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A study on the perception of hand washing and health status in Korean adults

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Abstract

This study aimed to investigate the perception about hand washing and health status among Koreans using the data from the Community Health Survey.

We examined the differences in the perceptions about hand washing and health statuses of 220,440 participants of the 2017 community health survey. The sample was divided into groups based on demographic variables, perceptions about hand washing, and prevalence of metabolic diseases. Participants' demographic characteristics were analyzed using frequency, and perceptions about hand washing and subjective health status-related parameters were analyzed using *t* tests. The prevalence of metabolic disorder was analyzed with χ^2 tests.

There were significant differences in subjective health status, subjective oral health status, and perceived obesity in the positive and negative hand washing perception groups ($P < .01$). The prevalence rate of hypertension and diabetes mellitus significantly differed in the positive and negative hand washing perception groups ($P < .01$), but no differences were observed for hyperlipidemia ($P < .01$).

This study showed that positive hand washing perception is associated with good health care practices. The perceptions of hand washing, which are formed during early childhood, were closely associated with health status. This finding could be useful evidence for developing programs focusing on major health behaviors and levels of health.

Abbreviations: CHS = community health survey, KCDC = Korea Centers for Disease Control and Prevention, KRW = South Korean Won.

Keywords: hand washing, health status, metabolic syndrome

1. Introduction

The public fear of the novel coronavirus epidemic is far from waning.[1] The outbreak of an unexpected communicable disease brings about a national crisis.[2] The World Health Organization has already announced that the 21st century is an era of communicable diseases, and as anticipated, epidemics such as the Severe Acute Respiratory Syndrome, novel influenza, Ebola, and Middle Eastern Respiratory Syndrome have led to the loss of human lives and mass confusions in societies, emerging as a novel threat to societies worldwide.[3] Recently, cases of pneumonia caused by coronavirus, with the first outbreak in Wuhan, China, have spread.[4] Particularly, many patients with underlying illnesses lost their lives to this infection.[5]

Personal hygiene not only helps maintain and promote one's own health but is also the basis of public health. Thus, the practice of healthy behaviors based on correct knowledge and attitudes by each member of the society would positively impact themselves, families, communities, and nations. The most fundamental personal hygiene practices for preventing communicable diseases include hand washing, drinking boiled water, cooking food thoroughly, taking precautions against bug bites such as mosquito bites, checking areas with elevated risks for communicable diseases prior to traveling abroad, and avoiding contact with wild animals.[6]

The World Health Organization recommends washing hands.[7] Hand washing is the most basic health-promoting practice in preventing communicable diseases. One study on children in the US reported that hand washing alone reduced the incidence of common cold by 32%.[8] Further, about 50% to 70% of waterborne infections are preventable by washing hand alone, and particularly, hand washing with soap effectively removes microorganisms and is effective in preventing communicable diseases.[9]

Hand washing falls under the Personal hygiene or Bathing-showering categories of the activities of daily living in the Occupational Therapy Practice Framework and is one of the basic activities in human lives. Prevention is a type of occupational therapy intervention.[10] Although traditional occupational therapy involves performing interventions after disease onset, recent

Editor: Mehmet Bakir.

This study was supported by research funds from Honam University 2016.

The data used in this study are that of an annual, nationally sampled survey conducted by the KCDC to examine the health status of community residents.

The language in this document has been checked by at least 2 professional editors, both native speakers of English.

The authors have no conflicts of interest to disclose.

The datasets generated during and/or analyzed during the current study are publicly available.

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How to cite this article: Park S. A study on the perception of hand washing and health status in Korean adults. Medicine 2021;100:3(e24421).

Received: 16 July 2020 / Received in final form: 29 November 2020 / Accepted: 3 January 2021

http://dx.doi.org/10.1097/MD.0000000000024421

trends emphasize interventions that lower disease incidence through prevention.[11] Hand washing may serve as a strategy to prevent infection. However, studies examining the long-term impact of the perception of hand washing on health status are rare, and it is difficult to evaluate whether poor perception positively impacts disease prevention.

