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Original Research Article

Nutritional status and personal hygiene of children living in the orphanages of Bhubaneswar: capital city of Odisha

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ABSTRACT

Background: Orphan's children are vulnerable and neglected group in the society and are more prone to malnutrition. Aim is to assess the nutritional status, personal hygiene and demographic details of the children living in different orphanages in Bhubaneswar city.
Methods: A cross sectional study was conducted among the children of age group 6 to 14 years in the selected orphanages in Bhubaneswar from October 2015 to March 2016 using two stage stratified cluster random sample to select the orphanages and simple random sample to select study subjects. A pretested predesigned schedule was used to collect information regarding personal hygiene practices, anthropometric measurements of the children were taken and WHO reference growth charts were used to assess nutritional status. Pearson Chi-Square test was used to determine the association between personal hygiene and nutritional status.
Results: Out of 210 children, majority 57.7% were malnourished, 53.3% were stunted and malnutrition was higher among the boys than girls whereas the personal hygiene practices scores were better in girls than boys. Our study revealed a significant association between nutritional status and poor personal hygiene ($p<0.05$).
Conclusions: Malnutrition is highly prevalent in children living in orphanages and needs to be addressed. Nutritional status should be monitored regularly, which helps in early identification and timely intervention and this will improve nutritional status of children living in orphanages.

Keywords: Orphan, Malnutrition, Orphanage, Personal hygiene

INTRODUCTION

There are 71.4 million orphans in Asia alone. Every 2.2 seconds a child loses a parent somewhere in the world. By 2015, It is projected that there will be 400 million orphaned children worldwide.[1] In India 31 million children have become orphans due to all causes as by 2009.[1] According to NFHS-3 survey 17.3% of the total children in India are orphans.[2] Odisha an eastern state has about 16,382 orphans who live in the orphanages and there are 272 child care institutions in Odisha registered under the government (Juvenile Justice Act) and they provide care as per norms of the act.[3]

Orphanage is the name given to describe a residential institution devoted to the care and education of orphans i.e., children whose parents are deceased or otherwise unable to take care of them. They provide an alternative to foster care or adoption by giving orphans a community based setting in which they live and learn. The purpose of an orphanage is to care for children who have no one to care for them. These orphanages often attempt to provide reasonable quality care in terms of material needs such as shelter, clothing and food but they have limited capacity. Malnutrition is the largest health problem of children in the developing countries especially among the orphans.

Approximately 60 million children are underweight in India and child malnutrition is responsible for 22% of the country's burden of disease.[4] One in every three malnourished children in the world lives in India. Malnutrition is more common in India than sub-Saharan Africa.[5] Malnutrition in early childhood has serious, long-term consequences because it impedes motor, sensory, cognitive, social and emotional development. Malnourished children are less likely to perform well in schools and more likely to grow into malnourished adults who are at greater risk of disease and early death.[6] Under nutrition increases susceptibility to infection and disease, further increasing the probability of being malnourished. About 50% of all childhood deaths are attributed to malnutrition.[4]

Poor sanitation and hygiene is a major problem in developing countries and remain high risk behaviour among children residing in orphanages causing many people to fall ill and even die.[6] Odisha state currently has been experiencing natural disasters since the past decade, like droughts and floods leading to massive loss of human life. This state is already earmarked as one of the empowered action group states with poor socioeconomic parameters. In this context, it is likely that this state has a large population of orphaned children. The current study attempts to study the nutritional status and Personal hygiene practices among the children housed in various registered orphanages in Bhubaneswar, the capital city of Odisha.

Objectives

- To assess the nutritional status of children living in the orphanages.
- To assess the personal hygiene practices among the orphan children.

METHODS

Study design

It is a community based cross sectional study, a total of five registered orphanages were selected using two stage stratified cluster random sampling and simple random sampling was used to select the study subjects.

Study setting

Kalinga Institute of Medical Sciences, Bhubaneswar.

Study population

Children living in orphanages of age group 6 to 14 years in the selected orphanages

Sample size

By taking prevalence of underweight as 57 percent from a study done by Shukla in orphanages in Chennai, with 95percent confidence interval, allowable error of 10 percent, non-response rate as 10 percent and since each orphanage is considered as a cluster, design effect of 2 was applied and final sample size calculated to be 210 subjects.[7]

Inclusion criteria

Inclusion criteria were children between 6-14 years of age irrespective of their gender; should be staying at the orphanage for more than 6 months; he/she should be willing to participate in the study.

Exclusion criteria

Exclusion criteria were children who are extremely sick during study; children who are mentally retarded; Children who are not willing to participate and uncooperative.

Study period

The study was carried out for 6 months from October 2015 to March 2016.

