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Knowledge of Hand Hygiene and Oral Health Students at Methodist 3 Private Primary School Medan

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Abstract

Aims: The aim of this study was to assess the knowledge among students at private school towards hand hygiene and oral health in Medan, Indonesia. **Materials and methods**: A cross-sectional study was conducted among 498 students aged 6-12 years of Methodist 3 Primary School in Medan, Indonesia. Knowledge was asssed using hand hygiene and oral health questionnare. **Results**: 86.95% of students (426 out of 490) had good knowledge regarding hand hygiene and 78.4% of students (384 out of 490) had good knowledge regarding oral health. **Conclusion**: The results of this study indicate that comprehensive hand hygiene and oral health educational programs for primary students are required to achieved this goal.

Keyword: primary students, hand hygiene, oral health

1. INTRODUCTION

The importance of hand-hygiene and sanitization in preventing highly contagious viral infections to outbreak of the novel coronavirus disease (COVID-19) (Alzyood M *et.al*, 2020; Bains, 2020). Although direct inhalation of infected respiratory or nasal droplets remains the primary mode of transmission of SARS-CoV-2, hand-hygiene is a very effective method of disease prevention by stopping the indirect transmission (Peng X *et al*, 2020). The leading health organizations such as World Health Organization and Center for Disease Prevention have endorsed the role of correctly performed hand hygiene as a primary and easy to implement preventive measure for breaking the chain of transmission of the disease (WHO, 2020; CDC, 2020). It is advised to wash hands with soap and water for 40–60 s, and if it is not available, then with an alcohol-based hand rub (ABHR) for at least 20 s (NCDC, 2020). Unlike the germicidal action of ABHR that involves protein denaturation and cell membrane disruption, surfactant in the soap reduces water tension, lifts soil and microbes, and thus clean them from the skin. Scrubbing with soap and water results in the mechanical removal of microflora (Kampf G *et.al* 2004; World Health Organization, 2009) In health-care settings, one can see the pictorial presentation of the five moments.

Similar to hand hygiene, ancient literature reports various preparations and methods of oral hygiene maintenance among the Sumerians, the Babylonians, and the Assyrians (Shaklar G, 2017) At present, standard oral hygiene measures consist of thorough cleaning of all surfaces of teeth using a toothbrush with toothpaste, interdental areas, and tongue daily. An interesting article stated that a suitable time of brushing during COVID-19 pandemic maybe just before stepping out and coming home (Wales, 2020). Recommended timing for tooth brushing should not be less than 2 min, and more than 5 min revealed no additional benefit. Toothbrushes should be changed every 3 months or when visibly frayed. If toothbrush is fraying early than 3 months, it means a person is brushing too hard and forcefully. If toothbrush is not fraying even after 3 months, it means the person is not brushing correctly.

The aim of this study was to assess the knowledge among students at private school towards hand hygiene and oral health in Medan, Indonesia.

2. MATERIALS AND METHODS

A cross-sectional study was conducted among 490 students aged 6-12 years of Methodist 3 School in Medan, Indonesia. Ethical clearance was obtained fromthe Ethical Review Committee of Medical Faculty Universitas Sumatera Utara. The student were explained the content and aim of this study. Verbal consent was obtained from 490 students who volunteered to participate. A self administered questionnare containing set of questions regarding hand-hygiene and oralhygiene knowledge was distributed to all participants.

Knowledge was asssed using WHO hand hygiene and oral health questionnare. This proforma of 5 question of hand hygiene and 5 question of oral hygiene include multiple choice and ”true” “false” “I dont know.”

Inclusion criteria
All students from grade 1-6 primary school willing to participate were included in the study.

Exclusion criteria
Sick students who were not willing to participate were excluded from the study.
Statistical analysis was done by using percentages and proportions. Using excel data sheets.

3. RESULT

The study included a total of 490 students out of which 6-7 years old 12% (n=59), 7-8 years old 12% (n=59), 8-9 years old 16, 1% (n=79), 9-10 years old 17,9% (n=88), 10-11 years old 23,6% (n=116), 11-12 years old 18,4 %(n=91).

	Age (years old)					
	6-7	7-8	8-9	9-10	10-11	11-12
True	54	54	70	83	105	82
False	3	5	7	3	10	9
I Don’t Know	0	0	1	2	1	0

Table 3.1. The number of answers for question 1 (When there is no water, applying hand sanitizer (Dettol, Antis) to hands and fingers is the same as washing them), answered by Methodist III Medan Primary School students, ranging from 6 to 12 years old.