This study aimed to investigate the factors related to health behaviors among Koreans in the Community Health Survey (CHS) conducted by the Korea Centers for Disease Control and Prevention (KCDC). More specifically, we examined whether subjective health status, subjective oral health status, and obesity awareness differs according to the perception of hand washing. Moreover, we compared the prevalence of metabolic syndrome (hypertension, diabetes mellitus, hyperlipidemia) according to the perception of hand washing. By identifying the differences in health status according to the perception of hand washing, we aimed to determine whether strengthening the perception of hand washing improves overall health management ability and contributes to disease prevention in the long term.

2. Methods

2.1. Study design

This study involved a descriptive, cross-sectional secondary analysis of the CHS.

2.2. Study participants

Of 228,381 people who participated in the 2017 CHS, participants with missing data were excluded, resulting in 220,440 participants being included in this study.

2.3. Definition and measurement of study variables

2.3.1. Sociodemographic characteristics. Sociodemographic characteristics assessed were sex, age, marital status, education level, and income level. Age was categorized into teens, 20 s, 30 s, 40 s, 50 s, 60 s, 70 s, and ≥ 80 s. Marital status was divided into married, divorced, widowed, separated, and single. Education level was classified into uneducated, elementary school, middle school, high school, college, or beyond college. Finally, income level was divided into < 1 million South Korean Won (KRW), 1 to 2 million KRW, 2 to 3 million KRW, 3 to 4 million KRW, 4 to 5 million KRW, 5 to 6 million KRW, and ≥ 6 million KRW.

2.3.2. Perception of hand washing. Although the perception of hand washing was surveyed in the 2017 CHS, it was excluded from the 2018 survey onwards; therefore, we used the 2017 CHS data.

The perception of hand washing was assessed as being

1. very helpful
2. helpful
3. not helpful
4. and not helpful at all.

Then, the parameter was divided into the positive and negative hand washing perception groups (positive hand washing perception group ≤ 2, negative hand washing perception group ≥ 3).

2.3.3. Health-Related characteristics. Health-related characteristics assessed were subjective health status, subjective oral health status, and perceived obesity. Subjective health status and subjective oral health status were rated on a 5-point scale, ranging from very good to very poor. Perceived obesity also was rated on a 5-point scale, ranging from very thin to very obese.

2.3.4. Metabolic syndrome characteristics. Metabolic syndrome included hypertension, diabetes mellitus, and hyperlipidemia, and the presence or absence of each disease was used. A score of 1 was assigned for presence of any of the above-mentioned disease and a score of 0 was assigned for absence of disease.

2.4. Data collection

The CHS, the raw data used in this study, is an annual, nationally sampled survey conducted by the KCDC to survey the health status of community residents. Data are collected from an average of 900 adults aged 19 years or older across 254 cities, each having a public health center.[12] These data were collected from 17 states and provinces by the KCDC and statistical data needed for developing evidence-based health policy were generated. To collect data, a selection notice was sent to the selected households, after which trained interviewers visited the households, explained the CHS, collected consent forms, and conducted a 1:1 face-to-face interview using the computer assisted personal interview program on their laptops.

2.5. Ethical considerations

The CHS acquires informed consent from all participants prior to data collection, and the instrument and process used in the survey were approved by the institutional review board at KCDC. For this study, we signed an oath regarding the use of raw data per the "Regulation on the KCDC raw data disclosure procedure, etc (Revised January 2, 2012, KCDC directive No. 164)," prepared a data utilization protocol, and submitted the request for raw data (submission number 71754). Following KCDC review and approval of the data utilization protocol, we were provided with the data excluding personally identifiable information for analysis.[12]

2.6. Data analysis

Data were analyzed using the IBM SPSS/WIN 24.0 software. The sample for the CHS was recruited using a complex sample design, which considered the stratification variable, cluster variable, and weights. Frequency analysis was performed on participants' demographic characteristics. The differences in subjective health status, subjective oral health status, and perceived obesity according to the perception of hand washing were analyzed with independent t tests. The differences in hypertension, diabetes, and hyperlipidemia according to the perception of hand washing were analyzed with χ^2 tests. Statistical significance was set at $P < .05$ in all instances.

