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Indian Journal of Medical Sciences

Original Article

Effective behavior change in hand hygiene practices among boys residing at foster care home in Bengaluru city: An interventional study

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Received : 14 February 2020
Accepted : 25 February 2020
Published : 29 May 2021

DOI
10.25259/IJMS_11_2020

Quick Response Code:

ABSTRACT

Objective: Handwashing is the best defense against communicable infections due to lack of good personal hygiene practices. The objective of the study is to evaluate the change in knowledge and practice of hand hygiene among the children living in a foster care home of Bengaluru city.

Material and Methods: A pre-tested, closed-ended, and structured questionnaire was administered in local language among 98 children, aged 8–16 years, residing in a foster home for boys in Bengaluru city to assess their knowledge and hand hygiene practices before and after a community-based intervention of handwashing technique which was done.

Results: The present study showed a significant improvement in knowledge among majority of the children regarding hand hygiene before and after meals, usage of toilet post-intervention. About 96.9% of the children started practicing handwashing using handwash solution and water.

Conclusion: Behavior change through communication campaigns improves safe hand hygiene practices on long term.

Keywords: Hand hygiene, Knowledge, Practice, Foster care

INTRODUCTION

The foundations of lifelong responsibility for the maintenance of personal hygiene are laid down in childhood, which is important for a healthy childhood, for a healthy adulthood, and for the development of positive values about health and the use of health services.[1]

A large fraction of the world's illness and death is attributable to communicable diseases. About 31% of all deaths in Southeast Asia are caused by infectious disease. This trend is especially notable in developing countries where acute respiratory and intestinal infections are the primary causes of morbidity and mortality among young children in sheltered homes. Inadequate sanitary conditions and poor hygiene practices play major roles in the increased burden of communicable disease within these developing countries. Handwashing really is the best defense against many kinds of bacteria and viruses that cause infection. Children typically do not like to take the time to wash their hands.[2]

The previous hand hygiene studies have indicated that children with proper handwashing practices are less likely to report gastrointestinal and respiratory symptoms. Handwashing with

soap has been reported to reduce diarrheal morbidity by 44% and respiratory infections by 23%.[2,3]

A study conducted by the Global Public-Private Partnership for Handwashing (PPPHW) which included several sub-Saharan African countries reported that 17% of participants washed their hands with soap after using the toilet, while 45% used only water.[2,4] Lack of resources, namely, soap and water as well as inadequate sanitation facilities may be two of the main reasons why children do not wash their hands.[2,4,5] In addition to having proper resources and facilities, hygiene practices are heavily influenced by children's knowledge and attitudes toward hygiene. A study conducted by the United Nations Children's Fund (UNICEF) in Ethiopia found that study participants in rural Ethiopia had poor status regarding knowledge, attitudes, and practices (KAP) of hygiene.[1] Approximately 60% of children surveyed did not know about the possible transmission of diseases through human waste. Simple hygienic measures such as washing hands with soap were poorly practiced, especially in rural areas.[6]

There is a sparse literature regarding hygiene practices followed among children in foster care homes. Teaching and providing new handwashing facilities, in addition to awareness and knowledge of proper hygiene, can lead to some changes in behavior and attitude among children in foster care homes. These strategies use a variety of intervention components intended to address obstacles to comply with good hand hygiene practices and to reinforce behavioral change. This study tries to introduce a low cost but highly effective handwashing programs which will meaningfully attenuate the burden of transmissible disease among the children residing in foster care homes in Bengaluru city. Thus, the study was conducted with an aim to evaluate the knowledge and hygiene practices pre- and post-intervention among the children living in foster care homes of Bengaluru city.[1]

MATERIAL AND METHODS

The present study was a community-based cross-sectional study conducted among 8–16 years old children residing in the foster care home of Bengaluru city for a duration of 2 months. Foster home was purposively selected which is the state home for boys situated in Bengaluru, Karnataka, India.

All the children aged 8–16 years who were brought there from streets, abandoned, or run away from various parts of the country and residing in this foster home during the tenure of the study were included. A pre-designed, pre-tested, and structured questionnaire was used before and after intervention.

