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Improving health services for street children in selected areas of Pune city

Vanita N Jamdade
College of Nursing, Bharti Vidyapeeth Deem University, Pune, Maharashtra, India

Abstract

Health is recognized as one of the basic rights of every child. Macro level challenges continue to mar the attempts made to solve the multi dimensional problems of street children. The government, civil and international bodies in India has been striving to fulfill the obligations stated in our policies and in the CRC. They are a result of increasing poverty and unemployment, increased migration of families, broken families, neglect, abuse, riots and violence, armed conflicts, natural and man-made disasters, decreasing resources in rural areas, and the attraction of cities. **Aim**: To assess the health status of the street children from selected areas of Pune city. Health status was assessed on the basis of nutritional assessment. **Methods:** A total of 100 samples, from children of age between 6-12 years were selected by using non probability convenient sampling technique. The developmental tool comprises of physical examination like anthropometric measurement like pulse rate, respiration rate, temperature, blood pressure, height, weight, systematic assessment of physical parameters, and nutritional assessment. Statistical package for Social Scientists (SPSS/PC+) computer package was used for data entry and analysis. Indices of nutritional status that is weight- for- age, height- for- age, weight- for- height were calculated using the WHO child growth standard. **Results:** The study findings revealed that there was a prevalence of stunted, underweight and wasted children. Out of 31% stunted growth, 04% of street children are severely wasted and 20% of street children are wasted. 7% of the street children are severely underweight and 28% of the street children are underweight.

Keywords: Health Services, Street children, nutrition assessment

***Corresponding author: Mrs. Vinita N Jamdade,** College of Nursing, Bharti Vidyapeeth Deem University, Pune, Maharashtra, India. Email: vinita.jamdade@gmail.com

1. Introduction

A cross-sectional study was conducted in which the investigator explored nutritional status in school- age street children and analyzed factors associated with malnutrition with the help of a predesigned and pre-tested questionnaire, anthropometric measurement and clinical examinations from December 2010 to April 2011 in urban slums of Bareilly, Uttar- Pradesh (UP), India. The mean height and weight of boys and girls in the study group was lower than the CDC 2000 (Centre for Diseases and Control Prevention) standards in all age group. Regarding the nutritional status, prevalence of stunting and underweight was highest in age group 11 years to 13 years whereas prevalence of wasting was highest in more common in girls, but the gender difference is statistically significant only for anemia and rickets. The risk of malnutrition was significantly higher among children living in joint families, children whose mother‘s education was (less than or equal to) 6th standard and children with working mothers. Most of the street children in the study had poor nutritional status [1].

Based on gender the percentage of female respondents was higher i.e.39%, while that of the male street children was 29%. The

average weight of the street children was 40.5kg and the height was 148.3cm. In contrast, the average weight for females was 35.8kg and the height was 138.6 cm. based on the classification of nutritional status, 42.7% and 80.4% of street children were underweight and stunted respectively [2].

Another study conducted in which Of the 353 children studied, 38.2% belonged to the school-aged group, with 7% more girls than boys. Only 11.3% of the children had normal HAZ while 10.3% had normal WAZ. The largest percentages of children (31.8% HAZ and 29.1% WAZ) were clustered in the SD1 group that is the severely stunted or wasted group. In every age group except the 9- to 12-year group, most of the children were found in the WAZ SD1 category. Gender appeared to influence the SD1 category significantly. There were 17.0% severely stunted girls (SD1), as compared to 14.8% boys; while the percentages of WAZ girls were 16.1% and boys was 13%. The situation in the urban areas was slightly better: 6.4% of the sample had normal HAZ and 7.1% had normal WAZ, compared with 4.4% and 4.6% of the rural children. In all three agro climatic situations, the largest percentage of children fell in the HAZ SD1 (stunted) category (15.3% in the high hills, 7.3% in the middle hills, and 9.5% in the low hills). There is a significant effect of area (rural vs. urban) on stunting and wasting among children. The child's sex affects stunting only. The other two variables, altitude and age, do not show a significant relationship with stunting or wasting [3].

