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Assessment of oral health status of street children in Kolkata, West Bengal, India

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ABSTRACT

Street children are considered to be a high risk group for dental diseases especially dental caries and bleeding gums. The aim of this study was to assess the oral health status of street children living in Kolkata. A cross sectional study was conducted on 480 street children aged from 3 to 18 years in randomly selected 10 zones in Kolkata. In the study the prevalence of Dental caries was 68.13% and bleeding gum 44.17%. Substance abuse, mothers qualification, per capita monthly income, duration of breast feeding, awareness about oral hygiene practice, fruits and vegetable intake, and protein intake had great influence on their oral health status. Knowledge enhancement of the street children is recommended by empowering them with oral hygiene practice and healthy food habit related information.

KEYWORDS Street Children, Dental caries, bleeding gum

Introduction:

'Street children' is a term for children experiencing homelessness who live on the streets of a city, town, or village. Homeless youth are often called street kids and street youth; the definition of street children is contested, but many practitioners and policymakers use UNICEF's concept of boys and girls, aged under eighteen years, for whom "the street" (including unoccupied dwellings and wasteland) has become home and/or their source of livelihood, and who are inadequately protected or supervised.[1] The street children in India choose to leave their families and homes for three strategic reasons - urban poverty, families, and urbanization. They are result of increasing poverty & unemployment, increased migration of families, broken families, neglect, abuse and violence, armed conflicts, natural and manmade disaster, decreasing resources in rural areas and the attraction of cities. [2] Not only they are exposed and susceptible to disease, they are also unlikely to be vaccinated or receive medical treatment.[3] Street children in India face additional vulnerability because of their lack of access to nutritious food, sanitation, and medical care. Street children lack access to nutritious food because many are dependent on leftovers from small restaurants or hotels, food stalls, or garbage bins. Studies on the oral health status of street children are scarce. Limited studies showed that street children are commonly faced with oral health problems, especially periodontal problems. [4] In a number of studies prevalence has to be higher among boys. A survey on oral health status of street children in Guntur City, Andhra Pradesh found that prevalence of dental caries was 50.19%.[5]

A cross sectional study on oral health status of street children in Delhi, India, conducted by Mehta A & Mansoori S found that prevalence of dental caries was 36.5%.[6] Hence the present study aims to assess the oral health status, oral hygiene practices and personal habits of street children in Kolkata city, West Bengal.

Methodology: It was a cross sectional study in 10 randomly selected zones of Kolkata out of the total of 11Assembly zones, West Bengal conducted during June 2016 to November 2016. The selected zones (Kolkata port, Bhabanipur, Rashbehari, Ballygunge, Chowranghee, Entally, Beleghata, Jorasanko, Shyampukur and Maniktala) were considered according to various Assembly area of Kolkata. Street children living outside Kolkata and those who were not willing to participate were excluded.

Here each Assembly zone was considered as one cluster. Therefore the study was conducted taking 10 clusters with the cluster size 48. From each cluster 48 street children in the age group 3 to 18 years were selected randomly. Total number are 480.

As we followed interview technique for data collection, interviewer administered questionnaires were filled, obtaining information from them and their guardian within specific time period. Suitable time schedule was fixed for the survey without hampering their daily working schedule.

Information regarding the demographic factors, personal habits and oral hygiene practices was obtained from 10-15 study subjects in a day by interview method using the questionnaire in a private area away from other participants. Guardians of the children aged 3-10 years were allowed with them. Oral examination was performed using a mirror and torch in a natural day light. Information collected through this schedule which included general information pertaining to study subjects like Name, Date of Birth, Age, and Gender. Clinical assessment includes dentition status of child for caries and its effect like missing or filled teeth due to caries. Diet history was recorded according to 24 hour recall method. Regular diet pattern were also recorded. In the survey that mothers informed about the period of breast feeding of their child/children. Oral hygiene practice and information about substance abuse for all age groups with type were also collected. Awareness about oral hygiene practice includes regular habit of brushing teeth, washing mouth before and after meal. The data obtained from them was scored. For 'yes' the score was taken as 1 and for 'no' it was 0. The child who scored above the average was considered as having practice in oral hygiene.

