International Journal of Community Medicine and Public Health
Jayalekshmi CS et al. Int J Community Med Public Health. 2024 Jan;11(1):301-306
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20234142

Original Research Article

Socio-demography, nutritional status, age-appropriate immunization coverage and morbidity among under-five children in rural Maharashtra

Jayalekshmi C. S.[1]*, Shrikant S. Birajdar[2], Ravindra B. Gurav[1]

[1]Department of Community Medicine, Rajiv Gandhi Medical College, Thane, Maharashtra, India
[2]Department of Community Medicine, Vilasrao Deshmukh Government Medical College, Latur, Maharashtra, India

Received: 09 November 2023
Accepted: 11 December 2023

***Correspondence:**
Dr. Jayalekshmi C. S.,
E-mail: drjayalekshmics@gmail.com

ABSTRACT

Background: Morbidities among under-five children in rural areas is a major public health problem. This study was conducted to assess the nutritional status, age-appropriate immunization coverage, personal hygiene and morbidity pattern among under-5 children and their socio-demographic determinates in rural slum dwellings.
Methods: A community based cross sectional study was conducted in rural area of Maharashtra using purposive sampling technique. The survey was done by using predesigned and pretested proforma along with recording of socio-demographic factors, anthropometric measurements, immunization status and clinical examination of the study subjects.
Results: The study included 86 under-5 children from a rural slum dwelling. 16 (18.60%) subjects were underweighted, 35 (40.70%) were stunted and 14 (16.28%) were wasted. 04 (04.65%) and 02 (02.33%) subjects were MAM and SAM respectively. 35 (40.70%) subjects were morbid. 20 (23.26%) subjects were suffering from louse infestation of which 07 (14.58%) were boys and 13 (34.21%) were girls ($p<0.05$). 17 (19.77%) subjects were suffering from dental caries. 12 (13.95%) subjects were suffering from skin diseases. 23 (26.74%) subjects were suffering from oral health problems. All subjects' personal hygiene was poor. 72 (83.72%) subjects were age-appropriate fully immunized. The association between monthly family income and presence of stunting among the subjects is statistically significant ($p<0.05$).
Conclusions: Underweight, stunting, wasting, MAM, SAM, louse infestation, skin diseases, dental caries, oral health problems and poor immunization coverage are found to be major health problems among the under-five children in rural areas. Poor personal hygiene of under-5 children is also a major issue. Capacity building of parents for early health seeking and strengthening of primary health care services is essential to act timely in managing these morbidities.

Keywords: Morbidity, Nutritional status, Rural area, Under-five children

INTRODUCTION

The health and well-being of the under-five children is an important parameter for the measurement of the development of a nation. This age group is the most precious asset in the community for the socio-economic development in the long run. The under-five children are the most vulnerable group in the community in which there is lack of guarantee for adequate nutrition and social protection. The lack of essential health care services ultimately leads to morbidity among the under-five children. The acute respiratory infection and diarrhea are found to be the cause of concern among under-5 children, which dominate the morbidity pattern. The factors responsible with such precarious situation are deeply entrenched conditions like illiteracy, poor socio-economic

conditions, poor environmental sanitation, and increased birth order among the population.[1] Under-5 children accounts for 10.70% of Indian population and they are vulnerable to various morbidities including malnutrition. This age group is a crucial and transitional period when the child is struggling to come into equilibrium with its ecology. A child deprived of health care during these most valuable years, is deprived of the opportunity of growing into a normal human being and the damage occurred in the first few years could be irreversible.[2] Malnutrition and other morbidities among under-5 children is an important concern for the health services in India. Therefore, it is very important for the health care system to detect malnutrition and other morbidities at an early stage for planning and implementing timely interventions at the community level.[3] Children below five years of age is vulnerable group deserving special health care. Children are considered to be susceptible to host of disease and infection and most important causes of under-5 mortality are acute respiratory infections and diarrheal diseases.[4] Under nutrition in under-5 children still remains a major public health problem. Most of the under-5 deaths are due to undernutrition, putting the child at more risk of catching common infections.[5] India is contributing to around 20% of world total under-5 children mortality. Most of the underweight children are infants, females and those belong to lower socio-economic status.[6]

