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ORIGINAL RESEARCH

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## FACTORS AFFECTING HAND WASHING PRACTICE AMONG ELEMENTARY SCHOOLS STUDENTS IN INDONESIA

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### ABSTRACT

**Background:** Hand washing is the most effective method of preventing the transmission of diseases through hands.

**Objective:** To identify relationships between gender, availability of hand washing facilities, perception of barriers toward hand washing compliance and subjective norm in implementing hand washing practice among students of public elementary school in Belitung district, Indonesia.

**Method:** A cross-sectional research study was used in this study. Of 309 participants were recruited in 11 public elementary schools from 3 sub districts that has been implemented the hand washing program in Belitung, Indonesia. Purposive sampling method was used to select the participants. This study was used a self-administered questionnaire with minimal interference in order to minimize bias and by emphasizing to the students that this is not an examination.

**Results:** The results showed that 71.8% of the students were not hand washing properly. It also showed that availability of hand washing facilities and gender were not related with hand washing behavior. In regards of barrier perception toward hand washing compliance also showed that was not related to hand washing practice among elementary schools' students. However, subjective norm ( $\chi^2 = 4.459$ ,  $p < .05$ ) was related to hand washing practice among elementary schools' students.

**Conclusion:** Subjective norm has a significant relationship to hand washing behavior. Thus, health care provider could develop specific intervention programs based on TPB to promote subjective norm among elementary schools' students since this norm or perception of norm can motivate hand washing behavior among the students effectively.

**Keywords:** perception, hand washing, elementary schools, student, related factors

## INTRODUCTION

Sixty-two percent and 31% of all deaths of children in Africa and Southeast Asia, respectively, are caused by acute respiratory infection. In addition, the absenteeism among school children due to acute respiratory infection and diarrhea is a major problem in the developing countries.<sup>1</sup> As one of the developing countries, Indonesia also faces these problems and has experienced of the impact of the widespread of infection caused by acute respiratory infection and diarrhea.

The NHBR research finding 2013<sup>2</sup> also reported that Bangka Belitung province with significantly high of incidence of acute respiratory infection and diarrhea in Sumatera region. Belitung, one of the districts located within Bangka Belitung province, currently faces this common problem with acute respiratory infection and diarrhea. In 2013, Health Department of Belitung District<sup>2</sup> revealed that the number of incidences of acute respiratory infection and diarrhea were 33,296 and 1,652 respectively. Environmental Health Risk Assessment (EHRA)<sup>2</sup> reported that in 2014, approximately 23.5% of population living in Belitung district had fallen ill with acute respiratory infection and diarrhea. A study of EHRA in 2014 was revealed that 20% of the households in Belitung were not using soap while washing hands before having meals and after visiting toilets.<sup>2</sup>

Acute respiratory infection and diarrhea are also commonly transmitted within the compound of elementary schools. Crowded settings and lack of self-care awareness, these are the conducive factors for the transmission of microorganisms.<sup>3</sup> Through their contaminated hands micro-organisms are transmitted directly among the children with inanimate objects serving as medium of transmission of diseases.<sup>4</sup> This would

imply that these elementary school students could potentially spread the acute respiratory infection and diarrhea unknowingly, and not only among the children themselves but also to the community.<sup>5</sup>

Hand washing is the most effective method of preventing the transmission of diseases through hands. The previous study reported hand washing with clean water and soap was a good intervention resulting in 53% reduction of influenza and diarrhea.<sup>6</sup> In addition, hands hygiene was also specifically recommended for the prevention of diseases with pandemic potential such as severe acute respiratory syndrome.<sup>7</sup> The objective of the study was to identify relationship between knowledge, availability of hand washing facilities, perceived susceptibility of diseases related to hand washing, and perceived seriousness of diseases related to hand washing with hand washing behavior among sixth grade students of public elementary school.

## METHODS

A cross-sectional research study was used in this study. 309 participants were recruited in 11 public elementary schools from 3 sub districts that has been implemented the hand washing program in Belitung, Indonesia. Purposive sampling method was used to select the participants with inclusion criteria were as follows: (1) sixth grade students who were studying at the public elementary schools, (2) students who were allowed by their parents or guardian to participate, and (3) students who were willingly volunteer to participate in the study. This study used a self-administered questionnaire with minimal interference in order to minimize bias by emphasizing to the students that this was not an examination.

