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RESEARCH ARTICLE

THINNESS AMONG THE MUSLIM ORPHAN BOYS FROM KOLKATA, INDIA

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ABSTRACT

Background: Children are essential assets of a country, because they are the future human potential required for its future development. Children belong to 5-15 years ago group are vulnerable because of their rapid growth rate. In the absence of parents, orphanages are an alternative, which provide care and support for these vulnerable children. An estimated 153 million children in the world are orphans. Being an orphan may make children more vulnerable to under nutrition as maternal and paternal level factors, and household food availability which are linked to child nutritional well – being are more likely to be inadequate. **Objective:** As there is a paucity of data on the nutritional status of the orphan children as a whole, especially among the Muslim population in India, we have conducted a preliminary study on the nutritional status (based on thinness) of the Muslim Orphan boys of Kolkata. Besides, it will also help to generate relevant information and data on health status of children living in orphanages. **Materials and methods:** This cross sectional study was conducted on 150 boys of the orphanage within the age groups of 8 to 15 years from Calcutta Muslim Orphanage, Kolkata, India. **Results:** Based on thinness, irrespective of grade, 32.0% boys of the studied participants were undernourished. Out of this, 2.0% orphan boys were severely undernourished (Grade III) and 9.3% were moderately undernourished whereas, 20.7% boys were in Grade I condition. **Conclusion:** Although, the prevalence of under nutrition as measured by low BMI for age (thinness) was not so alarming but, in comparison with other studied on orphan children from various countries, it is not in a healthy position and the result could be useful to nutrition policy makers and intervention planners to target children who are more vulnerable to under nutrition.

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INTRODUCTION

Children are essential assets of a country, because they are the future human potential required for its future development (Belli and Appaix, 2003). Children belong to 5-15 years ago group are vulnerable because of their rapid growth rate. They need more attention and care for the physical and mental development. Physical growth, development and well-being are directly related to the nutritional status. Chronic under-nutrition is considered to be the primary cause of ill health and premature mortality among children in developing countries (Nandy et al., 2005). Despite a consensus that surviving children should remain together after a parent's death, orphaned siblings are very commonly separated, often with resulting emotional problems.

The nature of this suffering, in both the short term and long term, should be better understood. Orphan means either both the parents lost or died, nor single parent died or lost is defined as orphans. The term 'Orphan' is derived from GK word 'orphanos' meaning bereft of father or mother or both. In the absence of parents, orphanages are an alternative, which provide care and support for these vulnerable children. These children may be educated within or outside the orphanage. Several physical and behavioral problems were recognized among children raised in orphanages, especially when they faced adverse conditions during the early years of life (Worldwide Children's Statistics USA, 2018). The lack of emotional and social attachment, inadequate stimulation and interaction with family members, is an important cause of developmental impairment. It has been reported as well that emotional deprivation, anxiety, and insecurity influence the neurochemical regulation of the growth hormone and affect the growth of children.

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Children exposed to socioemotional neglect exhibit growth deficiencies and develop a condition called as psychosocial dwarfism (Johnson, 2000). The psychological implications of orphan-hood and the utility of such mitigating practices as youth counseling and should community education, would be examined, it will also be important to understand the impact on all children of growing up in an environment where so many adults and children are ill and dying. There is an urgent need to understand the circumstances of those who care for children who have been affected by abnormal height-weight relation, to document the availability and limitations of financial and material support to caregivers, and to understand the nature and extent of caregiver burnout and the need for emotional support. The number of children who are left orphaned in the world due to loss of parents has increased in recent years. An estimated 153 million children in the world are orphans (Routray *et al.*, 2015) with more than one in seven children orphaned in sub-Saharan Africa (Deters, 2008). Being an orphan may make children more vulnerable to under nutrition (Lindblade, 2003; Iram and Butt, 2006), as maternal and paternal level factors, and household food availability which are linked to child nutritional well – being are more likely to be inadequate (Iram and Butt, 2006). However, studies have reported mixed results about how the nutritional status of orphans compare with their counterpart non – orphans (Al-Adili, 2008; Kimani-Murage, *et al.*, 2011). Understanding the disparities in nutritional status and dietary diversity of orphan and non – orphan children could be useful to nutrition policy makers and intervention planners to target children who are more vulnerable to undernutrition and inadequate dietary intake (Ali *et al.*, 2018). The study of Ali and others (2018) found that orphanages had better daily meal menus which in most of the cases were well followed. Their data therefore disagree with a study among orphanages in India which reported poor menu planning. Their findings highlight the importance of good menu planning in the achievement of adequate dietary diversity among orphans in orphanages.