According to NFHS-5 data, in India children under-5 who were stunted were 35.5%, wasted were 19.3%, severely wasted were 7.7%, underweight 32.1%. Nutritional status of under-5 children was found to be significantly associated with category and immunization status of the children.[7] There is high proportion of under nutrition and other morbidities among under five children in India. Special focus needs to be put in neglected rural residential areas to promote health of the under-5 children.[8] Avoidable illness and disabilities among under-5 children are prevented by routine immunization against some specific diseases. Immunization coverage is associated with various socio-demographic factors.[9]

The aim of the study was to understand the socio-demographic factors, nutritional status, age-appropriate immunization coverage, status of personal hygiene and morbidity pattern among the under-five children in rural slum dwelling.

METHODS

A descriptive cross-sectional study was undertaken by interviewing mothers with the help of a predesigned and pretested questionnaire to understand the socio-demographic factors, nutritional status, age-appropriate immunization coverage, status of personal hygiene and morbidity pattern among under-five children in the rural slum dwelling located under the catchment area of a rural health training center of a medical college in rural Maharashtra. The study was conducted during April and May 2023 by applying scientific principles.Purposive sampling technique was used to conduct the study. The study included 86 under-5 children. All the respondents were identified by door-to-door survey. Verbal informed consent was obtained from each of the mother, and they were assured that the information obtained would be confidential and only be used for the purpose of this study. The study questionnaire contained parameters related to socio-demographic factors, anthropometry, immunization status, personal hygiene, and morbidity pattern among the subjects. The mothers were interviewed in the local language to collect the relevant data of the study subjects. All the children were thoroughly examined at the house only. The anthropological measurements were taken by standard methods.

Statistical analysis

The data was analyzed by using MS Excel spread sheet. Descriptive statistical tests were applied to find out the results according to the objectives of the study. The p value was taken to be significant when <0.05.

RESULTS

The mothers of 86 under-five children were interviewed. These under-five children were examined of which 48 (55.81%) were boys and 38 (44.19%) were girls. 28 (32.56%) children were in the age of <2 years of age while 58 (67.44%) were in the age group of >2 to 5 years. 83 (96.51%) subjects belong to unitary family. 11 (12.79%) subject's mothers were illiterate while 13 (15.12%) subject's fathers were illiterate. 27 (31.40%) subject's mothers were working while all subject's fathers were employed. All subjects belong to upper lower-class family (class-IV). All the subjects were covered under Anganwadi services of ICDS program. All the families surveyed were migrants from Karnataka and at least possess Aadhaar card of the head of the family (Table 1).

16 (18.60%) under-5 subjects were underweighted, of which 08 (16.67%) were boys and 08 (21.05%) were girls. 02 (05.26%) girls were grade-4 underweight. 35 (40.70%) subjects were stunted of which 22 (45.83%) were boys and 13 (34.21%) were girls. 04 (04.65%) subjects were MAM and 02 (02.33%) were SAM. 14 (16.28%) subjects were wasted of which 07 (14.58%) were boys and 07 (18.42%) were girls (Table 2).

10 (11.63%) subjects were suffering from worm infestation, of which 04 (08.33%) were boys and 06 (15.79%) were girls. 12 (13.95%) subjects were suffering from skin diseases. 20 (23.26%) subjects were suffering from louse infestation of which 07 (14.58%) were boys and 13 (34.21%) were girls ($p<0.05$). 17 (19.77%) were suffering from dental caries. 23 (26.74%) subjects were having oral health problems. The personal hygiene of all the boys and girls was poor. 01 (02.08%) boy was having positive flag sign (Table 3).

Table 1: Socio-demographic profile of the subjects (n=86).