Study tools

A semi structured pretested predesigned schedule was used to collect information regarding age, gender, hygiene practices etc. Details like orphan status, reasons for stay, duration of stay in orphanages, age at admission were taken from orphanage records. A child was subjected for anthropometric and personal hygiene assessment in good day light after the interview with the children. Height was measured in centimetres with the help of stadiometer to nearest 1cm.Weight was measured with bathroom weighing scale. Weighing Machine was regularly standardized with known standard weights. Measurements were taken to the nearest 100 grams. Assessment of personal hygiene was done by scoring system, data was collected on important hygiene aspects like hair, skin, oral cavity, nails, etc. and depending on the scores different grading was done as good (>8) fair (6-8) and poor (<5).[8] Care was taken to find details regarding hygiene practices of children like hand wash with soap before eating and after toilet use, brushing, bathing and wearing washed clothes.

Data collection

Each orphanage was approached; the purpose of the survey and a brief protocol on the conduction of the survey was explained. Due permission and appointment was taken from concerned authority. On the allotted date and time, the survey team visited the orphanage. The survey was organized in a room within the orphanage premises and the selected subjects were invited to participate in the study. They were explained the purpose of the study and were assured about the anonymity and confidentiality of the information shared. After taking the

consent children were interviewed and then subjected to anthropometric assessment.

Data analysis

The data was entered on Microsoft excel and final data analysis was done with the help of statistical software SPSS 21. Anthropometric data, namely weight for age, height for age, BMI for age Z-scores were assessed using WHO ANTHRO PLUS 2007 software and the Z-scores of the children were then compared to the existing World Health Organization growth standards. (WHO 2007)

Ethical approval

The study was approved by Kalinga Institute of Medical Sciences Institutional Ethics Committee.

RESULTS

A total of 210 children of age group 6 to 14 years were included in the study, out of which 116 were males and the rest 94 were girls. Mean age, weight and height of children 9.63±2.361, 24.46±9.36 and 129.97±14.9. Majority of children, 41.9% (88) were in between the age group of 9 to 11 years. Unlike the common perception that orphanages house orphaned children, in our study only 47.1% (99) of the sampled children had neither of their parents, surprisingly 21.5% (62) of them cited poverty and education as a reason for seeking orphanage care and only 8.1% (17) were abandoned children (Table 1). Prevalence of underweight was 55.7% which was more among the boys compared to girls (61.8% vs 31.8%) and severe underweight was found in 17.2% of the children out of which 81% were boys and 19% were girls. Prevalence of stunting and thinness were 53.3% and 25.2% (Table 2 and Figure 1). Moderate and severe stunting was found to be more in boys 58.8% and 54.5% compared to girls 41.2% and 45.5% respectively.

Hygiene practices were observed regarding daily brushing of teeth which was reported among 100% of children. Next was washing hands before having food (94.8%) which was better among girls than boys, followed by hand wash after toilet use 90%. Boys were more among the remaining 10% who were not washing (Table 3).

The status of personal hygiene was assessed by using a ten-point grading system[8] which was graded as >8 points as good, 6-8points as moderate and ≤ 5 points as poor. It was found that out of 210 total study populations, 51% (107) had good hygiene scores, while 44.8% (94) had moderate hygiene and 4.2% (9) were found to have poor personal hygiene. Girls were having better personal hygiene compared to boys but this difference is not found to be statistically significant (Table 4).

There was statistically significant association between nutritional status and personal hygiene and also between personal hygiene and age groups. The children who had normal weight for their age had significantly better personal hygiene scores as compared to those who were under weight (Table 5). Good scores were highest in 12 to 14 years' age group i.e. 74% and decreased with age as indicated above i.e. 50% in 9 to 11 years to 36% in 6 to 8 years. Thus this difference in personal hygiene status in age groups was found to be highly significant in the study population (Table 6).

Table 1: Socio demographic characteristics of the study population (n=210).

Details	Categories	Gender		Total n=210 (%)	
		Male (n=94)	Female (n=116)		
Age in years	6 to 8	34	38	72	34.3
	9 to 11	48	40	88	41.9
	12 to 14	12	38	50	23.8
Education	Primary school (class I to IV)	61	61	122	58.1
	Middle school (class V to VII)	31	52	83	39.5
	High school (class VIII to X)	2	3	5	2.4
Duration of stay in orphanage	6months to 2 years	23	30	53	25.2
	3 to 6 years	67	70	137	65.2
	> 6 years	4	16	20	9.5
Orphan status	Only father	28	27	55	26.2
	Only mother	12	19	31	14.8
	None	44	55	99	47.1
	Both present	10	15	25	11.9
Reasons for admission to orphanages	Parents are not alive	45	54	99	47.1
	Poverty and education	29	33	62	29.5
	Poverty	12	20	32	15.2
	Abandoned	8	9	17	8.2

Table 2: Gender wise grading of under nutrition among the study population.

