ASSOCIATION OF NUTRITIONAL STATUS AND DIETARY HABITS OF STREET CHILDREN (5-18 YEARS AGE) – A CROSS SECTIONAL STUDY IN RAWALPINDI

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ABSTRACT

Objective: To determine the dietary characteristics and nutritional status of street children in Rawalpindi along with association between malnutrition and dietary characteristics of these street children.

Study Design: Cross sectional analytical study.

Place and Duration of Study: Bahria, DHA and Chaklala Scheme-III, Rawalpindi Pakistan, from Aug 2019 to Feb 2020.

Methodology: Data was collected conveniently from 88 street children after ethical approval of the study from the institute. Data was entered in SPSS-22. Descriptive analysis was done to report frequency and percentage of categorical variables. Inferential analysis was done by applying chi square to find out association between malnutrition and independent variables (age, hand washing, illnesses). Binary logistic regression was done to find the predictors of malnutrition among street children.

Results: Out of 88 participants majority were male 56 (63.6%). Most of the street children were found underweight 74 (84.1%). Children in age group 5-8 years were more malnourished as compared to age groups above 8 years (p-value <0.05). A significant association between nutritional status and hand washing was found (p-value <0.05). Participants who had hand washing practice were 3 times more likely to be healthy as compared to malnourished (p-value=0.05, OR=3.5, 95% CI: 0.9-13.7). The garbage picker and mechanics were 1.3 times more likely to be underweight.

Conclusion: Most of the street children roaming around the streets of Rawalpindi are underweight indicating malnutrition.

Keywords: Street Children, Malnutrition, Nutritional Status, Dietary Habits.

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INTRODUCTION

Street Children acquire a nomadic life while inhabiting streets as their living and livelihood place[1]. Street children are referred as the children who are homeless and dwell on the streets at different urban cities and areas worldwide, they are also known as street youth and street kids. There is no specific definition for street children. For policy makers the concept given by UNICEF's definition for street children is "homeless girls and boys less than the age of 18 years living on the streets"[2]. Polygamous parents and turned down from home are some of the major causes for children to start living on the streets in developed countries[1]. Street children are often found to be explicitly involved in crime theft, drug dealing, swindlidng, gang activities owing to lack of exposure to culture, tradition, moral, income, shelter, health, social networking, nutrition and hygiene[3]. Often, Adolescent children are found indulged in low paying labors of baggage loading, parking, car washing, shoe polishing, mechanics work and more.[4]

Most of these children come from families inflicted with intra-family feud; poverty and poor family structures who tend to push the children on to the streets or run away from their homes.[5] The number of street children is on a constant rise with each passing day and they are expected to reach a striking number of 800 million in the absence of appropriate initiatives particularly for this group of the society.[6]

There are 53% of street children who suffer from chronic malnutrition and 63% go to bed hungry,[7] 27 million are severely underweight and 33 million are out of school. Most of these children work as beggars, car cleaners, vendors, garages helpers, newspaper sellers, rag pickers and other hazardous works. This puts them at the risk of loss of human capital that can turn to become contributing citizens of the country for a better economy and hence, poverty alleviation.[8]

According to The Society for the Protection of the Rights of the Child (SPARC) there are 1.2-1.5 million of street children in urban areas of Pakistan of whom malnourishment statistics are unknown. This marginalized part of the society needs to be dealt with at the fragile stage of adolescence to improve their health status and help them in becoming healthy and responsible citizens of the country to alleviate the economic as well as health burden.[9] Therefore, health need assessment of nutrition of this target age group of children is

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critical and research is required to frame the issue for policy makers.

The objective of this study is to determine the dietary characteristics and nutritional status of street children in Rawalpindi along with association between malnutrition and dietary characteristics of these street children.

METHODOLOGY

This cross-sectional study was conducted in Rawalpindi's areas of Scheme-III, suburbs around DHA and Bahria, from August 2019 to February 2020. Study was approved by the Ethical Review Committee of Armed Forces Post Graduate Medical Institute.

Inclusion criteria: The street children (male and female), ranging from age 5-18 years who spend more than 3 hours per day in streets for earning money (vendors, working in garages/hotels, shoe polishers, or any child who is earning) were included in the study.

Exclusion criteria: Whereas, beggars and the children working at someone's home/domestic workers were excluded from this study. These street children of District Rawalpindi were selected conveniently.

The sample size of 88 was calculated as per the reference study "Health and Nutritional condition of street children of Dhaka city: an empirical study in Bangladesh".[1]

A self-designed/adapted questionnaire based on reference study 1 and validated in consultation with peers was used. It was translated into Urdu for easy comprehension and was confirmed by a language expert. The questionnaire gains the relevant information considering personal, household, social and economic details, dietary patterns, general behaviors, anthropometric assessments and association between age, education level, drinking water and nutritional state. A cronbach alpha value of 0.7 was rendered acceptable.

The anthropometric data was collected using the techniques illustrated below;

Weight Measurement: The body weight was recorded using the standard weighing machine keeping the respondent bare footed with minimal cloths.

Height Measurement: The body height was recorded using modified tape keeping the respondent stranded on a platform, bare footed with their head upright and looking straight forward.

