Disease Transmission Prevention Management Of Washing Hands With Soap For Students: Case Study At The University Of Jakarta, Indonesia

Mulyo Wiharto[1], Erlina Puspitaloka Mahadewi[2*], Jerry Maratis[3], Agus Firmansyah[4]

[1,2,3,4] Universitas Esa Unggul, Jakarta Indonesia
[*]Corresponding Author:
Email: erlina.puspitaloka@esaunggul.ac.id

Abstract.

The present study reports the first comprehensive study on management preventing efforts on disease transmission has been carried out by washing hands with soap since hands are the most transmittable disease medium. Hands should always be clean by using washing hands with soap (CTPS) following to the correct steps. Before practicing CTPS, respondents were given counseling about hand washing by carrying out 7 steps of washing hands starting with rubbing the palms, back of the hands, between the fingers, closing the right and left fingertips, rubbing the thumbs, cleaning the fingertips then ending by wiping the wrists, rinse with water and dry. The results of observations in class action research on 47 respondents that are university students in Jakarta Indonesia concluded that most respondents (59.57%) had practiced CTPS correctly. The results of the observations of the CTPS steps or steps can showed that most respondents (86.02%) have carried out these steps, in fact all respondents have carried out step 1 and step 7 correctly. The quality of the implementation of the CTPS steps, which were mostly good, was made possible by the educational factors possessed by the respondents and the information obtained during the counseling before the respondents carried out the CTPS practices. The good quality of the implementation of the CTPS steps was also made possible that most of the respondents around 74.47% were women.

Keywords: *CTPS, health protocols, preventing disease transmission and washing hand .*

I. INTRODUCTION

This paper presents the characterization of people behavioural during the covid-19 pandemic and after the pandemic, people were urged to implement health protocols to prevent disease transmission, namely washing hands, wearing masks, maintaining distance, staying away from crowds, and reducing mobility. These new habits, especially the habit of washing hands, must be done correctly by washing hands with soap (CTPS). The practice of CTPS is an effective way to prevent disease transmission because many disease transmission media occur through hands that are exposed to bacteria and viruses. The CTPS steps begin with wetting both palms with running water, taking soap then wiping and rubbing both palms, the back of the hands and between the fingers.

The next CTPS step is to clasp the right and left fingers alternately, rub the thumb, clean the nails or the tips of the fingers and finally clean the wrist, rinse, and dry it.Currently, many children, adults and even students do not carry out CTPS properly, even though the chance of disease transmission occurring through the hands, especially in children, is very large, namely as much as 80%. Hands must always be clean by doing CTPS, but apart from not doing CTPS with the right steps, many students also do not do CTPS at all.Efforts to prevent disease transmission will not work well due to the practice of CTPS that is not in line with expectations. In this regard, it is necessary to conduct classroom action research regarding the CTPS so that the habit of practicing CTPS can be carried out correctly. To prevent the spread of germs during the covid-19 pandemic, we should also wash our hands properly with soap and water for at least 20 seconds or use a hand sanitizer with at least 60% alcohol to clean your hands before and after:

- Touching your eyes, nose, or mouth
- Touching your face
- Entering and leaving public places
- Touching items or surfaces that others may touch frequently, such as doorknobs, tables, gas stations, shopping carts, or electronic checkout screens

Observations found that many students did not perform CTPS at critical points that required someone to do CTPS, such as washing hands before eating and drinking in the canteen, washing hands after defecating and so on. The students who washed their hands before eating or after going to the toilet also only did it on a whim and did not wash their hands according to the proper steps. The research aims to examine public health university students in Jakarta Indonesia ability to practice CTPS as an effort to prevent disease transmission. This research is also to obtain a more detailed description of the handwashing practice carried out by students step by step. This research is also expected to be useful in efforts to prevent disease transmission more effectively in pandemic and after pandemic.

