INTERNATIONAL PERSPECTIVES

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Hand Washing Among Palestinians in the West Bank and Gaza Strip: Attitudes and Practices

Although most of the information presented in the Journal *refers to situations within the United States, environmental health and protection know no boundaries. The* Journal *periodically runs International Perspectives to ensure that issues relevant to our international membership, representing over 25 countries worldwide, are addressed. Our goal is to raise diverse issues of interest to all our readers, irrespective of origin.*

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Abstract **Regular and proper hand washing is a low-cost and effective intervention to prevent the spread of infectious diseases. The authors' study aimed to assess the socioeconomic and demographic characteristics associated with attitudes and practices of hand washing before eating in the West Bank and Gaza Strip. It also assessed parents' participation in the personal hygiene of their children. Results revealed that almost all participants believed that it is always necessary to wash one's hands before eating. Females had higher rates than males for washing hands before eating as well as for helping with child hygiene. Not surprisingly, a positive relationship existed between educational level and attitudes and practice of washing hands before eating. The authors recommend that governments, ministries, and different nongovernmental organizations have an active role in developing and implementing programs in order to improve the health of their communities. Such programs should be conducted in all localities and at all levels including homes, schools, and public domains.**

Introduction

Our health is greatly affected by environmental risk factors such as sanitation and hygiene, which includes hands washing (Prüss, Kay, Fewtrell, & Bartram, 2002). Hands need to be washed regularly especially before preparing or eating food; after being around sick people; before and after treating a cut or wound; after cleaning up a child who has used the toilet; after using the toilet; after touching an animal, animal feed, or animal waste; and after cleaning or touching garbage (Centers for Disease Control and Prevention [CDC], 2012). According to the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC), the right way to clean hands is to use soap and clean running water; rub hands together; and make sure to clean the backs of the hands, between fingers, and under the nails. Washing hands with soap and water is the best way to get rid of germs. If soap and water are not available, however, an alcohol-based rub can be used. Although this method will reduce a number of germs, it does not eliminate all the different types (CDC, 2012; World Health Organization [WHO], 2012).

WHO estimates that about 10% of the global burden of disease today could be prevented and controlled by improving the water supply, sanitation, hygiene, and management of water resources (Prüss-Üstün, Bos, Gore, & Bartram, 2008). One of the key United Nations Millennium Development Goals is a 66% reduction in mortality rates in children under five years by 2015 (Fewtrell et al., 2005). Half of all child deaths each year are attributed to diarrhea and acute respiratory infections; both are transmitted from person to person during everyday interaction, through skin contact and contamination of the environment (Curtis, Danquah, & Aunger, 2009). Therefore, hand washing with soap is considered to be one of the most important interventions to prevent and control these infections (Bhojani, D'Costa, & Gupta, 2008; Curtis et al., 2003; Curtis et al., 2009; Curtis et al., 2011; Hass & Larson, 2007). Lack of hygiene and access to safe water or adequate sanitation is among the underlying and structural causes of maternal and child mortality (UNICEF, 2008). In Palestine (the West Bank and Gaza Strip), respiratory infections and diarrheal diseases are major causes of child morbidity and mortality primarily as a result of poor sanitary and environmental conditions (Rionda & Clements, 2000).

Several meta-analysis studies reported that hand washing or hand washing with soap resulted in a significant reduction in the risk of diarrhea (Curtis & Cairncross, 2003; Fewtrell et al., 2005), and that interventions to promote hand washing might save millions of lives (Curtis & Cairncross, 2003). In an intervention study that took place in Karachi, Pakistan, results revealed that households that received free soap and hand

TABLE **1**

Percentage Frequency Distribution of the Sample According to the Household Variables

Variable	%
Age	
18–24	18.9
25–34	31.9
35–44	22.9
45–54	15.8
55+	10.5
Education	
Illiterate	3.8
Elementary	6.7
Preparatory	14.9
Secondary	31.8
Intermediate diploma	15.7
Bachelor's degree and higher	27.1
Sex	
Male	50.1
Female	49.9
Children under 18	
Yes	77.2
No	22.8