On the day of the survey participants and their guardians were briefed about the objective of the study as well as the questionnaire. After collection of data, the children were sensitized regarding harmful effects of oral diseases and they were advised to follow some healthy practices. The data obtained from the survey was analyzed by http://vassarstats.net. Website for

Statistical computation.

Results: Out of the 480 street children 301(62.71%) were boys and 179(37.29%) were girls. The number of participants belonged to the age group of 3 to 10 years (59.37%) was more than the age group 11 to 18 years (40.63%). Majority (56.67%) of their mothers was illiterate and rests (43.33%) studied up to primary. Most (85.83%) of the street children belonged to lower socio-economic status (using Prasad's socio economic status classification for 2015).[8]

Majority of the children (62.92%) did not have sufficient breast milk (exclusive breast feeding up to 6 months from delivery) from mother during their childhood.

The present study reveals that 68.13% children were suffering from dental caries. Prevalence of dental caries is more (69.47%) for the age group 3-10 Years than 11-18 (66.15%), though the difference was not significant (p=0.442). Among the children boys suffered more (70.76%) from dental caries than girls (63.69%) but the difference was not significant statistically (p=0.108). It has been observed that children of illiterate mothers suffered more (71.76%) than of literate mothers (63.76%) but statistically the difference was not significant (p=0.061). This study shows that the children whose family's monthly per capita income is ≤ Rs 866 suffered more (74.27%) than the children of > Rs 866 (30.88%) and the difference was statistically significant (p<0.0001). The children having exclusive breast feeding, suffered from dental caries less than (29.78%) the children who had insufficient breast milk (90.73%) and the difference was statistically significant(p<0.0001). It was observed the risk of developing dental carries is 23.071 times more among the children not having exclusive breast milk than children who had. Majority of the children who were not aware about oral hygiene practice suffered from dental caries more (93.62%) than the children obeying consciousness about oral health (26.37%) and the difference was significant(p<0.0001) It was observed the risk of developing dental carries is 40.99 times more among the children not obeying consciousness about oral health than children who obeyed. According to the present study 35% were indulged in substance abuse any time in their life. The most common substance abuse was tobacco in the form of cigarettes or bidis, gutkha and an inhalant substance, 'whitener'– a white fluid containing organic solvents, used to erase errors in hand written, printed papers. Multiple responses to the type of substance abuse were observed. Dental caries was observed 57.74% for substance abuser and 73.72% for non abuser and the difference was statistically significant (p<0.0001). Presence of dental caries was more (73.30%) among the children consuming sufficient fruit and vegetable than the children not having sufficiently (65.13%). The difference was not significant (p=0.064). Our study shows that dental caries was more prevalent (71.26%) among the children consuming insufficient protein than the children having sufficiently (64.81%) but the difference was not significant (p=0.129). (Table -1)

Table – 1: Prevalence of dental caries according to different variables: (N=327)