Their study (Ali *et al.*, 2018) also showed no significant difference in the anthropometric status of orphan and non – orphan children. Orphans were more likely to receive a diversified diet than their counterpart non – orphans. The lack of significant difference in the nutritional status of orphan and non-orphan children in a study is consistent with earlier findings. For instance, the risk of child undernutrition was not significantly different between orphan and non- orphan children in Kenya (Kimani-Murage, *et al.*, 2011). There was also no significant difference in nutritional status of orphan and non- orphan Luo children (Zidron *et al.*, 2009). Data from China did not also show significant difference in the nutritional status of orphans and non-orphans (He and Ji, 2007). As they find no significant difference in the nutritional statuses of orphan and non- orphan children, efforts aimed at reducing undernutrition among children under 5 years should target both children in orphanages and households with equal importance (Kimani-Murage, *et al.*, 2011). Recent research has shown that as many as 200 million children worldwide fail to reach their cognitive and socio emotional potential because of malnutrition, micronutrient deficiency, and lack of stimulation during early childhood (Grantham-McGregor *et al.*, 2007). These findings are especially pertinent for Africa, where 15 percent of all orphans, or about 6.5 million children, are under 5 years of age (Hamadani *et al.*, 2006). Malnutrition in orphanage children is completely lacking in National surveys. In Malawi, 64 % of orphanage children were stunted compared

with 46 % of the non orphanage children (Lindblade, *et al.*, 2003). In Zimbabwe a strong association was found between living in an orphanage and nutritional and health outcomes such as diarrhea, acute respiratory infection, and underweight status among 5-10 year old children. In the same study orphanage children were more wasted (9%) compared to non-orphanage group (2%) (Young and Jaspars, 2006). Wakoli and others (2012) studied to assess the prevalence and associated factors for under nutrition among the beneficiaries of Kenya Cash Transfer Program compared to non-beneficiaries in Korogocho, Nairobi and concluded that. There was improved nutritional status among the beneficiaries compared to non-beneficiaries. Panpanich and colleagues (1999) studied to compare the nutritional status and health problems of village orphans, non-orphans and orphanage children, and to identify factors associated with under nutrition and found that, the prevalence of under nutrition in orphanage children was 54.8% compared with 33.3% and 30% of village orphans and non-orphans, respectively.

The orphanage children who had been admitted to the orphanages for a longer period were more likely to be stunted and underweight ($p < 0.05$) than those who had been recently admitted. These findings differ from those of the study in Malawi where children who had been admitted to an orphanage for more than one year were less malnourished than those who had been admitted for a shorter time. It could also imply that nutritional care in the orphanage is less than optimal, resulting in chronic long term malnutrition (Mwaniki and Makokha, 2013). In India, Soudhabi and others (2017) observed in Kasaragod district of Kerala that children residing in orphanage were having weight within normal range but nutritional deficiency signs were present.

Objectives

According to the United Nations Guidelines for Alternative Care for Children, “it is the role of the state, through its competent authorities, to ensure the supervision of the safety, wellbeing and development of any child placed in alternative care and the regular review of the appropriateness of the care arrangement provided” (Guidelines for the Alternative Care of Children, 2010). There is a paucity of data on the nutritional status of the orphan children as a whole, especially among the **Muslim** population in India. Keeping this in mind, we have conducted a preliminary study on the nutritional status (based on thinness) of the Muslim Orphan boys of Kolkata. Besides, it will also help to generate relevant information and data on health status of children living in orphanages.

MATERIALS AND METHODS

Study area: The study was conducted in the Calcutta Muslim Orphanage, Kolkata, West Bengal. It is located within Ward No. 41 under Calcutta Municipal Corporation. This was established in the year 1892. It has two sections, one is boys section and another is girls section. The area is very near to the Mahatma Gandhi Road and Central Avenue crossing.

The participants: This cross sectional study was conducted on 150 boys of the orphanage within the age groups of 8 to 15 years (Table 1). These orphanage provides meals for four times to the participants which include morning tea and biscuits, breakfast (puffed rice, potato gravy, or bread and banana), lunch (rice, pulses, vegetables, fish/meat –beef and mutton on

Sundays), evening snacks (tea, puffed rice, curry) and dinner (rice, pulses, vegetables, chicken on Tuesdays and Fridays).

Anthropometric measurements: Anthropometric measurements such as, height and weight were measured following standard methods (Lohmann *et al.*, 1988). Their weight was measured using a standardized ATCO digital weighing balance. The body weight was recorded when the digital display of the body weight became stabilized. For measuring standing height Anthropometer of Martin type was used. The height was recorded to the nearest centimeter.

Nutritional assessment

The BMI was calculated by the following equation:

$$\text{BMI} = \frac{\text{Weight in kg}}{\text{Height in meter}^2}$$

The thinness (Low BMI for age) of the study participants was estimated considering the age and sex specific standard international cut off (Cole *et al.*, 2007) point for boys aged 8 to 15 years.

RESULTS

Table 3 represented the prevalence of thinness among the Muslim orphan boys of Kolkata.

Table 1. The number of children studied under various ages

Age in years	Number (%)
8	18 (12.0)
9	21 (14.0)
10	25 (16.7)
11	20 (13.3)
12	26 (17.3)
13	14 (9.3)
14	12 (8.0)
15	14 (9.3)
Total	150 (100.0)

Table 2. The BMI (kg/m²) Cut-off Points for Thinness Grades III, II and I for 8 - 15 Years old children as proposed by Cole et al. (2007).