Variable	%
District	
Ramallah	22.3
Jenin	22.2
North Gaza	10.9
Gaza	13.6
Hebron	22.2
Rafah	8.8
Locality	
Urban	50.4
Rural	42.7
Camp	6.9
Marital status	
Single	16.5
Married	76.5
Engaged	2.7
Divorced	1.1
Widowed	2.9
Separated	.3

Variable	%
Number of family members	
1–2	7.9
3	7.6
4	11.3
5	13.7
6	13.9
7+	45.6
Employment status	
Currently employed	45.1
Unemployed but looking for work	9.4
Unemployed and not looking for work	9.4
Student	8.9
Housewife	26.4
Retired	.7
Unable to work	.1

TABLE **2**

Percentage Reporting Washing Hands Before Eating Among Selected Sociodemographic Variables

Variable	Reported Washing Hands Before Eating (%)			Pearson's Chi-Square Test	*p*-Value
	Always	Sometimes	No		
Sex				31.107	<.0001
Male	80.4	18.2	1.4		
Female	89.6	9.5	1.0		
Education				47.660	<.0001
Illiterate	75	18.1	6.9		
Elementary	80	19.2	0.8		
Preparatory	78.1	20.1	1.8		
Secondary	86.6	12.9	0.5		
Intermediate diploma	91.1	8.2	0.7		
Bachelor's degree and higher	86	12.8	1.2		
Region				66.595	<.0001
North West Bank	81.3	18.2	0.5		
Central West Bank	82.1	17.9	0.0		
South West Bank	80.6	18	1.4		
Gaza Strip	92.3	5.4	2.2		
Locality				22.212	<.0001
Urban	87	11.5	1.5		
Rural	81.3	17.7	1		
Camp	93.1	6.9	0.0		

washing promotion for nine months reported a 53% reduction in diarrhea compared to controls (Luby et al., 2009).

Palestine suffers from water scarcity, which in turn contributes to negative effects on health. A study that was conducted in the Gaza Strip revealed that poor sanitation and restriction of water may favor communicable diseases, especially diarrhea, which is one of the leading causes of morbidity in the area (Abouteir et al., 2011). A Palestinian study in the Nuseirat refugee camp reported that 61.2% of the interviewed women agreed that their hands should always be washed and 70.7% reported that their children's hands should be washed before and after eating (Abu Mourad, 2004).

Various surveys including a household survey carried out by UNICEF and the Palestinian Hydrology Group (2010) indicated that about 50% of the surveyed population suffered from diarrhea as well as skin diseases and parasites, particularly among children under the age of five. The survey also showed that hygiene practices are poorly applied. Accordingly, our study aimed to assess the socioeconomic and demographic characteristics associated with attitudes and practices of hand washing before eating, as well as par-

ents' participation in the personal cleaning of their children, using the West Bank and Gaza Strip as case examples.

Methods

Population and Sampling

A stratified multistage random sample approach of men and women over 18 years of age was chosen (three stages). This approach was used to make sure that the sample was distributed in a way commensurate with the population in every location of the West Bank and the Gaza Strip. In order to divide the study population into different classes, depending on the homogeneity of these classes, two variables were chosen—the region and type of communities.

Accordingly, the sample size of each area in the West Bank was estimated to be 418 individuals. Two people were selected from each family. Consequently, the sample size in every area was estimated at 209 families. In the Gaza Strip the sample size of individuals was estimated at 628, equivalent to 314 families. The total sample size was 1,882 residents living routinely in the Palestinian territories in the year 2010. The confidence level was 95% (confidence coefficient 1.96), and the margin of error about ±5.25%, covering the entire research sample in every geographical location.

