Aloha International Journal of Health Advancement (AIJHA)
ISSN 2621-8224
Volume 1 Number 6, December 2018
http://journal.aloha.academy/index.php/aijha
RESEARCH
DOI: http://dx.doi.org/10.33846/aijha10604

Level of Knowledge, Washing Hand's Behavior and Total Number of Bacteria on The Surface Hand Moher At Blawong I, Bantul Regency, Yogyakarta

Dyah Suryani[1], Wibowo[2] (corresponding author)
[1]Faculty of Public Health, Ahmad Dahlan University, Yogyakarta, Indonesia
[2]Research and Development Center for Health Resources and Services, Ministry of Health Indonesia
(wibowo869@yahoo.co.id)

Submitted: November 4, 2018 -Revised: November 24, 2018 -Accepted: December 1, 2018 -Published: December 31, 2018

ABSTRACT

Background: Practicing the hand washing appropriately and correctly is the easiest and effective way to prevent the outbreak of diseases such as diarrhea, cholera, acute respiratory infections, intestinal worms, influenza, hepatitis A, and even bird flu. Pathogenic germs that may be found in the skin as transient microorganisms are *Escherichia coli, Salmonella sp, Shingella sp.* Hand is the part of the body which is used daily and always contact with outside. The surface of a toddler's mother's hand is an object that has a high-risk factor of being contaminated with germ numbers. This greatly facilitates contact with food microorganisms in infants. The purpose of this study was to determine the relationship between the level of knowledge and behavior of washing hands with the number of germs on the surface of the hands of toddlers in Blawong I Village, Bantul Regency, Yogyakarta. **Method**: This study was an observational analytic study with laboratory tests and used a cross-sectional study design. The sample in this study were mothers who have children under five years in Blawong I, Bantul Regency, Yogyakarta. The sample size in the study was 35 mothers. Data analysis used descriptive analysis and bivariate analysis, and an alternative test was used using the Fisher's Exact Test. **Results**: Knowledge of washing hands showed the *p-value* 0.059, which means that there was no statistically significant relationship between knowledge and existence of germs in mother's infants. Hand washing behavior shows the *p-value* 0.725 which means that there is no statistically significant relationship between behavior and number of germs in mothers of children under five years in Blawong I village, Bantul Regency, Yogyakarta. **Conclusion**: There was no relationship between knowledge and the incidence of germ in Blawong I Hamlet village, Bantul Regency, Special Region of Yogyakarta. There was no relationship between knowledge and the incidence of germ in Blawong I Village, Bantul Regency, Special Region of Yogyakarta Province.
Keywords: knowledge, behavior, hand washing, germ number

INTRODUCTION

Young children are very vulnerable to diarrhea. In the fact, more than a quarter of all children under five mortality rates in Southeast Asia are caused by diarrhea.(1) Bacteria are living organisms that are microscopic in size. The categories of microorganisms consist of five groups of organisms: bacteria, protozoa, viruses, algae, and fungi. Microorganisms are very closely related to our lives, some of which are beneficial and others harmful. In diarrhea case, microorganism residence in human body and affect the imbalance the process of absorption and secretion of electrolyte fluids in the digestive tract (intestine). Diarrhea occupies second place as a cause of death. The impact of diarrhea is very large on the economy, especially in developing countries.(2)

Washing hands with soap that is practiced appropriately and correctly is the easiest and effective way to prevent the outbreak of diseases such as diarrhea, cholera, acute respiratory infections, intestinal worms, influenza, hepatitis A, and even bird flu. Washing hands with soap and water can more effectively remove dirt and dust mechanically from the surface of the skin and significantly reduce the number of disease-causing microorganisms such as viruses, bacteria and other parasites on both hands. Washing your hands with water and soap can more effectively clean the dirt and worm eggs that stick to the surface of the skin, nails and fingers on both hands.(3)

Food-borne diseases can cause mild and severe illness and even result in death among others due to poor application of food hygiene and environmental sanitation. The magnitude of the impact on health is not yet known because only a small proportion of cases are ultimately reported to the health service and far less more are being investigated. 90% of cases of food poisoning are caused by microbes.(4)