Nutritional State: The nutritional states of the respondents was found applying the widespread Quetelet /BMI Index.

SPSS-22 was used for data analysis. Mean and standard deviation was calculated for quantitative data and frequencies and percentages were calculated for qualitative variables i.e. number of siblings, gender etc. Chi Square statistical test was applied to measure statistically significant association between age and nutritional status. Logistic regression model was applied to identify the significant predictors of nutritional status.

RESULTS

Out of 88 participants majority were male 56 (63.6%). Age was divided in four groups. Majority of participants belonged to age group 13-16 years followed by 9-12 years. Most of the children had 6-8 siblings and majority were illiterate 42 (55%). Most of the street children 20 (22.7%) were street hawker followed by garbage picker 18 (20.5%). Sociodemographic characteristics of street children are shown in Table-I.

Table-I: Sociodemographic characteristics of street children (n=88).

Variable	n (%)
Gender	
Male	56 (63.6)
Female	32 (37.4)
Age (years)	
5-8	15 (17)
9-12	27 (30.7)
13-16	28 (31.8)
17-18	18 (20.5)
Total	88 (100)
Siblings	
<3	3(3.4)
3-5	36(40.9)
6-8	41(46.6)
Daily Income (Rs)	
100	8 (9.1)
200	18 (20.5)
500	43 (48.9)
800	19 (21.6)
Educational Status	
Illiterate	42 (55)
<3 years	14 (15.9)
>4 years	30 (35)
Occupation	
Garbage picker	18 (20.5)
Day Labor	13 (14.8)
Street Hawker	20 (22.7)
Bus Helper	08 (9.1)
Local restaurant worker	17 (19.3)
Mechanics work	13 (14.8)

Out of 88 street children only 12 (13.3%) eat breakfast thrice in a week, whereas 73 (81.1%) only had breakfast once a week. Paratha (loaf) 39 (40%) and egg

23 (25.6%) are the most consumed thing in the breakfast which these children have thrice a week 44(48.9%). Almost half of the street children eat breakfast at home 44 (50%) and they get to consume fruits and vegetables only twice a week 32 (36.4%). Source of drinking water for most of the street children was tap 60 (68.2%).

Majority of the street children had no practice of hand washing 51 (58%) and taking daily bath 76 (85.2%). Out of 88 only 35 (39.8%) and 28 (31.8%) suffered from diarrhea and flu within last 3 months, respectively.

Body Mass Index of participants were categorized according to the WHO scoring. Most of the street children were underweight 74 (84.1%) as shown in the Figure.

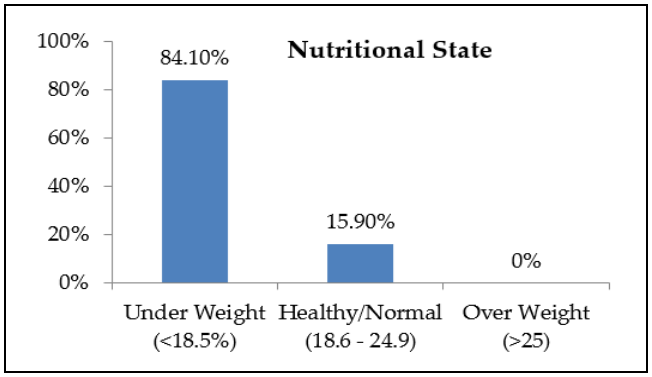

Figure: Nutritional state of street children (n=88).

A chi-square test for independence (with Yates Continuity Correction) indicated significant association between age and nutritional status as shown in Table-II. Children in less age group 5-8 years were more malnourished as compared to the other age groups (p= 0.02). Similarly, chi-square test for independence indicated significant association between nutritional status and no hand washing practices (p=0.008).

Table-II: Association between nutritional status and sociodemographic variables.

Variable	Nutritional Status, n(%)		X^2	p-value
	Malnourished	Healthy		
Age (years)	74 (100%)	14 (100)	9.18	0.027
5- 8	34 (45.9)	2 (14.20)		
9-12	18 (24.3)	3 (4.0)		
13-15	17 (22.9)	5 (6.7)		
16-18	5 (6.7)	4 (5.4)		
Hand washing	74 (100)	14 (100)	7.05	0.008
Yes	13 (17.5)	7 (50)		
No	61 (82.4)	7 (50)		

A significant regression model was found (p <0.001) indicating that the model was able to distinguish between respondents who had malnutrition and healthy status regarding entered independent variables (Occupation, Age and Hand washing practice). This model was explained between 19.5% (Cox and Snell R square) and 33.2% (Negal kerker R square) of the variance between nutritional status and correctly classified 84.1% of cases.

Participants with lower age were 2.77 times more likely to be malnourished as compared to the higher age group (p-value=0.007, OR=2.77, 95% CI:1.329-5.802). Participants who had hand washing practice were 3 times more likely to be healthy as compared to malnourished (p-value=0.05, OR=3.5, 95% CI: 0.9-13.7). The bus helper child had less chance to become underweight than the day labor (OR=0.00). The hawker and worker of restaurant child were also less likely to be underweight as compared to the day labor. The garbage picker and mechanics were 1.3 times more likely to be underweight as shown in Table-III.