3. Results

3.1. Demographic characteristics

The study sample consisted of 45% men and 55% women, which is an appropriate male-female ratio. Age was distributed evenly, with the highest number of participants in their 50 s (19.7%). The majority of the participants were married (67.4%), and the most common education and income levels were college (32.7%) and < 1 million KRW (19.8%), respectively (Table 1).

Table 1

Demographic characteristics (N = 220,440).

Variable	Number (%)
Sex	
Male	99,272 (45.0)
Female	121,168 (55.0)
Age (yr)	
19–29	23,721 (10.8)
30–39	29,178 (13.2)
40–49	38,499 (17.5)
50–59	43,591 (19.7)
60–69	39,307 (17.9)
70–79	32,247 (14.6)
≥ 80s	13,897 (6.3)
Marital status	
Married	148,605 (67.4)
Divorced	8455 (3.8)
Widowed	25,701 (11.7)
Separated	2898 (1.3)
Single	33,790 (15.3)
Other	897 (0.5)
Education level	
Uneducated	15,894 (7.2)
Elementary school	37,181 (16.9)
Middle school	24,838 (11.3)
High school	61,966 (28.1)
College	72,073 (32.7)
Beyond college	8125 (3.7)
Other	363 (0.1)
Income level (million KRW)	
< 1	43,620 (19.8)
1–2	34,917 (15.8)
2–3	38,255 (17.4)
3–4	34,892 (15.8)
4–5	26,226 (11.9)
5–6	16,248 (7.4)
≥ 6	26,282 (11.9)

KRW = South Korean Won.

3.2. Frequency of hand washing

Frequency of hand washing was highest number of participants in their answer always. The hand washing before meal was 55.7%, hand washing after using toilet was 63.2% and handwashing after going out was 52.6%(Table 2).

3.3. Health status according to the perception of hand washing

The positive hand washing perception group showed a better perceived health (2.83) than the other group. Perceived oral health was also higher in the positive hand washing perception group (3.16). Perceived obesity differed between the positive and negative hand washing perception groups (Table 3).

3.4. Metabolic syndrome according to perception of hand washing

There were more participants without hypertension and diabetes in the positive than the negative group. However, no significant difference was observed for hyperlipidemia (Table 4).

4. Discussion

Perception of hand washing is formed in early childhood. The inculcation of healthy behaviors and habits not only contributes to lowering communicable diseases but may also gravely impact the maintenance and promotion of one's health in adulthood.[13] Occupational therapists frequently encounter chronic patients with unclean hands. Although education on hand washing pertaining to hospital infection is provided in the field of occupational therapy, the importance of hand washing is not emphasized for patients.[14] The Korea Pan-national Hand Washing Campaign Project recommends washing hands before and after various activities including touching money, books, or computer.[15] Hand hygiene has been recognized as the most effective intervention to reduce the transmission of pathological problem. Gastrointenstinal infections are the most commonly occurring illnesses children due to improper hand washing.[16]

This study attempted to present baseline data to improve public health by analyzing the health status of Koreans according to their perception of hand washing and highlighting the importance of hand washing. Our results showed that the positive hand washing perception group had better perceived health and perceived oral health. There was a difference in perceived obesity between the positive and negative hand washing perception groups, where the former group perceived themselves as being slightly more obese than did the latter. Pertaining to this finding, 1 study had reported that while maintaining a normal body weight is the most effective in promoting health, overweight is associated with poorer health parameters than underweight.[17]

Recently, interest in metabolic syndrome has been mounting. Metabolic syndrome refers to a cluster of symptoms such as insulin resistance, hyperlipidemia, and hypertension. Obesity is closely related to metabolic syndrome.[18] The onset of metabolic syndrome is associated with non-adjustable factors such as aging, family history, and postmenopausal reduction in female hormones as well as adjustable lifestyle factors such as lack of exercise, irregular diet, smoking, and heavy drinking.[19] Our results showed that the prevalence rates of hypertension and diabetes differed significantly between the positive and negative

Table 2

Frequency of hand washing(N = 220,440).