Nutrition indicators	Total children		Gender			
			Boys (n1)		Girls (n2)	
Underweight (weight for age)	**N** (n1+n2)	**%**	**N**	**%**	**N**	**%**
Mild underweight (>-2SD to <-1SD)	17	13.9	7	41.2	10	58.8
Moderate underweight (>-3SD to <-2SD)	30	24.6	18	60	12	40
Severe underweight (<-3SD)	21	17.2	17	81	4	19
Total	68	55.7	42	61.8	26	38.2
Stunting (height for age)						
Mild stunting (>-2SD to <-1SD)	67	31.9	28	41.8	39	58.2
Moderate stunting (>-3SD to <-2SD)	34	16.2	20	58.8	14	41.2
Severe stunting (<-3SD)	11	5.2	6	54.5	5	45.5
Total	112	53.3	54	48.2	58	51.8
Thinness (BMI for age)						
Moderate thinness (>-3SD to <-2SD)	34	16.2	20	58.8	14	41.1
Severe thinness (<-3SD)	19	9.0	12	63.2	7	36.8
Over weight (+1SD to +2SD)	0	0	0	0	0	0
Total	53	25.2	32	60.4	21	39.6

Table 3: Gender wise comparison of hygiene practices among the study population.

Hygiene practices		Total (n=210)		Gender			
				Boys (n1=94)		Girls (n2=116)	
		n=(n1+n2)		**N**	**%**	**N**	**%**
Practices of washing hands before eating	Yes	199	94.8	90	45.2	109	54.8
	No	11	5.2	4	36.4	7	63.6
Washing hands after using the toilet	Yes	189	90.0	81	42.9	108	57.1
	No	21	10.0	13	61.9	8	38.1
Hand wash	Water and soap	173	82.4	79	45.7	94	54.3
	Only water	37	17.6	15	40.5	22	59.5
Daily brushing of teeth	Yes	210	100	94	44.8	116	55.2
	No	0	0	0	0	0	0
Bathing	Daily	150	71.4	57	38	93	62
	4 to 6 times a week	42	20.0	26	61.9	16	38.1
	< 4 times a week	18	8.6	11	61.1	7	38.9
Wearing tidy clothes	Daily	134	63.9	50	37.3	84	62.7
	Some times	76	36.2	44	57.9	32	42.1
Regular Trimming of nails	Yes	140	66.7	51	36.4	89	63.6
	No	70	33.3	43	61.4	27	38.6

Table 4: Personal hygiene score between boys vs girls.

Sex	Status of personal hygiene			Total N (%)
	Good N (%)	Moderate N (%)	Poor N (%)	
Boys	41 (43.6)	48 (51.1)	5 (5.3)	94 (100)
Girls	66 (56.9)	46 (39.7)	4 (3.4)	116 (100)
Total	107 (51)	94 (44.8)	9 (4.2)	210 (100)

$\chi 2=3.74$, d.f=2, p=0.15. (Pearson's corrected value).

Table 5 Association between personal hygiene and nutritional status among the study population.

Personal hygiene score	Nutritional status		Total N
	Under weight N (%)	Normal N (%)	
≤ 5 (Poor)	6 (75.0)	2 (25)	8
6 to 8 (Moderate)	40 (64.5)	22 (35.5)	62
> 8 (Good)	22 (42.3)	30 (57.7)	52
Total	68 (56.7)	54 (43.3)	122

$\chi 2$=6.13, df =2, p=0.04. (Pearson's corrected value)

Table 6: Distribution of study population according to age and personal hygiene.

Age group (years)	Status of personal hygiene			Total N
	Poor N (%)	Moderate N (%)	Good N (%)	
6 to 8	4 (5.6)	42 (58.3)	26 (36.1)	72
9 to 11	5 (5.7)	39 (44.3)	44 (50)	88
12 to 14	0 (0)	13 (26)	37 (74)	50
Total	9 (4.3)	94 (44.8)	107 (51.0)	210

$\chi 2$ =18.053, df = 4, P = 0.001. (Pearson's correction applied)

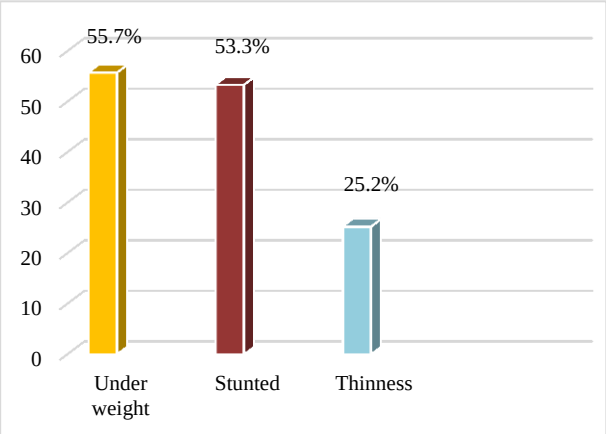

Figure 1: Prevalence of under nutrition among the study population.