Transient microorganisms consisting of bacteria, fungi, yeast, viruses and parasites, come in various forms, from various sources which can eventually come in contact with the skin. These microorganisms can usually be found on the palms, fingertips and under the nails. Pathogenic germs that may be found in the skin as transient microorganisms are *Escherichia coli, Salmonella sp, Shingella sp.* Flora will always be there and survive,

Aloha International Journal of Health Advancement (AIJHA)
ISSN 2621-8224
Volume 1 Number 6, December 2018
http://journal.aloha.academy/index.php/aijha
RESEARCH
DOI: http://dx.doi.org/10.33846/aijha10604

especially where the place provides an environment that supports microbial growth. Excessive sweating or washing and bathing did not significantly eliminate or reduce the amount of permanent flora. The hand is the part of the body that is most frequently in contact with the outside and used for daily activities. This greatly facilitates contact with food microorganisms in infants, giving rise to a high incidence of diarrhea in infants.[5] The risk of diarrheal disease can be reduced by promoting hand washing, improving water quality and improving sewage disposal facilities.[6] Washing hands with soap can reduce the level of microorganisms near to zero and can interfere with fecal-oral microbial transmission in the domestic environment mainly through the mechanism of rubbing and rinsing.[7]

Based on the results of initial observations by researchers that the number of germs that occurred in 2 mothers of children under five is 13,061/cm^2 and 471/cm^2. Researchers found the number of germs on the surface of a toddler's mother's hand was not in accordance with the standard number of germs set by Ministry of Health Indonesia which is 100 colonies/cm^2 and *E. coli* was 0 colonies/cm^2. From the level of knowledge and behavior how to wash their hands they know how to use soap, but not in accordance with the 7 steps of washing hands according to World Health Organization properly. On this basis, researchers were interested in conducting research on the Relationship between the Level of Knowledge and Behavior of Hand Washing with the Number of Germs on the Surface of a Toddler's Hand in Blawong I Village, Bantul Regency, Yogyakarta.

METHODS

This research was an analytic observational research with laboratory test and cross-sectional research design. The population and sample in this study were mothers who have children in Blawong 1 Village, Bantul, Yogyakarta. The sample size in the study were 35 mothers. The number of germ surface of the toddler's mother's hand was measured by taking a surface swab of the toddler's mother's hand and then tested it in laboratory of vocational training center in Yogyakarta. Knowledge is measured by using a questionnaire, which contains the benefits of washing hands, how to wash hands, when washing hands and the consequences of not applying good and proper hand washing. Hand washing behavior is taken with a questionnaire that contains how to wash hands and when washing hands specifically associated with the preparation of complementary foods for toddlers. Data analysis used univariate analysis and bivariate analysis by using the Fisher's Exact Test.

RESULTS

Characteristics of Respondents

Respondents in this study are mothers who have children under five in the Blawong 1 Village, Bantul Regency, having the following respondent characteristics:

Table 1. Characteristics of respondents of mothers of children under five in Blawong I Village, Bantul Regency, Yogyakarta

Characteristics	Category	Frequency	Percentage
Age	20-30	4	11.4
	31-40	23	65.7
	41-50	6	17.1
	51-60	2	5.7
Level of education	Low (< Senior High School)	12	34.3
	High (Senior High School-University)	23	65.7
Employment	Housewife	28	80.0
	Entrepreneur	2	5.7
	Teacher	2	5.7
	The employee	1	2.9
	Nurse	1	2.9
	Civil Servant	1	2.9
Income Level	< 1.000.000	5	14.3
	≥ 1.000.000	30	85.7

Based on table 1, it can be seen that the majority of mothers who had children under five in Blawong I Village, Bantul Regency, Yogyakarta, aged 31-40 years were 23 (65.7%) while the smallest percentage was aged 51-60 years was 2 (5.7 %). Respondents who attended the high level of education were 23 people (65.7%),

Aloha International Journal of Health Advancement (AIJHA)
ISSN 2621-8224
Volume 1 Number 6, December 2018
http://journal.aloha.academy/index.php/aijha
RESEARCH
DOI: http://dx.doi.org/10.33846/aijha10604

while the lowest level of education was 12 people (34.3%). The majority of working status of respondents in this study was house wives as many as 28 (80.0%), while the smallest percentage were the employees, nurses, civil servants as many as 1 person (2.9%). The highest economic percentage in this study was >1,000,000 by 30 people (85.7%) while the smallest percentage was ≥1,000,000 by 5 people (14.3%).

