

Factors associated with hygiene behavior among high school students in Chiangmai, Thailand.

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Abstract

Infectious diseases are diseases that causing by organisms, bacteria virus fungi or parasites. These organisms can spread from person to person either direct or indirect. Once organisms live in our bodies then destroyed the normal processes causing signs and symptoms that depend on the type of organisms. Good hygiene behavior is one of the important means to reducing transmitted diseases. To promote knowledge, attitude, hygiene practices among high school students, especially hand hygiene are significantly prevented the spreading of infectious disease not only oneself but also classmates. Objective: To assess knowledge, attitude, and hygienic behavior and to study factors associated with hygienic behavior. Study Methods: A cross sectional survey research that studied a group of high school students. An online survey was developed in a google form and distributed to grade 10-12 students of a private high school in Chiangmai, Thailand, during April-May 2022. Descriptive statistics; frequency, percentage, mean and standard deviation, were used to analyze participants' characteristics. Persons' correlation coefficient was used to study association among variables. Results: A total of 381 students participate in this study. Most participants were female (n=199, 62.6%). Most of them studied in grade 11 (n=187, 58.8%). Majority of participants' parents worked in the health science field (n=79, 24.8%). Most participants reported a good level of hygiene-related knowledge (M=9.15, SD=1.70), Attitude toward hygiene (M=49.52, SD=1.57), and hygiene practice (M=49.00, SD=2.72). Male participants had attitudes toward hygiene and hygiene practice higher than females but had scores of hygiene knowledge less than females. Grade 10 students showed the highest scores of knowledge about hygiene (M=8.46, SD=2.57), attitudes toward hygiene (M=49.77, SD=1.02), and hygiene practice (M=49.51, SD=1.57). Participants whose parents worked as a teacher earned the highest scores in both hygiene knowledge (M=9.55, SD=0.60) and hygiene practice (M=49.68, SD=1.04). Conclusion: This study showed that almost all volunteers have a high excellence knowledge about hygiene. Good attitude toward hygiene. Excellent hygiene practices. Factors that affect students' hygiene are attitude toward hygiene and hygiene practices. To encourage education about hygiene, attitude toward hygiene, and hygiene practices through social media, online, and website.

Keyword: hygiene behavior, adolescent, knowledge

Introduction

Infectious diseases are illnesses that are caused by organisms such as bacteria, viruses, fungi, or parasites¹. They can spread from one person to another either directly (via skin contact with body's fluid, body's secretion, or droplets in the air though coughing and sneezing) or indirectly (via contaminated food or water), including insects, animals, or the environment (table top, door knob, or faucet handle) to person². Organisms that cause disease are called pathogens³. When pathogens enter our bodies then destroy the normal process of our bodies and/ or stimulate immune systems, reaction of tissue⁴. The defense responses depend on the organisms, often including fever, fatigue, inflammation, and other systemic or local symptoms⁵.

Hygiene is the series of practices performed to preserve health. Hygiene behavior is the process to control transmission of infectious disease to the public, including individual communities. According to the World Health Organization (WHO) "Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases". personal hygiene refers to maintaining cleanliness of one's body and clothing to preserve health and well-being⁶. To promote personal hygiene might be the single cost- effective way to reduce the global burden of infectious diseases like that for COVID-19, Avian influenza, (aerosol route) Cholera (oral route), etc. Stimulation for personal hygienic practice reduces personal infection, healing process, recovery time, good health, and wellbeing. Good personal hygiene practices are the most effective way to protect contaminated pathogens⁷. Hand hygiene, hand washing with soap, water, or hand sanitizer especially before eating, feeding, after toilet are the cessation of fecal- oral route transmitted diseases, example diarrhea, food poisoning⁸. Hand

washing after coughing and sneezing reduces pathogens in aerosol droplets before catching surroundings things to quit the air - borne respiratory infection, for example cold, flu, moreover regularly hand washing when contact outside body is important for health hygiene practices. So hand hygiene is the major key in preventing the spreading of infectious disease in daily life. Body hygiene, showering or bathing regularly usually twice a day, but during an outbreak of infectious disease showering and changing clean clothes after going outside to reduce pathogens that contaminated clothes are necessary⁹.