In this study, availability of hand washing facilities refers to perception of

sixth grade students of public elementary school in Belitung district, Indonesia about sufficiency and accessibility of the infrastructure for supporting hand washing practice including location, hand washing stand, soap, tap water, and clean water. Perceived barriers towards implementing hand washing refers to belief of sixth grade students about the environmental and personal obstacles to perform hand washing behavior such as hand washing stand location, availability of clean water, availability of soap, lack of time, laziness, and possible to forget.<sup>8</sup> Subjective norm refers to perception about the expectation of the significant other (parents, teachers, and friends) in performing proper hand washing in the critical time.

The instruments were tested for the content validity and reliability before data collection process. The instrument was examined for content validity by panel of experts. The panel of experts consisted of 3 scholar persons in the areas of pediatric nursing, community health nursing, and health promotion. Panel experts were reviewed and assessed all of items of question by checking the content clarity and content relevance. All three experts were asked to rate the clarity and relevance of the instrument using Content Validity Index Item (CVI-I).<sup>9</sup> The experts were asked to rate each item clarity and relevancy using 4- point rating scale: 1 = not relevant, 2 = items needs revision, 3 = relevant, it takes a bit revision and 4 = very relevant.<sup>9,10</sup> Panel experts were also welcome to give suggestion and add any other items that important and relevant to the study. The result of content validity index was given by panel experts were 99% for content relevance and clarity. Then, the researcher tested the reliability of the questionnaires. The questionnaire in Indonesia language version was administered to the 30 sixth grade students in one public elementary school of

Belitung district. The Cronbach's alpha coefficient was used to assess internal reliability coefficient (ICR) of hand washing behavior questionnaire since the questionnaire was in multi-point scaled item.

The study was approved by Committee and Ethics Review Board (ERB) Committee for Research Involving Human Research Subjects, Boromarajonani College of Nopparat Vajira, Bangkok, Thailand. The permissions for data collection were obtained from Head of Belitung district Health Department, Head of Belitung district Educational Department, Head of the Elementary Schools selected for data collection, and Head of Public Health Centers (PHC) of each sub-district involved in this study. Data were collected from October to November 2015. The participants were assured that the rights and confidentiality during the study were protected. The participants were informed about the objectives, procedures, and benefits of the study through information sheet. Those parents who were willing to allow their children to participate in this study were signed the informed consent. Then, the participants who were agreed to participate in the study were asked to sign the informed consent. This study was used a self-administered questionnaire. Name, or any identify of students were not filled in the questionnaire. After the participants finishing with the questionnaire, the researcher checked and picked up the completed questionnaires from participants and then kept in the sealed envelope. Data were kept in the locked cabinet and secured computer.

For data analysis, Chi-square test was used to identify the relationships between gender, availability of hand washing facilities, perceived barrier toward hand washing compliance, subjective norm of hand washing and hand

washing behavior among sixth grade students of public elementary schools since the data were nominal scale. Phi statistic was used to examine the strength of the relationships.<sup>11,12</sup>

## RESULTS

The results in Table 1 and 2 showed that participants were male (44.7%) and female (55.3%). Regarding hand washing facilities at the schools, the results shows the majority of clean water, soap, and hand washing stands for hand washing had available at the schools (98.1%, 98.4%, and 85.8%). Furthermore, the reason of participants for did not wash their hands were forgetfulness (68.3%), laziness (11.7%), lack of clean water (8.7%), lack of soap (4.2%), and lack of time (3.2%). About 11.7% of students had high level of perceived barrier toward hand washing compliance followed by the participants who had low level of

perceived barriers were 49.5%. The students who had high level of subjective norm of hand washing were 59.5%. The students who had moderate level and low level of subjective norm were 30.1% and 10.4%.

Furthermore, this study showed gender ( $\chi^2 = 2.445$ ,  $p > .05$ ), availability of clean water at schools ( $\chi^2 = 1$ ,  $p > .05$ ) availability of soap at schools ( $\chi^2 = 0.623$ ,  $p > .05$ ), availability of hand washing stands at schools ( $\chi^2 = 0.049$ ,  $p > .05$ ) and perceived barrier ( $\chi^2 = 1.985$ ,  $p > .05$ ) were not significantly related to hand washing behavior. However, the results of this study show subjective norm of hand washing ( $\chi^2 = 4.459$ ) was significantly related to hand washing behavior. The strength of the relationship between subjective norm hand washing behavior was positively weak (Phi = 0.12).