The factors that determine the odds of becoming nutritionally well-off or worst-off status are length of period spent working on the streets, scavenging scrap materials for subsequent sale, total average income per day, part of income spent on gambling activities; and food combinations eaten. There are varied needs of the street children in the area of nutrition, health and livelihood [4].

Compared with children in food insecure, subsidized families, the adjusted odds ratio (95% confidence interval) for weight-for-age z score more than 2 SDs below the mean was 2.11 (1.34- 3.3) for children in food insecure, non subsidized Families [5].

The average earning of the children was between 2000 and 3000 rupiah/day (U.S. $1=2000 Indonesian Rupiah). The distribution of height-for-age relative to the NCHS reference standard indicated that 52% of the children were stunted (below the third percentile of the standard). However the distribution of weight-for height was close to that of the reference population standard, and only 7% of the children were wasted (below the third percentile of the standard). A comparison of the data from these street children showed that they weighs more and are taller than their socio-economic peers [6].

Status related to health status of the street children:

The department of Anthropology, Case Western Reserve University, and Cleveland, Ohio 44120, USA has conducted a study to assess the growth and health status of street children in Dhaka, Bangladesh. (Jan-Feb 2007) The purpose of this study was to assess the effects of street life on the growth and health status of poor children who live and work full time on the streets of Dhaka, Bangladesh (street children), independent of the effects of poverty. This was accomplished by comparing 142 street children with 150. Poor children who live and work on the streets of Dhaka but who return to their families at night (slum children). Children between 7-14 years, weight and upper arm circumference did not differ significantly between street and slum children. They are typically found ($p > 0.05$), but energy reserves, as assessed by skin fold thickness, were significantly larger in street than in slum children. ($p< 0.05$). There was no wasting in either in slum and street children. Although, the majority of children in both groups were stunted and underweight, there was no significant difference between groups ($p > 0.05$). The prevalence of disease symptoms tended to be slightly higher in street children than in slum children, but few of the differences were statistically significant (p 0.05). This data does not support the

contention that street children are a particularly high- risk group. The greater than- expected growth and health status of street children, compared to other poor children, may be due to biologically fit children being more likely to permanently move to the streets and/ or to remain on the streets once the move has been made [7].

Studies related to mortality and morbidity of street children

A study was conducted to examine the challenges of understanding mortality changes among street youth in New York (2009). According to cohort study conducted in Montreal, Quebec from 1995 to 2000, the mortality rate among the street youth was 921/100,000 person year. Several new community initiatives aiming to increase access to housing and to social and health services for the homeless were implemented in the city between 2000 and 2003. This study aimed to update the mortality rate estimate for the period 2001-2006 and to examine factor that could explain a difference between rates, if any. A second cohort study was conducted between 2001 and 2006. The cohort two mortality rates was computed and compared with the cohort one rate. Several analysis then carried out: Mortality rates in the general population were compared with street youths using standardize mortality ratios; A total of 1,687 subjects participated in the two cohorts: 829 in cohort 1 only, 647 in cohort 2 only, and 184 in both cohorts.

Sex distribution and mean age at recruitment into Cohort 2 (68.9% boys; 20.4 years) were similar to those reported for cohort 1 (67.4%; 19.9 years). Five of the 858 participants in cohort 2 died during follow-up, for a mortality rate of 191/100,000 persons year (95% CI, 62-447). Causes of death were overdose (2), suicide (1), unintentional injury (1), and unknown (1). This mortality represents a decrease of 79% (from 921/100,000 persons years to 191/100,000 persons years) and the difference between the rates was statistically different (pG 0.001). The corresponding decline in the general population was only 19% and the SMRs in cohort 1 and 2 were 11.6 (95% CI, 7.6-17.0) and 3.0 (95% CI, 1.0-6.9), respectively. The statistically significant difference between SMRs shows that the decline in the mortality was greater among street youth than in general population [8].