Instruments

Primary data were acquired using a questionnaire that was designed following the structured questions method to provide useful information concerning the necessity of washing hands before eating and whether hand washing is actually practiced. Moreover, participants were asked if they help in the personal hygiene of their children. The questionnaire was pretested to ensure that the questions were understandable and clear to respondents. Twelve questions pertained to hand washing. The questionnaire also targeted other issues but those were not the focus of our study. It took between 20 and 25 minutes to administer the questionnaire. The response rate was 95%. In addition, a total of 15 focus group discussions (FGD) were held with the participation of both men and women from the West Bank and the Gaza Strip (eight FGDs for women and seven for men). Families were contacted and informed about the study through local committees. No incentive was given to participate in the study.

TABLE **3**

Percentage Reporting Belief That It Is Necessary to Wash Hands Before Eating Among Selected Sociodemographic Variables

Variable	Reported Belief That It Is Necessary to Wash Hands Before Eating (%)			Pearson's Chi-Square Test	*p*-Value
	Always	Sometimes	No		
Sex				4.675	.097
Male	93.1	5.8	1.1		
Female	95.3	3.7	1		
Education				42.205	<.0001
Illiterate	90.3	2.8	6.9		
Elementary	96.8	3.2	0.0		
Preparatory	91.4	7.9	0.7		
Secondary	93.5	6	0.5		
Intermediate diploma	96.6	2.4	1		
Bachelor's degree and higher	95.1	3.8	1.2		
Region				39.403	<.0001
North West Bank	93.3	6.5	0.2		
Central West Bank	95.9	3.3	0.7		
South West Bank	91.3	8.4	0.2		
Gaza Strip	95.5	2.2	2.2		
Locality				21.725	<.0001
Urban	95	3.4	1.6		
Rural	92.6	7	0.4		
Camp	97.7	1.5	0.8		

Data Management and Analysis

The collected data were numerically coded to facilitate the use of statistical programs, i.e., SPSS v. 17.0. Following the coding process, the data were subjected to statistical analysis on the premise of which conclusions were drawn.

Results and Discussion

A summary of the sociodemographic characteristics of the study sample is presented in Table 1. The age distribution shows that the 25–34 age group was the largest (31.9%). The secondary education level was the largest (31.8%); those with secondary level education and higher made up 74.6%. The distribution of gender was almost equal with 50.1% males and 49.9% females. About 77% of the sampled families had children under 18 years old. About 50% were from urban areas, 76.5% were married, and 45.1% were employed.

Almost all the sampled population (94.2%) believed that it is always necessary to wash hands before eating while only 1% of the people believed that it is not. Yet only 85% answered that they always wash their hands before eating. These rates are considered acceptable when compared to the results of a study conducted in Ghana and India, which revealed that hand washing with soap after using the toilet was uncommon, varying from 3% in one of the areas in Ghana to 42% in one of the areas in India (Curtis et al., 2011). No doubt exists that almost all people believe that hands should be washed before eating. Whether they practice what they believe or whether they do it right, however, are other issues.

One of the women from the Rafah camp focus group was asked, "How do you and your husband take care of your health and the health of the family?" She stated, "We teach our children to wash their hands before eating and clean up their bodies daily." A man from the Beach camp focus group in Gaza was asked, "How can you/should you improve the family environmental health in

TABLE **4**

Percentage Reporting Helping in Child Hygiene for Family Children Among Locality, Age, and Employment Status

Variable	Reported Helping in Child Hygiene for Family Children (%)			Pearson's Chi-Square Test	*p*-Value
	Always	Sometimes	No		
Locality				25.598	<.0001
Urban	56.4	20.3	22.3		
Rural	66.3	19.3	14.4		
Camp	66.3	22.8	10.9		
Age				23.631	.003
18–24	56.3	19.6	24.1		
25–34	67	19.2	13.8		
35–44	61.9	21.4	16.7		
45–54	57.1	21.5	21.5		
55+	55.8	16.8	27.4		
Employment status				176.343	<.0001
Currently employed	50	25.4	24.6		
Unemployed but looking for work	57.3	19.6	23.1		
Unemployed and not looking for work	59.7	16.9	23.4		
Student	49.3	23.9	26.8		
Housewife	86.7	10.4	2.9		
Retired	50	40	10		
Unable to work	0.0	100	0.0		

the home?" He stated, "The most important thing is to take care of our hygiene and our children's personal hygiene."

