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Nutritional Status of Under Five Children of Migrant Labourers at Construction Sites in Haveli Taluka, Pune, Maharashtra

Research Article

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Abstract

Seasonal migration for work is a persistent reality in India. Around 120 million people are estimated to migrate from rural areas to urban labour markets. This study examines the nutritional status of fewer than five children of migrant construction workers who live on construction sites with their parents. Nutrition is one of the impacting factors during the growth and development period of a child. India accounts for 40% undernourished children in the world. According to NFHS- 4, 35.5% under five children are underweight, 38.4% stunted, 21% wasted in India. Community-based cross- sectional study, field work of this study was undertaken between Jan 2020 and March 2020 at five construction sites in Haveli Taluka of Pune city. Construction sites were conveniently selected. The study population was children fewer than five age group present at the construction sites during data collection and their mothers. Data was gathered from children (N=85) using anthropometric measurements and semi-structured questionnaire for their mother. The mean age of study sample was 37.12 months, 44.7% male (n=38) and 55.3% female (n=47). The overall prevalence of Underweight (Weight for age < –2SD) was 41.2%, stunting (Height for Age <– 2SD) 28.2% and wasting (Weight for Height < – 2SD) 32.9%. Birth spacing, intake of IFA during pregnancy, and source of drinking water at construction sites were significantly associated with prevalence of wasting among children ($p < 0.05$). Birth spacing was significantly associated with stunting ($p<0.05$). Consumption of IFA during pregnancy was significantly associated with underweight ($p<0.05$). Study addresses the gap in context to migrant labourers and the health status of their children in India. Study highlights the necessity to focus on the specific needs of migrant children.

Keywords: Migrant labourers; Fewer than five age group children; Under nutrition; Construction sites

Introduction

Malnutrition accounts for half of all childhood death worldwide. Sometimes, young children are not able to utilize the food they eat, which leads to under nutrition or at times if they consume too many calories which lead to obesity or over-nutrition [1]. Individuals are considered malnourished when the calories intake and protein intake in their diet is not sufficient enough for their overall growth and development. Malnutrition is one of the significant factors that affect the growth of children [2]. Food given to the child during the first five years determines the child's nutritional status. During the period of childhood growth, nutrition plays an important influencing factor [2]. Malnutrition has been accountable for 60% of the 10.9 million deaths that occur annually among children under five years of age [3]. Globally, the prevalence of stunting is 20.1%, underweight 13.1% and wasting 9% in children fewer than five years of age [4]. Globally, 159 million children are stunted. Fifty million children under five age group are wasted, and 16 million are severely wasted in under five age group [2,3]. The degree of the problem of malnutrition among children is high throughout India [2]. India accounts for 40% of undernourished children in the world. Prevalence of under-nutrition among the states of India ranges from 27% to 55% [7]. According to the NFHS- 4, 35.7% of children under the age of five in the country are underweight, 38.4% are stunted and 21% are wasted.

Across the Indian sub-continent, the movement of workers is an age-old phenomenon. The 2001 Census of India recorded 309 million internal migrants. While 2007-2008 National Sample Survey Office recorded 326 million internal migrants in India (UNESCO, 2013). The recent estimates based on the census of 2011 show that the number of internal migrants in India is likely to touch 400 million by 2020. A large number of people from rural India, especially from

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the flood-affected, rain- dependent and drought-prone regions, are forced to migrate in search of a livelihood [5]. It is usually associated with the changing patterns of economic development and partly related to the levels of poverty [8].

In India, there is primarily of two types of migration. Long-term migration results in the shifting of an individual or household and short-term or seasonal migration that involves back and forth movement between a source and destination. Approximately short term migrants vary from 15 million to 100 million. 30% of the total Indian population is migrants who have relocated within and outside the states [13]. Majority of the short-term migrants belong to socioeconomically deprived groups having negligible educational attainment, inadequate assets, and resource deficits [8].

It is estimated that around 40 million migrant labourers are in the construction industry. These labourers have contributed to the country's developing economy. Short-duration rural to urban migration provide livelihood to millions of poor households in India [6]. Migrant households in the city mostly involved in temporary work. This temporary work is often characterized by low paid wages, job insecurity, strict recruitment regimes, and economic vulnerability. They are mostly engaged in informal work environments. Many of these labourers migrate with their entire families, including their young children and live in very challenging conditions [6,7]. Child migrants in India are estimated to be around 15 million [8].

Literature had documented several threats to the health status and well-being of migrant children in India. Migrant households in urban lands face great difficulties in accessing government programs related to health care and insurance, childcare, education [9,10], and food rations, which is otherwise accessible in rural settings. But the interdependent relationship of these threats to the health and well-being of the child is often overlooked [7].

