread to nearby individuals through of airborne inhalation (Safitri and Amaliah, 2021).

According to the survey, 36.5% of participants had good cough etiquette, and 63.5% had poor cough etiquette. Only 4.7% of respondents in New Zealand used tissue or their elbow when sneezing or coughing, which is considered proper cough etiquette. Similar to Bangladesh, just 7% of respondents at the household level follow the coughing protocol. 92.7% of participants in this study avoided looking at other persons while coughing or sneezing (Yani et al., 2018).

WHO and other organizations still advise using and abiding by infection control measures to stop the spread of diseases that are spread through droplets and can become epidemics in healthcare facilities. Further study is necessary to ensure that cough etiquette is properly implemented and that the role of blocking cough drops and preventing the spread of running is optimized (Zayas et al., 2013).

The lack of flowing water and the expense of supplying hand hygiene supplies are two factors that prevent most Bangladeshi schools from requiring students to practice hand hygiene or use tissues to conceal coughs and sneezes. It is because the majority of people are poor. It has been customary to cover the nose with the upper arm or elbow when coughing or sneezing to encourage cough etiquette among children in schools in Bangladesh (Sultana et al., 2017).

This study revealed variations in the outcomes of intervention trials on knowledge of pulmonary tuberculosis prevention conducted offline and online. In contrast to the offline intervention, which had somewhat better results with an increase in knowledge of 60.28%, the online intervention indicated that 56.72% of the respondents had higher information regarding preventing pulmonary tuberculosis. According to research done in primary schools, using audio-visual materials and songs that promote a healthy diet positively impacted students' understanding of pulmonary tuberculosis prevention (Takbirani et al., 2022).

Conclusion

Based on the results of the data analysis and discussion above, it can be concluded that: education about cough etiquette is effective in increasing knowledge about cough etiquette, but less effective in increasing attitudes about cough etiquette.

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Conflict of interest

There is no conflict of interest in this study

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