Descriptive Analysis

The level of knowledge, behavior of mothers in washing their hands and the number of germ surface of the hands of mothers who have children under 5 years old can be seen in the following table 2:

Table 2. Distribution of knowledge and behavior frequency of respondents about hand washing in Blawong I sub-village, Trimulyo Village, Jetis District, Bantul Regency Yogyakarta Special Region in 2016

Characteristics	Category	Frequency	Percentage
Knowledge of hand washing	Not good	12	34.3
	Good	23	65.7
Behavior of hand washing	Not good	18	51.4
	Good	17	48.6
Number of germs	Not good	12	34.3
	Good	23	65.7

Based on table 2, it can be seen that the majority of respondents' knowledge about washing hands was good (65.7%), while respondents who had bad knowledge were 12 people (34.3%). Less than a half of respondents had good behavior of hand washing (48.6%), while more than a half of respondents had not good knowledge as many as 18 people (51.4%). The number of bacteria on the surface of the hands of the majority of under-five mothers was 23 mothers (65.7%).

Bivariate Analysis

Table 3. Relationship between respondents' knowledge about handwashing in Blawong I sub-village, Trimulyo Village, Jetis District, Bantul Regency, Yogyakarta Special Region in 2016

Knowledge	Number of Germs				P-value	RP (95% CI)
	Not good		Good			
	Frequency	Percentage	Frequency	Percentage		
Not good	7	20	5	14.29	0.059	2.683 (1.079 – 6.673)
Good	5	14.29	18	51.42		
Total	12	34.29	23	65.71		

Based on table 3, the results of the study above can be seen that there were 12 people (34.28%) of respondents' knowledge about washing hands that were not good, 23 people (65.71%) who had good knowledge. Statistical test results obtained p value = 0.059 and RP = 2.683 with Confidence interval 1.079 <RP <6.673 which includes the number 1. This shows that there was no statistically significant relationship between knowledge and germ numbers in infants in Blawong I Sub-village, Trimulyo Village, Jetis District, Bantul Regency, Special Region of Yogyakarta.

Table 4. Relationship between respondents' behavior about handwashing in Blawong I Sub-village, Trimulyo Village, Jetis District, Bantul District, Special Region of Yogyakarta

Behavior	Number of Germs				P-value	RP (95% CI)
	Not good		Good			
	Frequency	Percentage	Frequency	Percentage		
Not good	7	20	11	31.42	0.725	1.322 (0.518 – 3.374)
Good	5	14.29	12	34.29		
Total	12	34.29	23	65.71		

Aloha International Journal of Health Advancement (AIJHA)
ISSN 2621-8224
Volume 1 Number 6, December 2018
http://journal.aloha.academy/index.php/aijha
RESEARCH
DOI: http://dx.doi.org/10.33846/aijha10604

Based on table 4, the results of the study above can be seen that there are 18 people (51.42%) of respondents did not practice good behavior in term of hand washing, then only 17 people (48.58%) who had good behavior. Statistical test results obtained p-value = 0.725 and RP = 1.322 with a Confident interval of 0.518 <RP <3.374 which includes the number 1. This shows that there is no statistically significant relationship between behavior and the number of germs in infants in Blawong I Sub-village, Village Trimulyo, Jetis District, Bantul Regency, Special Region of Yogyakarta.

DISCUSSION

The Relationship Between Knowledge and the Number of Germs in Blawong I Sub-village, Bantul Regency, Special Region of Yogyakarta

Based on the results of statistical tests for knowledge variables using the Fisher's Exact Test. Fisher's Exact Test was used as an alternative test when it could not be tested with Chi Square because it does not meet the requirements, namely there is one cell that has an expectation value of less than 5. The results of the study above can be seen that some respondents had good knowledge of 23 people (65, 71%), and 12 people with poor knowledge (34.28%). Based on the research results obtained p-value = 0.059> 0.05 and RP = 2.683 with Confidence interval 1.079 <RP <6.673, so statistically there was no relationship between knowledge and the number of germs on the hands of mothers of children under five in Blawong I Sub-village, Bantul Regency, Yogyakarta. The result of RP = 2.683 shows that mother of children under 5 years who had not good knowledge tend to be risky of 2.683 times compared to mothers of children under 5 years who had good knowledge. The results of this study can be concluded that statistically there is no significant relationship between knowledge and the incidence of germ numbers on the hands of mothers but biologically incomplete level of knowledge has a risk to the number of germs in children.

