



ORIGINAL RESEARCH PAPER

Ayurveda

A STUDY OF MORBIDITIES, NUTRITIONAL STATUS AND IMMUNIZATION STATUS OF ANGANWADI CHILDREN: A COMPARATIVE CROSS-SECTIONAL STUDY

KEY WORDS: morbidities, nutritional status, immunization status, anganwadi children

Dr. Sukeshini D Moon*

Asso. Professor Dept. of Shalakyatantra, Chhattisgarh Ayurvedic Medical College, Rajnandgaon. *Corresponding Author

Dr. Mahendra Dhanvijay

JR-3, Dept. of Community Medicine, GMC Nagpur

ABSTRACT

Introduction - Children are in a constant phase of development. Their body is in a phase of constant wear-tear and repair, their brain is developing, bones are growing. These growing children require constant supplementation of calories, proteins and micronutrients to keep the pace of increased demands of the body.

Material And Methods - This cross-sectional study was conducted among children up-to 6 years registered in anganwadi. There were 6 ICDS projects in this city. From that 1 ICDS project was selected randomly. Selected ICDS project was comprised of 195 Anganwadi centers.

Results - Most of the study subjects (29.75%) had fevers as morbidity during previous fortnight. In urban area, most of the study subjects (30.5%) had fevers as morbidity during previous fortnight followed by ARI in 5.5%. In rural area, most of the study subjects (29%) had fevers as morbidity during previous fortnight followed by diarrhea in 10%.

Conclusion - High prevalence of various morbidities like diarrhea, fever, ARI and other diseases along with signs of nutritional deficiencies were present in both urban and rural area.

INTRODUCTION

Children are in a constant phase of development. Their body is in a phase of constant wear-tear and repair, their brain is developing, bones are growing. These growing children require constant supplementation of calories, proteins and micronutrients to keep the pace of increased demands of the body. [1]

Measures of child undernutrition are used to track progress towards Millennium Development Goal 1: Eradicate extreme poverty and hunger. Database of UNICEF revealed 161 million underfive year olds were stunted globally in 2013. Between 2000 and 2013 stunting prevalence declined from 33% to 25%. [2]

In India, 48% of children under 5 years are stunted and 43% are underweight and 20% of children under 5 years in the country are wasted. [3]

Preschool children are the most vulnerable to the effect of under nutrition because of their rapid growth and thus their nutritional status is considered to be sensitive indicator of community health. [4]

The new WHO standards depict normal early childhood growth under optimal environmental conditions and can be used to assess children everywhere, regardless of ethnicity, socioeconomic status and type of feeding. [5]

It is strongly linked with poverty therefore poor children are more likely to be underweight at birth. [6]

Child under nutrition is a major contributor to the Global hunger index (GHI). [4,7,8]

The tribal areas, food scarce districts, chronically drought prone rural and tribal hamlets have inadequate access to nutrition and health services. [9]

Malnutrition in its several forms of under-nutrition, namely wasting, stunting and under-weight has been coined as the "silent emergency" by the United Nations children's fund (UNICEF). It has been associated with endangering the health of women and children across the world. [10]

Main reasons of poor nutritional status were attributed to recurrent attack of diarrheal and other infections. [11]

Therefore, this study was conducted to study various morbidities and other factors related to nutritional status.

AIM AND OBJECTIVE

- a) To study the morbidities among anganwadi children in previous fortnight.
- b) To study the nutritional status and immunization status of anganwadi children.

MATERIAL AND METHODS

Sample Size was calculated by taking prevalence of malnutrition 14.5% in urban slums of Miraj City (Gondikar A et al) [12] & 24% in rural area of GOA. (Silva VG et al)[13]. Sample size for each group calculated is 135.

This cross-sectional study was conducted among children up-to 6 years registered in anganwadi.

Approval from Institutional Ethics Committee was sought. Permission was taken from Divisional Deputy Commissioner, women and child development department for urban area and from Deputy Chief Executive Officer, women and child development department, Zilha Parishad, for rural area. Informed written consent was taken from parents (mother) of study subjects after explaining them of the purpose of study and assuring full confidentiality.

There were 6 ICDS projects in this city. From that 1 ICDS project was selected randomly. Selected ICDS project was comprised of 195 Anganwadi centers. These anganwadis were divided in 5 zones so 1 anganwadi was selected from each zone randomly for study purpose. For rural area, there were 13 ICDS projects. Among that 1 ICDS project selected randomly. Selected ICDS project was comprised of 5 PHCs (Primary Health Center). Enlisting of anganwadi centers of each PHC was done by using random number table. 1 anganwadi was selected from each PHC randomly. 5 Anganwadi centers were choosed for rural area for study purpose. Probability proportional to size (PPS) sampling was done to achieve sample size.