	Hand washing before meal N(%)	Hand washing after using the toilet N(%)	Hand washing after going out N(%)
Always	122,813 (55.7)	139,328 (63.2)	115,879 (52.6)
Often	68,555 (31.1)	56,080 (25.4)	60,625 (27.5)
Sometimes	25,844 (11.7)	22,189 (10.1)	36,253 (16.4)
Seldom	2748 (1.2)	2202 (1.0)	7337 (3.3)
Other	480 (0.1)	641 (0.1)	346 (0.1)

Table 3

Subjective health status according to perception of hand washing (N = 220,440).

	Positive hand washing perception group (n = 218,103) M(SD)	Negative hand washing perception group (n = 2,337) M(SD)	F	*P*
Subjective health status	2.83 (0.92)	3.06 (1.02)	17.82	.00
Subjective oral health status	3.16 (0.96)	3.44 ((1.00)	53.63	.00
Perceived obesity	3.21 (0.88)	3.14 (1.00)	56.68	.00

SD = Standard deviation.

Table 4

Metabolic syndrome according to perception of hand washing (N = 220,440).

	Positive hand washing perception group (n = 218,103) N(%)	Negative hand washing perception group (n = 2,337) N(%)	χ^2	*P*
Hypertension				
Yes	59,393 (27.2)	845 (36.2)	92.76	.00
No	158,710 (72.8)	1492 (63.8)		
Diabetes mellitus				
Yes	23,961 (11.0)	427 (18.3)	124.72	.00
No	194,142 (89.0)	1,910 (81.7)		
Hyperlipidemia				
Yes	37,883 (17.4)	393 (16.8)	0.49	.48
No	180,220 (82.6)	1,944 (82.6)		

hand washing perception groups. Metabolic syndrome is a chronic disease induced by an interaction of hypertension, diabetes, hyperlipidemia, and obesity, and the prevalence of metabolic syndrome in Korea is rapidly rising due to the growing obese population and changes in social structure.[20] Thus, activities to effectively prevent metabolic syndrome are considered highly important. In general, the 2 most emphasized activities to lower the prevalence of metabolic syndrome are exercise and weight management. However, prior to these prevention efforts, forming desirable health management habits early in childhood is crucial.[21]

Illness perceptions are formulated based on various direct and indirect experiences with health, so interactions with family members may impact illness perceptions, as people share behavioral habits and health knowledge and interact emotionally with family members in daily living since childhood.[22] It is important to consider their impact on health behaviors along with the multilateral association between family functions and illness perceptions. This can help promote health behaviors in people with complex health problems.[23] Education on hand washing is the most basic one for such health management.

This study has a few limitations. As we utilized items surveyed in the 2017 CHS for our analysis, our study lacks in-depth measurement from multiple aspects. Therefore, qualitative studies should be conducted to address this. However, amid insufficient studies utilizing big data on the perception of hand washing, the use of the CHS data in our study is significant in providing evidence for developing effective intervention programs to increase the awareness of hand washing. Further studies examining whether hand washing education and campaign can prevent diseases would shed light on the influence of hand washing on the promotion of health. Such findings would serve as evidence to support the importance of hand washing to prevent diseases and enhance work performance in the future.

5. Conclusion

This study identified health statuses of Korean people according to their perceptions of hand washing. The perceptions of hand washing, which are formulated during early childhood, are closely associated with health status. This result would be useful as evidence for developing programs focusing on major health behaviors and levels of health. Increasing the awareness of hand washing has great implications for developing health-promoting strategies and securing healthcare resources. This would also make tremendous contributions in the field of occupational therapy by promoting work performance.

Acknowledgments

I would like to thank the CHS investigator as well as Editage for English language editing.

Author contributions

Formal analysis: Soohee Park.
Investigation: Soohee Park.
Methodology: Soohee Park.

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