Permission was obtained from the boys state home authority. The questionnaire was drawn up in English, translated into Hindi and Kannada (local language) as most of the children residing in the foster care home during the tenure of the study commonly knew these languages. This was then back translated in English to check the translation validity. Before starting of the study, pre-testing of the questionnaire was done among 10% of the population who were not included in the main study and necessary modifications were made and this was finalized. The foster home was visited on a pre-assigned day of each week to complete the study. A total of 98 children aged 8–16 years who could read and write the questionnaire were enrolled for the study and the medical superintendent and the assistants were explained the purpose of the study. The response rate was 100% and good rapport was developed with the children. Informed verbal consent was obtained from them and the children were briefed about the questionnaire and were instructed to mark the responses.

The questionnaire consisted of the demographic information (e.g., age, gender, religion, and education), questions regarding knowledge and practices of hand hygiene. The questionnaire included the following indicators of hand hygiene such as washing hands before and after eating, after using toilet, frequency, and materials used for handwashing.

Morbidities such as scabies, oral health status, and examined for signs of any illness such as fever, diarrhea, and vomiting which could correlate to lack of personal or hand hygiene were intimidated to the medical superintendent for further medical help. Each child took approximately 20 min to complete the questionnaire following which the children were educated and given information on their personal hygiene and related health status. A brief community-based health education intervention using a 15 min PowerPoint presentation regarding the importance of hand hygiene and handwashing method was done.

After the presentation, the investigator gave a demonstration of hand washing method for the children, the assistants and medical officer of the sheltered home using the 'tell, show, do' technique. Post-intervention, the same questionnaire was used to evaluate the change in knowledge and practices regarding hand hygiene among the children residing in the sheltered home after 1 week.

RESULTS

A community-based interventional study was conducted among 98 children aged 8–16 years.

In the present study, a total of 98 boys residing in the foster care home which is the state home for boys, Bengaluru, were included where the pre- and post-intervention knowledge and practice of hand hygiene were assessed.

When the study participants were questioned regarding their knowledge on hand hygiene, results in Table 1 showed that majority of the study participants (n = 76) did not think that handwashing was important, this was because majority of the children at foster care homes (n = 72) were not aware of

Knowledge based

Table 1: Pre- and post-intervention distribution of the study participants according to the knowledge of hand hygiene.

Pre	Post				*P* value
	Yes	**No**	**Do not know**	**Total**	
Q1: Do you think handwashing is important					
Yes	12 (12.2)	0	0	12 (12.2)	-
No	69 (70.4)	7 (7.1)	0	76 (77.6)	
Do not know	0	0	10 (10.2)	10 (10.2)	
Total	81 (82.65)	7 (7.1)	10 (10.2)	98 (100)	
Q2: Do you know when to wash your hands					
Yes	26 (26.5)	0	0	26 (26.5)	0.00*
No	65 (66.32)	7 (7.1)	0	72 (73.46)	
Do not know	0	0	0	0	
Total	91 (92.85)	7 (7.1)	0	98 (100)	
Q3: Do you think hand hygiene reduces chances of spreading infections					
	Post				***P* value**
	Yes	**No**	**Do not know**	**Total**	
Yes	4 (4.08)	0	0	4 (4.08)	-
No	49 (50)	0	0	49 (50)	
Do not know	45 (45.91)	0	0	45 (45.91)	
Total	98 (100)	0	0	98 (100)	
Q4: Are you aware of the respiratory tract (lung) infections and GIT (stomach) infections caused by unhygienic conditions					
	Post				***P* value**
	Yes	**No**	**Do not know**	**Total**	
Yes	0	0	0	0	-
No	0	0	0	0	
Do not know	90 (91.83)	0	8 (8.16)	0	
Total	90 (91.83)	0	8 (8.16)	98 (100)	

*Significant

when to wash their hands. There was a statistically significant improvement in knowledge post-intervention ($P < 0.001$).

Pre-intervention, only four children in the foster care home agreed that hand hygiene could reduce spread of infections and 90 children did not know that hand hygiene can reduce lung and GIT infections, but after the intervention, almost all the study participants agreed that hand hygiene could possibly reduce chances of infections showing a significant improvement in the knowledge.

At baseline that is before the educational intervention, when the study participants (n = 98) were questioned regarding their knowledge of hand hygiene, we found that majority of the study participants did not think that handwashing was important as they were not aware of when to wash their hands, whether hand hygiene prevents spread of infections and if it reduces lung and stomach infections, but after the demonstration and presentation of facts and practice of hand hygiene, there was a significant change in knowledge.