Washing Hands and Gender

Table 2 shows that 89.6% of women answered that they wash their hands before eating compared to 80.4% for men. A statistically significant correlation existed between washing hands before eating and gender (*p*-value < .0001). Men tend to be less likely than women to wash their hands. A study conducted by Harris Interactive (2010) on self-reported hand washing habits among adult Americans found that 83% of surveyed women said that they always wash hands before handling or eating food compared to 71% of men.

Washing Hands and Educational Level

A statistically significant relationship existed between the belief in the necessity of washing hands before eating and educational level (Table 3) (*p*-value < .0001). About 90% of illiterate people believed that it is always necessary to wash their hands before eating, while 6.9% of them believed that it is not. By contrast, 96.6% of those with an intermediate diploma believed that it is always necessary to wash their hands before eating while only 1% believed that it is not. Apparently, education positively influences the attitude of washing hands before eating.

Table 2 shows that a statistically significant relationship existed between washing hands before eating and educational level (*p*-value < .0001). As the educational level increased the percentage of people who wash their hands before eating increased. For example, 75% of the illiterate wash their hands before eating compared to 86.6% and 91.1% of the secondary and intermediate education levels, respectively. This finding is similar to the finding of a study that was conducted in Thailand, Kenya, and Ethiopia (International Rescue Committee, 2011) that reported that a higher level of education was associated with better hygiene practices. This may be attributable to the fact that the educated are more knowledgeable about the importance of hand washing.

Washing Hands and Region

As presented in Table 3, a statistically significant relationship existed between the belief in necessity of washing hands before eating and the region of residence (*p*-value < .0001). South West Bank had the lowest percentage (91.3%), which may be due to the scarcity of water in this region in comparison with the other regions.

Table 2 shows the results for cross tabulation between washing hands before eating and the region. A statistically significant relationship existed between these two variables (*p*-value = < .0001). The highest percentage (92.3%) of responses was in the Gaza Strip, while the lowest percentage was in the south West Bank.

Washing Hands and Locality

Tables 2 and 3 show that a statistically significant relationship existed between the belief in the necessity of washing hands and the actual washing before eating and the locality type (*p*-value < .0001) whether rural, urban, or camp. The lowest percentage (92.6%) existed in rural areas, which may be attributed to the lack of water and the lack of promotional programs of health education. The percentage of camp residents who wash their hands before eating was 93.1% as compared to 87% and 81.3% for urban and rural residents, respectively. This urban-rural difference was also found in a study from seven schools in Konya, Turkey (Yalcin, Yalcin, & Altin, 2004).

Helping With Hand Hygiene for Children

About 61.4% of those surveyed answered that they always help with their children's hygiene while 18.6% answered that they do not. Table 4 shows a statistical relationship between helping with children's hygiene and different age groups (*p*-value = .003), with the highest percentage for the 25–34 age group. By contrast, the age group 55 and more was least likely to help with children's hygiene, with only 55.8% always helping and 27.4% not helping at all.

Table 4 shows that a statistical relationship existed between helping with children's hygiene and different localities (*p*-value < .0001). Camps are the areas that help most with children's hygiene; 66.3% of them are

always helping with children's hygiene and only 10.9% are not helping. By contrast, urban areas help the least with children's hygiene, with 56.4% always helping and 22.3% not helping at all.

In addition to the above differences in helping with children's hygiene, regional differences and differences between gender and marital status existed. Figure 1 shows a significant relationship between gender and helping with children's hygiene in the family (p-value < .0001). About 82% of females answered that they always help with children's hygiene compared to only 40% for males. This vast female-male difference can be expected from some of the FGDs. A women from the Gaza focus group stated, "giving birth, upbringing, and being fully responsible for the kids' hygiene." Another women from the north camp group stated, "my husband may help with the laundry and dish washing and may give the kids a bath when I am busy." A man from the north of Gaza focus group stated, "I do the kids' laundry and I am responsible for their hygiene because my wife works." It can be concluded that since the majority of women in our study are housewives, caring for their homes and their children are their main duties.

