

Hygiene Behavior and Hygiene-Related Facilities among School Adolescents in Palestine

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ABSTRACT

Introduction: Although, the importance of personal hygiene in reducing the infection cannot be underestimated; but it is not enough when other hygienic resources and facilities are inadequate or unavailable.

Purpose: To determine the prevalence of hand-washing behaviors and hygienic facilities among school adolescents in Tarqumia, Palestine.

Methods: A descriptive Cross-sectional study was conducted, and data was collected on hand-washing behavior and hygienic facilities from 720 seventh- through eleventh-grade students in 4 schools in Tarrqumia by anonymous self-administered questionnaire.

Results: Overall, only 6.25% of the sample never or rarely washed their hands before eating during the past 30 days; 8.06 % never or rarely washed their hands after using the toilet or latrine.

Conclusions: This study demonstrates the prevalence of proper hand washing was very high among the school adolescents. Lack of adequate hygienic facilities in schools in Tarqumia prevents students from adopting proper hygienic behavior and impedes health promotion efforts.

KEY WORDS

hand washing, sanitation, facilities, drinking water, adolescents, Palestine

INTRODUCTION

Over the past few decades, multilevel hygiene improvements, such as sanitary living conditions and practices, potable water, and sewage facilities have been considered a major contributing factor in reducing morbidity and mortality from infections, specifically those transmitted by the faecal-oral and direct contact. Diarrheal diseases are the leading causes of 2-3 million deaths globally, where hand washing with soap could prevent million deaths annually^{1,2)}. WHO reported that, 88% of diarrheal diseases are attributed to inadequate and unsafe water supply, as well, inadequate sanitation and hygiene³⁾.

Poor oral hygiene practices (e.g., brushing teeth), at least twice a day, leading to inadequate plaque control and calculus formation have been associated with an increased risk to develop dental caries and chronic periodontitis^{4,5)}. Both these oral diseases are infectious diseases (caused by bacteria) and thus can be controlled by proper oral hygiene⁶⁾.

Yet, a considerable amount of deaths and illnesses related to these conditions causes enormous burden in developing countries, where public health infrastructure and medical care are inadequate or unavailable^{1,2)}. WHO reported that, 88% of diarrheal diseases are attributed to inadequate and unsafe water supply, as well as, inadequate sanitation and hygiene³⁾.

UNICEF estimates that only 51% and 45% of schools in developing countries have access to adequate water and sanitation, respectively³⁾. This restricts hand washing and safe sanitation practices that are known to improve health^{7,8)}. Furthermore, this may contribute to unequal learning opportunities. For example, lack of adequate, clean and secure toilets and washing facilities may prevent parents from sending girls to

school. In addition, girls missing days at school or drop out of education at puberty, due to inadequate facilities for menstrual hygiene⁹⁾.

Palestinian schools, specifically those in rural areas, often complain of shortage in drinking-water and sanitation and hand washing facilities; on the other hand; if they exist, they are often inadequate in both quality and quantity or did not work³⁾.

Schools with lack of drinking-water, sanitation, and hand washing facilities, combined with lack of public health infrastructure, and inadequate health care are high-risk environment, and increase students' particular susceptibility to environmental health hazards in which susceptible individuals gather. Previous study had proven that certain infections, such as gastrointestinal and respiratory symptoms, can be reduced by improving personal hygiene practices such as hand-washing with soap, and public health infrastructure¹⁰⁻¹⁴⁾. In addition, 44% of diarrheal morbidity and 23% of respiratory infections can be reduced by using soap for hand-washing^{10,15,16)}. On the other hand, studies have shown that adequate sanitation and hand washing facilities alone without good hygiene knowledge and practices lead solely to little health improvements^{10,13)}.

It is anticipated that the improvement of schools' environment hygiene conditions will have a substantial impact on integrating hygiene education into students' daily lives; consequently they can be effective messengers and agents for change in their families and the wider community. Conversely, communities in which schools are lack of adequate water supply; sanitation and hygiene, students are themselves more at risk. Families bear the burden of their children's illness due to bad conditions at school.