II. METHODS

The method used to examine the problem is classroom action research. This research consists of preparing research plans, conducting research interventions or actions, collecting data by observing and conducting analysis by reflecting (Sutrisna, 2012). At the stage of preparing the research plan, the preparation of observation guidelines used to collect data, the preparation of extension activity plans, the preparation of media used for counseling and so on. The implementation of the research began with giving pre-tests about CTPS practices to students. As a result, none of the students could do CTPS by washing their hands in the 7 steps completely. The students were then given counseling on step-by-step CTPS practice supplemented by practical exercises. Data collection is carried out by carrying out research according to the plan that has been prepared. Observation guidelines that have been prepared are used to collect data by observing students who practice CTPS based on the steps or steps of washing hands according to World Health Organization (WHO) standards. The last step in the research is to analyze the observed data and reflect on the research results. Reflection activities are carried out to review the results of CTPS practice after students are given counseling. Reflection activities are also carried out to provide useful improvement suggestions for making the next plan. Evaluation of this study was carried out in 2 forms, namely orally and also using action tests. The evaluation was carried out based on taxonomy bloom by looking at the cognitive, affective, and psychomotor aspects of the students.

Oral tests were given to counseling participants related to the cognitive aspects of hand washing, meanwhile, action tests were given to evaluate how to wash hands properly. Evaluation of the attitude dimension was carried out by assessing the participation of students in this study. The action test was carried out by giving participants the opportunity to directly demonstrate how to wash their hands properly in the right order and duration.Based on age, it was reported that Covid-19 often infects adults with an age range of 31-45 years, meanwhile, the age group that is least frequently infected is children aged 6-18 years, while those aged 0-5 years have a prevalence of 2. 8% for exposure to Covid-19 (Task Force for Handling Covid-19, 2021). Nonetheless, children of all ages remain susceptible to Covid-19 and, like adults, can transmit the virus to others (Benner & Mistry, 2020). Covid-19 cases in children worldwide have reached 2.1-7.8% of the total number of confirmed Covid-19 cases. However, the global prevalence of Covid-19 in children remains unclear. This may be since children are more likely to show milder symptoms or be asymptomatic (UNICEF, 2021).Based on the guidelines issued by the Ministry of Home Affairs of Indonesia, to stop the spread of Covid-19, apart from keeping a distance, limiting mobility, using masks, and avoiding crowds, the practice of periodic hand washing must be made a habit (Safrizal et al., 2020). Hand washing is an effective way to prevent transmission of Covid-19 (World Health Organization, 2020).Apart from the prevalence of Covid-19 in children, prevention of transmission is very important to be cultivated from an early age. Society has entered the new normal period in which all levels of society of all ages are expected to be able to adjust to a new life side by side with Covid-19. Communicable disease prevention activities in the community include behavioral practices that are often studied together with knowledge and risk perception through surveys of knowledge, attitudes, and practices (Aerts et al., 2020).

III. RESULTS AND DISCUSSION

Disease transmission can occur through bacteria and viruses that enter the body, among others, caused by the habit of not practicing CTPS properly. In this regard on November 2022 an observation was made on the practice of CTPS with respondents who came from students.Research has shown that washing hands can prevent someone from being exposed to infectious diseases such as Covid-19 (Willmott et al., 2016). Even so, other studies have found that the application of hand washing has not been maximized. In the clinical setting of Mohaithef (2020), his research found that 10.3% of the total respondents still demonstrated inadequate hand washing practices and 44% who did not practice proper hand washing were male. Another study conducted with child respondents showed that only 23.3% could wash their hands properly and 15% of children washed their hands under clean running water. Meanwhile, 23.3% of children used to wipe their hands using a handkerchief (Dajaan et al., 2018). This is the same as the results of research by Nazliansyah et al. (2016), that 71.8% of students did not wash their hands properly.Proper hand washing according to the recommendations of the World Health Organization is through the following steps:

1) Wet hands under running water and use soap, 2) Rub palms and backs of hands alternately, 3) Rub between fingers alternately, 4) Make a locking motion, 5) Clasp the five fingers in the palm of the other hand, and vice versa, 6) Rub the thumbs alternately, 7) Rinse under running water and dry with a clean towel or dry tissue (Safrizal et al., 2020). The number of research respondents was 47 students from the Public Health Study Program, Esa Unggul University Jakarta Indonesia. Before being given counseling about proper hand washing, all respondents could not wash their hands according to World Health Organization (WHO) standarts and guidelines. They just wash their hands casually by wetting both hands with water, rubbing their palms and fingers with soap and then rinsing them under running water. According to the revised taxonomic structure, this is included in the dimension of remembering, namely being able to recognize and recall (Darmawan & Sujoko, 2013). Hand washing can be done using a hand sanitizer or under running water for a minimum duration of 20 seconds. The impact of hand hygiene to reduce the risk of communicable diseases itself can be increased by convincing someone to apply hand washing procedures correctly and at the right time (Bloomfield et al., 2007).Respondents were then given information about the steps for washing hands according to World Health Organization (WHO) guidelines as follows on Figure 1 and Figure 2 in this below:

Fig 1. The Steps for Washing Hands Hygiene to WHO Standart

Fig 2. The Steps to Hands Washing According to WHO Guidelines

1. Wet both palms with running water, take the soap then wipe and rub both palms gently.
2. The backs of both hands rubbed and rubbed alternately.
3. The fingers and between the right and left fingers are rubbed alternately.
4. The tips of the right and left fingers are rubbed alternately by bringing the two fingertips together.
5. The right and left thumbs are rubbed and rotated alternately.
6. The right fingertips are gently rubbed on the left palm, then the left fingertips are rubbed gently on the right palm, alternately.
7. Both right and left wrists are rubbed alternately in a circular motion, ending by rinsing all parts of the hand with clean running water, then drying it using a towel or tissue.

The level achieved by students in the affective or attitudinal aspect is valuing where the child pays attention to the material, participates actively during the community service process, and demonstrates how to wash hands or cough and sneeze properly. Researchers cannot assume that the attitude shown is the conclusion from the results of the counseling carried out. Apart from changing attitudes that take time, it is also because attitudes are influenced by various factors such as differences in experience, knowledge, intensity of feelings and the surrounding environment. Attitude itself is related to the willingness to respond to social objects that lead a person to real behavior (Asrul et al., 2015). After obtaining clear information, the students practiced the CTPS steps one by one and were assessed using observation guidelines which contained 7 steps for CTPS practice according to World Health Organization (WHO) standards and guidelines. Observations found that most of the respondents (59.57%) had practiced CTPS correctly. The distribution of CTPS practices can be seen in Figure 3 below:

7 Steps for Washing Hands	Ɛ	%
Right	28	59,57
Wrong	19	40,43
Total	47	100

Fig 3. Distribution of Washing Hands (CPTS) Practices

In Figure 3 above it is also stated that almost half of students (40.43%) cannot do CTPS properly, so the use of soap in washing hands must be emphasized because soap is proven to be effective in eliminating bacteria and viruses. Washing hands with water alone is not enough because it is not effective for maintaining health because dirt in the form of fat that sticks to the skin cannot be cleaned.Washing hands by practicing CTPS according to World Health Organization (WHO) standards is very important. This habit is one of the sanitation measures taken to prevent transmission of disease because hands are the medium that most transmits diseases caused by bacteria and viruses. This is in line with the opinion of Hanny Nilasari, a doctor skin and gender specialist from University of Indonesia stated that diseases that occur through the hands have an 80% chance. Hands are the medium that transmits the most diseases, especially diseases

caused by bacteria and viruses, so hands must always be clean by practicing CTPS with the right steps. Most students have practiced CTPS correctly so that efforts to prevent disease transmission are expected to run effectively.

