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Original Research Article

Hygiene behaviors and nutritional status of children living in orphanages in Bangladesh

Fazle Siddique M. Yahya[1], M. Mahfuz Ashraf[2], Mohammad Iqbal Hossain[3], Mohammad Shamsal Islam[4]*

[1]Ministry of Defence, People's Republic of Bangladesh, Bangladesh
[2]Lincoln Institute of Higher Education, Australia
[3]S. S. Welfare Foundation, Gazipur, Bangladesh
[4]Department of Education, Ispahani Islamia Eye Institute and Hospital, Dhaka, Bangladesh

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***Correspondence:**
Islam M. Shamsal,
E-mail: shamsal.islam@islamia.org.bd

ABSTRACT

Background: Malnutrition is considered a complicated public health issue and depends on multiple factors. Hygienic behavior is related to orphan children's growth, nutritional outcomes, and sound health. The study's aim was to assess the hygiene behaviors and nutritional status of orphan students in Bangladesh.
Methods: A descriptive cross-sectional quantitative study was conducted in three orphanage centers. A total of 120 respondents were interviewed. A descriptive analysis of the collected data was performed.
Results: The monthly mean and median expenditure of orphans was 2000±475 BDT (20$). The number of toilets and waiting time for the orphan to use them are closely associated (χ^2= 33.38; Cramer's V=0.44, df=13; Sig; p<0.001). On average, an orphan waits 32.20 minutes to use the toilet facility when they need it. Orphan family income and disposal of waste in the toilet of the orphan center are strongly associated (χ^2=99.19; Cramer's V=0.49, df=39; Sig; p<0.001). There was a significant association between attending toilet-related hygiene and types of diseases. Hair fall, muscle wasting, fever, and xerosis of the skin were common diseases among orphans. Types of diseases orphans and schedule for the dietary chart are strongly associated (χ^2=23.35; Cramer's V=0.37, df=24; Sig; p<0.001).
Conclusions: Integrated approach is required to counter the extent of malnutrition among orphans. Teachers of orphanages should receive proper training so that they are able to take care of the physical and mental health of the orphan children.

Keywords: Bangladesh, Hygiene, Malnutrition, MDG, Orphan, SDG

INTRODUCTION

The government of Bangladesh has remarkable achievements in the health and nutrition-related millennium development goals (MDGs), especially in the field of immunization, under-five morbidity, and mortality, maternal health, and communicable diseases. The government of Bangladesh is committed to achieving the sustainable development goals (SDGs) 6 and working to ensure 90% hygiene and sanitation coverage and increasing hygiene behaviors at home, school, and health centers.[1] Malnutrition is considered a complicated public health issue and depends on multiple factors. In Bangladesh, child malnutrition largely depends on socio-demographic, environmental, and health-related factors.[2] Global statistics indicate that about 149 million children are stunted, 45 million are wasted, and 38.9 million are overweight.[3] About 31% of Bangladeshi children are stunted, 8% are wasted and 22% are underweight.[4] Evidence reveals the low quality of food, poor health, and

environmental condition of orphan centers including poor WASH facilities are responsible for malnutrition among Bangladeshi orphan children.[5] Hygienic behavior is related to orphan children's growth, nutritional outcomes, and sound health. Insufficient sanitation or inadequate hygiene mediate can the transmission of fecal pathogens that is responsible for severe childhood disease.

Some Asian and African studies suggested underlying causes associated with poor nutritional outcomes in orphan children and growing evidence of adverse effects of poor WASH practices on orphan child nutrition and well-being.[6] Recently UNICEF study reveal that poor WASH facilities are responsible for 50% of maternal and childhood underweight and found an association between diarrhea and malnutrition.[7] Well-facilitated sanitation and a hygienic environment reduce the chance of stunted and protect parasitic infections.[8]

Bangladesh had dramatic economic growth since 2000, despite this economic growth the hygienic behavior practice is very poor among the underserved group like orphanage students and this slow progress severely impacts human capital development. Orphan children are neglected in terms of WASH facilities and some cases deprived of high-caloric food intake. Such factors led to many health problems including diarrheal disease, nutritional disorders, anemia, parasitic infestations, pediculosis, caries teeth, refractive errors, skin diseases, ear and throat problems, tic disorders, sleeping disorders, etc.[9] Recent evidence reveals that poor hygiene practices among school-age students may increase the burden of communicable diseases and it may decrease students' capacity to learn to their full potential.[10]

To understand this complex relationship, the study was conducted in the Dhaka city corporation and two district orphan centers aiming to assess the hygiene behaviors and nutritional status of orphan students of Bangladesh.

