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Original research article

Study of Morbidity Pattern Among Children Residing in Urban Slum of Aurangabad, Maharashtra, India

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Abstract

Introduction: Children are the future of a developing nation, and their health is a vital indicator of their growth. School going children belonging to slums are more disposed to diseases due to unacceptable and unsatisfactory living conditions. Hence, there is a need to identify them and their health problems so that proper interventions can be installed to improve their quality of life.

Aim: To asses the morbidity pattern of children living in an urban slum.

Materials and Methods: A community-based cross-sectional study was conducted among children in the age group of 0–18 years in one of the urban slums of Aurangabad, Maharashtra. The total population of the urban slum named Misarwadi is 20,400 with ten wards. The total number of houses is 6306, which has a 0–18 year old population of 7621. The baseline survey was conducted with the help of paramedical workers about the demographic composition of the slum area. A total duration of six months (October 2021 to March 2022) was required for doing this study. The calculated sample size required for performing this study was 261. A total of 300 children between 0 and 18 years of age were enrolled in the study, consisting of 170(56.66%) males and 130(43.34%) females.

Results: The overall prevalence of morbidity among these children was found to be 49.67% (149/300). Malnutrition was the paramount morbidity found in 81(27%) children, followed by

dental caries 43(14.33), ARI 14(4.66%), viral fever 8(2.66%), eye problems (4 conjunctivitis and 3 squint) 7(2.33), worm infestation 6 (2%), and diarrhoea 5(1.66%). We also observed other morbidities like gingivitis, injury, dysmenorrhoea, juvenile diabetes mellitus, and tonsillitis. Comparatively, the prevalence of morbidity among females was significantly higher than that among males.

Conclusion: The overall prevalence of various morbidities were found to be higher among children residing in an urban slum. Regular health surveys, medical camps and treatment facilities for children in slum areas are important, with special attention to the needs of female children.

Key Words: Urban slum, Children, Morbidity, Malnutrition

Introduction

In India, urban areas house approximately 35.39% of the total population, with slums accounting for 35.2%.[1] Slums are informal settlements where people live in abject poverty and devastated living conditions. Slum inhabitants lack access to adequate and safe water, proper sanitation, sufficient living area, and durability of housing.[1] and hence leading to prevalence of various ailments and morbidities.

Children contribute to about 25.78 percent of the Indian population and every eighth child in urban India lives in slum.[2,3]. In India, the state of Maharashtra has the highest population of children between 0-6 years of age living in slums.[3]

According to National Family Health Survey 5, Maharashtra has a total population of 22.8% of children below 15 years of age and a population of 21.9% children below 15 years in urban areas. In Aurangabad total population of children below 15 years is 27.4%. Prevalence of morbidities like diarrhea and acute respiratory infection [ARI] in Aurangabad, in children below 5 years of age is reported to be 12.6% and 4.1% respectively.[4]

Paediatric age is a period when an individual undergoes physical, emotional, mental and social changes. It is a dynamic period of growth and development. This age also involves adolescence which is an important period of physiological and psychological change. By virtue of their physical, mental, emotional and social status, children are more vulnerable and are susceptible to various conditions such as infections, malnutrition, stress etc. Moreover, children from urban slums suffer from poor quality of life with poor sanitation and social conditions.[5]

Poor health of children from ignorant and poor families is one of the most common causes of low school enrolment, high absenteeism, early dropout, and poor classroom performance.

Children are the precious assets of the country. Promoting and protecting the health of children from all walks of life, especially the neglected urban slums and rural children, will yield us rich dividends in the future.

Therefore, this study was planned in an urban slum of Aurangabad, a famous tourist destination in Maharashtra. The aim of study was to determine the prevalence of morbidity and to enumerate different types of morbidity in children living in this slum area.

Materials and methods:

The permission and clearance was obtained from the head of institution and institutional ethics committee respectively. This community-based cross-sectional study was conducted among children in the age group of 0-18 years in one of the urban slums of Aurangabad, Maharashtra. This study was sponsored by non profit organization named OurVoice, Inc

[Registration No. (EIN)874556603]. The total population of urban slum named Misarwadi is 20,400 with ten wards. The total numbers of houses were 6306 which has 0-18 year's population of 7621. The baseline survey was conducted with the help of paramedical workers about demographic composition of the slum area. Total duration of six months (October 2021 to March 2022) was required for doing this survey.

