

Awareness education on the prevention and control of upper respiratory tract infections in medical students of Universitas Muhammadiyah Yogyakarta



Asti Widuri^{1*}, Deoni Daniswara¹, Camelia Herdini²

ABSTRACT

Introduction: Respiratory tract infections are a subject of public health concern due to their widespread occurrence and significant rates of disease and mortality reported worldwide. Viruses trigger most of these respiratory infections, but bacteria also trigger some. Current measures in prevention efforts are to limit the spread of cases. Health education is crucial in preventing and managing infectious diseases. Given the provided background information, the Faculty of Medicine and Health Sciences service team Universitas Muhammadiyah Yogyakarta, conducted awareness education on preventing and controlling upper respiratory tract infections in medical students of Universitas Muhammadiyah Yogyakarta.

Methods: The participants of this community service consisted of 49 students. This community service program was carried out in March 2024. The techniques used in implementing this program in detail are preparation before the implementation of community service, pretest, providing educational material on preventing and controlling upper respiratory tract infections and ending with posttest activities. The delivery of educational material was carried out with a PowerPoint presentation for 90 minutes.

Results: This community service activity was attended by 49 participants, with the majority of respondents aged 21 years (51%) and females (61.2%). The analysis found a statistically significant increase in knowledge ($p=0.000$) between before and after education.

Conclusion: In this study, education on preventing and managing upper respiratory tract infections proved significant in enhancing knowledge.

Keywords: Awareness; education; medical students; prevention; upper respiratory tract infection.

Cite This Article: Widuri, A., Daniswara, D., Herdini, C. 2024. Awareness education on the prevention and control of upper respiratory tract infections in medical students of Universitas Muhammadiyah Yogyakarta. *Journal of Community Empowerment for Health* 7(3): 155-157. DOI: 10.22146/jcoemph.95359

¹Departement of Otorhinolaryngology Head and Neck Surgery, Faculty of Medicine and Health Science, Universitas Muhammadiyah Yogyakarta, Indonesia;

²Departement of Otorhinolaryngology Head and Neck Surgery, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia.

*Corresponding author:

Asti Widuri;
Departement of Otorhinolaryngology Head and Neck Surgery, Faculty of Medicine and Health Science, Universitas Muhammadiyah Yogyakarta, Indonesia;
asti.widuri@umy.ac.id

Submitted: 2024-04-04

Revised: 2024-06-27

Accepted: 2024-07-06

INTRODUCTION

According to the International Statistical Classification of Diseases, upper respiratory tract infections include nasopharyngitis, sinusitis, pharyngitis, tonsillitis, laryngitis, and laryngotracheitis or laryngotracheobronchitis. Viruses trigger most upper respiratory tract infections, but bacteria also trigger some.¹ Over 200 viruses are capable of causing upper respiratory tract infections. These viruses are highly infectious and are transmitted by physical contact, such as sharing food or beverages, shaking hands, kissing, and coughing or sneezing. Viruses can transmit from the hands to the upper respiratory tract.² Enterovirus, coronavirus, parainfluenza virus, rhinovirus, adenovirus, and respiratory

syncytial virus are a few of the viruses that can cause upper respiratory tract infections.³

Based on data from the Ministry of Health in 2023, coronavirus cases, better known as COVID-19, in December have increased with an average daily case increase of 35-40 cases. The surge in cases is mainly driven by the Omicron XBB 1.5 subvariant, which is also responsible for a significant rise in COVID-19 infections in Europe and the United States. In addition to the XBB variant, Indonesia has also detected the EG2 and EG5 subvariants. Steps in current prevention efforts are to limit the spread of cases. Prevention strategies focus more on proper infection control and isolating patients exposed to COVID-19.⁴ Health education is crucial in preventing and managing infectious

diseases.⁵

Health education is an activity that aims to provide information to others about the nature and causes of disease and the risk of disease associated with behaviors related to their lifestyle. Health education information is designed to increase knowledge and improve individual attitudes and beliefs so that individuals can consciously change and improve unhealthy behavior.⁶ Considering the previously mentioned background information, the Faculty of Medicine and Health Sciences service team, Universitas Muhammadiyah Yogyakarta, conducted awareness education on the prevention and control of upper respiratory tract infections in medical students of Universitas Muhammadiyah Yogyakarta. This activity would be efficiently managed

and carefully organized to help government programs implement health promotion initiatives for needy individuals. It would ultimately lead to an independent and directed improvement in living standards and long-term health.