METHODS

This research study data was collected from pre-determined study areas. Quantitative data were collected from three orphans' centers. The study was conducted from January 2022 to March 2022.

Survey data collection and analysis

Data collection tools, locations of the study, and respondents

A sample survey was conducted for collecting mostly quantitative data. Following the literature review findings and objectives of the study, a structured quantitative survey questionnaire was developed. The developed questionnaire has five domains including socio-economic and demographic factors, KAP on hygiene behavior, knowledge about nutritional status, knowledge of common diseases, and awareness of the orphan center hygiene environment. The interview schedule was pretested and revised on the pre-test findings and feedback from public health experts. The study was conducted in 4 orphanage educational institutions located in Dhaka city corporations, Khargachari district, and Lakshmipur district, Bangladesh. The respondents were adult orphan, orphan teachers, and their caregivers. Data collectors were trained in interviewing techniques, rapport building with a respondent, and checking the consistency of responses. The research team members constantly monitored the field data collection.

Selection of orphan centers and sample size

The selection of samples was a difficult task, as there was no proper list of the potential target orphan centers. Hence, we decided to select 3 orphanage educational institutions located at Dhaka city corporations, Khargachari distracts, and Lakshmipur district purposively. The sample size of the study was determined using a formula (Fisher et al. 1991) and a total of 120 respondents were interviewed.

Selection criteria of the centers and respondents

We selected orphan centers and respondents purposively and we data from urban, rural, and hilly areas to understand the hygiene and nutritional status differences of the orphan. Usually, Bangladesh orphan centers are located in low-resource settings, and orphans stay in the center. We visited physically and interviewed the orphan who was available there.

Data analysis

The survey data were analyzed in two ways, univariate and bivariate with the help of statistics like percentage distribution, mean, standard deviation, correlation, and non-parametric tests. Survey data were analyzed with the help of the SPSS statistical package. Qualitative interviews were transcribed within 24 hours of the interview lest information is lost. Two researchers read the transcripts independently to assign a code. The contents under similar codes were read by two researchers to interpret the underlying meaning of the write-ups; if researchers disagree on interpretations, a discussion session of interpreters was held to reach a decision.

Ethical consideration

The ethical approval of the study was obtained from the University of South Asia. The verbal consent of quantitative data, FGD, KII, and IDI respondents was obtained from each participant after explaining the purpose and nature of the research.

Participation in the study was voluntary, participants were informed of their rights to quit/refuse their participation at any stage of the study if they did not want to participate. Moreover, the confidentiality of the information was assured by using an anonymous consent form.

RESULTS

About 82.5% of the respondents are males and 17.5% were females. Nearly 81% of the orphan students were boys and 19% were girls and the orphan students were between 7 to 16 years old. About 34.2% of respondents were from Dhaka city, 19.2% were from Lakshmipur district and 46.7% were from Khagrachari. About 42.5% of orphans were 1 to 5-grade students, 29.5% were 6 to 9-grade students and 28% were Hafizi Quran. The primary occupations of the orphan guardian indicate black and white strata of society as 55% of them either day laborers or drivers of a rickshaw or van, 27.5% were farmers, 9.2% were employed in government and 8.3% were non-government jobs. The monthly mean and median expenditure of orphans (2000±475 BDT) indicates their poor quality of life which may have many limitations including nutrition foods. Around 10% of the orphan received support from the government's social safety net program.

The occupations of the heads of the families indicate that the head of the family of orphans of the lower strata of society as 35% of them either day laborers or drivers of a rickshaw or an automobile, 38.4% small businessmen, 18.5% employed in government and non-government jobs at lower levels, 9.4% engaged in farming as a self-employed one or a wage laborer, only 1.5% engaged as housewives, and 7.2% involved with different other occupations.