The calculated sample size of 261 was required for prevalence of morbidity 21.70%[6] with 95% confidence interval and 5% level of error with design effect one by using formula Sample size n = [DEFF*Np(1-p)]/ [$(d^2/Z^2_{1-\alpha/2}$*(N-1)+p*(1-p)] (from website www.openepi.com)[7]

The sample was collected by using a simple random sampling technique by selecting one ward of the slum area. All houses were given number starting from 1 to 550 in the same ward. The houses were chosen by lottery method till we get sample of 300. The total number of houses required for this sample was 96. The total number of children enrolled in the study was 300. Since that is closer to the sample size calculated, all the children were included in the study.

The data was collected by interviewing the children using a pre-designed questionnaire, which was validated after a pilot study. Additional information was gathered by using individual health records and communicating with their parents. A general physical examination was done. Anthropometric measurements were done using Salter's weighing scale for weight assessment and measuring tape for height measurement. The various morbidities among children were diagnosed with the help of a paediatrician and laboratory investigations. The WHO Child Growth Standards, 2006[8]data was used for that particular age and sex to get height for age (stunting), weight for age (underweight), and weight for height (wasting).

Data thus obtained was entered and analyzed into Microsoft Excel worksheet (Microsoft Corporation, Redmond, USA). All the variables were presented as frequencies and percentages, mean and standard deviation and analyzed by student t test and chi square test. P-value <0.05 was considered to be statistically significant.

Results

The total number of children enrolled in the study was 300 with Mean age of 8.46 years and standard deviation 3.06 years. The range of age for all children was between 2 years to 18 years. Total number of male children was 170(56.66%) and female 130(43.34%). Mean age of the male children is 10.01 years and standard deviation is 2.98 years. Mean age of the female children is 8.78 years and standard deviation is 3.02 years. The mean age among male and female children was significantly different (t=3.51, df=276, P= 0.0002573). All children belonged to low socioeconomic class residing in an urban slum.

Table no. 01 shows distribution of children according to age and gender. Total number of male children was 170(56.66%) and female 130(43.34%). The majority of children 151 (50.33%) were found in the age group of 06 – 10 years followed by 106 (35.33%) in 11 – 15 years. The majority of male 87(29%) and female 64(21.33%) children were found in the age group of 06 – 10 years.

From table no.2, it is observed that overall prevalence of morbidity among children was found to be 49.67% (149/300). The commonest morbidity found was Malnutrition 81(27%) followed by dental caries 43(14.33), ARI 14(4.66%), Viral Fever 8(2.66%), eye problem (4 conjunctivitis and 3 squint) 7(2.33), Worm infestation 6(2%), diarrhea 5(1.66) and other morbidities were one case of each gingivitis, injury, dysmenorrhoea, juvenile diabetes mellitus and tonsillitis. Out of 81 children with malnutrition, 31 were suffering from other morbidities.

From table no. 03, it is observed that the overall prevalence of morbidity among female children was found to be 32.33% (87/300) and overall prevalence of morbidity among male children was found to be 20.66% (62/300). The morbidities were highest in the age group of

0 – 5 years of age for both male and female children. Morbidities were also found in the descending order in the age groups of 6 – 10 years, 11 – 15 years and more than 15 years respectively. When the morbidity prevalence among males and females was compared, it was found that the prevalence of morbidity among females was significantly higher than the males (Chi square test= 25.13, df= 01, P= 0.000000537).

Table 1: Distribution of study children according to age and gender

Age (years)	**Male**		**Female**		**Total**	
	No.	**Percentage**	**No.**	**Percentage**	**No.**	Percentage
0 – 5	14	04.66	25	8.33	39	13
6 – 10	87	29	64	21.33	151	50.33
11 – 15	65	21.66	41	13.66	106	35.33
>15	04	01.33	0	0	04	01.33
Total	170	56.66	130	43.34	300	100

Table 2: Distribution of Study children according to Morbidity

	Present (No.)	**Percentage**
Normal	151	50.33
Morbidity	149	49.67
Viral FEVER	08	02.66
Skin diseases	09	03
ARI	14	04.66
INJURY	01	00.34
Malnutrition (31 with morbidity)	81	27
Worm infestation	06	02
Anaemia	03	01
Eye problem (squint 3)	07	02.33
Dental caries	43	14.33
Diarrhea	05	01.66
Others (Gingivitis, injury, Dysmenorrhea, juvenile diabetes+Tonsilitis	05	01.66