	Age (years old)					
	6-7	7-8	8-9	9-10	10-11	11-12
True	0	1	3	2	2	1
False	59	58	75	85	114	90
I Don’t Know	0	0	1	1	0	0

Table 3.2. The number of answers for question 2 (Before meals, you don’t need to wash your hands with soap, water is sufficient), answered by Methodist III Medan Primary School students, ranging from 6 to 12 years old.

	Age (years old)					
	6-7	7-8	8-9	9-10	10-11	11-12
True	58	56	78	86	116	85
False	1	2	0	1	0	2
I Don't Know	0	1	1	1	0	2

Table 3.3. The number of answers for question 3 (Washing your hands with water and soap after meals is a must), answered by Methodist III Medan Primary School students, ranging from 6 to 12 years old.

	Age (years old)					
	6-7	7-8	8-9	9-10	10-11	11-12
True	40	38	50	50	62	57
False	15	16	27	36	46	31
I Don't Know	4	5	2	2	7	3

Table 3.4. The number of answers for question 4 (One of the causes for COVID-19 is hand-washing without soap), answered by Methodist III Medan Primary School students, ranging from 6 to 12 years old.

	Age (years old)					
	6-7	7-8	8-9	9-10	10-11	11-12
True	52	46	65	84	101	76
False	7	13	13	4	15	13
I Don't Know	0	0	0	0	0	2

Table 3.5. The number of answers for question 5 (The right time to brush your teeth is after breakfast and after dinner), answered by Methodist III Medan Primary School students, ranging from 6 to 12 years old.

	Age (years old)					
	6-7	7-8	8-9	9-10	10-11	11-12
True	51	55	75	80	107	82
False	5	2	3	3	2	4
I Don't Know	3	2	1	4	7	4

Table 3.6. The number of answers for question 6 (Toothbrush usage is three months maximum and has to be replaced with a new one), answered by Methodist III Medan Primary School students, ranging from 6 to 12 years old.

	Age (years old)					
	6-7	7-8	8-9	9-10	10-11	11-12
True	47	51	62	76	94	66
False	3	3	11	3	6	9
I Don't Know	8	5	5	8	15	14

Table 3.7. The number of answers for question 7 (The correct toothbrush is soft-bristled and small-headed), answered by Methodist III Medan Primary School students, ranging from 6 to 12 years old.

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	Age (years old)					
	6-7	7-8	8-9	9-10	10-11	11-12
True	40	27	52	52	75	64
False	18	32	27	34	36	27
I Don't Know	0	0	0	2	5	0

Table 3.8. The number of answers for question 8 (You only go to the dentist if you have dental problems, e.g. toothache, bleeding gums, misaligned teeth), answered by Methodist III Medan Primary School students, ranging from 6 to 12 years old.

	Age (years old)					
	6-7	7-8	8-9	9-10	10-11	11-12
True	52	53	71	74	95	76
False	3	4	5	10	12	10
I Don't Know	4	1	3	4	9	4

Table 3.9. The number of answers for question 9 (Vitamin deficiency can damage teeth and gum), answered by Methodist III Medan Primary School students, ranging from 6 to 12 years old.

	Age (years old)					
	6-7	7-8	8-9	9-10	10-11	11-12
True	58	58	78	84	113	78
False	1	1	1	1	3	10
I Don't Know	0	0	0	2	0	2

Table 3.10. The number of answers for question 10 (Maintaining oral health is as important as hand hygiene), answered by Methodist III Medan Primary School students, ranging from 6 to 12 years old.

4. DISCUSSION

Effectiveness of hand washing in preventing nosocomial infections is still noted among students. Majority of students (91.4%) agree when there is no water, applying hand sanitizer (Dettol, Antis) to hands and fingers is the same as washing them. Alcohol-based hand sanitizers may be consider as an alternative to soap and requires less time but the risk of poisoning and intoxication and the high cost must be carefully, especially in developing country (Pratinidhi SA, *et al* 2020).