Since men are overrepresented as respondents, a question may arise about the accuracy of data as men are often considered less informed. In fact, men are possibly more active in orphans and care for an orphan. Therefore, their inclusion may positively affect the quality of data as they know family matters no less than their female folks. Household assets are considered influential factors that directly affect the determination of children's and women's health. The assets of the families are limited to a few items such as, 59.8% have a cow, 21.6% goat, 8.8% chicken, 36% have bi-cycle, and 5.9% other items. Furthermore, it has been found that about 68.4% of the respondents live in their own homes, 28% live in a rented house, and 3.6% live on others' property without paying any rent. Respondents' possession of movable and immovable assets clearly implies their poor economic standing in society.

In response to the question of where the respondents go for primary healthcare, 57.5% of the respondents have reported going to government hospitals, 16.8% to private facilities, and 25.7% going to 9% pharmacy. These findings are not consistence with the national survey data (National, 2017), which claims 84% of urban people receive primary healthcare from the government facilities and upazila health complex. These figures suggest that over 40% of the respondents seek private facilities despite their poor status. This might be for the lack of access of poor people to government facilities to weak status in society.

The study has tried to assess the waiting time that an orphan has to wait to use the toilet. The waiting time is very annoying, and orphans often hesitate to go outside of the orphanage center. The number of toilets and waiting time for the orphan to use them are closely associated (χ^2=33.38; Cramer's V=0.44, df=13; Sig; p<0.001). This study finds, on average, an orphan waits 32.20 minutes to use the toilet facility when they need it. The vast majority (65%) of respondents opined that sweepers disposed of toilet waste while 35% said orphan students collect and dispose of toilet waste. Orphan family income and disposal of waste in the toilet of the orphan center are strongly associated (χ^2=99.19; Cramer's V=0.49, df=39; Sig; p<0.001).

Table 1: Association of types of diseases with attending toilet-related hygiene.

Name of disease	Yes (%)	No (%)	df	χ^2	P value
Hair fall	83.70	16.30	12	36.76	0.001
Muscle wasting	79.50	20.50	14	29.88	0.02
Xerosis of skin	75.60	24.40	11	22.33	0.05
Loss of ankle and knee jerks	55.00	45.00	9	19.80	0.06
Bow legs	49.50	51.50	12	33.60	0.08
Fever	88.50	11.50	8	18.90	0.03

There was a significant association between attending toilet-related hygiene and types of diseases (Table 1). Hair fall, muscle wasting, fever, and xerosis of the skin was a common disease among orphan. Grains, roots, and tubers (91%), flesh foods (61%), vitamin A-rich fruits (55%), and vegetables (95%) were in the daily food schedule of the orphan. Around than two-thirds of children consumed legumes (66%). Eggs (26%) were the food group least consumed by orphans. Types of diseases orphans and main source of energy or nutrition are strongly associated (χ^2=32.55; Cramer's V=0.38, df=12; Sig; p<0.001). Usually, the orphan has three meals in a day and in some cases, they had rice three times a day. Types of diseases orphans and schedule for the dietary chart are strongly associated (χ^2=23.35; Cramer's V=0.37, df=24; Sig; p<0.001).

Table 2: Association between personal hygiene practices and facilities of the orphan center.

Name of disease	Yes (%)	No (%)	df	χ^2	P value
Take bath daily	93.60	6.40	9	16.66	0.06
Wear washed uniform/clothes daily	66.50	35.50	11	39.80	0.03
Use the toilet without footwear	70.60	29.40	15	32.30	0.02
Has personal towel	45.00	55.00	17	29.90	0.001
Has personal comb	48.50	50.50	9	31.60	0.05
Wash hands before eating and after using the toilet	88.50	11.50	10	28.90	0.05
Wash hands after throwing waste	68.00	32.00	13	18.90	0.002
Wash hands after wearing/removing shoes	78.00	22.00	9	22.50	0.005