Even though migration provides economic opportunities to households, but migrant children face several disadvantages in the destination region.

Assessment of nutrition status is necessary for early detection of malnutrition and for assessing the effectiveness of preventive programs. Anthropometry is widely used and recognized as one of the useful techniques to assess the growth and nutritional status of an individual or population [11,12].

The goal of this study is ascertain the nutritional status using anthropometric measurement and to analyze the factors associated with the nutritional status of under-five children of migrant construction workers.

Methodology

Study Design & Setting

A community based cross-sectional study was undertaken in Pune, located in the western part of the state of Maharashtra. Pune has 5 district sub-divisions with 15 talukas. The study was conducted among under-five age group children and their mothers residing at the construction sites in Pune. The study was conducted from January 2020 - June 2020 at five construction sites in the Haveli Taluka of Pune city. The five construction sites namely Bavdhan, Yewlewadi, Uttamnagar, Undri, and Padmavati, were conveniently selected to assess the nutritional status of children under five age groups of migrant construction workers. Access to these construction sites was provided by the organization that runs the education center for workers' children.

Study Participants

The study population of this study was children fewer than five age group present at the construction sites and their mothers who lived for at least more than a month or more than six months at the construction sites.

Inclusion Criteria

- All the children in the age group of 0-5 years present at the study site
- Mothers should have had at least one child in the under-five age group.

Exclusion Criteria

- Children not in the age group of 0-5 years
- Mothers who do not have at least one child in the under-five age group.

Sampling Size & Sampling Technique

Children in the age group 0-5 years who were present at the study site were checked for the eligibility criteria. 85 children [44.7% male (n=38) and 55.3% female (n=47); (Mean age: 37.12 months)] participated in the study. Mothers (N = 58) of the children enrolled in the study were interviewed.

Data Collection

The Institute's ethical committee approval for the study was obtained before the commencement of the study. Written informed consent was obtained prior to the study, which was signed by the mothers. This was followed by a cross-sectional survey conducted at the study site by taking anthropometric measurements of the children and conversation with their mothers to obtain information on their socio-demographic, child feeding and caring characteristics, maternal characteristics, and WASH practices based on the questionnaire. For identification and initial contact, the help of co-ordinator from NGO was obtained to minimize the non-response.

Height/length and weight of the children under five years of age were measured to gather the anthropometric data. The weight measurements were recorded to the nearest 100 g using Standard weighing machine. The height of the children was recorded to the nearest 0.1 cm using anthropometric height rod. For children below 24 months of age, the length was measured using infantometer. After every case examination, calibration for the weight and height instruments was done. All measurements were taken twice, and the mean value was obtained and used for data analysis. Weight of the child was measured in grams, and height was measured in centimeter.

Data Analysis

IBM Statistical Program for Social Sciences (SPSS) trial version

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25 was used to perform statistical analyses. WHO Anthro (version 3.2.2, 2011) was used to compute z-score values of weight for height (WHZ), height for age (HAZ), and weight for age (WAZ). The results were presented using frequency tables and percentages and a chi square test was performed to investigate the association between the selected variable and the nutritional status. For anthropometric measurements, data analysis was performed using "WHO Anthro" software. This software converts the anthropometric measures; weight, height/ length and age values into Z-scores values of height for age (HAZ), weight for height (WHZ), and weight for age (WAZ). It categorizes nutritional status as stunting, wasting and underweight respectively among children who were minus two standard deviations below the reference population.

Children are categorized into two groups, 'suffering from undernutrition' (Z- score less than - 2 SD) and 'not suffering from under nutrition (Z-score equal to or greater than – 2SD), for each of the three indicators.

Results

Socio-demographic profile of under-five children

Among total of 85 migrant children, 4.7% (n=4) were between the age group of 6- 11 months, 10.5% (n=19) were in the age group of 12-23 months, 10.5 % (n=19) were in the age group of 24-35 months, 15.29% (n=13) were in the age group of 36-47 months, and 35.29% (n=30) were in the age group of 48-60 months. The mean age of study sample is 37.12 months with 44.7% male (n=38) and 55.3% female (n=47) as seen in Figure 1. Mean height and weight of the sample is 89.81 cm and 11.4 kg, respectively. Majority of the participants were in the age group 48-60 months. Majority of the children (91.8%) were Hindu by religion, followed by Muslims 5.9%, and 2.3% were Christians. About mother's education, 32 (37.6%) were illiterate, 31(36.5%) had primary schooling, 21 (24.7%) had higher secondary and 1 (1.2%) were senior secondary educated mothers. 51 (60%) mothers were working as labourers, and 34 (40%) were currently not working as labourers at construction sites. Majority of children came from the states of Chhattisgarh which was followed by Maharashtra and Karnataka. And the native state for the remaining children was Kolkata, Jharkhand, Telangana, Madhya Pradesh, and West Bengal. According to caste, the majority of children belonged to Scheduled Tribes (ST), while the others were from Scheduled Castes (SC), Other Backward Classes (OBC), and general category.