The majority of people with lack of access to basic infrastructures (water supply and adequate sanitation) live in developing countries¹³⁾. The current study examined a sample of early adolescents (i.e., 7th to 11th

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Table 1. Demographic characteristics of the participants (n = 720)

Characteristics	No. of respondents	percent
Age-group		
≤ 13	122	16.9
14 - 15	299	41.5
≥ 16	299	41.5
Gender		
male	363	50.4
female	357	49.6
Grades		
7th grade	121	16.8
8th grade	148	20.6
9th grade	155	21.5
10th grade	148	20.6
11th grade	148	20.6

Table 2. Prevalence of hygiene-related behaviors and facilities by gender (n = 720; male = 363, female = 357)

Item	Gender		Total (95% C.I.)	Pearson Chi-Square	P-value
	Male% (95% C.I.)	Female% (95% C.I.)			
A. Prevalence of hygiene-related behaviors					
Did not clean or brush their teeth during the past 30 days	15.98 (12.36, 20.16)	8.40 (5.74, 11.78)	12.22 (9.92, 14.84)	26.30 (4)	< 0.001
Never or rarely washed their hands before eating during the past 30 days	6.89 (4.51, 9.10)	5.60 (3.46, 8.52)	6.25 (4.59, 8.27)	3.65 (4)	0.455
Never or rarely washed their hands after using the toilet or latrine	10.74 (7.75, 14.39)	5.32 (3.23, 8.19)	8.06 (6.17, 10.29)	21.30 (4)	< 0.001
Never or rarely used soap when washing their hands	14.60 (11.13, 18.66)	7.00 (4.58, 10.16)	10.83 (8.66, 13.33)	14.67 (4)	0.005
B. Prevalence of hygiene-related facilities in school					
Do not have a source of clean water for drinking at school.	39.39 (34.33, 44.63)	54.06 (48.73, 59.32)	46.67 (42.97, 50.39)	15.56 (1)	< 0.001
Do not have a place to wash their hands before eating at school	41.60 (36.48, 46.86)	36.69 (31.68, 41.93)	39.17 (35.58, 42.84)	1.82 (1)	0.178
Whose toilet or latrines at school are not clean	68.32 (63.26, 73.08)	70.03 (64.98, 74.74)	69.17 (65.65, 72.52)	0.25 (1)	0.62

grade), which is typically a time in the developmental progression when youth are granted more autonomy with their decision-making regarding hand washing behavior and facilities.

METHODS

Study Design and Population

This study is part of a descriptive cross-sectional study conducted for three months from February of the academic year 2011 in four national schools at Tarqumia, Palestine. Data on hand washing practices, and school environment factors (e.g., availability of clean water, soap, and bathroom facilities) from 720 male and female students 13 to 17 years of age, grade 7 through 11 was collected by anonymous self-administered questionnaires.

Stratification was based on gender and grades. Classes were selected proportionately to enrollment size and size of students in the classes (proportional allocation), then simple random sampling without replacement was employed to select the required students from each class. The final sample size was 720 students (357 girls and 363 boys).

Data Collection

A standardized self-administered anonymous questionnaire was distributed to participating male and female students. This questionnaire includes 15 items used for school students; these items include a number of demographic to characterize students, hand washing practices, and hygienic facilities. Hand-washing behavior was assessed based on 4 criteria related to hand-washing technique: use of soap, use of clean water, hand washing before eating, and hand washing after using the toilet. All the collected data were checked, verified and edited and then analyzed (percentage and confidence interval) using statistical package for social science (STATA 11) with 95% level of confidence ($p < 0.05$).

Ethical considerations

The targeted population was school adolescents; therefore, this

investigation was undertaken with prudence, and with respect of the rights and the integrity of people. Approval for conducting this study was obtained from the Palestinian Ministry of Health Education Ethical committee. Written students' consents were acquired prior to data collection. The participants were informed about their right to decline or withdraw from the study, any time in the process.

RESULTS

Table 1 shows the socio-demographic of Tarqumia school students. From a total of 720 students 357 of them were females and 363 were males.

Up to 6.25% (95% CI: 4.59, 8.27) of male and female students reported that they never or rarely washed their hands before eating during the past 30 days. Male students were more likely at 6.89% (95% CI: 4.5, 10.2) to report that they never or rarely washed their hands before eating than female students at 5.60% (9% CI: 3.46, 8.52) during the past 30 days. (Table 2).