Further, when the practice-based questions were given before the intervention results in Table 2 showed that there was nobody who never washed their hands, but all the children washed their hands less than thrice in a day. When further responses regarding washing hands before and after meals or use of toilet and how they wash their hands were recorded, similar results were seen where majority did not give importance to the hand hygiene practice which could be due to lack of knowledge or no facilities. Post-intervention, it was seen that almost all the participants started washing their hands regularly and our initiative was successful as it was seen that knowledge was transferred to practice bringing about a positive behavior change for a healthier environment.

Table 3 shows that majority of the children (n = 91) did not know about if there is a handwashing solution kept in the toilet before the intervention and post-intervention, 92 children agreed that there is a handwashing solution kept in the toilet.

Table 4 shows that before the intervention, even though there was handwashing solution in the toilet, 81 children were washing their hand with water only and nobody was using the handwashing solution but post-intervention (n = 95), almost all the children washed their hand with handwashing solution and water.

Practice based

Table 2: Pre- and post-intervention distribution of the study participants according to the frequency of hand washing to practice skills of hand hygiene.

Q5: In a day, how often do you wash your hands					
Pre	**Post**				***P* value**
	Never	**Less than thrice**	**More than thrice**	**Total**	
Never	0	0	0	0	-
Less than thrice	0	86 (87.75)	12 (12.24)	98 (100)	
More than thrice	0	0	0	0	
Total	0	86 (87.75)	12 (12.24)	98 (100)	

Table 3: Pre- and Post-intervention distribution of the study participants according to practice skills of hand hygiene.

Q6: Do you wash your hands before having meals					
Post	**Pre**				***P* value**
	Always	**Sometimes**	**Never**	**Total**	
Always	13 (13.26)	0	0	13 (13.26)	0.00*
Sometimes	81 (82.6)	4 (4.08)	0	85 (86.73)	
Never	0	0	0	0	
Total	94 (95.91)	4 (4.08)	0	98 (100)	
Q7: Do you wash hands before having meals with soap or handwashing solution					
Always	0	0	0	0	0.00*
Sometimes	4 (4.08)	0	0	4 (4.08)	
Never	94 (95.91)	0	0	94 (95.91)	
Total	98 (100)	0	0	98 (100)	
Q8: Do you wash hands after having meals					
Always	90 (91.83)	0	0	90 (91.83)	-
Sometimes	0	8 (8.16)	0	8 (8.16)	
Never	0	0	0	0	
Total	90 (91.83)	8 (8.16)	0	98 (100)	
Q9: Do you wash your hands with soap water or handwashing solution after having meals					
Always	2 (2.04)	0	0	2 (2.04)	-
Sometimes	77 (78.57)	0	0	77 (78.57)	
Never	12 (12.24)	7 (7.1)	0	19	
Total	91 (92.85)	7 (7.1)	0	98 (100)	
Q10: Do you wash your hands after using toilet					
Always	49 (50)	0	0	49 (50)	-
Sometimes	8 (8.16)	0	0	8 (8.16)	
Never	41 (41.83)	0	0	41 (41.83)	
Total	98 (100)	0	0	98 (100)	

*Significant

DISCUSSION

The foundations of lifelong responsibility for the maintenance of personal hygiene are laid down in childhood, which is important for a healthy childhood, for a healthy adulthood, and for the development of positive values about health and the use of health services.[3,6,7] The children residing in the sheltered homes showed a positive behavior change after the educational intervention. Table 5 showed that 82.65% of the participants who were using water only for washing their hand started using hand washing solution post intervention. The children of today will be the adults of tomorrow. By focusing on children today, by giving them tools and knowledge to change behavior, future generations can be stronger and healthier.[3]

In the present study, a total of 98 boys residing in the foster care home which is the state home for boys, Bengaluru, were included where the pre- and post-intervention knowledge and practice of hand hygiene were assessed.

Table 4: Distribution of the study participants according to the responses towards presence of hand washing solution in the sheltered home toilets.