Characteristics		Total (n=86) (%)	Boys 48 (55.81%) (%)	Girls 38 (44.19%) (%)
Age in years	<2	28 (32.56)	18 (37.50)	10 (26.32)
	>2-5	58 (67.44)	30 (62.50)	28 (73.68)
Type of family	Unitary	83 (96.51)	46 (95.83)	37 (97.37)
	Joint	03 (03.49)	02 (04.17)	01 (02.63)
Literacy status of mother	Illiterate	11 (12.79)	04 (08.33)	07 (08.14)
	Literate	75 (87.21)	44 (91.67)	31 (81.58)
Literacy status of father	Illiterate	13 (15.12)	06 (12.50)	07 (18.42)
	Literate	73 (84.88)	37 (77.08)	31(81.58)
Employment status of mother	Home maker	59 (68.60)	32 (66.67)	27 (71.05)
	Employed	27 (31.40)	16 (33.33)	11 (28.95)
Employment status of father	Employed	86 (100.0)	48 (100.0)	38 (100.0)
Family income	< 15000	65 (75.58)	38 (79.17)	27 (71.05)
	>15000	21 (24.42)	10 (20.83)	11 (28.95)
Socio-economic class	Class IV	86 (100.0)	48 (100.0)	38 (100.0)
Privilege	Anganwadi	86 (100.0)	48 (100.0)	38 (100.0)
Aadhar card of HOF	Yes	86 (100.0)	48 (100.0)	38 (100.0)
Migration status	Yes	86 (100.0)	48 (100.0)	38 (100.0)

Table 2: Anthropometry and nutritional status of the subjects (n=86).

Variables		Total (n=86) (%)	Boys 48 (55.81%) (%)	Girls 38 (44.19%) (%)	P value
Weight for age	Gr 1 underweight	05 (05.81)	01 (02.08)	04 (10.53)	0.60
	Gr 2 underweight	08 (09.30)	06 (12.50)	02 (05.26)	
	Gr 3 underweight	01 (01.16)	01 (02.08)	00 (00.00)	
	Gr 4 underweight	02 (02.33)	00 (00.00)	02 (05.26)	
	Underweight	16 (18.60)	08 (16.67)	08 (21.05)	
	Normal weight	70 (81.40)	40 (83.33)	30 (78.95)	
Height for age	Severe stunting	10 (11.63)	07 (14.58)	03 (07.90)	0.28
	Moderate stunting	11 (12.79)	07 (14.58)	04 (10.53)	
	Mild stunting	14 (16.28)	08 (16.67)	06 (15.79)	
	Stunting	35 (40.70)	22 (45.83)	13 (34.21)	
	Normal height	51 (59.30)	26 (54.17)	25 (65.79)	
MUAC	Normal	80 (93.02)	44 (91.67)	36 (94.74)	0.72
	MAM	04 (04.65)	03 (06.25)	01 (02.63)	
	SAM	02 (02.33)	01 (02.08)	01 (02.63)	
Weight for height	Wasting	14 (16.28)	07 (14.58)	07 (18.42)	0.63
	No wasting	72 (83.72)	41 (85.42)	31 (81.58)	

Table 3: Morbidity and personal hygiene status among the subjects (n=86).

Variables	Total (n=86) (%)	Boys 48 (55.81%) (%)	Girls 38 (44.19%) (%)	Z score
Worm infestation	10 (11.63)	04 (08.33)	06 (15.79)	1.05
Skin diseases	12 (13.95)	08 (16.67)	04 (10.53)	0.84
URTI	01 (01.16)	01 (02.08)	00 (00.00)	
Louse infestation	20 (23.26)	07 (14.58)	13 (34.21)	2.13
Dental caries	17 (19.77)	09 (18.75)	08 (21.05)	0.26
Oral health problems	23 (26.74)	13 (27.08)	10 (26.31)	0.08
Flag sign +ve	01 (01.16)	01 (02.08)	00 (00.00)	
Morbid subjects	35 (40.70)	18 (37.50)	17 (44.74)	0.68
Poor personal hygiene	86 (100.0)	48 (100.0)	38 (100.0)	

Table 4: Association between socio-demographic factors and morbidity as well as immunization status of the subjects (n=86).