A study conducted in Montreal (2004) to estimate mortality rate among street youth in Montreal and to identify causes of death and factors increasing the risk of death. From January 1995 to September 2000, 1013 street youth 14 to 25 years of age were recruited in a prospective cohort with semiannual follow ups. Original study objectives were to determine the incidence and risk factor for HIV infection in that population; however, several participants died during the first months of follow up, prompting investigators to add mortality to the study objectives. Mortality data were obtained from the coroner‘s office and the Institute de la Statistique du Quebec. 26 youths died during follow up for a mortality rate of 921 per 100,000 persons- years (95% confidence intervals (CI), 602- 1350); this represented a standardized mortality ratio of 11.4. the observed causes of death were as follows: suicide (13), overdose (8), unintentional injury (2), fulminate hepatitis A (1), heart disease (1); unidentified (1). In multivariate Cox regression analysis, HIV infection (adjusted hazard ratio AZR = 5.6; 95% CI, 1.9-16.8), daily alcohol use in last month (AZR= 3.2, 95% CI, 1.3-7.7), homeless in the last 6 month (AZR= 3.0, 95%CI, 1.1-7.6), drug injection in the last 6 month (AZR = 2.7, 95% CI, 1.2-6.2), and male sex (AZR= 2.6, 95%CI, 0.9-7.7), were identified as independent predictors of mortality [9].

A study conducted in which 27 street youth and 27 non runaway peers responded to a questionnaire investigating history of running away, depression level, coping strategies, family history and stress. Analyses revealed that stress and depression were positively correlated for the street youth and that these youth had higher levels compared with non runaways of both. There were also differences in coping strategies: street youth were more likely to engage in acts of self-harm and to use drugs and alcohol, while non runaways more frequently resorted to productive problem solving and

disclosure/discussion with someone they trust [10]. A study was conducted in which the children were aged between 4 and 17 years. (Mean 10.5 years.) 64% were males and 18% belonged to ethnic minorities. The majority (84%) had family ties. Family disintegration was mentioned as the cause for life on the streets by 36%. Child labour was reported in 38%. 16% admitted to being sexually abused. 20% were tobacco smokers. Respiratory and skin infections, and injuries incurred in road traffic accidents were the main causes of morbidity [11].

2. Materials and methods

A total of 100 samples, from children of age between 6-12 years were selected by using non probability convenient sampling technique. The children were selected from areas of Pune city. The areas were a shelter in Kondhava, footpaths nearby Pune railway station, traffic signal areas like Hadapsar, Swargate (Jedhe Chauk), Nal stop, Shivajinagar. The children were from mixed community comprising of all castes and cultures. The children selected for this study were those who are begging, selling something like balloons, flowers, toys on street and living on the streets.

The developmental tool comprises of physical examination like anthropometric measurement like pulse rate, respiration rate, temperature, blood pressure, height, weight, systematic assessment of physical parameters, and nutritional assessment. The tool was validated [18] by total twenty one experts out of which fifteen (15) experts were from community health Nursing, three(3)were from community medicine, two(2) were from paediatric Health Nursing and one (1) from Biostatistics department.

To test the reliability of the tool [18] the method of rational equivalence 'has been used. Method used: Following formula gives coefficients of reliability. Also data is collected by one person so, ∑pG gives the exact error in the reliability scores.

$$r_{11} = \frac{n}{(n-1)} \frac{\sigma_t^2 - \sum pq}{\sigma_t^2}$$

Where,

r11 = reliability coefficient of the whole test.
n = number of items in the test.
σt= *the S.D. of the test scores.*
P = the proportion of group answering a question to each choice.
q = (1-p) = the proportion of group not answering a question to each choice.
n = 10

If value of r11 is greater than 0.80 then test is reliable. As value of *r*11 0.8318 (83.18%). As the result, the test for practices is reliable. Hence the tool was found to be reliable.

Samples of 10 street children from Nal-stop signal from Kothrud area were selected. To assess the feasibility of the study and to decide the plan for data analysis [18].