The habit of doing CTPS is very important for students, especially when students are in the following conditions: before and while preparing food, before and after eating or after defecating, after direct contact with sick b, efore and after touching the wound, after touching dusty things, after coughing, sneezing, or blowing your noseThe activities mentioned above can make bacteria and viruses stick to the hands. Furthermore, the bacteria and viruses will be transferred to the second person when the first person affected by the bacteria and viruses holds an object and the object is held by the second person. These activities are critical points that require students to do CTPS because this habit can prevent the transfer of bacteria and viruses and can prevent disease transmission. The large number of students who did not practice CTPS was probably triggered by the unavailability of facilities or hand washing facilities in canteens or places to eat and drink around campus, the unavailability of soap for washing hands in bathrooms and toilets needed for CTPS after defecating, and so on. The provision of hand washing facilities and facilities is important because it is a driving factor for clean behavior. Enabling factors are factors that enable students to behave cleanly.

STEPS of CTPS Students at University	DO		NOT DO	
	Ɛ	%	Ɛ	%
1	47	100	0	0
2	41	87,23	6	12,77
3	37	78,72	10	21,28
4	33	70,21	14	29,79
5	36	76,60	11	23,40
6	42	89,36	5	10,64
7	47	100	0	0
Averages		**86,02**		**13,98**

Fig 4. Distribution of The Implementation of CTPS Steps

The results of observations of the CTPS practices carried out by students step by step show the appearance of the respondents like Figure 4 as follows:

- Steps 1 and 7 : All students (100%) did step 1 by wetting both palms of running water, took soap then rubbed and rubbed both palms slowly. All students (100%) also did step 7 by washing both wrists alternately, rinsing their hands with clean running water and then drying them with a towel or tissue.
- Step 2: Most of the students (87.23%) did step 2 by rubbing and rubbing the back of their hands alternately.
- Step 3 : Most of the students (78.72%) did step 3 by rubbing their fingers and between their fingers until they were clean and doing
- Step 4 : Most of the students (70.21%) did step 4 by closing their right and left fingers alternately to clean the fingers.
- Step 5 : Most of the students (76.60%) did step 5 by rubbing and rotating the right and left thumbs alternately.
- Step 6 : Most of the students (89.36%) did step 6 by cleaning their fingertips into their palms and rubbing them gently.
- Step 7: All the students (100%) did step 7, both right and left wrists are rubbed alternately in a circular motion, ending by rinsing all parts of the hand with clean running water, then drying it using a towel or tissue.

Students can also demonstrate how to wash their hands properly according to what was demonstrated by the speaker, when they are going to eat together. This shows that they have been able to reach the second level of the cognitive dimension, namely understanding the importance of washing hands to prevent transmission of Covid-19. Until this position, students have also started to apply the concept of hand washing and proper coughing and sneezing ethics. However, for the implementation level, more routine supervision and education from the campus is needed.The quality of the implementation management of the CTPS steps, which were mostly good, was made possible by the educational factors and information

provided before the respondents carried out the CTPS practice. Before being given counseling, all students could not carry out CTPS practices with complete steps, but after students were given counseling, their ability to practice CTPS greatly improved. The use of soap is very effective for removing fat when rubbed on the palms, backs of the hands, fingertips, thumbs, and forearms. Running water and soap will expel all the viruses and bacteria hiding in the fat and prevent disease transmission. The best soap to use for CTPS is antiseptic soap, but basically any type of soap can be used because soap has been proven to be effective at eradicating viruses and bacteria.