Figure 2 shows a statistical relationship between helping with child hygiene in the family and the region (p-value < .0001). Likewise, Figure 3 shows a significant relationship between marital status and helping with child hygiene in the family (p-value < .0001) with the highest percentage (70.3%) for widows.

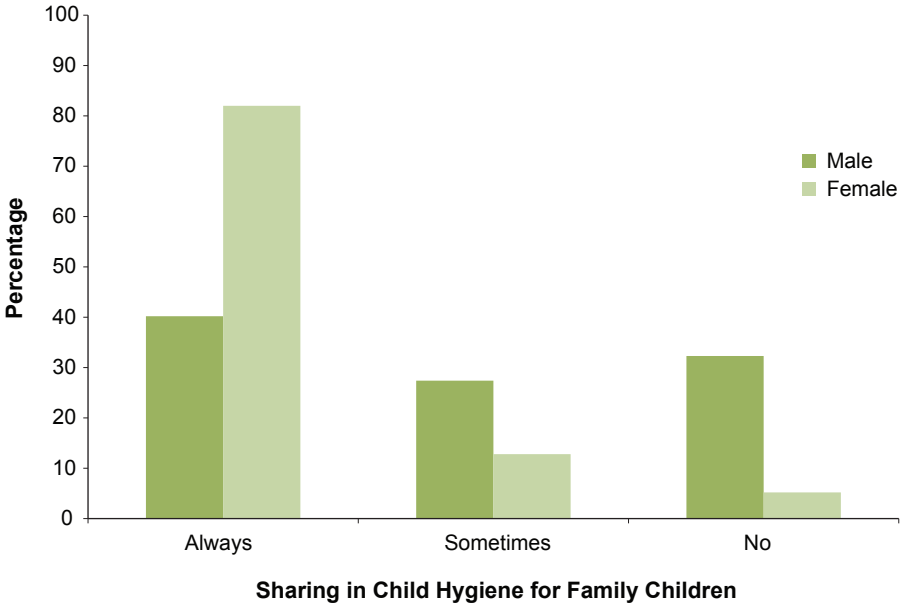
Table 4 shows a statistical relationship between helping with child hygiene and the work situation of the member of the family (p-value < .0001).

Conclusion and Recommendations

It can be concluded from our study that generally most people believe that it is always necessary to wash one's hands before eating, yet not all of them put this into practice. When it comes to helping with child hygiene, a considerable percentage (61.4%) answered that they always do. Females had higher rates than males in the belief in washing hands before eating as well as in the practice, and they exhibited higher rates of helping with child hygiene. Furthermore, a positive relationship existed between the educational level and practice of washing hands before eating.

FIGURE **1**

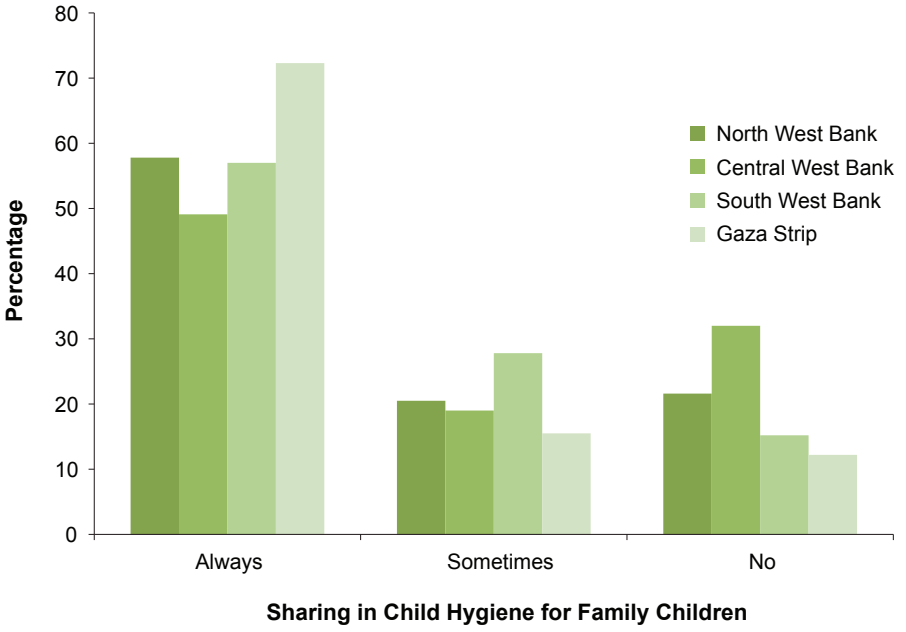
Relationship Between Gender and Helping With Child Hygiene



