

ORIGINAL ARTICLE

 OPEN ACCESS

Received: 18.04.2023

Accepted: 20.06.2023

Published: 24.07.2023

Citation: Abhishek SV, Sunil BN.
Assessment of Nutrition and
Immunization Status of Children
Attending to Anganwadis at Field
Practice Area of a Rural Medical
College, Karnataka. J Clin Biomed
Sci 2023; 13(2): 50-55. <https://doi.org/10.58739/jcbs/v13i2.23.12>

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Funding: None

Competing Interests: None

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Published By Sri Devaraj Urs
Academy of Higher Education, Kolar,
Karnataka

ISSN

Print: 2231-4180

Electronic: 2319-2453



Assessment of Nutrition and Immunization Status of Children Attending to Anganwadis at Field Practice Area of a Rural Medical College, Karnataka

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Abstract

India has one of the highest rates of underweight children in the world, which has serious ramifications for illness, mortality, productivity and economic growth and malnutrition chiefs to sequence of physiological fluctuations, metabolic anomalies lower tissue and organ function and harm to body mass. Childhood vaccination programs contributed to major reductions in global morbidity and mortality in children under 5 years. India has a large number of unvaccinated and under-vaccinated children. The primary goal of such studies is to determine the extent, kinds and distribution of malnutrition in various geomorphologic locations in order to identify risky groups and control contributory factors. To assess the Nutritional status of children among residents of Devarayasamudra Rural Health Training Center. To find out Immunization status of children among Devarayasamudra Rural Health Training Center. A Cross-sectional study done under Devarayasamudra Rural Health Training Center. Included all children present and villages were selected via convenient sampling technique. Total of ten villages were covered and 90 children were included in the study. Majority (77%) of the children belonged to the age group between 3 – 6 years and gender wise they were equally distributed. 36% of participants were having a birth weight below normal, 7.7% of children were screened positive for severe acute malnutrition and 99% of the participants were immunized as per schedule. The present study concluded that 99% of children received all three DTP doses and 1 dose of MR Vaccine. Nonetheless, difficulties to increase regular vaccination coverage persist despite significant increases in vaccine coverage between 2000 and 2010.

Keywords: Underweight; Vaccine status; Children

Introduction

A better nourished world is a better world. The global community is dealing with numerous nutritional challenges.¹ Eighty eight percent several nations are suffering from two or three types of malnutrition². Malnutrition is a serious medical condition marked by a deficiency of energy, essential proteins, fats, vitamins and minerals in a diet. Over 10 million children aged less than five years (under-five children) die annually from diseases that are both preventable and curable, almost all these deaths occur in poor countries³. Prevalence of underweight children in India is among the highest in the world, roughly double that of Sub-Saharan Africa, with disastrous effects for morbidity, mortality, productivity, and economic growth.⁴

Nutritional health status assessment includes evaluating information related to demographics, anthropometric measurement, clinical health and eating habits.^{5,6}

Malnutrition occurs when total nutrient consumption is less than needs. Malnutrition causes a chain reaction of physiological changes, metabolic abnormalities, decreased tissue and organ function, and body mass deterioration⁷. The primary goal of such studies is to determine the quantity, kinds, and distribution of malnutrition in various geomorphologic locations in order to identify risky groups and manage contributory factors.⁸

A key focus of the health-related Sustainable Development Goal (SDG) is universal health coverage (UHC), including access to safe, effective, quality, and affordable essential medicines and vaccines⁸. Childhood immunisation programmes contributed significantly to significant decreases in worldwide morbidity as well as death among children under the age of five. Childhood vaccination can only provide population-level advantages if a large proportion of children get inoculated⁹. Historically, low vaccination uptake was assumed to be primarily due to impediments to vaccine access¹⁰. With the fall in polio vaccination coverage, polio was transmitted from Nigeria to other nations that had previously been proclaimed polio-free.^{10,11}

There are many unvaccinated and under-vaccinated youngsters in India. As of 2019, India has the world's second biggest number of babies who had not received their first dose of the diphtheria-tetanus-pertussis vaccination.¹²

Objectives

- To assess the Nutritional status of children in Rural Health Training Center.
- To find out Immunization status of children in Rural Health Training Center.