The results of this study indicate that some respondents did not understand about washing hands with soap. This is may be because, mothers who have low knowledge will more easily ignore personal hygiene behavior, especially washing hands with soap, because they do not know the importance of washing hands. The impact of a sufficient level of knowledge can cause someone to not understand something from the source of information obtained, will cause someone to tend to behave badly. Knowledge is influenced by education, work and age. Increased knowledge is not absolutely obtained from non-formal education, but can be obtained from through non-formal education. Knowledge is the result of knowing, and this happens after people perceive a particular object. Health objects can be described through one form of knowledge gained from experience alone.[8] Increased knowledge does not always lead to changes in attitudes and behavior but has a positive relationship, namely by increasing knowledge the behavior change will be rapid. The higher the level of one's education makes it easier for respondents to receive, absorb and understand information from others. The higher the education of respondents, it is hoped that the more insights they have so that knowledge will also increase, but it is important to know that someone with low education is not absolutely obtained from formal education, but can also be obtained in non-formal education.[9] With counseling and hand washing training, it can improve one's compliance with hand washing compared to those who do not get training.[10]

This study is strengthened by previous studies that there is a significant relationship between knowledge with handwashing habits with soap in housewive.[11] Knowledge can be obtained from direct experience or through the experience of others, knowledge can be increased through counseling, both individually and in groups to improve health knowledge that aims to achieve changes in individual behavior in an effort to realize optimal health degrees. Knowledge obtained both directly and from the experience of others always has levels often with increasing and developing that knowledge. Knowledge can also be increased through counseling, both individually and in groups to improve health knowledge that aims to achieve changes in the behavior of housewives in an effort to realize optimal health status. Information will influence someone's knowledge. Even if a person has low education, if he gets good information, it can increase one's knowledge. Providing counseling and disseminating information on the ways and benefits of proper hand washing are considered important to increase knowledge and improve public health and also reduce the incidence of diarrhea in infants.[12]

The Relationship Between Handwashing Behavior and the Number of Germs in Blawong I Sub-village, Bantul Regency, Special Region of Yogyakarta

Based on the results of statistical tests for behavioral variables using the Fisher's Exact Test. Fisher's Exact Test was used as an alternative test when it cannot be tested by Chi Square because it did not meet the

requirements i.e. there was any one cell that has an expectation value of less than 5. Results provision of clean water and soap for hand washing is very necessary. Awareness from housewives can also influence behavior in washing hands. As for the poor hand washing behavior, it can be influenced by the lack of good and functional hand washing facilities, such as washbasins, water taps, hand washing soap, and towels or dry wipes that are used for disposable.[16]

CONCLUSION

Conclusion

There was no relationship between knowledge and behavior in term of hand washing and the incidence of germ in Blawong I Hamlet, Bantul Regency, Special Region of Yogyakarta.

Suggestions

1. Jetis 1 Public Health Center officials, Bantul Regency, Yogyakarta Special Region needs to provide counseling and coaching to mothers who had children under 5 years about how to wash hands properly.
2. Further research needs to pay more attention to the level of education, economy, and culture that can represent all populations.