The mid upper arm circumference was taken using Shakir's tape, in left arm. Clinical examination for nutritional deficiency signs. For history of morbidity in previous fortnight: history of Fever, Diarrhea, Dysentery, Measles and Acute respiratory tract infections was taken. Estimation of

haemoglobin was done by Sahli's method using hemoglo binometer.

Data was analysed and tabulated using frequency distribution tables and proportions. The significance of difference between various factors was analysed using the Chi-square test.

RESULTS

Table 1 shows most of the study subjects (45%) were from age group from 12-35 months. In both urban and rural area, equal distribution of boys and girls were taken to compare various socio-epidemiological factors, nutritional factors and morbidities. 52% of study subjects were boys and remaining 48% were girls. Majority of study subjects (72.50%) were from Hindu religion. Most of the study subjects were living with joint family. Most of the study subjects belonged to class IV of socioeconomic status according to B.G.Prasad scale.

Table 2 Shows Most Of The Study Subjects (29.75%) Had Fevers As Morbidity During Previous Fortnight.

In urban area, most of the study subjects (30.5%) had fevers as morbidity during previous fortnight followed by ARI in 5.5%. In rural area, most of the study subjects (29%) had fevers as morbidity during previous fortnight followed by diarrhoea in 10%.

Table 3 shows pallor (29.5%), hair spars/dicoloured (26.75%), dental carries (15%), angular stomatitis (8%), cheilosis (2.5%), conjunctival xerosis (1.25%), phrynoderma (0.5%), bleeding gums (0.25%) and bitot's spot (0.25%) were found in study subjects. In urban and rural area proportion of various nutritional deficiency signs were seen nearly same.

Table 4 shows that majority of study subjects (75.4%) had normal mid upper arm circumference. In urban area, majority of study subjects (72.48%) had normal mid upper arm circumference followed by moderate acute malnutrition in 22.14%. In rural area, majority of study subjects (72.48%) had normal mid upper arm circumference followed by moderate acute malnutrition in 22.14%. There was no statistically significant difference between urban and rural area for mid upper arm circumference as p value was 0.3.

Table 5 shows that Overall Prevalence of anaemia was 39.26%. Prevalence of anaemia in urban area was 38.66 %. Prevalence of anaemia in rural area was 39.89%. There was no statistically significant difference between urban and rural area for anaemia as p value was 0.89. Haemoglobin test was done in study subjects who had completed 6 months of life.

Table 6 shows majority of study subjects (90.5%) had completed immunization appropriate for age. None of the study subject was unimmunized.

Table 1. Distribution Of Study Subjects According To Socio-demographic Factors.

Socio-demographic factors	Urban N (%)	Rural N (%)	Total N (%)
Age (months)			
0-11 months	35 (17.50)	38 (19.00)	73 (18.25)
12-35 months	92 (46.00)	88 (44.00)	180 (45.00)
36-59 months	62 (31.00)	59 (29.50)	121 (30.25)
60-71 months	11 (05.50)	15 (07.50)	26 (06.50)
Gender			
Boys	104 (52.00)	104 (52.00)	208 (52.00)

Girls	96 (48.00)	96 (48.00)	192 (48.00)
Religion			
Hindu	115 (57.50)	175 (87.50)	290 (72.50)
Muslims	42 (21.00)	02 (01.00)	44 (11.00)
Bouddha	41 (20.50)	22 (11.00)	63 (15.75)
Others	02 (01.00)	01 (0.50)	03 (0.75)
Type Of Family			
Nuclear	79 (39.50)	41 (20.50)	120 (30.00)
Joint	81 (40.50)	108 (54.00)	189 (47.25)
Three Generation	40 (20.00)	51 (25.50)	91 (22.75)
Family Size			
1-4	77 (38.50)	54 (27.00)	131 (32.75)
5-7	92 (46.00)	106 (53.00)	198 (49.50)
>= 8	31 (15.50)	40 (20.00)	71 (17.75)
Average Family Size	5.6800	5.8650	5.7725
Socio-economic Status*			
I	11 (05.50)	06 (03.00)	17 (04.25)
II	42 (21.00)	30 (15.00)	72 (18.00)
III	72 (36.00)	34 (17.00)	106 (26.50)
IV	66 (33.00)	81 (40.50)	147 (36.75)
V	09 (04.50)	49 (24.50)	58 (14.50)
Total	200 (100)	200 (100)	400 (100)

Mean age of study subjects months- 29.45 ± 18.31 months (0-72).