Materials and Methods

- **Study Area:** Anganwadis of Devarayasamudra Rural Health Training Center, Kolar.
- **Study Design:** Cross Sectional study.
- **Survey type:** Anganwadis based survey.
- **Sampling technique:** Universal sampling.
- **Study Setting:** Rural Field Practice areas of Devarayasamudra Rural Health Training Center, covers 22 villages with a total population of 11638. From which 10 villages were selected via lottery method and data was collected.
- **Inclusion criteria:** All the Children who were attending the Anganwadi.
- **Exclusion criteria:** Those who were absent on the day of Survey.
- **Approval for the Study:** The study protocol was approved by the Institutional Ethical review Committee (IEC).
- **Ethical Considerations:** The institutional ethical review committee of Sri Devaraj Urs Academy of Higher Education and Research, Kolar, has authorized this project. Before the research, the individuals and their parents & guardians provided verbal informed consent. The respondents' anonymity was kept confident throughout the data analysis process.

Details about Village

Devarayasamudra is a medium size village located in Mulbagal taluka of Kolar district, Karnataka with 441 families residing. Devarayasamudra village has 184 children aged 0 to 6, accounting for 9.39% of the total population.

Methodology

Anganwadi survey was done under Devarayasamudra Rural Health Training Center to assess the Nutritional status and immunization status of children's who were attending to Anganwadi of the selected villages. Survey was carried out with a pre structured questionnaire which was validated during Pilot Study which was done on 10 children by interviewing ASHA & Checking Anganwadi register to assess Vaccination Coverage and checked for Malnutrition among them.

Data collection method

Data was obtained using interview method by using pre structured questionnaire which lasted less than 10 minutes. Pretested Semi-structured questionnaire which was translated into local language and back translated to English, to collect information on sociodemographic characteristics. It was validated by pre-testing it on a subset of the sample group and changes were made as needed. Data regarding Immunization status was collected from Thayi Card from each participant

and Anthropometric assessment was recorded. If the child was absent during the visit, they were excluded.

Statistical analysis

The data was entered into a Microsoft Excel spread sheet. Variables were coded. The collected data was summarised and presented as frequencies, proportions, mean, and standard deviation, depending on the quantitative or qualitative variables.

Chi-square test and Fisher exact test were used as tests of significance. Binary logistic regression was done. An odds ratio with a 95% confidence interval was found from logistic regression analysis. Analysis was performed using the SPSS version 22.

P-value less than 0.05 considered as statistically significant

Results

Table 1. Distribution of participants based on residence

Sl No	Village	Children	Percentage
1	Devarayasamudra	15	16.5%
2	V Guttahalli	18	19.8%
3	Kempapura	2	2.2%
4	Avani	3	3.3%
5	Bettegenahalli	7	7.7%
6	Bheemapura	7	7.7%
7	Doddiganahalli	12	13.2%
8	Bellampalli	6	6.6%
9	Keeanahalli	15	16.5%
10	Mallapanahalli	5	5.5%
Total		90	100%

Table 2. Descriptive Characteristics of Study Participants

Characteristics (n)	Frequency	Percentage
Age (Years)		
0 – 3 years	21	23%
3 – 6 years	69	77%
Gender		
Boys	45	50%
Girls	45	50%
Family Type		
Nuclear Family	65	72.2%
Joint Family	25	27.7%

Children between age group 3 to 6 years are 77% and age group between 0-3 were only 21 children (23%).

Maximum number of births in Devarayasamudra took place in DRS PHC which was 33%, whereas in Mulbagal Hospital and RLJ Hospital it was 23.1% and 22% respectively out of which 66.7% of them had Normal delivery and 33.3% underwent LSCS. Those who underwent LSCS were due to

Table 3. Distribution of participants based on place of birth and mode of delivery

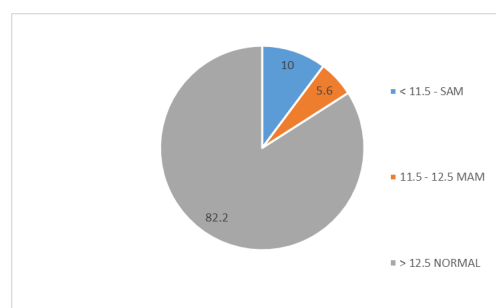
Place of Birth	Mode of Delivery		Total
	Normal Delivery	LSCS	
Mulbagal Taluk Hospital	14 (66.7%)	7 (33.3%)	21 (100%)
Devarayasamudra PHC	27 (90.0%)	3 (10.0%)	30 (100%)
SNR Hospital	6 (75.0%)	2 (25.0%)	8 (100%)
RLJ hospital	4 (20.0%)	16 (80.0%)	20 (100%)
Others	9 (81.8%)	2 (18.2%)	11 (100%)
Total	60 (66.7%)	30 (33.3%)	90 (100%)

*Others — Delivered other than Kolar districts.

short stature, increased birth weight and due to existence of co-morbidity condition.