3. Results

Analysis of the data Physical assessment

SN	Sample Characteristics	Female		Male		Total
		frequency	%	frequency	%	
1	less than 98f	14	14	6	6	20
2	more than 98.6F	03	03	05	05	08
3	Within 98-98.6F	35	35	37		72

Table no 1: Distribution of street children according to their body temperature. (N=100)

Table No 1.Shows the body temperature of the street children. In females, 14%had temperature lower than normal, 3% had higher than normal and 35% had within normal range. In males, 37% had temperature within normal range, 5% had higher than normal temperature and 6% had lower than normal temperature.

Table No 2: Distribution of street children according to their pulse (N = 100)

SN	Sample Characteristics	Female		Male		Total
		frequency	%	frequency	%	
1	less than 60/min	12	12	6	6	18
2	more than 95	12	2	7	7	19
3	within 60-95	28	28	35	35	63

Table No 2: shows the pulse rate of the street children. In females, 12%had pulse rate lower than normal, 12% had higher than normal and 28% had within normal range. In males, 35% had within normal, 7% had higher than normal and 6% had lower than normal pulse rate.

Table No 3: Distribution of street children according to their respiration. (N = 100)

SN	Sample Characteristics	Female		Male		Total
		frequency	%	frequency	%	
1	less than 14/min		03	05	05	18
2	more than 22/min	07	7	05	05	12
3	within 14-22/min	42	42	38	3	80

Table No 3: shows the rate of respiration of the street children. In females, 3% had low respiration, 7% had high respiration rate and 42% female street children had normal respiration. In male children, 05% had low respiration, 05% had high respiration, 38% male children's respiration rate was normal**.**

Table No 4: Distribution of street children according to their blood pressure (N = 100)

SN	Sample Characteristics	Female		Male		Total
		Frequency	%	Frequency	%	
1	Less than 90/60mm of hg	15	15	13	13	28
2	More than 100/70 mm of Hg	5	5	7	7	12
3	90/60- 100/70 Mm of hg	32	32	28	28	60

Table No 4: shows the blood pressure of the street children. In females, 15% had low blood pressure, 5% had high blood pressure and 32% female street children had normal blood pressure. In male children, 13% had low blood pressure, 7% had high blood pressure, 28% male children's blood pressure were normal.

Table 5: Frequency distribution of participants having nutritional inadequacy by WHO growth chart (Z score) with respect to height for age.

SN		Frequency
1	Above +3sd	00
2	Above + 2sd	00
3	Above + 1sd	00
4	Above 0 sd	02
5	Below 0 sd	20
6	Below - 1 sd	47
7	Below - 2sd	27
8	Below -3sd	04

4% of the street children are severely stunted as they are lie below -3sd. 27% of the street children are stunted as they lie below-2sd. 69% children fall within normal range

Table 6: Frequency distribution of participants having nutritional inadequacy by WHO growth chart (Z score) with respect to weight for age. (N= 100)

SN		Frequency
1	Above +3sd	00
2	Above + 2sd	00
3	Above + 1sd	00
4	Above 0 sd	0
5	Below 0 sd	09
6	Below - 1 sd	56
7	Below - 2sd	28
8	Below -3sd	07

07% of the street children are severely underweight as they lie below -3 SD.28% of the street children are underweight as they lie below -2sd. 65% of the street children within normal range.

Table No 7: Frequency distribution of participants having nutritional inadequacy by WHO growth chart (Z score) with respect weight for height. N= (100**)**

SN		Frequency
1	Above +3sd	00
2	Above + 2sd	00
3	Above + 1sd	00
4	Above 0 sd	03
5	Below 0 sd	37
6	Below - 1 sd	36
7	Below - 2sd	20
8	Below -3sd	04

04% of street children are severely wasted as they lie below -3sd. 20% of street children are wasted as they lie below - 2sd. No children were found at possible risk of being overweight. 76% of children are in the normal range.

