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Knowledge and Practices of Hand Washing among Caregivers of Under Two Years Old Children in Kicukiro District, Rwanda

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Abstract**—** *The objective of this research is to assess the knowledge and practice level of hand washing among caregivers of under two years old children. This research used survey model that involved a sample of 384 caregivers from Masaka sector in Kicukiro district and was taken using simple random sampling technique. Data description and analysis were performed using SPSS software program. The results showed that the mean age of caregivers participated was 27±5.7 years. Almost sixty-eight percent of the respondents had good knowledge and only 39.6% had a good practice of handwashing. The handwashing practice at critical moments was high only before eating with 77.1% and lower after handling children and after urination with 43.2% each. The good knowledge level about handwashing is statistically associated with the age group, marital status, and level of education of respondents with P-value <0.05, and the good practice level of handwashing is statistically associated with the good knowledge level of handwashing of respondents with P-value <0.05. The knowledge and practice level of Handwashing among caregivers of under two years old children in Kicukiro district are still low and there is a gap between knowledge and practice of handwashing so the efforts of the health promotion responsible are needed.*

Keywords**—** *Knowledge, Practices, Handwashing, Caregivers of under two years old children.*

I. INTRODUCTION

Globally diarrhea is one of the leading causes of child morbidity and mortality in 2017, it caused more than 5 million death [1]. Children in developing countries are more than fifteen times more likely to die before 5 years old than children in developed countries. In the developing countries, diarrhea and acute respiratory infection (ARI) are among the leading causes of mortality and morbidity which are responsible for 21% of all deaths [2 – 5].According to Rwanda Demographic and Health Survey (RDHS 2014-2015) conducted by national instate of statistics reported that the occurrence of the prevalence of diarrhea during two weeks before the study in under five years old children was 12.1% and was more in Children of 6 months to 24 months and the prevalence was higher in rural than urban areas [10] and different studies have been reported that diarrheal disease and ARI are strongly associated with poor handwashing practices among other factors [2, 6, 7]. To reduce under-five mortality to 25 per 1000 live births or less by 2030 is one of the goals of the Sustainable Development Goals, [12] so it is necessary to control the leading causes of under-two years' old children morbidity and mortality like infectious disease by great enhancing adoption of appropriate handwashing practices among children caregivers because the good hand washing practice and good knowledge of caregivers could prevent the occurrence of diarrhea by 14-40% and 27% respectively annually [8, 9]. According to the Rwanda Ministry of Health Report March 2014 With regard to hygiene, reported that there are significant differences between handwashing knowledge and practice. Knowledge of hand washing is higher than the hand washing practice in all cases, only 28% practice this behaviour [27]. Currently, there are no published articles in Rwanda, which determine the knowledge and practice level of handwashing among caregivers of under-two children and associated factors which may lead to poor hand washing practice which can be one of the causes of diarrea disease in children less than two years.

II. MATERIAL AND METHODS

This study follows a cross-sectional design using a quantitative approach. It was conducted in March 2018 where the target population was caregivers of under two years' old children from Masaka sector, Kicukiro district, Rwanda.

The study used simple random sampling techniques and a sample of 384 caregivers participated in the study. The sample size was estimated by using Fisher's formula [11] with the assumptions of the percentage of mothers with good hand washing practice level of 50%, the margin of error (d) of 5%, the confidence interval of 95%, and the oversampling account for any unpredictable events of 5%. The caregiver from the Masaka sector who had at least one child under two years old during the research period and willing to participate in the study was selected randomly.

Primary data were gathered from caregivers utilizing structured questionnaires, the socio-demographic characteristics of caregivers and handwashing knowledge and practice level were investigated through the responses given by the participants. Levels of hand washing knowledge and corresponding indicators as well as their associated scores are described in table 1. In the same way table 2 presents different levels, indicators and scores related to handwashing practice.

The questionnaire was pretested among 20 caregivers (5% of sample size) from Rusororo sector, the neighbor sector of the Masaka sector, and the corrections were made. The purpose of the study, techniques of data collection, and ethical issues during the data collection were explained to the data collectors during 2 days before the beginning of the study. The

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completeness and consistency of data were observed by the research responsible every day and he was undertaken necessary correction.