The information provided in counseling is well received so that most students can practice CTPS properly. This is in accordance with the opinion of Notoatmodjo (2011) which says that the higher a person's education, the easier it is for him to receive the information provided, so that the higher his knowledge will be. The counseling provided is a reinforcing factor in carrying out CTPS practices. Reinforcing factors that encourage clean living behavior should be developed not only in the form of counseling, but other activities that support and strengthen students in clean behavior. The good quality of the implementation of the CTPS steps was also made possible by the condition of the respondents, most of whom or 74.47% were women. Gender is a facilitating factor (disposing factor) to carry out student clean behavior. According to Tel Avip University (2015), a woman can absorb information faster so that she is quicker in concluding and is also more skilled in practicing correct CTPS than men. Apart from implementing the correct CTPS practice, efforts to prevent disease transmission can also be carried out by implementing other health protocols, including wearing a mask.Discipline in wearing a mask is necessary because disease transmission also occurs due to inhalation or splashing of bacteria or viruses. Wearing a perfect mask is covering the bridge of the nose to below the chin, then the sides are tightened so that droplets, aerosol particles or airborne particles are not penetrated and worn for a maximum of 4 hours. The use of a good mask can prevent droplet splashes, and the spread of aerosol particles, airborne particles or the inhalation of other pathogens attached to objects.

IV. CONCLUSION

The results of observations of the CTPS practices carried out by the students showed that the majority of students (59.57%) had practiced the CTPS correctly. Most of the students (86.02%) have also done good hand washing practice step by step. Furthermore, this study also concluded the following:

- All students have done step 1 by wetting both palms of running water, applying soap then wiping and rubbing both palms slowly.
- All students have also done step 7 by washing both wrists alternately, rinsing hands with clean running water and drying hands with a towel or tissue.
- Most of the students had practiced CTPS correctly, most likely related to being given CTPS counseling according to WHO standards, which was a reinforcing factor for clean behavior.
- Most of the students had done the CTPS practice correctly in relation to the number of respondents, most of whom were women who more easily absorbed information about CTPS.

Apart from wearing a mask, keeping your distance from other people is also important because cloth masks are only able to protect against exposure to bacteria or viruses in droplets, only around 70-90%. For bacteria or viruses contained in smaller particles such as aerosol particles or airborne particles, cloth masks are not very effective so it is necessary to maintain distance from other people who are sick or suspected of being sick even though they are wearing a mask. Maintain a safe distance from people who are sick or suspected of being sick at least 2 meters to avoid the risk of being exposed to droplets. The results of observations of the CTPS practices carried out by the students showed that the majority of students (59.57%) had practiced the CTPS correctly.Most of the students (86.02%) have also done good hand washing practice step by step. To keep your distance, don't crowd with people who are likely to be sick and can transmit the disease, people who don't use masks that comply with standards, people who take off masks when in crowds, lower masks when talking, or wear masks that don't covering their noses or people talking at a loud volume, shouting and even laughing so that they emit a lot of droplets, aerosol particles or airborne particles that can spread disease bacteria and viruses.

V. ACKNOWLEDGMENTS

The authors are grateful to all support from the respondents, the university, the most important team to the research for learning also sharing informations, special thank to co-author Ms. Erlina Puspitaloka Mahadewi, for the invaluable revision and advices that made this study more completely.

REFERENCES

[1] Aerts, C., Revilla, M., Duval, L., Paaijmans, K., Chandrabose, J., Cox, H., & Sicuri, E. (2020). Understanding the role of disease knowledge and risk perception in shaping preventive behavior for selected vector-borne diseases in Guyana. *PLOS Neglected Tropical Diseases*, *14*(4), e0008149.

[2] Asrul, Ananda, R., & Rosnita. (2015). *Evaluasi Pembelajaran*. Citapustaka Media.

[3] Benner, A. D., & Mistry, R. S. (2020). Child Development During the COVID-19 Pandemic Through a Life Course Theory Lens. *Child Development Perspectives*, *14*(4), 236–243. https://doi.org/10.1111/cdep.12387

[4] Safrida, S., Tannady, H., Solissa, E. M., Sapulete, H., & Al Haddar, G. (2023). Strategic Leadership Analysis of School Principal to Improve Learning Quality. ***Jurnal Pendidikan dan Kewirausahaan***, 11(2), 391-399.