METHOD

A one-group pre-posttest design study was conducted to determine the effect of upper respiratory tract infection education on medical students' knowledge at Universitas Muhammadiyah Yogyakarta. This research was designed to implement a community service program by lecturers from Universitas Muhammadiyah Yogyakarta. Lecturer community service refers to a program by UMY lecturers to fulfill the Tri Dharma of Higher Education. Community service activities were carried out in March 2024 at Skills Laboratory, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta. The activity was attended by 49 participants of the Medicine Study Program, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta. The sample size in this study was calculated using the hypothesis testing formula for the mean of two-paired populations. The sample size calculation assumes an overall two-tailed alpha of 0.05, which is evenly distributed. The sample calculation in this study assumed a 20% infection rate for Upper Respiratory Tract Infections based on previous studies⁷. These 49 samples were estimated to have at least 80% power to detect differences between pre-and post-education knowledge levels with a significance level of 0.05. Samples were selected using a consecutive sampling technique.

The methods employed in implementing this community service program included preparing and filling out the pretest questionnaire of upper respiratory tract infection prevention behavior, providing educational material on awareness of prevention and control of upper respiratory tract infections, and ending with a posttest and closing. Before participating in this community service event, all participants were provided with a thorough explanation of the benefits of participating in the program and signed an informed consent.

Table 1. Community service participants' demographics (n = 49)

Variable	n	%
Age (years)		
19	2	4,1
20	21	42,9
21	25	51
22	1	2
Gender		
Male	19	38,8
Female	30	61,2

Table 2. Effect of education on participants' knowledge

	Number of participants	Mean ± SD	p
Pre-education knowledge	49	28,20 ± 4,98	0,000*
Post-education knowledge	49	32,73 ± 6,75	

* Significant ($p < 0.05$)

The delivery of educational material was carried out with a PowerPoint presentation for 90 minutes. Before the delivery of educational material, there was a pretest session to fill out a questionnaire on preventing upper respiratory tract infections, which aimed to determine the participant's knowledge about the behavior of service participants in preventing upper respiratory tract infections. A question-and-answer session with participants was held after the material was delivered and continued with a post-test session. The questionnaire was given using the Google application form to make it easier for participants to access and work on it. The questionnaire consists of 15 questions regarding preventing upper respiratory tract infections with four answer options. The questionnaire contained statements with four answer options. The answer was scored 0, the answer was rarely scored 1, the answer was often scored 2, and the answer was consistently scored 3. The score results were then analyzed using SPSS version 22.0 to determine whether there was an increase in respondents' knowledge before and after education. Data analysis was conducted in two phases. The first phase was to analyze the demographics of the respondents. The second phase of the data was analyzed using paired t-test bivariate analysis to determine differences in knowledge levels before and after education.

The series of community service activities ended with the awarding grants to community service partners and closing. The grant is given for personal protective equipment as a preventive effort

to maintain personal health from upper respiratory tract infections.

RESULT

This community service activity was attended by 49 participants who were students of the Medical Study Program, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta, with the majority of respondents aged 21 years (51%) and females (61.2%). Demographic details of participants in community service activities can be seen in Table 1.

The analysis using a paired t-test in Table 2 shows a significant increase in knowledge ($p=0.000$) between before and after education.

DISCUSSION

Health education is the process by which individuals learn to behave appropriately to maintain, improve, and even restore their health.⁸ Educational interventions can be provided through various forms such as radio messages, lectures, posters, symposiums, discussions, television, and speeches in the public domain. This form of intervention must be tailored to the gender, education level, age, occupation, and background of the audience so that the education provided is adequate.⁹

Based on the results of the data analysis, there was a significant increase in knowledge ($p = 0.000$) of in-service participants before and after education. This aligns with a previously conducted meta-analysis study that provides educational interventions that have

proven effective in preventing respiratory infections in adults and the elderly. The knowledge domain is the most significant compared to attitude and practice. High levels of education and easy access to health services are believed to influence the results of educational interventions.¹⁰

Upper respiratory tract infection is the most common infection encountered in clinical practice. Therefore, health education about upper respiratory tract infections is essential for medical students. Moreover, the COVID-19 pandemic has had an impact on various aspects. Students may be exposed to and infected with the COVID-19 virus during clinical practice placements or at academic institutions.¹¹

Medical students are crucial in supporting hospitals in combating the COVID-19 outbreak.¹² Health education, mainly targeted towards health students and the general public, plays a crucial role in mitigating the transmission of this virus.¹³ Having a good understanding of epidemiological principles and prevention principles is the primary goal of providing education about this respiratory infection.¹⁴

This research is limited by its small sample size. The limitation is due to the limited time required to implement the service program, and the implementation of the service is carried out between lectures.

CONCLUSION

According to the study's findings, awareness education can significantly improve understanding of upper respiratory tract infection prevention and control. This is an important point, so more education is carried out as a preventive effort to control upper respiratory tract infections.