Table-III: Logistic regression model.

Variables	p-value	OR	95% C.I for Exp (B)	
			Lower	Upper
Bus Helper	0.999	0.000	-	-
Hawker	0.463	0.449	0.053	3.819
Worker at restaurant	0.527	0.513	0.065	4.071
Garbage picker	0.809	1.301	0.154	10.995
Mechanic	0.803	1.312	0.155	11.070
Age	0.007	2.777	1.329	5.802
Hand washing	0.068	3.535	0.909	13.745
Constant	0.002	0.016	-	-

DISCUSSION

The current study was conducted to estimate the prevalence of malnutrition among street children. Total 88 participants were included in the study. Majority were males 56 (63.6%), same findings (77% male, 23% females) were found that street children belong to most of the male gender.[10] Male children move to the street due to domestic violence and feed the family members. Most of the street children belong to the age group 13-15 years; this finding is contrary to the finding of the study conducted by Kalimbira *et al*[11] that most of the street children found in the lower age group. Majority of the children were found having more family members this showed that over population and low socioeconomic status push children to become street children.

In the current study, 74% street children were found malnourished (underweight) and only 15.9% were found normal and no one was found overweight. Similarly, a study conducted by Hakim *et al*[1] in Bangladesh reported 65% underweight status among street

children. The comparative study conducted in Kenya reported that the malnutrition was found 6 times more in street children as compared to the other children.[10] Study conducted in Kenya reported 73% malnourished and no one was found overweight same as the current study.[12] No overweight occurrence among street children is due to their aggressive physical activity and poor dietary intake.

In this study street children who had no hand washing practice before eating meal were more malnourished as compared to the children who had practice of hand washing. Same finding was found by the study conducted in Bangladesh.[1] This study found that the malnutrition is statistically significantly associated with the lower age group. Malnutrition found more among lower age group as compared to the above age group (p-value <0.005). Whereas, age of the street children made no difference in nutritional status was found in a study conducted by Tufail *et al*.[9] There was no statistically significant association found of malnutrition with gender and education status (p-value>0.05) in current study. Study conducted by Uddin *et al*[13] reported that the lower level of education was found statistically significantly associated with malnutrition (p-value<0.005). Same finding was found in a study conducted by Bhukuth *et al*,[14] that non-school going children were associated with the underweight status of the children.

In the current study the garbage picker and hawker found more prone to malnourishment as compared to the others. Same finding have been reported in a study conducted by Uddin *et al*.[13] A systematic review concluded that hand cleansing can reduce the risk of acute respiratory infections by 16% and diarrheal disease by almost half (42-49%).[15]

Prevalence of malnutrition among street children was found high in the current study which may weaken the immune system in the longer term. Owing to this, there was a significant association between hand hygiene practices and contracted an infectious diseases like diarrhea & flu in the past three months. The likelihood of high infection rates due to poor living conditions on the street, is likely to worsen the vicious cycle of malnutrition and infection.[16]

In current study no association between dietary intake and nutritional status of street children was found. Same finding was found in a study conducted on the nutritional status and adolescents in Indonesia. [17] It could be due to the limitations in dietary intake assessment based on recall.

In this study the significant association was found between malnutrition and hand hygiene practices. Similar findings were reported in a study conducted by Hakim *et al*,[1] that the huge percentage of street children was found to be the malnutritioned (66.67%) due to the lack of access to safe drinking water, inadequate nutritious foods, lack of hygiene practices and shelter. It has been found in literature that hygiene practices affect the nutritional status of the individuals.[18] In the human body to support growth and development, health, nutritional care and mental activities prevent occurrence of diseases. If nutrients deficiency exists for long time, they result in interference with body functioning and hence increasing the occurrence of diseases. Malnutrition weakens the immunity and this makes the children more vulnerable to the infections. Ingesting contaminated food, inadequate dietary intake of essential nutrients, faulty dietary habits and repeated illnesses are immediate causes of malnutrition.[19] Stress related to lack of nutrition and homelessness can contribute to early smoking and other immoral behaviors of these children.[15] That's why these street children are considered as deviant and criminals. Street children have wide exposure to diseases such as chronic problems like respiratory diseases, parasitic infections, and skin infections. They are also at high risk of substance abuse. The risk of exposure to diseases needs high nutritional intake.[20]

CONCLUSION

Most of the street children roaming around the streets of Rawalpindi are underweight indicating malnutrition. Age and hand washing are strongly associated elements with the nutritional status and the logistic regression model identifies age and hand washing along with occupation of garbage picker and mechanic as the strongest predictors of malnutrition among the study participants. Malnutrition is a grave national issue and especially among the street children. It is a very understudied area. It should be dealt with accurate policy change and programs initiation especially for these under privileged children.

Conflict of Interest: None.

Author's Contribution

AHK: Conception, data collection, entry, study design, manuscript writing, NA: Conception of study design, final approval, MR: Conception of study, data collection, critical review, SA & RA: Data analysis and interpretation, manuscript writing.

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