[5] Bloomfield, S. F., Aiello, A. E., Cookson, B., O'Boyle, C., & Larson, E. L. (2007). The effectiveness of hand hygiene procedures in reducing the risks of infections in home and community settings including handwashing and alcohol-based hand sanitizers. ***American Journal of Infection Control***, *35*(10), S27–S64.

[6] Dajaan, D. S., Addo, H. O., Ojo, L., Amegah, K. E., Loveland, F., Bechala, B. D., & Benjamin, B. B. (2018). Hand washing knowledge and practices among public primary schools in the Kintampo Municipality of Ghana. ***International Journal of Community Medicine and Public Health***, *5*(6), 2205.

[7] Darmawan, I. P. A., & Sujoko, E. (2013). Revisi Taksonomi Pembelajaran Benyamin S. Bloom. *Satya Widya*, *29*(1), 30. https://doi.org/10.24246/j.sw.2013.v29.i1.p30-39

[8] Lubis, H., & Pratama, K., Safrida, S. (2022). HR related antecedes to sustainability reporting in Indonesian public listed firm: The mediating role of employee committeemen. *Cuadernos de Economía, 45*(128), 87-97.

[9] Mohaithef, M. A. (2020). Assessing Hand Hygiene Practices Among Nurses in the Kingdom of Saudi Arabia. ***The Open Public Health Journal***, *13*(1), 220–226. https://doi.org/10.2174/1874944502013010220

[10] Nazliansyah, N., Wichaikull, S., & Wetasin, K. (2016). Factors Affecting Hand Washing Practice Among Elementary Schools Students In Indonesia. ***Belitung Nursing Journal***, *2*(4). https://doi.org/10.33546/bnj.24

[11] Safrizal, Putra, D. I., Sofyan, S., & Bimo. (2020). *Pedoman Umum Menghadapi Pandemi COVID-19 bagi Pemerintah Daerah: Pencegahan, Pengendalian, Diagnosis dan Manajemen*.

[12] Satuan Tugas Penanganan COVID-19. (2021). *Peta Sebaran COVID-19*. Komite Penanganan COVID-19 dan Pemulihan Ekonomi Nasional. https://covid19.go.id/peta-sebaran-covid19

[13] Sarkum, S., Syamsuri, A. R., & Supriadi, S. (2020). The role of multi-actor engagement. ***Journal of Open Innovation***: Technology, Market, and Complexity, 6(4), 176.

[14] UNICEF. (2021). *Understanding Child Health in the Context of COVID-19*. https://www.childhealthtaskforce.org/news/2020/understanding-child-health-context-covid-19

[15] Willmott, M., Nicholson, A., Busse, H., MacArthur, G. J., Brookes, S., & Campbell, R. (2016). Effectiveness of hand hygiene interventions in reducing illness absence among children in educational settings: A systematic review and meta-analysis. *Archives of Disease in Childhood*, *101*(1), 42–50

[16] Supriadi, ., Dalimunthe, R. F., Lumbanraja, P., & Tarmizi, H. B. (2021). The Antecedent Of Educational Staff Contextual Performance In Medan City Private Universities. Archives of Business Research, 9(2), 316–338.

[17] World Health Organization. (2020). *Handwashing an Effective Tool to Prevent COVID-19, other Diseases* (News Release SEAR/PR/1744). World Health Organization. https://www.who.int/southeastasia/news/detail/15-10-2020-handwashing-an-effective-tool-to-prevent-covid-19-other-diseases

[18] Rahayu, S., & Riana, Z. (2020). Determinants of Fraud Pentagon Theory Perspective and Its Effects on Fraudulent Financial Statement in Mining Companies Which Is Listed In Indonesia Stock Exchange. ***Budapest International Research and Critics Institute-Journal (BIRCI-Journal),*** 3(3), 1995-2010.

[19] World Health Organization. (2021). *WHO Coronavirus (COVID-19) Dashboard*.

[20] World Health Organization. https://covid19.who.int/ T.J.S. Learner, *Analysis of Modern Paints*, The Getty Conservation Institute, 2004, p. 236.