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Determinants of Fulfillment of Requirements for Hand Washing Facilities with Soap

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ABSTRACT: The behavior of Washing Hands with Soap (CTPS) and running water is carried out as an effort to protect yourself and others in the prevention of infectious diseases. However, the practice of CTPS in Banyumas Regency is still low. One of the causes is the limitation of CTPS supporting facilities and infrastructure which results in ineligible facilities. The purpose of the study is to analyze factors related to the fulfillment of CTPS facility requirements. A type of observational analytical research with the crosssectional method. The population in this study is houses that have CTPS facilities in Baturraden District. The number of samples was 325 houses with the sampling technique of cluster random sampling. Data collection techniques through interviews and observations. Data analysis uses chi-square statistical ui and logistic regression. Factors related to the fulfillment of the CTPS facility requirements were the respondent's education level (p-value ≤ 0.05; OR=1,855; CI95%=1,123-3,064). income (P-value ≤ 0.05; OR=1,855; CI95%=1,123-3,064), counseling (p-value ≤ 0.05; OR=2,116; CI95%=1,273-3,518 knowledge (p-value ≤ 0.05; OR=2,187; CI95%=1,137-4,207), and attitudes (p-value ≤ 0.05; OR=2,187; CI95%=1,137-4,207). The dominant factors related to the fulfillment of CTPS facility requirements are counseling, knowledge and attitude. The Primary Health Center of Baturraden I needs to actively conduct counseling to increase public knowledge and attitudes regarding the importance of fulfilling the requirements of CTPS facilities.

KEYWORDS: Counseling, Knowledge, Attitude, Banyumas.

INTRODUCTION

Washing Hands with Soap (CTPS) is a special action for hand hygiene using soap and running water to physically remove dirt, organic material and microorganisms from hands (Global Handwashing Partnership, 2020). The CTPS (Washing with Soap) behavior is effective for eliminating germs, avoiding disease, and preventing the spread of germs to other people (CDC, 2023), (WHO, 2020). According to the CDC (*Centers For Diseases Control and Prevention*), the habit of CTPS with running water can reduce diarrhea morbidity rates by up to 23-40% and 58%, especially in people with weak immune systems, reduce gastrointestinal morbidity rates which affect student absenteeism by 29-57%, and reduce morbidity rates Upper Respiratory Tract Infection (ARI) is 16-21% (CDC, 2022). During the pandemic, the practice of CTPS with continuously flowing water had an effective impact in preventing the transmission of COVID19 (WHO, 2020),(Ezezika *et al.*, 2023).

The practice of washing hands with soap and running water in both developing and developed countries is still a problem. The main factor is the unavailability of CTPS facilities at home. According to *United Nations Children's Fund* (UNICEF) states that three billion people or 40% of the world's population do not have a place to wash their hands with water and soap at home. Three quarters of them live in poor countries in the world, including in informal settlements such as migrant and refugee camps, or in conflict areas (UNICEF, 2020).

In Indonesia, good and correct CTPS behavior is still low. The results of the 2018 Basic Health Research stated that the proportion of correct hand washing behavior in Indonesia, especially in the age group >10 years, was 49.8%, Central Java Province was 53.57% and Banyumas Regency was 58.03%. This figure for population groups living in rural areas is lower than in urban areas (Ministry of Health of the Republic of Indonesia, 2018). Based on this, it shows that CTPS has not yet become a culture that people carry out in their daily lives. This low level of hand washing behavior can be caused by several factors, namely: inadequate facilities and infrastructure, such as: the absence of a sink, the unavailability of clean water and soap, and also the lack of communication and education provided (Setiyadi *et al.*, 2020). The availability of sufficient infrastructure that can be utilized or function properly is a supporting factor in the practice of washing hands with running water, soap and dry towels/tissues. Facilities and infrastructure are also an important factor in shaping a person's behavior. Thus, the behavior of washing hands using soap requires facilities and

infrastructure such as soap and a hand washing place (running water or tap). The research results show that there is a significant relationship between the availability of infrastructure and the practice of CTPS (Suryani *et al.*, 2024) (Berhanu *et al.*, 2022) (Admation *et al.*, 2022).