Table 1: Hand washing knowledge level indicator

SN	Hand washing Knowledge Indicator	Score
1	Identification soap and water as the correct materials for hand washing	1score
2	2 diseases correctly identified by study subjects as being preventable by hand washing	2 (1 score for each)
3	3 benefits of hand washing correctly identified by study subjects	3(1 score for each)
	TOTAL (MAXIMUM) SCORE 6	
	Good Knowledge: Score of 4-6 **Poor Knowledge**: Score of 0-3	

Source: author

Table 2: Hand washing practice level indicator

SN	Hand washing Practice Indicator	Score
1	Hand washing always	2 scores
2	washing hand after each critical moment activity	6 (1 score for each)
3	hand washing using clean water and soap	2(1 score for each)
	TOTAL (MAXIMUM) SCORE 10	
	Good Practice: Score of 6-10; **Poor Practice**: Score of 0-5	

Source: author

The analysis was carried out using the statistical program SPSS 22 version and Descriptive statistics were used to present the characteristic of the participants and The logistic regression was used to demonstrate the association between sociodemographic characteristics and knowledge of hand washing with $P<0.05$ in the first model and in the second model evaluate association with handwashing practice.

III. Results and Discusion

A sample of 384 caregivers have participated in the study. The caregivers had an average age of 27 ± (5.7 SD) years and the majority (43.5%) were between 23 and 28 years old, most of the respondents were Christians about 376(97.9%) and the remain were Muslim. Three hundred twenty-three respondents (84.1%) were married, the more than a half of respondents had a primary level of education 217(56.5%) and 170 respondents (44.3%) were farmers.

The results of this study demonstrate that only 29.7% of respondents heard about hand washing practice at school, 16.1% in media and 54.2% in others. Three hundred seventy four (97.4%) knew materials needed for proper hand washing, 66.7% knew three importance of hand washing and 70.6% knew two diseases and above which can be caused by not washing hands properly (Table 4). By using hand washing knowledge level assessment indicator score (table1), the results showed that the caregivers who had good handwashing knowledge level were 67.7%, this result is lower compared to the results found in the study done in coastal north India where 83.41% had good knowledge of hand washing [13], 90.4% in Orlu metropolis Nigeria [14] and 70.6% in rural community of Nigeria had good knowledge of hand washing [15]. This difference might be due to the socio-demographic characteristic of respondents like education level, where in this study 56.5% of mothers had at least primary level of education which is less compared with others studies.

Table 3: Sociodemographic characteristics of caregivers

Variables		Frequency (N=384)	Percentage (%)
Age Group	17-22	95	24.7
	23-28	167	43.5
	29-34	73	19.0
	35 and above	49	12.8
Mean(±SD) of Age=27±5.7			
Level of Education	Primary	217	56.5
	Secondary	129	33.6
	Tertiary	12	3.1
	None	26	6.8
Marital status	Single	56	14.6
	Married	323	84.1
	Separated	5	1.3
Religion Affiliation	Christian	376	97.9
	Muslim	8	2.1
Occupation	Farmer	170	44.3
	Business	109	28.4
	Civil servant	76	19.8
	House wife	29	7.6

Table 4: The knowledge indicators responses of respondents

Variables		Frequency (384)	Percent (%)
Did you hear about hand washing?	Yes	340	88.5
	No	44	11.5
Where did you hear about hand washing?	School	101	29.7
	Media	55	16.1
	Others	184	54.2
Know material need for effective hand washing?	Yes	374	97.4
	No	10	2.6
Did you do any training in last one year?	Yes	200	52.1
	No	184	47.9
Know importance of hand washing?	know 2 and above	256	66.7
	know less than 2	110	28.6
	do not know	18	4.7
Know diseases which can be caused by not washing hands?	Know 2 and above	271	70.6
	Know less than 2	113	29.4

The results of this study showed that two hundred and six (53.6%) wash hands always, 73.2% wash hand before food preparation, 54.2% wash hands after return from the farm, 77.1% wash hand before eating, 48.7% wash hand after defecation, 43.2% wash hands after urination, 43.2%wash hand after handling children and 77.6% of respondents wash hand with soap and clean water (Table5), these results are similar to the results found in others studies reported that caregiver hand washing practices after defecating were 90% and 38% before feeding child [19], 34% after defecation and 35% after handling child [20], 59% after defecation and 21.7% after handling child [21], 38.7% after defecation and 24.5% before feeding child [22]. This may be an indicator of raising awareness of hand washing at critical moment which are low among the caregiver [19, 13]. By using practice of hand washing level assessment indicator score (table 2), the results

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showed that the caregivers who had good hand washing practices level were 39.6 %,this result is similar to the results of the study done in northwest Ethiopia were 39.1% had good practice level of hand washing [16], but our result is lower compared to the result of the study done in India where 43.6% had good practice level [17] and 73.8% in Lagos Nigeria had good practice hand washing level [18] and our result is high compared to the results reported by Rwanda ministry of health in 2014 where 28% had good hand washing practice [27]. This difference might be due to the difference level of hand washing knowledge of respondents of each study and also might be due to others factors like availability and accessibility of handwashing facilities.