INDEPENDENT VARIABLES	TYPE	DENTAL CARIES				TOTAL (%)		p VALUE	OR (95% CI)
		YES (%)		NO (%)					
AGE (YEAR)	3-10	198	(69.47%)	87	(30.53%)	285	(59.37%)	0.442	0 .859 (0.582, 1.268)
	11-18	129	(66.15%)	66	(33.85%)	195	(40.63%)		
GENDER	BOY	213	(70.76%)	88	(29.24%)	301	(62.71%)	0.108	0 .725 (0.489, 1.074)
	GIRL	114	(63.69%)	65	(36.31%)	179	(37.29%)		
MOTHER'S QUALIFICATION	ILLITERATE	173	(63.60%)	99	(36.40%)	272	(56.67%)	0.015	1.632 (1.097, 2.426)
	LITERATE	154	(74.04%)	54	(25.96%)	208	(43.33%)		
MONTHLY PER CAPITA INCOME	≤ Rs 866	306	(74.27%)	106	(25.73%)	412	(85.83%)	<0.0001	0.154(0.088, 0.271)
	> Rs 866	21	(30.88%)	47	(69.12%)	68	(14.17%)		
BREAST FEED DURATION	≥6 MONTHS	53	(29.78%)	125	(70.22%)	178	(37.08%)	<0.0001	23.071(13.936, 38.221)
	< 6 MONTHS	274	(90.73%)	28	(9.27%)	302	(62.92%)		
ORAL HYGIENE PRACTICE*	YES	48	(26.37%)	134	(73.63%)	182	(37.92%)	<0.0001	40.992(23.187, 72.472)
	NO	279	(93.62%)	19	(6.38%)	298	(62.08%)		
SUBSTANCE ABUSE	YES	97	(57.74%)	71	(42.26%)	168	(35.00%)	<0.0001	2.053 (1.380, 3.052)
	NO	230	(73.72%)	82	(26.28%)	312	(65.00%)		
FRUITS & VEGITABLES INTAKE	≥1SERVING DAILY	129	(73.30%)	47	(26.70%)	176	(36.67%)	0.064	0.680 (0.452, 1.024)
	<1SERVING DAILY	198	(65.13%)	106	(34.87%)	304	(63.33%)		
PROTEIN INTAKE	RDA** FOR AGE	151	(64.81%)	82	(35.19%)	233	(48.54%)	0.129	1.346(0.916, 1.978)
	<RDA FOR AGE	176	(71.26%)	71	(28.74%)	247	(51.46%)		

Our study shows that 44.17% children were suffering from bleeding gum. Prevalence of bleeding gum is less (42.46%) for the age group 3-10 Years than 11-18 years (46.67%), though the difference was not significant(p=0.362). Among the children boys suffered more (48.50%) from bleeding gum than girls (36.87%) but the difference was not significant statistically (p=0.013). It has been observed that children of illiterate mothers suffered more (46.95%) than of literate mothers (40.83%) but statistically the difference was not significant (p=0.178). This study shows that the children whose family's monthly per capita income is ≤ Rs 866 suffered less (43.20%) than the children of > Rs 866 (50.00%) and the difference was not statistically significant (p= 0.296). The children having exclusive breast feeding, suffered from bleeding gum less than (41.57%) the children who had insufficient breast milk (45.70%) but the difference was not statistically significant(p=0.380). Majority of the children who were not aware about oral hygiene practice suffered from bleeding gum more (57.38%) than the children obeying consciousness about oral health (22.53%) and the difference was significant(p<0.0001). It was observed the risk of developing bleeding gum is 4.63 times more among the children not obeying consciousness about oral health than children who obeyed. Bleeding gum was observed 54.76% for substance abuser and 38.46% for non abuser and the difference was statistically significant (p<0.0001). Presence of bleeding gum was less (35.23%) among the children consuming sufficient fruit and vegetable than the children not having sufficiently (49.34%). The difference was not significant (p=0.002). Our study shows that bleeding gum was present among 44.94% children consuming insufficient protein and 43.35% among the children having protein sufficiently (43.35%) but the difference was not significant (p=0.729). (Table -2)

Table– 2: Prevalence of bleeding gum according to different variables: (N= 212)