Variables		Morbid subjects (%)	Non-morbid subjects (%)	Fully immunized (%)	Partially immunized (%)
Total (n= 86)		35 (40.70)	51 (59.30)	72 (83.72%)	14 (16.28%)
Age in years	<2	09 (25.71)	19 (37.25%)	20 (27.78%)	08 (57.14%)
	>2-5	26 (74.29)	32 (62.75%)	52 (72.21%)	06 (42.86%)
Chi-square value, P value		1.25, 0.26		4.60, 0.03 significant	
Gender	Boys	18 (51.43)	30 (58.82%)	37 (51.39%)	11 (78.57%)
	Girls	17 (48.57)	21 (41.18%)	35 (48.61%)	03 (21.43%)
Chi square value, P value		0.46, 0.50		3.51, 0.06	
Education of mother	<High school	17 (48.57)	20 (39.22%)	31 (43.05%)	06 (42.86%)
	≥High school	18 (51.43)	31 (60.78%)	41 (56.95%)	08 (57.14%)
Chi-square value, P value		0.74, 0.38		0.00018, 0.90	
Education of father	<High school	12 (34.29)	19 (37.25%)	29 (40.28%)	02 (14.29%)
	≥High school	23 (65.71)	32 (62.75%)	43 (59.72%)	12 (85.71%)
Chi-square value, P value		0.08, 0.77		3.43, 0.06	
Employment status of mother	Home maker	18 (51.43)	41 (80.39%)	18 (25.00%)	09 (64.29%)
	Employed	17 (48.57)	10 (19.61%)	54 (75.00%)	05 (35.71%)
Chi-square value, P value		8.08, 0.004 significant		8.39, 0.003 significant	
Monthly income	<15000	25 (71.43)	40 (78.43%)	53 (73.61%)	12 (85.71%)
	>15000	10 (28.57)	11 (21.57%)	19 (26.39%)	02 (14.29%)
Chi-square value, P value		0.55, 0.45		0.93, 0.33	

Table 5: Association between socio-demographic factors and nutritional status of the subjects (N=86).

Variables		Underweight		Stunting		Wasting	
Total (n=86)		**Yes (n=16) (18.60%) (%)**	**No (n=70) (81.40%) (%)**	**Yes (n=35) (40.70%) (%)**	**No (n=51) (59.30%) (%)**	**Yes (n=14) (16.28%) (%)**	**No (n=72) (83.72%) (%)**
Age in years	<2	06 (37.50)	22 (31.43)	12 (34.29)	16 (31.37)	05 (35.71)	23 (31.94)
	>2-5	10 (62.50)	48 (68.57)	23 (65.71)	35 (68.63)	09 (64.29)	49 (68.06)
Chi-square value		0.217		0.080		0.076	
P value		0.640		0.777		0.783	
Gender	Boys	08 (50.00)	40 (57.14)	22 (62.86)	26 (50.98)	08 (57.14)	41 (56.94)
	Girls	08 (50.00)	30 (42.86)	13 (37.14)	25 (49.02)	06 (42.86)	31 (43.06)
Chi-square value		0.269		1.187		0.0002	
P value		0.600		0.276		0.99	
Education of mother	<8	07 (43.75)	30 (42.86)	18 (51.43)	19 (37.25)	07 (50.00)	30 (41.67)
	≥8	09 (56.25)	40 (57.14)	17 (48.57)	32 (62.75)	07 (50.00)	42 (58.33)
Chi-square value		0.004		1.701		0.332	
P value		0.948		0.192		0.564	
Education of father	<8	04 (25.00)	27 (38.57)	10 (28.57)	21 (41.18)	07 (50.00)	24 (33.33)
	≥8	12 (75.00)	43 (61.43)	25 (71.43)	30 (58.82)	07 (50.00)	48 (66.67)
Chi-square value		1.040		1.430		1.412	
P value		0.307		0.232		0.235	
Occupation of mother	Home maker	13 (81.25)	46 (65.71)	23 (65.71)	36 (70.59)	11 (78.57)	48 (66.67)
	Employed	03 (18.75)	24 (34.29)	12 (34.29)	15 (29.41)	03 (21.43)	24 (33.33)
Chi-square value		1.459		0.229		0.771	
P value		0.227		0.632		0.379	
Monthly family income	<15000	13 (81.25)	52 (74.29)	31 (88.57)	34 (66.67)	11 (78.57)	54 (75.00)
	>15000	03 (18.75)	18 (25.71)	04 (11.43)	17 (33.33)	03 (21.43)	18 (25.00)
Chi-square value		0.342		5.396		0.081	
P value		0.558		0.020 Significant		0.776	