The results of the first model show that age group, marital status and level of education were statistically associated with good knowledge level of hand washing among respondents with P<0.05. The respondent who had age between 17-22 had 3.2 times more probability of having good knowledge of hand washing compared to the respondent who had age between 35-40 with (OR=3.247; 95%CI=1.147-9.191; p=0.04). The Married respondents have 0.77 times menos probability of having good knowledge compared to single respondents with (OR=0.77; 95%CI=0.408-1.455; P=0.03) and the respondents who have secondary and above level of education have 1.722 times more probability of having good knowledge compared to the respondent with none level of education with (OR=1.722; 95%CI=0.608-4.876; P=0.008) (Table 6), suggesting that hygiene training at the local level is important to lower the prevalence of unhygienic related diseases as was reported in different studies [22,23,24]

Table 5: The practice indicators responses of respondents

Variables		Frequency (384)	Percentages (%)
Time wash hand per day	Always	206	53.6
	Sometimes	178	46.4
How wash hand	soap and water	298	77.6
	water only	86	22.4
Wash hand after defecation	Yes	187	48.7
	No	197	51.3
Wash hand after urination	Yes	166	43.2
	No	218	56.8
Wash hand before preparation of food	Yes	281	73.2
	No	103	26.8
Return from the farm	Yes	208	54.2
	No	176	45.8
Wash hand before eating	Yes	296	77.1
	No	88	22.9
Wash hand after handling children	Yes	166	43.2
	No	218	56.8

Table 6: The relationship between socioeconomic factors and the level of handwashing knowledge among respondants

Social economic factors		Knowledge		P value	OR	95%CI	
		Good (%)	Poor (%)			Lower	upper
Age group	17-22	81(85.3)	14(14.7)		3.247	1.147	9.191
	23-28	97(58.1)	70(41.9)	0.04	0.481	0.235	0.985
	29-34	46(63)	27(37)		0.485	0.214	1.099
	35-40	36(73.5)	13(26.5)		Reference		
Marital status	Single	41(73.2)	15(26.8)		Reference		
	Married	219(67.8)	104(32.2)	0.03	0.77	0.408	1.455
Level of education	Primary	139(64.1)	78(35.9)		0.565	0.189	1.684
	Secondary and above	100(70.9)	41(29.1)	0.008	1.722	0.608	4.876
	None	21(80.8)	5(19.2)		Reference		

The results of model 2 in this study show that the good knowledge level of hand washing was statistically associated with the good Practice level of hand washing among respondents with P < 0.05. Others variables were not statically associated with the hand washing practices of caregivers in this study, the respondent who have good knowledge of hand washing have 3.1 times more probability of having good practice of hand washing compared to the respondent who have poor knowledge of hand washing with (OR=3.114;95%CI=1.90-5.09; p=0.002) (Table 7). The respondent mentioned others reasons which are associated with the level of hand washing practice like : insufficient of water with 33.2% of respondents, followed by being too busy with 23% which is linked to the attitude of respondent, these results are similar to the results of others studies where the commonest reasons given for not washing hands regularly: 19% were being too busy ,17.7% were non available of soaps and 13.5% were non available of water [25] and also were reported non availability of water, not having been shown how to wash hands and busy schedules [26].

Table 7: The relationship between the level of handwashing knowledge and the level of hand washing practice among respondents.

Factor		Practice		P value	OR	95%CI	
		Good (%)	Poor (%)			Lower	Upper
Knowledge	Good	125 (48.1)	135 (51.9)	0.002	3.11	1.902	5.098
	Poor	27 (21.8)	97 (78.2)		reference		

OR: Odds ratio; CI: Confidence interval

IV. CONCLUSION

There is a gap between knowledge and practice of hand washing among caregivers of under two years old children in Kicukiro District where a moderate number of caregivers have good knowledge level and low number of caregivers have good practice level of hand washing. Only a little number of

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caregivers washed hands after defecation, after handling child and before eating. The factors like age group, marital status and education level were found to be statistically associated with good level of hand washing knowledge and the good hand washing knowledge level and others Factors like availability of water and other hand washing facilities may influence hand washing practice, Therefore, efforts must be made by improving education about hand washing practice and the availability and accessibility of water and other hand washing facilities in order to enhancing practice of hand washing as a good measure for health promotion by fighting against unhygienic related diseases.

V. Ethical Approval and Consent To Participate

The study was approved by the Ethics Committee of the University of Mount Kenya and the official letter of permission was obtained from the Department of Public Health of the University of Mount Kenya, Rwanda (Ref No. MKU04/PGS&R/113/2018).

The purpose of the study and the method to be used was explained to the study participants and participants were requested to sign an informed consent form if they willingly accepted to be involved in this research. Respondents were also assured of confidentiality and were requested not to write their names on the questionnaire. The ethical statement used the principles of Helsinki Declaration.

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