Personal Hygiene-related Behavior

The overall percentage of male and female students who did not clean or brush their teeth during the past 30 days was 12.22% (95% CI: 9.92, 14.84). Male students were significantly more likely at 15.98% (95% CI: 12.36, 20.16) than female students at 8.40% (95% CI: 5.74, 11.78) to report not cleaning or brushing their teeth during the past 30 days preceding the survey. The Pearson chi-square indicated a significant association ($p < 0.001$) between gender and cleaning or brushing teeth. Overall, 8.06% (95% CI: 6.17, 10.29) of male and female students reported that they never or rarely washed their hands after using the toilet or latrine during the past 30 days. Male students were significantly more likely at 10.74% (95% CI: 7.75, 14.39) than female students at 5.32% (95% CI: 3.23, 8.19) to report that they never or rarely washed their hands after using the toilet or latrine during the past 30 days. The Pearson chi-square test indicated a significant association ($p < 0.001$) between gender and washing hands after using the toilet.

A total of 46.67% (95% CI: 42.97, 50.39) of male and female students reported that they lack a source of clean water for drinking at

school. Female students were significantly more likely at 54.06% (95% CI: 48.73, 59.32) than male students at 39.39% (34.33, 44.63) to report that they lack a source of clean water for drinking at school. The Pearson chi-square indicated a significant association ($p < 0.001$) between gender and reporting the lack of source of clean water.

Up to 39.17% (95% CI: 35.58, 42.84) of male and female students reported that they lack a place to wash their hands before eating at school. Male students at 41.60% (95% CI: 36.48, 46.86) were significantly more likely than female students at 36.69% (95% CI: 31.68, 41.93) to report that they lack a place to wash their hands before eating at school. The Pearson chi-square indicated no significant association ($p = 0.178$) between gender and reporting the lack of a clean water source.

Overall, 69.17% (95% CI: 65.65, 72.52) of male and female students reported the lack of clean toilets or latrines at school. Both male students at 68.32% (95% CI: 63.26, 73.08) and female students at 70.03% (64.98, 74.74) had nearly the same reporting percentage. The Pearson chi-square indicated no significant association ($p = 0.620$) between gender and reporting the lack of place to wash hands. The Pearson chi-square indicated no significant association ($p = 0.620$) between gender and reporting the lack of clean toilets or latrines at school (Table 2).

DISCUSSION

Overall, the majority of students reported high proportions of brushing teeth, washing hands before meals, after toilet and with soap. The prevalence of hand washing among Palestinian school adolescents had the highest as compared to adolescents from other regional studies¹⁷⁻²⁰. The possible attributable reason for these high proportions of hand washing could be that, the majority of the Palestine population is Muslims and the focus on personal hygiene in Islam. Another possible explanation, it is plausible that the Palestinian school students were exposed to hygienic-related education program through external aid programs.

The results of the current study showed that, significant differences between male and female hand washing practices, where girls have better hygiene practice than boys. Similar differences have been observed in regional and international previous studies¹⁷⁻²¹. Females are considered the primary care providers in the family, thus they could be targeted more than males by health education programs, and this might explain the gender difference.

Even if the school adolescents possessed knowledge of hygiene, inadequate of appropriate resources may negatively affect proper hand washing practices. Although UNICEF reported that the resources available in rural communities are generally lacking, data about the availability of resources in the targeted schools were collected in our study. Vast proportions of hygiene practices are depend on the availability of adequate resources. Well-designed and well-located hand washing facilities and latrines that include adequate amounts of soap and water, are necessary in promoting personal hygiene. Therefore, Ministry of Education, Municipalities and families bear the responsibilities about the lack of inadequate resources that expose students at risk of transmissible diseases.

The unavailability of potable water and poor sanitary facilitation, hygiene, and de-worming were considered the most significant contributing factors for intestinal parasitic diseases²². Improved sanitation, hygiene, and de-worming are considered the best control measures for preventing infection and re-infection²³. Previous research in Palestine indicated that the most common intestinal protozoa in Palestine are *Entamoeba histolytica*, whereas *Enterobius vermicularis* is the most common intestinal helminth²⁴.

Future studies should focus on assessing the knowledge that students possess towards hygiene, availability of resources (namely soap and water) and sanitation facilities at home and at school, and the reasons behind adopting hand washing. In conclusion, comprehensive knowledge about these issues should be used to develop and implement highly effective programs that will meaningfully mitigate the burden of communicable diseases among students in rural settings.

Because the majority of children attend school and school children are more receptive to learning and are more likely than are adults to adopt healthy behaviors at a younger age. They can also be agents of health change by reporting what they have learned in school to their social environments. Therefore, school-based hygiene education is critical and cost effective in order to promote proper hand washing behaviors to attenuate the rate of communicable diseases among school children and to mitigate the economic burden of these health problems on

the Palestinian health care system.

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