Extreme Low Birth Weight was not noted in the present study absent. Out of 90 children 32 were born with underweight (less than 2.5kg) and the reasons for low weight was due to low socio-economic status and anaemia in pregnancy as per the opinion of the posted Medical Officer in Devarayasamudra Primary Health Center. As the birth order increased the birth weight also decreased correspondingly. As per the survey, most of them (55.6%) were having single child and those who are having more than 2 children were 8.9%.

30 % underwent LSCS and whose birth weight were above 3.5kg.



Graph 1: Mid Upper Arm Circumference

68.8% of children had normal mid upper arm circumference, 12.6% children were in at risk of malnutrition, 7.7% had moderate acute malnutrition and children suffering from severe acute malnutrition were 7.7%. The reason for malnutrition is due to low socio-economic status and illiteracy of parents.

MCP Cards

99% Participants were having MCP card.

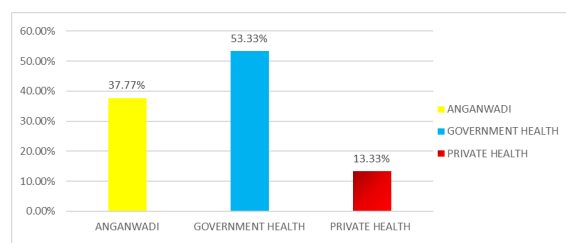
80 participants took vaccine from public sector and 10 took vaccines from private sector. It shows an improvement in

Table 4. Birth weight comparison with Birth order

Weight in kg	BIRH ORDER			Total	
	1st Child	2nd Child	3rd Child		
< 2 kg	3 (60%)	2 (40%)	0 (0%)	5 (100%)	$\chi^2 = 3.539$ df=6 p value = .739
2 - 2.5 kg	13 (48.1%)	9 (33.3%)	5 (18.5%)	27 (100%)	
> 2.5kg	33 (56.9%)	21 (36.2%)	4 (6.9%)	58 (100%)	
Total	49 (54.4%)	32 (35.6%)	9 (10%)	90 (100%)	

Table 5. Birth weight and Mode of delivery

Weight in Kg	Mode of delivery		Total	
	Normal Delivery	LSCS		
< 2 kg	4 (80 %)	1 (20 %)	5 (100%)	$\chi^2 = 2.037$ df=3 p value = .565
2 - 2.5 kg	17 (63 %)	10 (37 %)	27 (100%)	
2.5 – 3 kg	25 (73.5 %)	9 (26.5 %)	34 (100%)	
> 3 kg	14 (58.3 %)	10 (41.7 %)	24 (100 %)	
Total	60 (66.7 %)	30 (33.3%)	90 (100%)	


Graph 2: Availability vaccine services

our health system and the ASHA and other community health workers effort in implementing the programme effectively.

Depicts that about 74% of children had normal mid upper arm circumference and 5% children were at risk of malnutrition, 9% had severe acute malnutrition

Discussion

In our study, 50% of the children were males and the majority (69%) of the children were between the ages of three and six. Mandal *et al* found that 49.20% of the children in their research were males and 51% were girls. Deshmukh *et al.*¹³ found that 52% of children under the age of six were male and 48% were female.¹⁴