Table No 8: Distribution of children according to Skin and Integumentary system assessment. N= (100)

SN	Sample characteristics	F	(%)
1	Skin rash	23	23
2	Skin injury scar	13	13
3	Scabies	11	11
4	Dermatitis	12	12
5	Normal skin	28	28

In the physical examination, on the examination of skin 23% children had a rash, 13% had a scar due to road traffic accident or an injury, 11% had scabies infection, 12% had dermatitis, and 28% children did not have any skin problem.

Table No: 9 Distribution of children according to assessment findings on head. N= (100)

SN	Sample characteristics	Frequency	(%)
1	Pediculosis	25	25
2	Deformity	6	6
3	White hair	2	2
4	Brown, dry,& hard hair	47	47
5	Normal hair	20	20

Health problems on the head of street children are as follows. 25% children had pediculosis, 6% had deformity due to head injury, 2% had white hair, 47% had brown, hard and dry hair and 20% did not have any problem**.**

Table No: 10 Distribution of children according to assessment findings in eye problems. N= (100)

SN	Sample characteristics	Frequency	(%)
1	conjunctivitis	8	8
2	squint	6	6
3	Watery discharge	20	20
4	Discolouration of eye	30	30
5	Vision problem	30	30

64% children had eye related problems 8% had conjunctivitis, 6% had squint, 20% had watery discharge, 30% had discoloration of eye, 30% had other vision problems.

Table No: 11 Distribution of children according to assessment findings in ear N= (100)

SN	Sample characteristics	Frequency	P (%)
1	Chronic ear infection	40	40
2	Impacted wax	36	36
3	Earache	25	25
4	No abnormality	39	39

In ear majority number of children i. e. 40% children had chronic ear infection, 36% had impacted wax, 25% had earache and other 39% did not complain about any problems.

Table No: 12 Distribution of children according to assessment findings in nose. N = (100)

SN	Sample characteristics	Frequency	(%)
1	URTI	28	28
2	LRTI	10	10
3	Deviated Nasal Septum	5	5
4	No abnormality	57	57

Common cold (URTI) was the major problem with 28% children, 10% had lower respiratory tract infection. 5% had Deviated Nasal Septum (DNS) and 57% did not suffer any problem.

Table No: 13 Distribution of children according to assessment findings in mouth. N = (100)

SN	Sample characteristics	Frequency	(%)
1	Dental caries	89	89
2	Incomplete teeth	4	4
3	No abnormality	7	7

N89% children had slight or marked dental caries with or without bleeding gums and 4%

children had incomplete set of teeth. Only 7% children could found that had no problems with their teeth.

Table No: 14 Distribution of children according to assessment findings in neck. N = (100)

S N	Sample characteristics	Frequency	(%)
1	Rigidity	5	5
2	Lymphadenopathy	3	3
3	No abnormality	92	92

5% had rigidity in their neck only 3% children had cervical lymph node swelling. 92% showed no abnormality

Table No: 15 Distribution of children according to assessment findings in chest. (N= 100)

S. N	Sample characteristics	Frequency	(%)
1	Scoliosis	2	2
2	Deformity (protrusion forward)	2	2
3	Abnormal sounds	6	6
4.	No abnormality	90	90

2% children had scoliosis, 2% were having forward protrusion on chest. Auscultation, 6% had abnormal sounds like wheezing or crackling sound in the chest. 90% showed no abnormality.

Table No: 16 Distribution of children according to assessment findings in Abdomen. N = (100)

Sr.No.	Sample characteristics	Frequency	(%)
1.	Pain	30	30
2.	Diarrhoea	20	20
3.	No complaints	50	50

Pain in abdomen is the major complaint from 30% of the children. 20% were having diarrhoea and 50% did not show any problems.

Table No: 17 Distribution of children according to assessment findings in upper and lower extremities. N = (100)

Sr.No.	Sample characteristics	Frequency	(%)
1	Extra digits	4	4
2	Poliomyelitis	2	2
3	Contractures	2	2
4	No abnormalities	92	92

4% children had extra digits on the upper extremities. 2% had poliomyelitis, 2% had contractures. Others had problems like lack of personal hygiene, pain in lower extremities, corn and cracks in the heel. 92% children did not reveal any problems.