Almost all students (98.1%) believed that hand washing is important before meals, they need to wash their hands with soap, not only with water. Almost all students (97.7%) washing their hands with water and soap after meals. Soap has beenshown to be effective in promoting hygiene habits and preventing and controlling the spread of disease. Hand washing with a generous amount of clean water is effective at reducing the presence of some viruses, but the use of soap (or alternative rubbing agents) is vital to remove contamination from bacteria, parasites, and fungi (Pratinidhi SA, *et al* 2020).

Student agree (60.6%) one causes for COVID-19 is hand-washing without soap. Hands are a potential reservoir and vector for various pathological microorganisms. They come in contact with numerous already contaminated animate and inanimate surfaces. Studies have shown that people touch their face approximately 23 times in an hour, which poses a threat for virus transmission through oral, nasal, or conjunctival mucosa (Vivek, 2020).

Student agree the right time to brush your teeth is after breakfast and after dinner 91.8%. At present, standard oral hygiene measures consist of thorough cleaning of all surfaces of teeth using a toothbrush with toothpaste, interdental areas, and tongue daily. An interesting article stated that a

suitable time of brushing during COVID-19 pandemic maybe just before stepping out and coming home. Recommended timing for tooth brushing should not be less than 2 min, and more than 5 min revealed no additional benefit (Vivek, 2020).

Majority students 80,8% agree toothbrush usage is three months maximum and has to be replaced with a new one. Toothbrushes should be changed every 3 months or when visibly frayed. If toothbrush is fraying early than 3 months, it means a person is brushing too hard and forcefully. If toothbrush is not fraying even after 3 months, it means the person is not brushing correctly. The toothbrush is the most common tool for cleaning teeth and comes in contact with microbial dental plaque and saliva. Thus, retaining microbes in the brush after cleaning the teeth may re-contaminate the mouth (Naik R *et.al,* 2015). Studies show that after a single use for a duration ranging from the 30 s to 4 min, toothbrushes may become contaminated by various microorganisms such as bacteria, viruses, yeasts, and fungi (Tomar P, 2014). Often the toothbrushes are stored in bathrooms or combined toilet/bathrooms, which are warm and moist, and are an ideal place for the growth of microorganisms (Karibasappa GN *et.al*, 2011).

Majority student (80.8) agree the use toothbrush with soft-bristled and small-headed. Soft bristles avoids damage to the gums and small brush heads allow easier access to hard-to-reach areas in the oral environment (Ng C *et.al*, 2020). Disinfection of toothbrushes after use is often neglected practice. It is seen that the majority of people just rinse the brushes with plain water and then dry it to prevent contamination with potential disease-producing bacteria fungi and viruses (Konidala U *et.al*, 2011; Frazelle MR *et.al*, 2012). In a survey-based study conducted (Peker *et al*, 2015) to assess knowledge of toothbrush hygiene among dental students, 62.6% of the respondents reported that they did not know about toothbrush disinfection and did not disinfect their toothbrushes. It is advisable to dip the toothbrushes into an antiseptic mouthwash a few minutes after rinsing with water after each use.

Only 35.5 % students go to the dentist if you have dental problems, e.g. toothache, bleeding gums, misaligned teeth; Frequency of visiting dentist is also determined by the parents of childern and dental attitudes displayed by parents too should be made to understand why it is important to take the children for routine dental check-up (Blaggana A, et al, 2016)

Majority (85.9%) student agree deficiency can damage teeth and gums. Vitamins may be a modifying factor in the progression and healing of the oral diseases and promoting oral and dental health. The use of supplements with several or certain vitamins for people under physiological or pathological conditions that increase the risk of oral and dental diseases could contribute to protect teeth and periodontal tissue (Taqa AA, 2019)

Almost 95.7% student agree maintaining oral health is as important as hand hygiene. Oral hygiene is an integral part of personal hygiene practices and should not be neglected. Similar to hand hygiene, oral hygiene is essential in reducing infection from the oral cavity, and thus, its transfer to the upper and lower respiratory tract. Although there is no randomized clinical trial, oral hygiene may imply to reduce the morbidity and mortality related to coronavirus disease pandemic potentially.

5. CONCLUSION

The results of this study indicate that comprehensive hand hygiene and oral health educational programs for primary students are required to achieved this goal.Thorough tooth brushing for “Two Times For Two Minutes” in a day is an easy key to remember, and is equally essential as 20 s of hand hygiene in the current COVID-19 pandemic scenario.

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