High school students, teenagers, or teens 15-19 years old. Inadequate knowledge, lack of attitude toward hygiene, without routine hygiene practices leading to transmitted disease not only oneself but also classmates. Motivation for good personal hygiene practices are important to prevention of transmitted disease¹⁰. Teens might learn how to care for their body health and avoid high risk behaviors in contact with pathogens. Many high schools have high personnel density and close contact so easily causing outbreak of transmitted diseases especially respiratory disease and gastrointestinal diseases. Social distancing, reducing gatherings places, strict hand sanitizer, cover mask, well cooked food, and healthy food. These are important factors to get healthy and prevent transmitted disease¹¹. The clever new technology, the change of teens' health behavior. Furthermore some teens live in a dormitory far from family combined with imitative behavior getting from social media surrounding persons. the urgent health problem in teens are sexual transmitted diseases including unwanted pregnancy¹². Unhealthy, or contaminated food that brought from street causing diarrhea.

Objective of the study

1. To assess knowledge, attitude, and hygienic behavior
2. To study factors associated with hygienic behavior

Methods and Participants

Study design: This is a cross-sectional observational study.

Study setting: An online questionnaire was made through Google Form between 13 April 2022 to 14 May 2022

Participants: The students who access to social media groups of all classes were invited to participate in the study. the data collected as stated in the informed consent were explained. The participation was completely free and no personal data were collected from any participant. Of the 318 students from a total of 1,342 students participated in the study (response rate: 24%).

Instrument

The questionnaire was developed based on a literature review about hygiene knowledge, hygiene behavior, infection prevention and control knowledge which reviewed from Ministry of Public Health related studies on hygiene practice.

among high school students. The instrument was reviewed by students to validate its content. A preliminary version was performed with a small sample of students to test. All the questions remained without modifications. The psychological characteristics of the questionnaire were tested, as described in the statistical analysis subsection.

The final version of the questionnaire contained 33 questions; 3 about sociodemographic data (gender, education level and parent's occupation) and 30 items divided into 3 sections

First Independent Variable is knowledge about hygiene. This scale consisted of 10 statements related to hygiene. The participants were asked to choose the correct answer from multiple choices of 3. One point for each correct answer, while zero point for an incorrect answer. The sum of all items was made to obtain a score thus higher scores corresponded to a higher level of knowledge.

Second Independent variable is attitude toward hygiene. This scale was composed of 10 questions, and each question consisted of a five-point scale (from 1 to 5, strongly disagree to agree respectively) with the highest score corresponding to more positive attitudes toward hygiene. A sum of all items was made to obtain a score. The higher values corresponded to a more positive attitude toward hygiene.

Dependent variable is hygiene behavior. This scale referred to the number of preventive-hygienic behaviors included 10 items. Each item was answered using a five-point scale (From 1 to 5, never to always respectively), with one point assigned to each behavior that was always practiced. The number of behaviors practiced was added up. A high score on this scale indicated good preventive behaviors, ranging from 12 to 60.

Statistical analysis

Statistical analysis was done using SPSS for windows, version 26. To analyze psychological characteristics of the scales, an exploratory factor analysis, using principal component analysis with varimax rotation, was carried out. Reliability was analyzed through the calculation of item-total correlation coefficients and Cronbach's alpha (α) for the scales of the questionnaire. The descriptive analysis were presented in absolute (n) and relative (%) frequencies, mean (M) and standard deviations (SD). To assess the differences between the outcome variables (Knowledge, attitudes and hygiene practice) and the sociodemographic characteristics, considering the sample size, independent t-test and the ANOVA were used as appropriate. The correlations between the outcomes of the study were calculated by Pearson's correlation. Lastly, a generalized linear model was calculated to determine the predictive variables of the preventive behaviors. Exp (β) and the respective 95% confidence intervals (95% IC) were presented. Statistical significance was defined as $p < 0.05$.