**Table 1 Summary Results**

Variables	Frequency	Percent
<b>Gender</b>		
Male	138	44.7
Female	171	55.3
<b>Availability of clean water</b>		
Available	303	98.1
Not available	6	1.9
<b>Availability of soap</b>		
Available	304	98.4
Not available	5	1.6
<b>Availability of hand washing stands</b>		
Available	265	85.8
Not available	44	14.2
<b>Perceived barrier</b>		
High	36	11.7
Moderate	120	38.8
Low	153	49.5
<b>Subjective Norm</b>		
High	184	59.5
Moderate	93	30.1
Low	32	10.4

**Table 2** Summary Results

Variables	Proper Hand Washing		$\chi^2$
	Yes	No	
<b>Subjective Norm</b>			4.459*
Low	27 (21.6%)	98 (78.4%)	
High	60 (32.6%)	124 (67.4%)	

## DISCUSSIONS

The results showed that there was no relationship between gender and hand washing behavior among sixth grade students of public elementary schools in Belitung district, Indonesia. This finding is inconsistent with the previous studies mentioned that gender was related with hand washing behavior.<sup>13</sup> The reasons of this finding because the peers' role was influenced the behavior among students rather than gender. The children who want to fit in peer's activity, they are also sensitive to influence from their friends.<sup>14,15</sup>

Regarding availability of hand washing facilities, the results shows that there was no relationship between availability of hand washing facilities and hand washing behavior among sixth grade students of public elementary schools. This study finding was inconsistent with the previous studies mentioned that facilities affected proper hand washing in the schools, including the availability, supplies, functionality of water, soap, and toilets.<sup>16,17,18</sup> The possible reason of this finding due to the hand washing facilities was placed in the unseen area and uneasy to reach. For example, hand washing stands were not in the front of class, soap were not always available in the washing stands and toilets, even supporting by clean water sufficiency. According to previous study conducted in the schools showed that hand washing compliance was greater when the availability of hand washing facilities was clean and posted in the strategic places could improve

awareness and also remind the student to wash hands.

The results of this study showed no relationship between perceived barriers toward hand washing compliance and hand washing behavior among sixth grade students of public elementary schools. In this study even though the students had low level of perceived barriers but only 28.2% of participants who proper hand washing. The reason of this finding because the students focused on the two critical time of hand washing as the norm in the society including washing hands before eating and after visiting toilet, but they were not always perform hand washing in the other activities, such as every touch of something dirty, after touching animals, and less than 20 seconds as required time.<sup>17</sup>

The result of this study showed that subjective norms were related to hand washing behavior among sixth grade students of public elementary schools. It was indicated that the increase of subjective norms of hand washing would increase the proper hand washing behavior among sixth grade students of public elementary schools. The results of the study were as expected as the hypothesis and also consistent with the Planned Behavior Theory (TPB) mentioned the greater of subjective norm will engage the people in behavior to decrease the risk. The possible reason of this finding was because the students accepted all components of subjective norm, including parents, teachers, and friends as the

expectation of others who lead them to hand washing behavior.<sup>18-20</sup>

## CONCLUSION

In conclusion, the results of this study showed that 28.2% of participants washed their hands properly, and majority of participants (71.8%) did not wash their hand properly. This study also shows that gender and availability of hand washing facilities were not related with hand washing behavior among sixth grade students of public elementary schools in Belitung district, Indonesia. However, the study showed that subjective norm was related with hand washing behavior among sixth grade students of public elementary schools in Belitung district, Indonesia.

According to the findings of this study, health care provider could develop specific intervention programs based on TPB to promote subjective norm among elementary schools' students since this norm or perception of norm can motivate hand washing behavior among elementary schools' students effectively. The results of this study could be used as evidence, supporting information, and health education to design programs in nursing curriculum especially in family and community health.

The findings of this study could be applied for the schools that had implemented the hand washing program, may not be generalized to the schools that had not implemented the program of hand washing. Further, the results of this study may not be able as reference of explanation the hand washing behavior in the private elementary schools and in other regions.

### Declaration of Conflicting Interest

None declared.

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### Authorship Contribution

Nazliansyah designed the study, reviewed the concepts, collected data, analyzed data, and drafted the manuscript. Susheewa Wichaikull and Kanokwan Wetasin were the study advisors of Nazliansyah.

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