In this study, more female children (10.84%) were thin built than male children (5.9%), ($p>0.05$). According to Mandal *et al.*, the frequency of thinness among boys was 84.8% and 85.6% among females¹⁴. Another cross-sectional study conducted at Vydehi Institute of Medical Sciences Bengaluru in a rural field practice area revealed that the prevalence of underweight among male and female children was 56 (46.3%) and 60 (48.4%), respectively¹⁵. According to this study, 30% of women experienced LSCS and 70% had a normal vaginal birth. Those experiencing LSCS had it due to

their short stature, excessive birth weight, or a co-morbidity condition. According to the general public, the high number of normal births in the public sector was attributed to improvements in the quality of treatment and facilities. Another cross-sectional study indicated that the prevalence of underweight, stunting, and wasting was 34.14%, 45.52% and 35.52%, respectively, in the urban field practise area of a medical college in Tumkur. Undernutrition was linked to age, socioeconomic position, immunisation status, religion, and mother's education¹. According to the current study, 74% of children have normal midarm circumference, 5% are at risk of malnutrition, and 9% have severe acute malnutrition. Malnutrition is caused by parents' poor socioeconomic level and illiteracy. Preschool children's nutrition is critical since they are at high risk of malnutrition due to the growing period's high protein and calorie requirements⁷. During the current decade, poor infant and young child feeding, and poor utilization of healthcare are emerging as important determinants of undernutrition in children. Nutrition, health education, and good access and utilization of healthcare can be very effective interventions which could result in substantial reduction in undernutrition in children over the next decade. Children with growth faltering and undernutrition should be identified, counselled and provided with supplements regularly and monitored for improvement. Children with severe acute malnutrition should be referred to primary health care for care and counselling. Based on the observations made during the study and the results, there is a need to educate parents to provide energy-rich, locally available, and nutritionally balanced food items. Because the causes of childhood malnutrition are multifactorial, improvement in one aspect does not reflect the desired change. The necessity of the hour is for all responsible departments and individuals to work together to enhance the

Table 6. Association of Nutrition status and Birth order

MUAC	Birth order			Total
	1 st Child	2 nd Child	3 rd Child	
< 11.5 (SAM)	5 (55.6%)	3 (33.3%)	1 (11.1%)	9 (100%)
11.5 - 12.5(MAM)	1 (20.0%)	2 (40.0%)	2 (40.0%)	5 (100%)
12.5 -13.5 (Normal)	5 (55.6%)	3 (33.3%)	1 (11.1%)	9 (100%)
>13.5	36 (55.4%)	24 (36.9%)	5 (7.7%)	65 (100%)
Total	47 (53.4%)	32 (36.4%)	9 (10.2%)	88 (100%)

nutritional status of children. So now is the time to set the basis for a lifetime of health, strength and mental vigour's a consequence, it is critical for a primary care physician to examine and comprehend aspects influencing nutritional status in children in order to handle them appropriately. The study appears to indicate a relationship.

Strengths and Limitations

This study has various drawbacks, one of which is the collecting of inadequate socioeconomic data, which may have overlooked significant factors influencing vaccination status and nutritional status. This study is confined to a single city in India and cannot be applied to the entire country. Sampling at Anganwadis may potentially restrict access to more recent arrivals to the city. By restricting the sample to at least 20 mothers, also, wealthier individuals may choose utilise private child care centres, despite the fact that their household information should still be on the Anganwadi registers. Children's nutritional condition is frequently the consequence of a number of interconnected circumstances. Clinical examination, anthropometric measures, biochemical evaluation, functional assessment, food intake assessment, vital statistics, and ecological factor assessment are all procedures used to assess nutritional status. This survey may have been impacted by social desirability bias or other interviewer effects because it was done in person.

Conclusions

The present study reveals that, the rural school going children in Devarayasamudra PHC were fully immunised. Nonetheless, difficulties to increasing regular vaccination coverage remain. Despite significant increases in immunisation coverage between 2000 and 2010. Study participants are suffering from minimal grades of malnutrition. Mothers of these children should be educated about the importance of balanced diet. Consumption of foods like cereals, pulses, green leafy vegetables, roots and tubers, sugar and jaggery, fats and oil, milk and milk products, fruits etc., should be promoted.

Routine immunisation and Vitamin A supplementation are two main services offered by Government of India to reduce child mortality and morbidities. Auxiliary Nurse Midwives from health department, Anganwadi Workers from women and child development department and Accredited Social Health Activists (ASHAs) are responsible for raising awareness and demand for these services.

Recommendations

Under the National Health Mission in India, the Community Level Workers are expected to be the main source and channel for generating health awareness in the community, improving communities' knowledge and motivating them to access the health system and programs. The study findings revealed that CLWs had strong expertise, particularly ASHA, who is the community's initial point of contact. There is a need for improved induction and periodic refresher training for CLW's on knowledge about benefits of health programs like immunization, their counselling and communication skills.

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