Table No: 18 Distribution of children according to assessment findings in back. N = (100**)**

Sr.No.	Sample characteristics	Frequency	(%)
1.	Low backache	5	5
2.	Abnormal shape of back	4	4
3.	No abnormality	91	91

Low back pain was the major complaint of 5 % girls those who attended menarche 4% children had abnormal shape of back (protrusion, swelling on back). 91% did not reveal any abnormalities.

Analysis of nutritional assessment

Table.19 Analysis of modified ICMR Score card for Clinical assessment of nutritional status of street children. (N= 100)

Sr. No.	Examination	Findings	Total f	Nutritional Inadequacy		Considered Nutritional Inadequacy
				F	P	
01.	General Appearance	0 good 1 fair 2 poor 3 very poor	7 18 40 35	93	93	----
02.	Eyes					
A	Conjunctiva					
I)	Xerosis	0 absent, glistening and Moist 1 slightly dry on Exposure for a minute, Lack of lustre. 2 conjunctiva dry and Wrinkled 3 conjunctiva very dry And bitot's spots	37 50 11 2	63	63	Vitamin a
Ii)	Pigmentation	0 normal colour 1 slight discoloration 2. Moderate browning in Patches. 3 severe earthy Discoloration	21 45 18 16	79	79	Vitamin a
Iii)	Discharge	0 absent 1 watery, excessive Lachrymator 2 muco- purulent 3 purulent	50 41 6 3	50	50%	Vitamin a
B	Cornea					
I)	Xerosis	0 absent 1 slight dryness and Diminished Sensitibility. 2 haziness and diminished Transparency 3 ulceration	76 16 3 5	24	24%	Vitamin a
C	Functional					
I)	Night Blindness	0 absent 1 present	100 0	Nil	Nil	Vitamin a
3.	Mouth					

Sr. No.	Examination	Findings	Total f	Nutritional Inadequacy		Considered Nutritional Inadequacy
				F	P	
A	Lips - Condition	0 normal 1 angular stomatitis, Mild 2 angular stomatitis, Marked	40 52 08	60	60	Riboflav In
B	Tongue					
i)	Colour	0 normal 1 pale but coated 2 red 3 red and raw	8 49 33 10	92	92	Riboflavin
ii)	Surface	0 normal 1 fissured 2 ulcered 3 glazed and atropic	20 49 30 1	80	80	Riboflavin
C	Buccal Mucosa Condition	0 normal 1 stomatitis	70 30	30	30	Riboflavin
D	Gums Condition	0 normal 1 bleeding and gingivitis 2 pyorrhoea	57 33 10	43	43	Vitamin c
E	Teeth					
i)	Fluorisis	0 absent 1 chalky teeth 2 pitting of teeth 3 mottled and discoloured Teeth	08 34 31 27	92	92	Fluoride
ii)	Caries	0 absent 1 slight 2 marked	11 38 51	89	89	Vitamin d
4	Hair condition	0 normal 1 loss of lustre 2 discoloured and dry 3 sparse and brittle	9 40 36 15	91	91	Protein
5	Skin					
A	General					
i)	Appearance	0 normal 1 loss of lustre 2 dry and rough or crazy Pavements 3 hyperkeratosis, Phrynoderma	7 63 26 4	93	93	Protein
ii)	Elasticity					
B	Regional					