REFRENCES

1. Murray CJ, Vos T, Lozano R, et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: A systematic analysis for the Global Burden of Disease Study 2010. Lancet. 3013;380:2197–2223.
2. Irianto K. Bacteriology, Mycology, & Virology Medical & Clinical Guides (Bakteriologi, Mikologi, & Virologi Panduan Medis & Klinis). Bandung: Alfabeta; 2014.
3. Rachmayanti. The Use of Puppet Stage Media in Personal Hygiene Education Hand Washing Using Soap in Flowing Water (Penggunaan Media Panggung Boneka dalam Pendidikan Personal Hygiene Cuci Tangan Menggunakan Sabun di Air Mengalir). Jurnal Promosi Kesehatan Universitas Airlangga. 2009;1(1):1-13.
4. Yunus SP, Umboh JML, Pinontoan O. Food Congestion, Focus of Health Education (Penyakit Bawaan Makanan, Fokus Pendidikan Kesehatan). Jurnal Jikmu, Ilmu Kesehatan Masyarakat. 2006;5(2);210-220.
5. Rachmawati FJ, Triyana SY. Comparison of Germs in Hand Washing with Several Materials as Work Standards in FK UII Microbiology Laboratory (Perbandingan Angka Kuman pada Cuci Tangan dengan Beberapa Bahan Sebagai Standarisasi Kerja di Laboratorium Mikrobiologi FK UII). Jurnal Logika. 2008;5(1):1-13.
6. Cairncross S, Hunt C, Boisson S, et al. Water, sanitation and hygiene for the prevention of diarrhoea. Int. J. Epidemiol. 2010;39:193–205.
7. Kampf G, Kramer A. Epidemiology background of hand hygiene and evaluation of the most important agents for scrubs and rubs. Clin. Microbiol. Rev. 2004;17:863–893.
8. Dewi M, Wawan A. Theory & Measurement of Human Knowledge, Attitudes, and Behavior (Teori & Pengukuran Pengetahuan, Sikap, dan Perilaku Manusia. Yogyakarta: Nuha Medika; 2011.
9. Notoatmodjo S. Public Health Sciences & Arts (Kesehatan Masyarakat Ilmu & Seni). Jakarta: Rineka Cipta; 2007.
10. Green LR, Radke V, Mason R, Bushnell L, Reimann DW, Mack JC, et al. Factors related to food worker hand hygiene practices [Article]. Journal of Food Protection. 2007;70(3):661-666.
11. Astarini IAR, Jelantik IMG. The Relationship between Knowledge, Attitude and Availability of Facilities with Habits of Handwashing with Soap to Prevent Diarrhea and ARI in Housewives in the Central Amenan Village, Mataram City (Hubungan Pengetahuan, Sikap dan Ketersediaan Sarana dengan Kebiasaan Cuci Tangan Pakai Sabun Untuk Mencegah Diare dan ISPA Pada Ibu Rumah Tangga di Kelurahan ampenan Tengah Kota Mataram). Jurnal Media Bina Ilmiah. 48-51
12. Iswati. Knowledge and Attitude Improvement in Prevention of Infection in Visitors to the Dupak Health Center Surabaya by Handwashing Counseling (Peningkatan Pengetahuan dan Sikap dalam Pencegahan Infeksi pada Pengunjung Puskesmas dupak Surabaya dengan Penyuluhan Mencuci Tangan). Jurnal Adi Husada Nursing. 2015;1(2):30-33.

13. Purwandari R, Ardiana A, Wantiyah. The Relationship Between Handwashing Behavior and the Incidence of Diarrhea in School Age Children in Jembe Regency (Hubungan Antara Perilaku Mencuci Tangan dengan Insiden Diare pada Anak Usia Sekolah di kabupaten Jember). Jurnal Keperawatan. 2013;122-130.
14. Desiyanto FA, Djanah SN. The Effectiveness of Hand Washing Using Antiseptic Hand Sanitizing Liquid on the Number of Germs (Efektifitas Mencuci Tangan Menggunakan Cairan Pembersih Tangan Antiseptik Terhadap Jumlah Angka Kuman). Jurnal Kesmas. 2013;7(2);55-112.
15. Listiyorini W. The Relationship between the Ability to Wash Hands of Pre-School Children and the Incidence of Diarrhea in the Work Area of Pajang Health Center Surakarta (Hubungan Antara Kebisaan Mencuci Tangan Anak Pra Sekolah dengan Kejadian Diare di Wilayah Kerja Puskesmas Pajang Surakarta). Jurnal Kesehatan. 2012.
16. Purwandari R, Ardiana A, Wantiyah. The Relationship Between Handwashing Behavior and the Incidence of Diarrhea in School Age Children in Jember Regency (Hubungan Antara Perilaku Mencuci Tangan dengan Insiden Diare pada Anak Usia Sekolah di kabupaten Jember). Jurnal Keperawatan. 2013;122-130.