35 (40.70%) subjects were morbid. Of these 35, 09 (25.71%) were in the age group of <2 years while 26 (74.29%) were in the age group of >2-5 years. 72 (83.72%) subjects were age-appropriate fully immunized i.e., received all due vaccines as per the schedule, of which 20 (27.78%) were in the age group of <2 years and 52 (72.21%) were in the age group of >2-5 years. 14 (16.28%) were partially immunized i.e., missed any one or more vaccines, of which 08 (57.14%) were in the age group of <2 years and 06 (42.86%) were from >2-5 years ($p<0.05$). Of the 35 morbid subjects 18 (51.43%) were boys and 17 (48.57%) were girls. Of the 14 partially immunized subjects, 11 (78.57%) were boys and 03 (21.43%) were girls ($p<0.05$). Among morbid subjects, 18 (51.43%) subject's mothers were home makers and in the case of 17 (48.57%) subjects, they were employed. Mothers of 09 (64.29%) partially immunized children were home makers while mothers of 05 (35.71%) subjects were employed (Table 4).

Of the 86 under-5 subjects, 16 (18.60%) were underweight, 35 (40.70%) was stunted and 14 (16.28%) were wasted. 31 (88.57%) stunted subjects belong to families with monthly income <15000 per month and 04 (11.43%) stunted subjects belong to families with income more than >15000 per month ($p<0.05$). The association between socio-demographic factors and nutritional status is shown in Table 5.

DISCUSSION

In the present study in rural area of Maharashtra, it was observed that of the 86 under-5 children examined, 35 (40.70%) were morbid, of which 18 (51.43%) were boys and 17 (48.57%) were girls. In this study the most common morbidity was oral health problems (26.74%) followed by louse infestation (23.26%) and dental caries (19.77%). Devidas et al in rural area of Telangana observed, of the 210 study subjects, 154 (73.33%) under-five children were having several forms of morbidities.[1] The most common morbidity was acute respiratory tract infection (25.71%), followed by diarrhea (20.00%) and worm infestation (08.09%). In the present study, it is observed that of the 86 subjects, 16 (18.60%) were underweight, 35 (40.70%) were stunted and14(16.28%) were wasted. Khatri et al observed, stunting in 36.90% of children, followed by 31.1% underweight and 20.00% suffered from wasting among 975 under-5 children in rural population of Ghaziabad district.[2] They observed diarrhea and ARI among 36.50% and 30.90% under-5 children respectively. In the present study it is observed that only 01.16% under-5 children were suffering from upper respiratory tract infection.

Sahu et al observed that the prevalence of undernutrition among under-5 children was high and varied widely i.e., underweight (39-75%), stunting (15.4-74%) and wasting 10.6-42.3%) depending on the assessment methodology adopted.[3] Lakshmi et al studied 525 under-5 children in Mandya district, Karnataka, and observed, fever, diarrhea, pneumonia was the most common illness among them.[4] They also observed in their study that out of 324 boys 90 (27,70%) and out of 201 girls 59 (29.4) %) were morbid. Shweta et al observed, more than half of the under-5 children (56.3%) were found to be undernourished.[5] The prevalence of underweight, stunting and wasting was found to be 33.5%, 35.5% and 12.4% respectively in Western Maharashtra. Stalin et al observed in their study in a rural area of Kancheepuram district in Tamil Nadu that the prevalence of underweight among under-5 children was 52.9% and around 7.00% of the children were severely malnourished.[6] The prevalence of underweight among children under the age of one year was 62.4%. Females (62.6%) were more malnourished than males (44.0%). Children belonging to higher socio-economic status (40.0%) were less malnourished than lower socio-economic status (47.2%).