Table 3: Distribution of Study Children according to Morbidity and Gender

Age	**Male**		**Female**		**Total**	
	No.	**Percentage**	**No.**	**Percentage**	**No.**	**Percentage**
0 – 5	29	9.66	35	11.66	64	21.33
6 – 10	18	06	24	08	42	14
11 – 15	10	3.34	25	8.33	35	11.66
>15	5	1.66	3	01	8	2.66
Total	62	20.66	87	32.33	149	49.67

Chi square test= 25.13, df= 01, P= 0.000000537

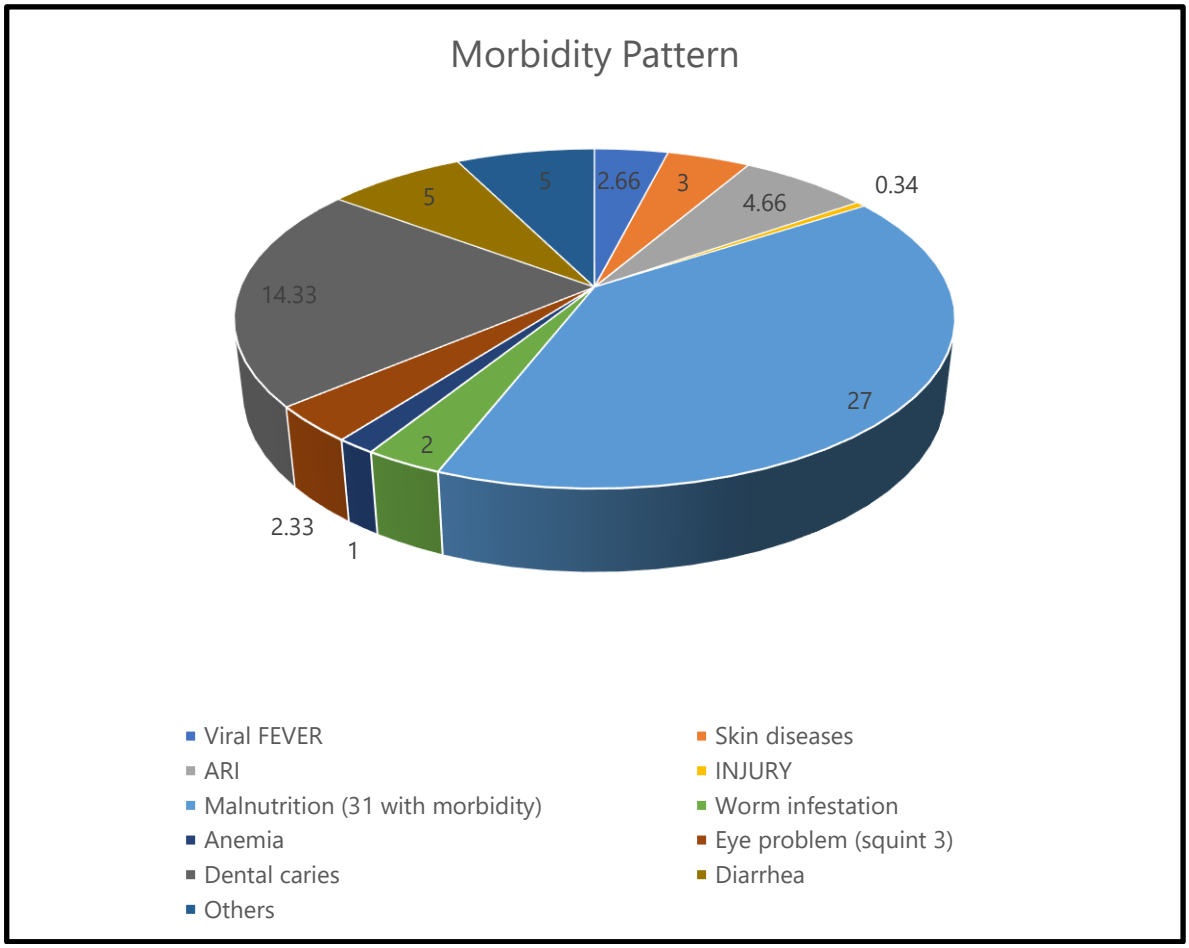

Figure 1: Patterns of Morbidity among children

Discussion

Identifying children with morbidities and recognising the need for treatment and interventions is a must for the well being of the children and their families at large.