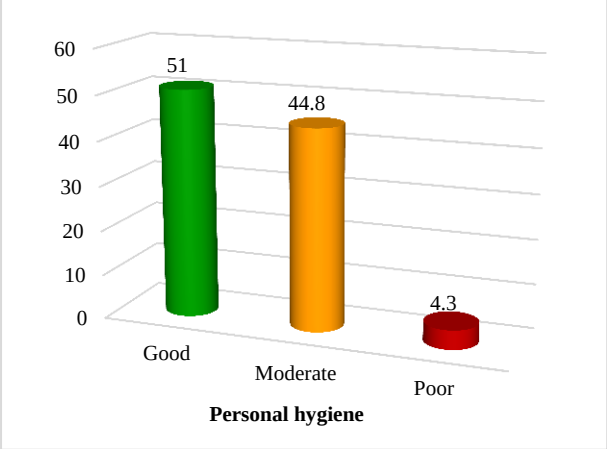

Figure 2: Distribution of study population according to personal hygiene scores.

DISCUSSION

In the present study, unlike the common perception that orphanages house orphaned children, in our study only 47.1% (99) of the children had neither of their parents. Interestingly 21.5% (62) of then cited poverty and education as a reason for seeking orphanage care. Only 8.1% (17) were abandoned children. A study done by Huq on orphanages in Bangladesh found that higher percentage of children (50.7%) were living in the orphanages for educational purpose and this may be due to poor economic status of parents.[9]

In the present study, the prevalence of underweight was 55.7% among the study population. A study done by Shukla, among children (5 to 14 years) in orphanages at Chennai found that 57.7% children were under weight. St Semele study done on orphan children (9 to 13) in South Africa found that 59% were underweight.[11] Huq in his study done on orphan children (5 to 14 years) in Bangladesh found that 65% children were underweight which were similar to our study findings.[9]

In present study, prevalence of stunting among the study population was 53.3%. Findings of our study are supported by Huq et al, found that 60.7% of children in orphanages were stunted.[9] Shivaprakash et al in a study done in Mandya district in Karnataka among school going children (6 to 12 years) found that 27.9% of children were stunted which is contrast to our study, as the children were non orphans and were living at their respective homes.[10]

In present study, found that that 25.2% of our study population had thinness. Our finding is supported by St Senoelo study done in South Africa found that 25% of

children in orphanages had thinness.[11] While a study done by Huq on orphans in Bangladesh found that 48% children had thinness and this difference may be due to poor standards of living and nutrition in Bangladesh.[9]

In present study found that girls were following hygiene practices better than boys. Similar findings were by Deb et al conducted a study among primary school children (5 to 10 years) in south Kolkata.[12] Kalaisevan et al among rural school children (6 to 14 years) in Puducherry, India found that girls trimmed their nails and wore tidy clothes regularly compared to boys which was similar to our study findings.[13]

In present study, children who had normal weight for their age had significantly better personal hygiene scores ($p<0.05$) as compared to those who were under weight. Similarly, study done by Deb et al among primary school children (5 to 10 years) in South Kolkata found that children who were having normal weight scored better than children with underweight regarding their personal hygiene.[12]

In present study, in personal hygiene scores, Good scores were highest in 12 to 14 years age group i.e. 74% and decreased with age as indicated above i.e. 50% in 9 to 11 years to 36% in 6 to 8 years. Thus this difference in personal hygiene status in age groups was found to be highly significant in the study population. This is may be due to the development of proper awareness on self as they grow older. A study done by Ali et al among primary school (5 to 10 years) children in Erbil city, Kurdistan had shown similar findings.[14]

CONCLUSION

Malnutrition is highly prevalent in children living in orphanages and needs to addressed. Nutritional status should be monitored regularly, which helps in early identification and timely intervention will improve nutritional status of children living in orphanages. There was significant association between nutritional status and poor personal hygiene ($p<0.05$) i.e. majority of children who had poor personal hygiene scores were found to have poor nutritional status. Personal hygiene among the children needs to be improved by imparting health education

Limitations

The nutritional status was assessed only by anthropometry but, definitive blood estimates of micronutrients and other deficiencies were not being assessed due to time and monetary constraints.

The type of food offered in the orphanage was not assessed for its quality and adequacy as it was beyond the scope of the study and perhaps permission for the same was difficult.

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