Ethical Approval.

Ethical approval was obtained before the collection of data. The consent form was assumed as completing the questionnaire. No identifying information of participants were collected.

Ethical Considerations

This research uses an anonymous data collection method to collect data from grade 10-12 Students of private school in Chiang Mai, Thailand, by using Google form. The invitation was sent to the classroom social media group in these invitations, information about the study's objectives and the ethical guarantee of confidentiality and anonymity in the data collected as stated in the informed consent was explained. Participation was completely free and voluntary, and no personal data were collected from any participant.

Result

This study comprised a total of 318 students. The sociodemographic characteristics of the sample are presented in Table 1. Most students were female (n=199, 62.6%), 187 (58.8%) of the students studied in grade 11. 70 (22%) of the students studied in grade12. The rest studied in grade10 and above (n=61, 19.2%). Most students parents occupation were Medical / Nurse / Pharmacy / Dentist / Veterinary / Medical Technician (n=79, 24.8%) followed by Business / Trading of parents occupation's group (n=74, 23.3%) and Executives / Company employees / Civil servants / State enterprises parents occupation's group (n=71, 22.3%) respectively.

Regarding knowledge about hygiene, students revealed good knowledge about hygiene, correctly answering mean of 9.15 (SD=1.70) questions in a total of 10. Female students showed higher knowledge scores (M=9.40, SD=1.03) than male students (M=8.74, SD=2.04). Education level group of grade11 showed the highest hygiene related knowledge score of 9.41 (SD=1.29). Students whose parent's occupation was teacher showed the highest hygiene related knowledge score of 9.55 (SD=0.60).

Students showed a good level of attitude toward hygiene with an average score of 49.52 from 50 full scores. Male students showed a higher attitude toward hygiene score (M=49.77, SD=0.98) than female students (M=49.37, SD=1.82). Education level group of grade10 showed the highest attitude toward hygiene score of 49.77(SD=1.02). Students who parent's occupation were Medical / Nurse / Pharmacy / Dentist / Veterinary / Medical Technician showed the highest attitude toward hygiene score of 49.76 (SD=1.17)

Students showed a good level of hygiene practice with the average score of 49.00 from 50 full scores. Male students showed higher hygiene practice scores ($M=49.71$, $SD=1.40$) than female students ($M=48.58$, $SD=1.39$). Education level group of grade10 showed the highest hygiene practice score of 49.51($SD=1.57$). Students whose parent's occupation was teacher showed the highest hygiene practice score of 49.68 ($SD=1.04$).

Table 1.

Differences in outcomes according to the sociodemographic characteristics of participants (N = 318)

Sociodemographic characteristics	N (%)	Knowledge about hygiene (Range 0-10) M (SD)	Attitude toward hygiene (Range 10-50) M (SD)	Hygiene practice (Range 12-60) M (SD)
Gender				
Male	119 (37.4)	8.74 (2.40)	49.77 (0.98)	49.71 (1.40)
Female	199 (62.6)	9.40 (1.03)	49.37 (1.82)	48.58 (3.19)
Education Level				
Grade 10	61 (19.2)	8.46 (2.57)	49.77 (1.02)	49.51 (1.57)
Grade 11	187 (58.8)	9.41 (1.29)	49.62 (1.62)	49.25 (2.65)
Grade 12	70 (22)	9.07 (1.58)	49.04 (1.73)	47.90 (3.35)
Parent's Occupation				
Medical / Nurse / Pharmacy / Dentist / Veterinary / Medical Technician	79 (24.8)	8.32 (2.75)	49.76 (1.17)	49.34 (2.27)
Teacher	22 (6.9)	9.55 (0.60)	49.73 (0.88)	49.68 (1.04)
Business / Trading	74 (23.3)	9.46 (0.89)	49.49 (2.03)	49.23 (2.47)
Executives / Company employees / Civil servants / State enterprises	71 (22.3)	9.30 (1.43)	49.59 (1.04)	48.82 (2.67)
Freelance	37 (11.6)	9.46 (0.90)	48.65 (2.47)	47.70 (4.50)
others	35 (11)	9.54 (0.74)	49.71 (0.86)	49.06 (2.14)
Total	318 (100)	9.15 (1.70)	49.52 (1.57)	49.00 (2.72)