Q11: Do you have soap or handwashing solution kept in the toilet					
Pre	**Post**			**Total**	***P* value**
	Yes	**No**	**Do not know**		
Yes	4 (4.08)	0	0	4 (4.08)	-
No	0	0	3 (3.06)	3 (3.06)	
Do not know	88 (89.79)	0	3 (3.06)	91 (92.85)	
Total	92 (93.87)	0	6 (6.12)	98 (100)	

Table 5: Distribution of study participants based on material used for washing hands pre and post intervention.

Q12: How do you wash your hands					
Pre	**Post**				
	Soap and water	**Handwashing solution and water**	**Water only**	**Total**	***P* value**
Soap and water	3 (3.06)	14 (14.28)	0	17 (17.34)	0.00*
Handwashing solution and water	0	0	0	0	
Water only	0	81 (82.65)	0	81 (82.65)	
Total	3 (3.06)	95 (96.93)	0	98 (100)	

*Significant

In the present study, pre-intervention, only 12.2% of the children residing in the foster care felt that handwashing is important, only 26.2% had the knowledge how to wash their hands but post-intervention, 82.6% felt that handwashing is important and 92.8% gained the knowledge of how to wash their hands. Similarly, pre-intervention knowledge regarding reduction in spread of infections such as lung and stomach with proper hand hygiene was poor which improved to a great extent post-intervention. Infections spread easily among children in foster care homes due to overcrowding and their natural intimacy. Fecal-oral contamination is a major cause of transmissible diseases such as gastrointestinal infections.[6,7] Recurrent infections may have negative impact on children's psychological and psychosocial well-being as well as quality of life. For improvement of health and prevention of diseases (e.g., diarrhea and gastrointestinal infections), handwashing with soap is very important for school-age children.[8-10]

When the practice skills of the study participants were assessed, it was seen to be very poor this could be directly related to lack of knowledge or status of the state home facilities, following the intervention, when the skills were assessed, the results of the study were in line with a study conducted in the Philippines.[5] In the present study, post-intervention indicated that 95.9% and 91.8% of children washed their hands before and after having meals, respectively, with majority using handwashing solution, which is compared to the studies conducted by Dongre *et al*. in rural India documented that 63.6% of school-going children (6–14 years) had practice of handwashing with soap after defecation.[9] However, only 36.2% of children washed their hands using soap in a study by Vivas *et al*..[1] Studies conducted in the Philippines[7] and Turkey[10] showed that on an average of 37.7% and 42.4% of children, respectively, washed their hands with soap. In the present study, 100% of children washed hands after using toilet and also in line with a study conducted by Sarkar[3] where 98 (94.23%) children washed their hands after visiting toilet and 88 (84.62%) washed their hands before eating. In a study by Vivas *et al*.,[1] only 14.8% of the children washed their hands after defecation. The considerably higher frequency of handwashing before meals among the children in the present study may be due to the Indian cultural tradition and ceremonial practice of washing hands before meals or the desire for clean, fresh hands before eating. Similar findings were found in studies conducted in Colombia[6] and India[3,7-8] which reported that 82.5% and 86.4% of the children, respectively, wash their hands after using the toilet.

It is quite expected that a lesser percentage of students having correct knowledge will be able to translate their knowledge into practice, whereas in our study, most of them were able to translate their knowledge into practice. This has been observed clearly in the present study, and this observation supports the principle of health education that knowledge leads to practice.

Several limitations have been observed from this study due to time constraint and limitation of funding. There should be longitudinal studies to cover wider aspect of hand hygiene and childcare. However, the results of this study have tried to have a glimpse of information about knowledge and practices of hand hygiene among foster care home children as a baseline

parameter for a bigger study in the near future. Further detailed studies, including the sanitary service adequacy and hygiene information communication, are recommended.

CONCLUSION

The results of the present study must be interpreted with caution due to the difference in the place of origin and frequent migration of the children residing in the foster care home. The foster care children showed suboptimal level of knowledge and practice of hand hygiene in the present study. A significant change in knowledge post-intervention was seen which was transformed into practice. Behavior change through communication campaigns can improve safe hand hygiene practices on long term.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Santhosh A, Chaithra V, Anuradha B, Bullappa D. Effective behavior change in hand hygiene practices among boys residing at foster care home in Bengaluru city: An interventional study. Indian J Med Sci 2021;73(1):82-7.