Pearson's Chi-square test = 301.873, df = 2, p-value < .0001.

FIGURE **2**

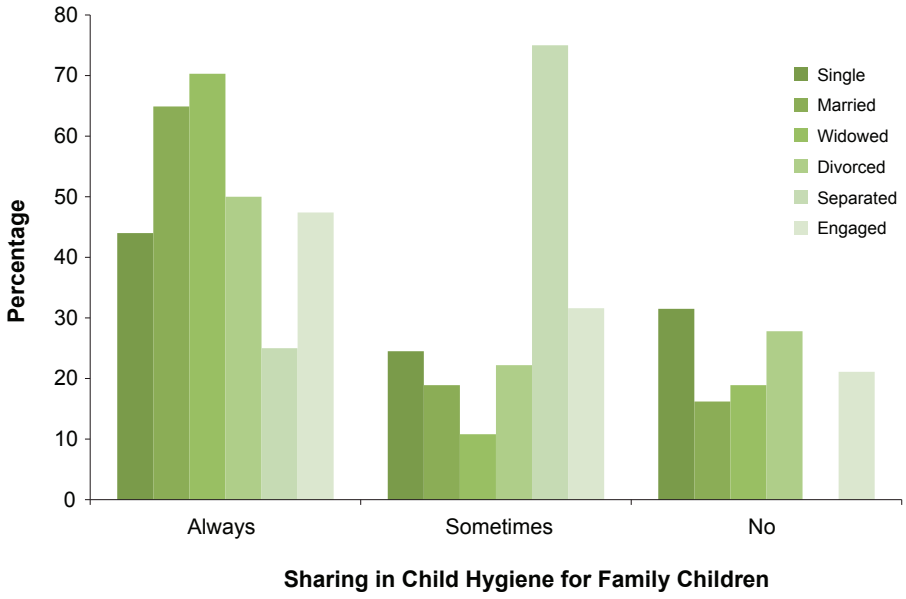
Relationship Between Region and Helping With Child Hygiene



Pearson's Chi-square test = 77.408, df = 6, p-value < .0001.

FIGURE **3**

Relationship Between Marital Status and Helping With Child Hygiene



Pearson's Chi-square test = 53.959, *df* = 10, *p*-value < .0001.

In the light of these findings and in the light of the overwhelming research that hand washing is one of the most important interventions in controlling the spread of infections, governments should prioritize the issue of hygiene and invest in programs to improve the populations' health. These programs should include hygiene education and the promotion of the benefits of hand washing. Awareness sessions about the necessity of personal hygiene should be conducted in all areas (urban, rural, and camps). In addition, addressing the issue of water scarcity and availability should be one of the government's priorities as this will contribute to better hygiene in general, leading to fewer communicable diseases.

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2. A description of the nominee's educational background and professional experience.
3. A description of the nominee's employment history, including the scope of responsibilities.
4. A narrative statement of specific accomplishments and contributions on which the nomination is based, including professional association activities, publications, and community/civic activities.
5. Three endorsements (an immediate supervisor and two other members of the professional staff or other person as appropriate).

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