INDEPENDENT VARIABLES	TYPE	BLEEDING GUM				TOTAL (%)		p VALUE	OR (95% CI)
		YES (%)		NO (%)					
AGE (YEAR)	3-10	121	(42.46%)	164	(57.54%)	285	(59.37%)	0.362	1.186(0.822, 1.711)
	11-18	91	(46.67%)	104	(53.33%)	195	(40.63%)		
GENDER	BOY	146	(48.50%)	155	(51.50%)	301	(62.71%)	0.013	0.623(0.424, 0.905)
	GIRL	66	(36.87%)	113	(63.13%)	179	(37.29%)		
MOTHER'S QUALIFICATION	ILLITERATE	131	(48.16%)	141	(51.84%)	272	(56.67%)	0.043	0 .686 (0.476, 0.990)
	LITERATE	81	(38.94%)	127	(61.06%)	208	(43.33%)		
MONTHLY PER CAPITA INCOME	≤ Rs 866	178	(43.20%)	234	(56.80%)	412	(85.83%)	0.296	1.314 (0.786, 2.197)
	> Rs 866	34	(50.00%)	34	(50.00%)	68	(14.17%)		
BREAST FEED DURATION	≥6 MONTHS	74	(41.57%)	104	(58.43%)	178	(37.08%)	0.380	1.182 (0.813, 1.711)
	<6 MONTHS	138	(45.70%)	164	(54.30%)	302	(62.92%)		
ORAL HYGIENE PRACTICE*	YES	41	(22.53%)	141	(77.47%)	182	(37.92%)	<0.0001	4.632 (3.052, 7.024)
	NO	171	(57.38%)	127	(42.62%)	298	(62.08%)		
SUBSTANCE ABUSE	YES	92	(54.76%)	76	(45.24%)	168	(35.00%)	<0.0001	0 .516(0.353, 0.754)
	NO	120	(38.46%)	192	(61.54%)	312	(65.00%)		
FRUITS & VEGITABLES INTAKE	≥1 SERVING DAILY	62	(35.23%)	114	(64.77%)	176	(36.67%)	0.002	1.791(1.222, 2.625)
	<1 SERVING DAILY	150	(49.34%)	154	(50.66%)	304	(63.33%)		
PROTEIN INTAKE	RDA** FOR AGE	101	(43.35%)	132	(56.65%)	233	(48.54%)	0.729	1.066(0.743, 1.529)
	<RDA FOR AGE	111	(44.94%)	136	(55.06%)	247	(51.46%)		

Discussion: Out of 480 study subjects, boys were 62.71% and girls were 37.29%. This is accordance to the study conducted by FK Kahabuka et al (2006)[3] reported 68% boys and 32% girls and in contrast to the study conducted by Elsa K Delgado et al (2009))[9] and Pisarn et al (2006))[10] who observed 48.6% boys and 53.3% girls, 42.9% boys and 57.1% girls respectively.

Among the children interviewed is the present study 35% had indulged in substance abuse anytime in their life. Substance abuse among 3 years old was also observed in the survey. They used an inhalant substance, 'whitener' and fell asleep. This habit was also encouraged by their mother. The most common substance abused was tobacco in the form of cigarettes, bidis, gutkha and an inhalant substance, whitener. This is lower than the results obtained by C Malhotra et al (2007)[11] (56.7%) and Deepti Pagare et al (2003))[12] (57.4%). Our result(35%) is higher than the result of the study conducted by Munevver et al (2004) [13] (02%). The higher ratio of substance abuse among the street children in Kolkata could be due to easy availability and accessibility of substances and Socio- Cultural environment.

In the present study bleeding gums was observed 44.16% in the children, which is in contrast to study quoted by Donald Chi et al (2010))[14] and Blanaid et al (2009))[15] reported that 27% and 5% of these studies were children with bleeding gums and which is in contrast to study observed by Abhinav Sing et al (2011))[16]. This high percentage of bleeding gum could be attributable to improper tooth brushing, improper mouth washing and lack of vitamin C in take.

According to our study the prevalence of dental caries was 68.12%. The caries prevalence is higher (69.47%) among the age group 3-10 years than the age group 11-18 years (66.15%). The results are higher than the results obtain by Mishra and Shee[17] (52.3%) and (6.9%) .This might be because of longer exposure of primary molars to the food habits in the age group of 3-10 years. Another reason is improper cleaning of teeth in early childhood and frequent intake of sweet and sticky food. These findings are contradictory to the study done by Retna Kumari N.[18] So caries prevalence was found to be higher in (3-10) years group than Juvenile Group(11-18) Years. The food habits might play an important role in the causation of dental caries. Lack of protein and vitamin C consumption are associated directly with the increased caries prevalence.

Conclusion:

The present study reveals higher level of oral health problems among the street children in Kolkata city. High percentage of dental caries and bleeding gum are prevalent among them due to lack of oral hygiene practice, improper brushing and lack of vitamin and protein in their diet.

Street children deserve special attention in the area of oral health as reflected in this study. Oral health policies and preventive services including oral health promotion program which aim to give information about dental issues and to make positive changes in behavioral and environmental factors should be developed.

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