Age yrs	Grade III	Grade II	Grade I
8.0	12.42	13.11	14.15
9.0	12.50	13.24	14.35
10	12.66	13.45	14.64
11.0	12.89	13.72	14.97
12.0	13.18	14.05	15.35
13.0	13.59	14.48	15.84
14.0	14.09	15.01	16.41
15.0	14.60	15.55	16.98

Table 3. Prevalence of thinness by Age among the studied Muslim orphan boys of Kolkata

Age in years	Thinness				Normal	Grand total
	Grade I	Grade II	Grade III	Total		
8	3	1	0	4 (2.7)	14 (9.3)	18
9	3	2	0	5 (3.3)	16 (10.7)	21
10	5	2	0	7 (4.7)	18 (12.0)	25
11	4	1	2	7 (4.7)	13 (8.7)	20
12	7	6	0	13 (8.7)	13 (8.7)	26
13	3	1	1	5 (3.3)	9 (6.0)	14
14	3	0	0	3 (2.0)	9 (6.0)	12
15	3	1	0	4 (2.7)	10 (6.7)	14
Total	31 (20.7)	14 (9.3)	3 (2.0)	48 (32.0)	102 (68.0)	150

From the table it is evident that, as a whole 32.0% of the studied boys were undernourished. Out of this, 2.0% orphan boys were severely undernourished (Grade III) and 9.3% were moderately undernourished whereas, 20.7% boys were in Grade I condition. Coming to the age specific prevalence, the highest rate (8.7%) of thinness was noticed in the age group of 12 years followed by (4.7%) boys of age groups 10 and 11 years. From this table, it is also evident that, 50% studied orphan boys (13) of the age group 12 years were undernourished out of total 26.

DISCUSSION

UNICEF study by Deininger and others (2003) reports that orphans are more likely to be stunted in their growth and less likely to be enrolled in school than children living with both parents. Poor nutrition and limited access to health services put orphans at increased risk of starvation, illness and death. Without nurturing from a loving parent or guardian, children's emotional development may be stunted as well. The foundations of sound physical and mental health are established during the school age (5-14 years) (Best *et al.*, 2010). Despite the fact that prevalence of stunting and underweight among children has declined globally since 1990, the overall progress is still inadequate and millions of children remain at risk (de Onis *et al.*, 2012; UNICEF-WHO-World Bank Group, 2015). School age children residing in orphanages were considered to be at higher risk of malnutrition compared to children living in households (Johnson, 2000). In a study conducted among the orphanage children aged 5 - 14 years of North Lebanon by El-Kassas and Ziade (2017), it was found that prevalence of stunting was higher in the age group above than 10 years compared to the below 10 years group (16.4% versus 11.3%). In contrast, the overall prevalence of overweight and obesity in the studied sample was 9.2%. The older age group had a higher prevalence of overweight and obesity, compared to the younger age group. A sample of 100 boys in the age group of 10-15 years residing in three different orphanages in the District Budgam, Jammu and Kashmir, India, revealed that 14% of children residing in orphanages were moderately or severely stunted (Vaida, 2013).

With respect to weight for age it was found that according to Indian Academy Paediatrics' classification out of 100 orphans, 84 were normal, 13 had grade-1-malnutrition and 3 had grade-2-malnutrition which reflects that situation is not that bad in these orphanages. Vaida (2013) also commented that, the majority of orphan children having normal nutritional status, with no clear relationship between orphan-hood and the nutritional status of children compared with those who lived with their parents. Whereas, the result of the present study revealed much higher prevalence of undernutrition as measured by thinness (here it is 32.0%), which indicates the severity of undernutrition among the Muslim orphan boys of Kolkata, India. More - or - less similar (Low weight for age - 33.2%) situation is observed among the school going children aged 4-11 years living in orphanage from Dagoretti division of Norobi, Kenya (Elizabeth and Makokha, 2013). The prevalence of malnourished (underweight) children aged under five years in Gondar City, Ethiopia was also closer (27.8%) to the present studied children (Gultie *et al.*, 2014). In another recently study done by Toutem and others (2018) among the institutionalized orphanages from Hyderabad, India, depicted the worst picture of undernutrition.

The orphan boys aged 10-16 years showed the low BMI for age ($> 18.5 \text{ kg/m}^2$) and that was 80.95%. The poor nutritional status of the children may have an impact on their cognition levels which may worsen their awareness and treatment seeking practices. This presents a unique opportunity to the health professionals for additional research; as well as to design easy to understand messages that would enhance the understanding of disease causation and would go a long way for its prevention (Toutem *et al.*, 2018).

Conclusion

Foods that provide the body with adequate nutrients to support all the functions are associated with good health (Krause and Mahan, 1984). It could therefore be suggested that for those children whose energy intake fell below the recommended, they were at risk of suffering from nutritional deficiencies. The children who did not meet the energy requirements possibly were given small amount of food. They could also have been the children who only took two out of the possible three main meals of the day. Although, the prevalence of undernutrition as measured by low BMI for age (thinness) in the present study was not so alarming but, in comparison with other studied on orphan children from various countries, it is not in a healthy position and the result could be useful to nutrition policy makers and intervention planners to target children who are more vulnerable to undernutrition.

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Conflict of interest: None

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