Bhadoria in her study in rural area of Barabanki district observed, 28.3% children were moderately malnourished, 12.2% were severely malnourished and 9.4% were very severely malnourished.[7] Kumar et al in their study among under-5 children in Bihar observed, 71.00% boys and 58.00% girls were morbid.[8] The difference was statistically significant. Pandey et al observed poor immunization coverage i.e.,65.00% in Bhojpur district of Bihar.[9] In the present study in rural Maharashtra, it is observed that 83.72% under-5 children were age-appropriate fully immunized. It is also observed that the association between monthly family income and presence of stunting among under-5 children is statistically significant ($p<0.05$). In the present study in rural Maharashtra, it was observed that the level of personal hygiene of all the subjects was poor. Ranga et al in their study in Sonipat, northern India, observed overall poor level of personal hygiene among 53.4% of the school children.[10]

CONCLUSION

Underweight, stunting, wasting, louse infestation, skin diseases, dental caries, oral health problems, poor personal hygiene and poor immunization coverage are the major health problems among the under-five children in rural area. Information, education and communication activities should be enhanced and strengthened to change the behavior of the mothers to seek the timely reference from a qualified doctor for the illness and proper adherence to the treatment. Most of the determinants of morbidities among the under-5 children are modifiable.

Preventive and remedial measures should be an ongoing process to combat the health problems of the under-5 children.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Devidas J, Mohapatra J, Dehury P, Dehury RK. Socio-demographic and Morbidity Pattern among under-five children in rural areas of Adilabad District of Telangana, India. J Clin Diagn Res. 2021;15(10):IC17-21.
2. Khatri S, Gupta GK, Kumar AR, Singh A, Agrawal D. Common morbidities among under-five children in the rural population of district Ghaziabad. Hindu. 2020;314:32-4.
3. Sahu SK, Kumar SG, Bhat BV, Premarajan KC, Sarkar S, Roy G, et al. Malnutrition among under-five children in India and strategies for control. J Nat Sci Biol Med. 2015;6(1):18.
4. Lakshmi L, Penta BT, Ragavendra SK. A study on health care seeking pattern of under five children in the rural field practice area of a medical college in Mandya District, Karnataka, India. Int J Contemp Pediatr. 2018;5(5):1919-22.
5. Gangurde S, Jadhav SL, Waghela H, Srivastava K. Undernutrition among under-five children in Western Maharashtra. Med J Dr. DY Patil Univ. 2023;16(3):386-92.
6. Stalin P, Bazroy J, Dimri D, Singh Z, Senthilvel V, Sathyanarayanan S. Prevalence of underweight and its risk factors among under-five children in a rural area of Kancheepuram district in Tamil Nadu, India. IOSR J Dent Med Sci. 2013,3(6):71-4.
7. Bhadoria A. A study on association of socio-demographic factors with nutritional status of under-five age group in rural area of Barabanki district. J Med Public Health. 2023;4(5):1077.
8. Kumar N, Jha RR, Gupta A. A cross-sectional study to assess the socio-demographic and morbidity profile among under-five children in a resettlement colony of Bihar. Int J Community Med Public Health. 2021;8(3):1295-8.
9. Pandey S, Ranjan A, Singh CM, Kumar P, Ahmad S, Agrawal N. Socio-demographic determinants of childhood immunization coverage in rural population of Bhojpur district of Bihar, India. J Fam Med Prim Care. 2019;8(7):2484.
10. Ranga A, Majra JP. Determinants of personal hygiene among school children: a community based cross-sectional study from Sonepat, northern India. Glob J Med Public Health. 2020;9(4):1-8.

Cite this article as: Jayalekshmi CS, Birajdar SS, Gurav RB. Socio-demography, nutritional status, age-appropriate immunization coverage and morbidity among under-five children in rural Maharashtra. Int J Community Med Public Health 2024;11:301-6.