According to the Indonesian Ministry of Health, it is stated that there is 2 aspects that must be fulfilled to maintain the CTPS habit properly and correctly, namely the technical/hardware aspect *(hardware)* like the presence of soap, clean water, and hand washing facilities and non-technical/software *(software)* includes knowledge, motivation and other social factors, especially those related to the use of materials for washing hands (RI Ministry of Health, 2021). To cultivate CTPS properly and correctly, the availability of facilities and infrastructure such as soap, tissue/dryer and clean running water and guaranteeing its availability, including maintaining and operating the facilities in a sustainable manner (Gunawan, Nuryanto, Suparmin, *et al.*, 2024). However, the availability of CTPS facilities and infrastructure is still limited so that the existing facilities do not meet the requirements which include the availability of soap, dryers (clean tissue/cloth), clean running water, waste water that does not stagnate, available closed waste water channels and no there are vectors. Based on this, researchers are interested in conducting research on fulfilling the requirements for CTPS facilities used by the community in Baturraden District, Banyumas Regency. The aim of the research is to analyze factors related to fulfilling the requirements for CTPS facilities.

MATERIALS AND METHODS

Type of quantitative research by design *cross sectional study*. The research was conducted in Baturraden District, Banyumas Regency from April to August 2024. The population in the study were houses in Baturraden District. The sample size in this study was 325 houses that met the inclusion criteria, namely having CTPS facilities and being willing to be respondents. The sampling technique is *cluster random sampling*. Respondents in the research were heads of families. Independent variables include education level, employment status, income level, residential density, knowledge, attitudes and counseling history, while the dependent variable includes fulfillment of CTPS requirements. Data collection techniques through interviews and observation. Data analysis uses bivariate analysis using tests *chi-square* and multivariate uses *logistic regression*. Variables resulting from bivariate analysis that are included in the multivariate model are variables with a p value <0.25.

RESULTS AND DISCUSSION

Type of hand washing facility

Table 1. Types of CTPS Facilities in Baturraden District in 2024

No	Type of CTPS Facility	n	%
1	Washing hands *stationer* (sink)	87	26,8
2	Simple hand wash (tap water)	135	41,5
3	Washing hands *portable (gallon/barrel with a hole*	55	16,9
4	Wash your hands in the bathroom with a dipper	48	14,8
Amount		**325**	**100,0**

The results of the study showed that the types of facilities used included stationary hand washing (sink), *portable* and simple. Most of the types of facilities used were simple hand washing (53.2%) and with a sink (26.8%). In line with the Indonesian Health Survey using sinks and tap water (67.5%) (RI Ministry of Health, 2023). In Indonesia, CTPS is found in various forms which are influenced by social, economic and geographical conditions. Overall, even though facilities are available to support CTPS practices, there are big challenges including inadequate infrastructure provision and changes in people's habits to make hand washing a daily routine (Ministry of Health of the Republic of Indonesia, 2021).

CTPS Facilities Requirements

Table 2. Fulfillment of CTPS Facility Requirements in Baturraden District in 2024

No	Variable	Yes	No
1	Soap available	121 (37,2%)	204 (62,8%)
2	Clean tissue/drying cloth is available	103 (31,7%)	222 (68,3%)
3	Availability of sufficient water (running water)	299 (92,0%)	26 (8%)
4	Waste water does not stagnate	274 (84,3%)	51 (15,7%)
5	Covered waste water pipes are available	243 (74,7%)	82 (25,3%)
6	No vectors found	287 (88,3%)	38 (11,7%)

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The results of the research show that the requirements for CTPS facilities are 204 units of soap (62.8%), no tissue (68.3%), 26 units of water (running water) not available in sufficient quantities (8%), waste water inundated in 51 units (15.7%), wastewater channels were not closed in 82 units (25.3%) and vectors were found in 38 units (11.7%). One of the obstacles in providing CTPS places independently is the lack of resources available in households such as soap, dryers (clean tissue/cloth), availability of water and other facilities such as drainage (Biswas *et al.*, 2017) (Lohiniva *et al.*, 2008). Limited resources result in CTPS practices carried out by the community that do not comply with WHO handwashing guidelines (Khadka and Dani, 2020). The main elements in providing hand washing facilities are the availability of clean, running water that meets physical requirements, there is soap as a disinfectant to kill disease-causing microorganisms and *tissue*/clean cloth as a hand dryer (Ministry of Health of the Republic of Indonesia, 2010). Limitations in the provision of CTPS facilities can influence behavior and hinder people from getting used to CTPS (Kefi *et al.*, 2022) (Indonesian Ministry of Health, 2021). Thus, the availability of facilities in CTPS is very important so that the CTPS habit can run well, correctly and sustainably (Friskarini and Sundari, 2020). The results of research by Berharu et al (2022) show that the availability of facilities equipped with soap and running water is significantly related to the practice of CTPS (Berhanu *et al.*, 2022).