This study was conducted in an urban slum area of Aurangabad. In all, 300 children were enrolled in the study between 02 and 18 years of age. All the children were from low socio-economic classes. Male children were 170(56.66%) with a mean age of 10.01 years [SD 2.98 years] and female children were 130(43.34%) with a mean age of 8.78 years [SD 3.02 years]. The majority of children (151, 50.33%) belonged to the age group of 06–10 years. Most of the similar studies show a male preponderance in urban slum children, but a variation is seen in the age of children.[9,10]

In our study the overall prevalence of morbidity among children was found to be 49.67% (149/300) and were found mostly between 0-5 years of age i.e 64/149 [42.95%] . Most of the similar studies were conducted in children below 5 years of age. [9,1011,12,13] In our study there was a decreasing trend in prevalence of morbidity with increasing age of both male and female children. Thus, younger children are more vulnerable to poor health.

In our study, the prevalence of morbidity in female children was significantly higher than that in male children. Adverse social customs tend to give more importance and care to the male child than the female child. Thus, in an already impoverished slum life, girls are more likely to get neglected and are more vulnerable to morbid conditions.

The most common morbidity found was malnutrition in 81(27%) children which was also reported as a common cause of morbidity and diarrhea, especially in children below 5 years of age, in similar other studies. [9,10,11] This is most commonly seen in the lower

socioeconomic strata, to which all of the children in our study belonged, where there is a fear of the unavailability of necessary and adequate food. Also, the quality of breast feeding and weaning may contribute to malnutrition.

Out of 81 children with malnutrition in our study, 31 had other morbidities. Thus, following malnutrition, other morbidities found were dental caries 43(14.33), ARI 14(4.66%), viral fever 8(2.66%), eye problems (4 conjunctivitis and 3 squint) 7(2.33), worm infestation 6(2%) and diarrhoea 5(1.66). Also, one case each of gingivitis, injury, dysmenorrhoea, juvenile diabetes mellitus, and tonsillitis was found. Similar types of morbidities were reported in other studies by Shrivastava DK et al.[10], where diarrhoea was the most common, and Roja VR et al.[12] where cough and skin infections were the most common. Poor sanitary living conditions with inadequate housing facilities, overcrowding, lack of clean drinking water and personal hygiene, financial constraints and ignorance may lead to repeated infections like acute respiratory infections, viral fever, conjunctivitis, worm infestations and diarrhea. These repeated infections may also contribute to malnutrition.

Dental caries was a common oral problem in our study. In a study done by Arvind Jain et al.[14] and Shingare P[15], high prevalence of dental caries is generally noted between 3-10 years of age, and this is generally attributed to a decreasing maternal literacy rate, poor oral care, nutritional status of children, and frequent consumption of sweets.

Vinod K. R. et al [16] reported the incidence of ARI as 27.29% among under five children living in urban slums. The prevalence of ARI in our study was lower, i.e. 4.66%, as our study included a wide age range of children from urban slums.

In our study, the prevalence of diarrhoea was 1.66 %. Enakshi Ganguly et al. [6] found that malnutrition and anaemia in children and low socioeconomic status are significantly associated risk factors for diarrhea. These are the common factors associated with children living in slums.

Worm infestation was discovered in 2% of our study subjects. Avhad S. B. et al.[17] found high prevalence of intestinal helminths in school children of Aurangabad municipal corporation and Z.P. and said that this may be due to refuse dumps along the roads, which attract stray cattle, dogs, cats, goats, rodents, etc., which are potential sources of zoonotic transfer of parasites to children who are found handling dogs and cats, and dipterans, which transmit the parasites to foodstuffs. Such conditions are a common sight in slum areas. In our study, ophthalmic problems were detected in 2.33% of children, which consisted of 4 cases with conjunctivitis and 3 with squint. Ocular morbidities in children in various age groups have been associated with low socioeconomic status, poor personal hygiene, ignorance, and Vitamin A deficiency, which are common amongst slum dwellers. [18,19]

This study enlightened us about the health issues related to children who are residents of urban slums. We found that the most common morbidity amongst these children was malnutrition, which was commonly associated with infections like respiratory tract infections, viral fever, and dental caries, diarrhea, and worm infestations. Female children suffered more from such morbidities than male children

There is a need for regular health check-ups and treatment of these children, with special attention to the needs of female children. Also, economic rehabilitation, education, provision of incentives to the families, improvement in sanitary living conditions, and dietary supplementation are important interventions required to improve their quality of life

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