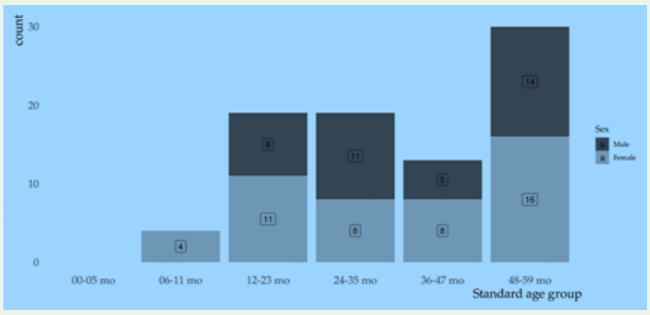

Figure 1: Age and gender wise distribution of the sampled children at construction sites (N=85).

There were 36 (42.4%) mothers who were married before the age of 18 years. 14 (16.5%) children were born as low birth weight babies. Majority, 58 (68.2%) of childbirth were in the hospital, whereas 27 (31.8%) children were born at home.

Under nutrition among under-five children

Among study subjects, the overall prevalence of Underweight was 41.2 %, stunting was 28.2% and, wasting was 32.9% as seen in Table 1. Wasting was found to be more prevalent among males (36.8%) than females (29.8%). Underweight was found to be more prevalent among males (42.1%) as compared to females (40.4%). Stunting was found to be more prevalent among males (31.6%) than females (25.5%). The category wise prevalence of under nutrition among boys and girls are seen in Table1. Underweight was found to be most prevalent (53.8%) in the age 36-47 months' group. Stunting was found to be more prevalent (36.8%) in the 24-35 months' age group, while wasting was more prevalent (46.7%) in the 48-60 months' age group as seen in Table 1.

Childhood illness and WASH Practices

There were 45.9% (n=39) children with the history of eating junk food. The source of drinking water for majority 69.4% (n=59) was tanker, followed by bore well 20% (n=17), and 10.6% (n=9) was filter bottle (10 liter). 55.3% (n=47) study participants had sharing toilet facilities at the construction sites. There were 49.4% (n=42) children who defecate in open. More than half of the study participants 54.1% (n=46) don't wash their hands before eating food. Almost 37.6% (n=32) children fell ill in the last two weeks. 43.55 (n=37) mothers noticed their child eating sand at construction sites. About 32.9% (n=28) had given deworming medicines to their children. Only 14.1% (n=12) mothers' carried their child's immunization card from their native state.

Statistical Association

Birth spacing, intake of IFA during pregnancy, and source of drinking water at construction sites was significantly associated with the prevalence of wasting among children ($p < 0.05$) as seen in Table 2. Birth spacing was significantly associated with stunting among children ($p<0.05$) as seen in Table 3. Consumption of IFA during pregnancy was significantly associated with underweight ($p < 0.05$) as seen in Table 4.

Discussion

Stunting

The percentage of children who were stunted (28.2%) was less as compared to a similar study carried out at construction sites of Ahmadabad [6]. Stunting indicating chronic malnutrition accounted for around 28.2% of total under nutrition among fewer than five children residing in the study area. This creates a picture of concern and need for immediate attention to reduce the burden of a nutritional problem country is facing from a long way.

Underweight

Underweight accounted for around 41.2% of total under nutrition among fewer than five children residing in the study area. Different studies conducted in a similar setting in urban areas of various places

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Table 1: Standardized indicators of anthropometry among children fewer than five in the study sample based on WHO standards.

Age in Months				Mean anthropometric Z Scores (SD)		
	Stunting	Wasting	Under weight	HAZ	WHZ	WAZ
6-11(n=24)	25	25	25	-0.8(1.13)	-1.3(1.34)	-1.4(1.19)
12-23(n=19)	26.3	26.3	26.3	-1.4(0.87)	-1.3(1.23)	-1.6(1.01)
24-35(n=19)	36.8	21.1	36.8	-1.8(1.22)	-1.1(1.0)	-1.8(1.22)
36-47(n=13)	30.8	30.8	53.8	-1.6(0.78)	-1.4(0.88)	-1.8(0.90)
48-60(n=30)	23.3	46.7	50.4	-1.2(1.06)	-1.7(0.93)	-1.8(0.85)
All age group	28.2	32.9	41.2	-1.4(1.03)	-1.4(1.03)	-1.7(0.88)
Female (n=47)	25.5	29.8	40.4	-1.3(1.1)	-1.4(1.08)	-1.6(0.97)
Male (n=38)	31.6	36.8	42.1	-1.6(0.94)	-1.5(0.98)	-1.8(0.76)

Table 2: Birth spacing, Buy/Received IFA during pregnancy, intake of IFA during pregnancy, and source of drinking water at construction site is associated with the prevalence of wasting among children under five age group (p<0.05).