Sr. No.	Examination	Findings	Total f	Nutritional Inadequacy		Considered Nutritional Inadequacy
				F	P	
i)	Trunk	0 normal 1 collar like Pigmentation and Dermatitis around the Neck	83 17	17	17	Niacin
ii)	Face	0 normal 1 nosolabial seberosa 2 symmetrical sub-orbit Pigmentation 3 moon face	76 14 05 05	24	24	Riboflavin Protein
Iv)	Extremities	0 normal 1 symmetrical dermatitis With pigmentation of Glove or stocking type	75 25	25	25	Niacin
6	Oedema distribution	0 absent 1 oedema on dependent Part general anasarca	78 22	22	22	Protein
7	Alimentary System					
A	Appetite	0 normal 1 anorexia	19 81	81	81	Thiamine
B	Stools	0 normal 1 diarrhoea	80 20	20	20	Niacin
C	Liver	0 not palpable 1 palpable	80 20	20	20	Vitamin d, And Calcium
D	Spleen	0 not palpable 1 palpable	86 14	14	14	Vitamin B12
8	Nervous System					
A	Calf - Tenderness	0 absent 1 present	80 20	20	20	Thiamine
B	Parasthesia	0 absent 1 present	81 19	19	19	Vitamin B12

Interpretations:

1. The presented data in table. No 19 shows that only 7% of street children had good general appearance.

2. Eyes:

A) conjunctiva:
i) 63% children may have Vitamin A inadequacy observed by xerosis.
ii) 79% children may have Vitamin inadequacy observed by pigmentation in eye on conjunctiva.
iii) 50% children had discharge in eyes and thus may have Vitamin A inadequacy.

B) Cornea:
i) xerosis- 24% children showed xerosis and may have Vitamin A inadequacy.

C) Functional:
i) Night-blindness – Not a single child suffered from night- blin

3. Mouth:
A) Lips – condition: 60% children may have Riboflavin inadequacy

B) Tongue
i) Colour: 92% children may have riboflavin inadequacy as their tongue was pale, red, raw and coated.
ii) Surface: 80% children shows fissured, ulcered, glazed and atropic changes on surface of tongue. They may have Riboflavin inadequacy.

C) Buccal mucosa condition: 30%children have stomatitis. They may have Riboflavin inadequacy.

D) Gums condition: 43% children had bleeding and Pyorrhoea. They may have Vitamin C inadequacy.

E) Teeth:
i) Fluorisis – 92% children showed that they may have fluoride inadequacy as they had chalky, mottled and discoloured teeth.
ii) Caries- 89% children suffered with slight to marked dental caries and may have Vitamin D inadequacy.

4. Hair condition: 91% children show that they may have protein inadequacy as their hair had loss of lustre and was discoloured, dry, sparse and brittle.

5) Skin:

A) General -:
i) Appearance: - 93% children may have protein inadequacy as they showed signs like dry, rough hyperkeratosis skin and loss of lustre.
ii) Elasticity: - 79% children had diminished elasticity and wrinkled skin. They may have protein inadequacy.

B) Regional:
I) Trunk: - 17% children had dermatitis and pigmentation around the neck. They may have niacin inadequacy.
ii) Face: - On the assessment of face 24% may have protein and Riboflavin inadequacy as explicit signs like moon face and symmetrical suborbital pigmentation were present.
iii) Perineum: - 23% children may have Riboflavin inadequacy as they had dermatitis in the perineum area.
iv) Extremities: - 25% children may have Niacin inadequacy as they were showing the dermatitis on extremities.

6) Oedema distribution: 22% children had oedema on dependent part as they may suffer with protein inadequacy.

7) Alimentary canal:
A) Appetite: - 81% may have Thiamine inadequacy as they all had anorexia.
B) Stools: - 20% children were suffering with Diarrhea. They may have Niacin inadequacy.
C) Liver: - 20% children‘s liver was palpable. They may have Vitamin D and Calcium inadequacy.
D) Spleen: - 14% children may have Vitamin B12 inadequacy as their spleen was palpable.

8) Nervous System:
A) Calf- tenderness: - 20% children had calf – tenderness.
They may have Thiamine inadequacy.
B) Parasthesia: - 19% children may have vitamin B12 inadequacy.