Mean age of urban study subjects months- 29.75 ± 17.79 months (0-72)

Mean age of rural study subjects months- 29.14 ± 18.85 months (1-72)

Median age of study subjects 27 months.

Median age of study subjects in urban area 27.5 months.

Median age of study subjects in rural area 26 months.

*CPI 254.2 for Nov 2019

Table 2. Distribution Of Study Subjects According To Morbidity During Previous Fortnight (n=400).

Morbidities	Urban N(%)	Rural N(%)	Total N (%)
Fever	58 (29.00)	61 (30.50)	119 (29.75)
Diarrhoea	09 (04.50)	20 (10.00)	29 (07.25)
Dysentery	00 (00)	00 (00)	00 (00)
ARI	11 (05.50)	06 (03.00)	17 (04.25)
Measles	00 (00)	00 (00)	00 (00)
Others	02 (01.00)	02 (01.00)	04 (01.00)

No Illness	122 (61.00)	122 (61.00)	244 (61.00)
------------	----------------	----------------	----------------

Table 3. Distribution Of Study Subjects According To Nutritional Deficiency Signs (n=400).

Signs	Urban N (%)	Rural N (%)	Total N (%)
Pallor	64 (32.00)	59 (29.50)	118 (29.50)
Hair spars/ discoloured	62 (31.00)	45 (22.50)	107 (26.75)
Dental carries	26 (13.00)	34 (17.00)	60 (15.00)
Angular stomatitis	16 (08.00)	16 (08.00)	32 (08.00)
Cheilosis	03 (01.50)	07 (03.50)	10 (02.50)
Conjunctival xerosis	10 (05.00)	05 (02.50)	05 (01.25)
Phyrnoderma	00 (00)	02 (01.00)	02 (00.50)
Bleeding gums	01 (00.50)	00 (00)	01 (00.25)
Bitots spot	01 (00.50)	00 (00)	01 (00.25)
Koilonychia	00 (00)	00 (00)	00 (00)
Glossitis	00 (00)	00 (00)	00 (00)
Oedema	00 (00)	00 (00)	00 (00)
Photophobia	00 (00)	00 (00)	00 (00)
Others	12 (06.00)	13 (06.50)	25 (06.25)
NO any sign	98 (49.00)	115 (57.50)	213 (53.25)

Table 4. Distribution Of Study Subjects According To Mid Upper Arm Circumference (n=305).

MUAC (Cm)	URBAN N (%)	RURAL N (%)	TOTAL N (%)
>=12.5 (Normal)	122 (78.20)	108 (72.48)	230 (75.40)
11.5-<12.5 (MAM)	24 (15.38)	33 (22.14)	57 (18.68)
<11.5 (SAM)	10 (06.41)	08 (05.36)	18 (05.90)
TOTAL	156 (100)	149 (100)	305 (100)

Prevalence of malnutrition according to MUAC =24.58 %.
 Prevalence of malnutrition according to MUAC in urban area =21.79 %.
 Prevalence of malnutrition according to MUAC in rural area = 27.50%.
 Mid upper arm circumference was taken from 305 study subjects from 6 to 60 months.

Table 5. Distribution Of Study Subject According To Blood Haemoglobin Level (n=359).

Haemoglobin Level*	Urban N (%)	Rural N (%)	Total N (%)
Normal (>=11 gm%)	111 (61.32)	107 (60.11)	218 (60.72)
Mild Anaemia (10-10.9 gm%)	60 (33.14)	56 (31.46)	116 (32.31)
Moderate Anaemia (7-9.9 gm%)	09 (04.97)	15 (08.42)	24 (06.68)

Severe Anaemia (< 7 gm%)	01 (00.55)	00 (00)	01 (00.27)
Total	181 (100)	178 (100)	359 (100)

$\chi^2 = 0.01, df = 1, p \text{ value} = 0.89.$
 * HAEMOGLOBIN CUT OFF LEVEL (WHO study on nutritional anaemia)
 Overall Prevalence of anaemia = 39.26%.
 Prevalence of anaemia in urban area =38.66 %.
 Prevalence of anaemia in rural area =39.89%.

Table 6. Distribution Of Study Subjects As Per Immunization Status.

Immunization Status	Urban N (%)	Rural N (%)	Total N (%)
Immunization appropriate for age	170 (85.00)	192 (96.00)	362 (90.50)
Immunization not appropriate for age	30 (15.00)	08 (04.00)	38 (09.50)
Unimmunized	00 (00)	00 (00)	00 (00)
Total	200 (100)	200 (100)	400 (100)

DISCUSSION

In this study, majority of study subjects (90.5%) had completed immunization appropriate for age. None of the study subject was unimmunized.