ACKNOWLEDGMENT

Nil.

CONFLICT OF INTERESTS

The authors declare there is no conflict of interest.

AUTHOR CONTRIBUTION

AW conceived the study's design, carried out data analysis, statistical analysis, manuscript preparation, manuscript review, and as a guarantor. AW, DD, and CH conducted literary research, the definition of intellectual content, experimental studies and data acquisition. All authors edited and reviewed the manuscripts.

ETHICAL STATEMENT

Before participating in this community service, all participants were explained the benefits of participating in the program and signed an informed consent.

RESEARCH FUNDING

The Community Service Institute at Universitas Muhammadiyah Yogyakarta financially supports this community service program.

REFERENCES

1. WHO. International Statistical Classification of Diseases and Related Health Problems (ICD). 2019
2. Eccles R, Wilkinson J. Exposure to cold and acute upper respiratory tract infection. *Rhinology*. 2015;53(2):99–106. doi: [10.4193/Rhino14.239](https://doi.org/10.4193/Rhino14.239).
3. Heikkinen T, Ruuskanen O. Upper respiratory tract infection. *Encyclopedia of Respiratory Medicine*. 2006;385–8. doi: [10.1016/B0-12-370879-6/00416-6](https://doi.org/10.1016/B0-12-370879-6/00416-6).
4. Güner R, Hasanoğlu İ, Aktaş F. COVID-19: Prevention and control measures in community. *Turk J Med Sci*. 2020;50(SI-1):571–7. doi: [10.3906/sag-2004-146](https://doi.org/10.3906/sag-2004-146)
5. Li W, Liao J, Li Q, Baskota M, Wang X, Tang Y, et al. Public health education for parents during the outbreak of COVID-19: a rapid review. *Ann*

6. Whitehead D. Health promotion and health education: Advancing the concepts. *Journal of advanced nursing*. 2004 Sep;47:311–20. doi: [10.1111/j.1365-2648.2004.03095.x](https://doi.org/10.1111/j.1365-2648.2004.03095.x)
7. Furushima D, Nishimura T, Takuma N, Iketani R, Mizuno T, Matsui Y, et al. Prevention of acute upper respiratory infections by consumption of catechins in healthcare workers: A randomized, placebo-controlled trial. *Nutrients*. 2019 Dec;12(1):4. doi: [10.3390/nu12010004](https://doi.org/10.3390/nu12010004)
8. Saha A, Poddar E, Mankad M. Effectiveness of different methods of health education: A comparative assessment in a scientific conference. *BMC Public Health*. 2005;5(1):88. doi: [10.1186/1471-2458-5-88](https://doi.org/10.1186/1471-2458-5-88)
9. Goni MD, Hasan H, Wan-Arfah N, Naing NN, Deris ZZ, Arifin WN, et al. Health education intervention as an effective means for prevention of respiratory infections among Hajj Pilgrims: A review. *Front Public Health*. 2020;8:449. doi: [10.3389/fpubh.2020.00449](https://doi.org/10.3389/fpubh.2020.00449)
10. Linhares FMP, Abreu WJCD, Melo PDOC, Mendes RCMG, Silva TAD, Gusmão TLAD, et al. Effectiveness of educational interventions in knowledge, attitude, and practice for preventing respiratory infections: a systematic review and meta-analysis. *Rev Bras Enferm*. 2022;75(4):e20210522. doi: [10.1590/0034-7167-2021-0522](https://doi.org/10.1590/0034-7167-2021-0522)
11. Sahu P. Closure of universities due to Coronavirus disease 2019 (COVID-19): Impact on education and mental health of students and academic staff. *Cureus*. 2020; 12(4): e7541. doi: [10.7759/cureus.7541](https://doi.org/10.7759/cureus.7541)
12. Miller DG, Pierson L, Doernberg S. The role of medical students during the COVID-19 pandemic. *Annals of Internal Medicine*. 2020;173(2):145–6. doi: [10.7326/M20-1281](https://doi.org/10.7326/M20-1281)
13. Belingheri M, Paladino ME, Riva MA. COVID-19: Health prevention and control in non-healthcare settings. *Occupational Medicine*. 2020;70(2):82–3. doi: [10.1093/occmed/kqaa048](https://doi.org/10.1093/occmed/kqaa048)
14. M Mitze T, Kosfeld R, Rode J, Wälde K. Face masks considerably reduce COVID-19 cases in Germany. *Proc Natl Acad Sci USA*. 2020;117(51):32293–301. doi: [10.1073/pnas.2015954117](https://doi.org/10.1073/pnas.2015954117)



This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/).