4. Discussion

Physical assessment- Anthropometric measurement physical measurements

The data presented in table no 12 shows that 72% children were normothermic, while in deviation 20% were having below normal temperature as it was the rainy season. The data presented in table No. 13 shows 63% had a normal pulse rate while 37% showed variations. The data presented in table no 14 shows the majority (80%) children had normal respiration pattern. The data presented in table no 15 shows that 60% children did not show any variations in their blood pressure. 12% had high blood pressure.

The data presented in table no 16 shows that 4% of the streets children are severely stunted as they lie below -3sd. 27% of the street children are stunted as they lie below -2sd. 69% children are within in normal range. 07% of the street children are severely underweight as they are lying below -3 sd.

28% of the street children are underweight as they lie below -2sd. 65% of the street children within normal range. 04% of street children are severely wasted as they are lying below -3sd. 20% of street children are wasted as they are lying below -2sd. No children were found at possible risk of being overweight. 76% of children are within the normal range

Nutritional assessment findings:

Only 7% of street children had good general appearance. Vitamin A inadequacy was revealed by xerosis and pigmentation of conjunctiva in 63% and 79% respectively. However no night blindness could be found. Riboflavin deficiency could be inferred from pale red coated tongue. 92% street children had fissured, ulcered and glazed atrophic changes were seen in 80% children. 43% had pyorrhea and bleeding gums suggestive of Vitamin C deficiency. 92% showed Fluorosis while 89% showed dental caries suggestive of vitamin D deficiency. That protein deficiency was very common was proven by 91% lusterless hair, 93% had rough, dry hair. 29% showed decreased elasticity in skin. 20% had calf tenderness and 19% had Parasthesia suggestive of Thiamine deficiency.

India has the highest street children population in the world [12]. India has nearly 20 million street children (approximately 7% of the child population [13].

Estimated that there are 100,000 to 125,000 street children each in Mumbai, Kolkata and Delhi, with total children (0-6) in Pune city are 324,572 as per figure from Census India 2011. The child forms 10.42% of total population of Pune city, including the street children. On the morbidity front, about 3/4 of our pediatric population can be classified as unhealthy and surviving with impaired bodies. Exploratory analysis is a standard design of such a study [14]. It has been observed that the female children in such studies have essentially always been better respondents. In our study there were 4% more girl respondents as in the study of Dutta et al where there were 7% more girl respondents. The most common diseases suffered by the street children were acute respiratory infections (ARI) (47%). In addition, 22.7% and 18.4% of them suffered from diarrhea and skin diseases respectively [15].

Development of tool involved the steps of preparing three sections, and content validity and establishing reliability. The pilot study was done on 10 street children from Nal – stop signal from Kothrud area from 14th august to 19th August 2012, to assess the feasibility of the study and to decide the plan for data analysis. Total 100 samples were taken with non probability convenient sampling technique from selected areas of Pune city. Data collection was done using appropriate techniques. The data analysis was done on the basis of objectives. The data gathered and analyzed using descriptive and inferential statistics

Conclusion

Study highlighted the fact about the poor health and nutritional status about our street children. The tobacco control and supply of tobacco needs to be given a serious thought by the govt of India as well as the local authorities as to ensure that these are not easily available. We need to look into the high incidence of neurological problems in the street children.
New strategy needs to be developed to reach out for complete and standard immunization of the street children as 30% shortfall in immunization is a huge gap especially for children living in cities where facilities are close by and resources are not difficult to organize. The NGOs need to be encouraged and supported by selectively identifying the ones who are doing good a job and thereby ensuring better food and shelter to these underprivileged children. Vitamin deficiency is an important problem and probably this can be easily made by additional supplementation in the form of tablets or vitamin rich diet supply to these children. The present study shows that the public health system in Pune city has fallen short to ensure access and availability of adequate health services to street children.

Thus, it can be seen that the —right to health —as far as street children are concerned has not been achieved. Health education and awareness by means of street play, health campaign, health camp for street children is an important aspect to reduce the child morbidity and mortality. Also there is an urgent need to assess the exact number and location of these children staying on the streets in Pune, since a healthy street child could contribute to a healthier, cleaner and prosperous Pune

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