Navya N, et al (2017) conducted study showed some less immunization coverage. Primary Immunization (up to measles) was completed in 84.4% children. There were 17(15.6%) children who were partially immunized. No child was unimmunized. Association was not found between immunization status and underweight. [14]

Suri S, et al (2015) conducted study showed various morbidities. 39.1% of study subjects had an episode of ARI in the last 15 days while 44.6% of the children with under-nutrition had a history of ARI in the past. [15]

Amsalu Taye, et al (2016) conducted study showed low proportion of malnutrition according to MUAC. As measured by MUAC 13 (2.2%) studied children were severely wasted (in severe acute under nutritional status) (MUAC<11.5 cm) and 71 (12.1%) were moderately wasted (in moderate acute under nutritional status) (MUAC<12.5 cm). [16]

CONCLUSION

High prevalence of various morbidities like diarrhea, fever, ARI and other diseases along with signs of nutritional deficiencies were present in both urban and rural area. Malnutrition according to mid upper arm circumference and prevalence of anaemia were also high in both areas. Immunization coverage was also not up to mark.

Recommendation

There should be health education for parents of anganwadi children about various health problems and their warning signals. Awareness about breastfeeding, weaning, immunization, nutrition should be increased among population.

Acknowledgement

We acknowledge the contribution of anganwadi children and their parents (study subjects) who played an important role in successful implementation of the study and Dr Sandip Zurmure who played an important role in successful analysis of the results.

REFERENCES:

[1] A.K. Shiva Kumar 'Child malnutrition: Myths and solutions'-The Little

- Magazine,myth.
- [2]. UNICEF http://data.unicef.org/resources/2013/web_apps/nutritionhttp://data.worldbank.org/child-malnutrition. Cited on 1.5.2015.
 - [3]. International Institute for Population Sciences (IIPS) and Macro International. National Family Health Survey (NFHS-3), 2005-06. Vol. I. India: International Institute for Population Sciences;2007.
 - [4]. Sunderlal, Adarsh, Pankaj. Textbook of Community Medicine, 4th edition. New Delhi: CBS Publication and Distributors Pvt.Ltd.;2014..198-06p.
 - [5]. Park's Textbook of Preventive and Social Medicine. 24th ed. Jabalpur: M/s Banarasidas Bhanot;2017.
 - [6]. Rutstein, S.O. 2005. Effects of preceding birth intervals on neonatal, infant and under-five years mortality and nutritional status in developing countries: Evidence from the Demographic and Health Surveys. International Journal of Gynaecology and Obstetrics 89 (suppl 1):S7-S24.
 - [7]. Patnaik A., Hindustan Times, New Delhi What India's growth story conceals Updated: Oct 15, 2010 11:42 IST.
 - [8]. Pelletier DL (1994) The relationship between child anthropometry and mortality in developing countries: implications for policy, programs and future research. Journal of Nutrition, 124:S2047-2081.
 - [9]. J. Kishor's . National Programs of India, 10th edition. New Delhi: century publications;2012;Chapter 18, 439-51p.
 - [10]. Bellamy C. The state of the World's Children - Focus on Nutrition. UNICEF, New York. Oxford University Press; 1998:p.9
 - [11]. Deswal B, et al. An epidemiological study of malnutrition among pre-school children in a slum of Gurgaon, Haryana, India. International Journal of Current Research, July, 2016;8(7):35133-37.
 - [12]. Gondikar A, et al. Anthropometric assessment of nutritional status of children attending anganwadi in urban slums of Miraj city, Maharashtra. International Journal of Community Medicine and Public Health 2017; 4(11):41-57.
 - [13]. Vanita G Pinto Silva, et al. Nutritional status of anganwadi children under the integrated child development services scheme in a rural area in Goa. International Journal of Scientific Study 2015;3(7):217-20
 - [14]. Gayakawad V, et al. Under nutrition and Its determinants among Children between 1-5 years of age residing In an urban slum of Bagalkot city, Karnataka State. Indian Journal of Forensic and Community Medicine, October-December 2017;4(4):245-49.
 - [15]. Suri S, et al. Nutritional status and the factors associated with it among children aged 1-5 years in a rural area of Jammu. International Journal of Scientific Study, June 2015;3(3):60-64.
 - [16]. Amsalu Taye, et al. Under-nutrition and related factors among children aged 6-59 months in Gida Ayana district, Oromiya region, west Ethiopia: a community based quantitative study. Journal of Nutrition and food Sciences 2016;6(5):1-12.