Table 3. Fulfillment of CTPS Facilities Requirements in Baturraden District in 2024

No	Variable	n	%
1	Eligibility (MS)	86	26,5
2	Does Not Meet Conditions (TMS)	239	73,5
Total		**325**	**100**

The research results showed that the majority of existing CTPS facilities did not meet the requirements (73.5%). The results of observations of CTPS facilities showed that the majority of them did not have soap (62.8%) and drying equipment/*tissue* (68.3%). Most households consider that preparing soap and tissue for CTPS is an additional burden in addition to other needs (Sultana *et al.*, 2018). This condition causes people to practice hand washing using only water. There is a public opinion that there is no need to wash your hands with soap if there is no dirt on your hands (Akter and Ali, 2014). Using water alone to wash hands is not enough to protect people from disease-causing germs on their hands (Burton *et al.*, 2011). Using soap for hand washing activities is very important in killing germs (bacteria and viruses) and removing dirt, oil and fat on the palms of the hands (Husni and Ramadany, 2019). Apart from that, soap makes hands smell good, feel light, smooth and soft, and clean, making users feel comfortable, calm and confident (Blum *et al.*, 2019). If you rub your hands with soap until foamy, then rinse them using running water, the dirt on your hands will disappear (Directorate of Primary Schools, 2020). Hands that are clean and free from germs must be dried with *tissue*/clean rag. Unavailability *tissue*/clean rags and people's habits of using clothes to dry can cause hands to become contaminated with germs again (Gunawan, Nuryanto, Lukmitarani, *et al.*, 2024). Hands are re-contaminated by germs if you don't dry your hands *tissue*/clean rag (Nugraheni *et al.*, 2010). Thus, through the use of CTPS facilities that meet the requirements, hand washing activities can protect the public from germs that cause disease. It is important to maintain environmental cleanliness and adopt clean and healthy living habits to prevent infectious diseases such as TB, Covid-19 or others (Kahar,F dkk, 2021). This Covid-19 disease has become a pandemic in several countries, including Indonesia, but it can be prevented by implementing clean and healthy living behaviors (Kahar, F, Dirawan, G.D dkk 2020).

Table 4. Bivariate Statistical Test Results for Factors Associated with Fulfillment of Requirements CTPS facilities in Baturraden District in 2024

No	Variable	CTPS Facilities Requirements		*P-Value*	OR (CI 95%)
		MS	TMS		
1	Work				
	Yes	64 (34,6)	186 (65,44)	0,680	0,849 (0,480-1,504)
	No	22 (28,9)	53 (71,1)		
2	Education				
	High	52 (32,5)	108 (67,5)	0,021*	1,855 (1,123-3,064)
	Low	34 (20,6)	131 (79,4)		
3	Income				
	High	51 (32,1)	108 (67,9)	0,034*	1,767 (1,072-2,914)
	Low	35 (21,1)	131 (78,9)		
4	Residential Density				
	Not dense	66 (28,3)	167 (71,7)	0,283	1,423 (0,803-2,520)
	Congsted	20 (21,7)	72 (78,3)		

5	Counseling				
	Yes	55 (33,5)	109 (66,5)	0,005*	2,116 (1,273-3,518)
	No	31 (19,3)	130 (80,7)		
6	Knowledge				
	Good	73 (29,8)	172 (70,2)	0,025*	2,187 (1,137-4,207)
	Not good	13 (16,3)	67 (83,7)		
7	Attitude				
	Good	53 (35,1)	98 (64,9)	0,002*	2,311 (1,394-3,830)
	Not good	33 (19,0)	141 (81,0)		

The results of bivariate analysis using the Chi Square statistical test show that the requirements for CTPS facilities to meet the requirements are higher for respondents who work (34.6%) than those who do not work and statistically there is no significant relationship (*p-value* > 0.05; OR=0.849; CI95%=0,480-1,504). The requirements of CTPS facilities meet higher requirements for respondents with higher education (32.1%) than lower and statistically there is a significant relationship (*p-value* ≤ 0,05; OR=1,855; CI95%=1.123-3.064). The requirement for CTPS facilities to meet the requirements is higher for respondents with high income (32.1%) than low and there is a statistically significant relationship (*p-value* ≤ 0,05; OR=1,767. CI95%=1.072-2.914). The requirements for CTPS facilities to meet the requirements were higher for respondents with non-dense residential densities (28.3%) than dense and statistically there was no significant relationship (*p-value* > 0.05; OR=1.423; CI95%=0.803-2.520). The requirement for CTPS facilities to meet the requirements is higher for respondents with a history of having attended counseling (33.5%) than never and there is a statistically significant relationship (*p-value* ≤ 0,05; OR=2,116; CI95%=1.273-3.518). The requirement for CTPS facilities to meet the requirements is higher for respondents with good knowledge (29.8%) than not good and statistically there is a significant relationship (*p-value* ≤ 0,05; OR=2,187; CI95%=1.137-4.207). The requirements for CTPS facilities to meet the requirements are higher for respondents with good attitudes (35.1%) than those with poor attitudes and statistically there is a significant relationship (*p-value* ≤ 0,05; OR=2,311; CI95%=1,394-3,830).