The analysis of the correlations between the outcomes of the study - knowledge, attitudes and hygiene practice- revealed the existence of positive and statistically significant correlations between attitude toward hygiene practice ($r=.663$, $p<0.01$).

Table 2. Pearson's correlation coefficient between the study outcomes

Variables	Knowledge about hygiene	Attitude toward hygiene	Hygiene practice
Knowledge about	1		

hygiene			
Attitude toward hygiene	.017	1	
Hygiene practice	.018	.663**	1
**Correlation is Significant at the 0.01 *Correlation is Significant at the 0.05			

Discussion

This study focused on assessing hygiene knowledge, attitude toward hygiene, and hygiene practice among high school students. A total of 381 students participate in this study. Most participants were female (n=199, 62.6%). Most of them studied in grade 11 (n=187, 58.8%). Majority of participants' parents worked in the health science field (n=79, 24.8%). Most participants reported a good level of hygiene-related knowledge (M=9.15, SD=1.70), Attitude toward hygiene (M=49.52, SD=1.57), and hygiene practice (M=49.00, SD=2.72). Male participants had attitudes toward hygiene and hygiene practice higher than females but had scores of hygiene knowledge less than females. Grade 10 students showed the highest scores of knowledge about hygiene (M=8.46, SD=2.57), attitudes toward hygiene (M=49.77, SD=1.02), and hygiene practice (M=49.51, SD=1.57). Participants whose parents worked as a teacher earned the highest scores in both hygiene knowledge (M=9.55, SD=0.60) and hygiene practice (M=49.68, SD=1.04).

Female participants showed a higher level of hygiene knowledge than male participants while male participants had a higher score of attitude toward hygiene and hygiene practice than females'. This may be because over the last decade, male participants have started following both hygiene and beauty trends¹³. This study was consistent with the study of SAUDI nursing students showed that male participants had higher score of hygiene practices than female participants, but less attitude toward hygiene¹⁴. Grade 10 students reported the highest score of hygiene knowledge, hygiene attitude and hygiene practice among participants from other classes. This may be because of grade 10 students, the younger participants had more docile than grade 11 and grade 12. It was not consistent with the study among Korea's general populations showed that the older age groups showed better than the younger age groups¹⁵. Our results contrasted to Mohammed ALBashtawy's study that the higher-class level students had the higher hygiene scores¹⁶.

Participants whose parents worked as a teacher reported the highest score of hygiene knowledge, hygiene attitude and hygiene practice amongst participants whose parents were from other occupation fields. There was a positive and statistically significant correlation between Hygiene Attitude and Hygiene practice. Therefore improving hygiene practice among high school students could be done by strengthening attitudes toward hygiene through various means of effective communication that are suitable for this group¹⁷. These study results were different from Stephen T Odonkor and et al.'s study that participants whose parents worked in the science field showed the highest level of hygiene knowledge among others parents' occupations¹⁸.

Limitation

This study's questions are about general knowledge not specific to high school students. Even when answering the online questionnaire some students may search from the internet. Moreover the data collected during COVID-19 pandemic, all participants working from home, study online may not be aware of the risk of infection.

Conclusions

This study showed that almost all volunteers have a high excellence knowledge about hygiene. Good attitude toward hygiene. Excellent hygiene practices. Factors that affect students' hygiene are attitude toward hygiene and hygiene practices. To encourage education about hygiene, attitude toward hygiene, and hygiene practices through social media, online, and website.

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