The orphan centers seem to be at hand as on average the distance of the center is only 1.7 kilometers from any formal health center. The standard deviation being only 1.5 kilometers means nearly 95% of the orphan are within 3 miles radius of the centers. About 81% of the respondents are not aware of service-providing related to nutritional health. Types of diseases orphans and visiting a doctor last year are strongly associated (χ^2=42.50; Cramer's V=0.36, df=9; Sig; p<0.001). About 80% of respondents confirmed that the orphan center has a water supply system, followed by lighting (86%), hands wash basin (68%), water pot (71%), water tank for flushing (55%), higher or lower commode (51%), hygiene materials (45%) and exclusive urine disposal system (4%) is available in the toilet. About 28% found those always workable, 32% found often workable, 32% found sometimes workable, and 8% found those not workable at all.

The orphan center's WASH facility is not monitored regularly and the crowding living environment negatively impacts their health (Table 2). Types of diseases orphan last one year and orphan WASH facility has a significant association that impacts orphan health (χ^2=29.50; Cramer's V=0.30, df=6; Sig; p<0.001). Regarding dissatisfaction with hygiene and sanitation conditions of toilets about 98% said unpleasant smell, 79% mentioned about lack of cleanliness, 76% said lack of hygiene materials, 9% said lack of privacy, 3% said lack of light, and 2% said lack of water supply.

We asked respondents about their understanding of knowledge, attitude, and practice on sanitation and hygiene. About 78% were knowledgeable about general hygiene/cleanliness, 50% knew about hand hygiene/cleanliness, 48% had knowledgeable about personal hygiene, 44% found knowledgeable on cleaning/use of safe water and maintaining food hygiene/cleanliness, 10% were knowledgeable on safe disposal of feces and 4% had knowledgeable on safe disposal of solid waste.

DISCUSSION

We collected data from three orphan centers in three districts. Our study showed that only 70% of orphan children washed their hands before eating and after using the toilet and clean toilet. Similar findings showed that about 85% of orphans washed their hands before eating and after using the toilet with soap and water.[11] One Bangladesh study on the personal hygiene of children living in urban Bangladesh showed that 88% of children washed their hands after visiting the toilet.[12,13] Our study of the poor practice of WASH indicates the poor facility and social status of the orphan. The above fact showed that orphan centers still have an inadequacy in WASH practices. Orphan children have to be educated that, washing hands and keeping them clean is the first line of defense in protecting from illnesses. The orphan center authority needs to pay attention to improving the WASH facility for orphans. Our synthesis data revealed that only 93% of orphans took baths daily and another personal hygiene practice is moderate level.

We couldn't compare our findings with other studies due to no available data on this topic in Bangladesh. Our study data revealed that the majority (64%) of orphans had no access to hygiene and well-decorated toilet facilities for refreshing purposes.

The majority of respondents opined that water supply, lighting, water pot, and hand wash basin were available there but hygiene materials, an exclusive urine disposal system, and enough baskets for waste materials were not available there. For this reason, the majority of respondents were unhappy with this sanitation and hygiene condition. The study finding suggests that the majority of the respondents had no good understanding of hygiene practice and in most of the cases their score was below 50. The majority (70%) of the orphan had some sort of illness (fever, hair fall, muscle wasting, xerosis of skin, loss of ankle and knee jerks, and bow legs) within the last year.

Personal hygiene practices and types of diseases with the orphan have a strong association. This reveals that improving WASH facilities will reduce the types of diseases in orphan children.

The study suggested that the orphans suffered most from nutrition-related health problems and this scenario is alarming who is staying in the orphanage. The orphanage

authority could not afford the nutritional requirements of orphan children due to poor budget allocation. Our results showed that the orphan center allocated BDT 2000 (20$) for one month regarding food. This is too much poor an amount to maintain healthy and nutritious foods for young orphan children. Further, in the case of Bangladesh, the study by Karim and Tasnim reported 50% of children less than five years of age are underweight largely caused by malnutrition.[14] Malnutrition costs Bangladesh an estimated 2-3% loss in national income because of its long-term impact on productivity.

CONCLUSION

An integrated approach or intervention is required to counter the extent of malnutrition among orphans. Superintendents and teachers of orphanages should receive proper training so that they are able to take care of the physical and mental health of the orphan children.

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