Several variables related to fulfilling the requirements for CTPS facilities include education, income, counseling, knowledge and attitudes. Respondents with low education are at risk of meeting the requirements for CTPS facilities not meeting the requirements 1.855 times greater than respondents with higher education. The low level of education of respondents causes ignorance about the importance of CTPS and facility requirements, resulting in limited knowledge in providing the required infrastructure. Respondents with low family income are at risk of not meeting the requirements for CTPS facilities 1.767 times greater than those with high income. Respondents with low incomes tend to have limitations in purchasing more complete and hygienic CTPS facilities such as ensuring the provision of running water, liquid soap, drying facilities (*tissue*/clean dry cloth) as well as maintaining and replacing sanitation facilities regularly. Low family income levels hinder the provision of resources such as purchasing soap, *tissue* and cleaning tools/materials thus become household obstacles in the practice of CTPS, and vice versa (Akter and Ali, 2014).

Respondents who had never attended counseling were at risk of not meeting the requirements for CTPS facilities 2.116 times greater than respondents who had attended counseling. Respondents who never attended counseling about CTPS resulted in a lack of knowledge about meeting the requirements for inappropriate facilities (according to standards). Respondents with poor knowledge are at risk of meeting the requirements for CTPS facilities not meeting the requirements 2.187 times greater than those with good knowledge. Respondents' poor knowledge has an impact on limited knowledge in fulfilling the requirements for CTPS facilities such as soap, tissue, water availability and other requirements. Respondents who have a bad attitude are at risk of fulfilling the requirements for CTPS facilities not meeting the requirements 2,311 times greater than respondents who have good attitude. Respondents who have a good attitude towards hand hygiene encourage the provision of CTPS facilities, which can support effective hand washing practices in daily life.

Table 5. Multivariate Statistical Test Results for Factors Associated with Fulfillment Requirements for CTPS Facilities in Baturraden District in 2024

Variable	p value	OR	C! 95%
Step 1			
Level of education	0,068	1,649	0,965-2,819
Income level	0,054*	0,165	0,026-1,035
Extension history	0,011*	10,632	1,712-66,024
Knowledge level	0,022*	2,261	1,125-4,545
Attitude	0,002*	2,268	1,340-3,839
Step 2			
Income level	0,091	0,211	0,035-1,279
Extension history	0,017*	8,989	1,481-54,542
Knowledge level	0,016*	2,350	1,172-4,711

Attitude	0,001*	2,389	1,417-4,029
Step 3			
Extension history	0,007*	2,048	1,212-3,459
Knowledge level	0,026*	2,153	1,096-4,229
Attitude	0,001*	2,475	1,472-4,160

The results of multivariate analysis using logistic regression statistical tests show that the more dominant factor related to fulfilling the requirements for CTPS facilities is counseling (*p-value* ≤ 0,05; OR=2,048; CI95%=1,212-3,459), respondents' knowledge (*p-value* ≤ 0,05; OR=2,153; CI95%=1,096-4,229) and respondents' attitudes (*p-value* ≤ 0,05; OR=2,475; CI95%=1,472-4,160). Overall, counseling, knowledge and attitudes are interrelated and contribute to fulfilling the requirements for CTPS facilities. Good counseling can increase knowledge, which can influence positive attitudes towards proper and correct CTPS practice. With good and correct CTPS practices on a regular and ongoing basis, efforts will be made to fulfill the requirements for CTPS facilities.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The research results show that the factors that are significantly related to fulfilling the requirements for CTPS facilities are education, income and the respondent's attitude. Good counseling can increase knowledge, which can influence positive attitudes towards fulfilling the requirements for CTPS facilities.

Suggestion

The Baturraden Community Health Center is once again promoting outreach to increase community knowledge and attitudes regarding the practice of CTPS and the importance of fulfilling the requirements for hand washing facilities that meet the requirements, such as the availability of soap, dryers/tissues, running water, the water used for washing hands does not stagnate and there are waste water channels that are closed and not become a breeding ground for vectors.

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