Variables	Category	Wasting							P Value
		Yes (n = 29)		No (n = 56)		Total n=85			
Birth Facility	Government health facility	15	(17.6)	34	(40)	49	(57.6)	2.115	0.347
	Private health facility	2	(2.4)	7	(8.2)	9	(10.6)		
	Home	12	(14.1)	15	(17.6)	27	(31.8)		
Birth Spacing	Only one child	11	(12.9)	8	(9.4)	19	(22.4)	6.336	0.042*
	>2 years	9	(10.6)	27	(31.8)	36	(42.5)		
	≤ 2 years	9	(10.6)	21	(24.7)	30	(35.3)		
Buy/receive IFA	Yes	19	(10.6)	49	(57.6)	68	(80)	5.77	0.016*
	No	10	(11.8)	7	(8.2)	17	(20)		
Consumption of IFA	≥120 days	3	(3.5)	18	(21.2)	21	(24.7)	6.491	0.038*
	< 120 days	11	(12.9)	22	(25.9)	33	(38.8)		
	Don't know	15	(17.6)	16	(18.8)	31	(36.5)		
Birth Order	1	14	(16.5)	20	(23.5)	34	(40)	2.61	0.455
	2	10	(11.8)	19	(22.4)	29	(34.1)		
	3	4	(4.7)	10	(11.8)	10	(16.5)		
	>4	1	(1.2)	7	(8.2)	7	(9.4)		
Source of drinking water	Bore well	4	(4.7)	13	(15.3)	17	(20)	7.297	0.026*
	Tanker	25	(29.5)	34	(40)	59	(69.4)		
	Other- filter water bottle	0	(0)	9	(10.6)	9	(10.6)		

Table 3: Birth spacing is associated with prevalence of stunting among children under five age group (p<0.05).

Variables	Category	Stunting						X^2 Value	p value
		Yes (n = 24)		No (n = 61)		Total N=85			
Birth Facility	Government health facility	14	(16.5)	35	(41.2)	49	(57.6	1.651	0.437
	Private health facility	1	(1.2)	8	(9.4)	9	(10.6)		
	Home	9	(10.6)	18	(21.2)	27	(31.8)		
Birth Spacing	Only one child	1	(1.2)	18	(21.2)	19	(22.4)	9.971	0.006*
	>2 years	16	(18.8)	20	(23.5)	36	(42.4)		
	≤ 2 years	7	(8.2)	23	(27.1)	30	(35.3)		
Buy/receive IFA	Yes	19	(22.4)	49	(57.6)	68	(80)	0.014	0.904
	No	5	(5.9)	12	(14.1)	17	(20)		
Consumption of IFA	≥120 days	4	(4.7)	17	(20)	21	(24.7)	1.307	0.52
	< 120 days	11	(12.9)	22	(25.9)	33	(38.8)		
	Don't know	9	(10.6)	22	(25.9)	31	(36.5)		
Birth Order	1	6	(7.1)	28	(32.9)	34	(40)	3.809	0.282
	2	9	(10.6)	20	(23.5)	29	(34.1)		
	3	6	(7.1)	8	(9.4)	14	(16.5)		
	>4	3	(3.5)	5	(5.9)	8	(9.4)		

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Table 4: Consumption of IFA during pregnancy is associated with prevalence of underweight among children under five age group (p<0.05).

Variables	Category	Under weight						X^2 Value	p value
		Yes (n = 35)		No (n = 50)		Total N=85			
Birth Facility	Government health facility	21	(24.7)	28	(32.9)	49	(57.6)	1.511	0.469
	Private health facility	2	(2.4)	7	(8.2)	9	(10.6)		
	Home	12	(14.1)	15	(17.6)	27	(31.8)		
Birth Spacing	Only one child	9	(10.6)	10	(11.8)	19	(22.4)	0.398	0.82
	>2 years	14	(16.5)	22	(25.9)	36	(42.4)		
	≤ 2 years	12	(14.1)	18	(21.2)	30	(35.3)		
Buy/receive IFA	Yes	27	(31.8)	41	(48.2)	68	(80)	0.303	0.581
	No	8	(9.4)	9	(10.60	17	(20)		
Consumption of IFA	≥120 days	4	(4.7)	17	(20)	21	(24.7)	6.655	0.03*
	< 120 days	14	(22.4)	19	(16.5)	33	(38.8)		
	Don't know	17	(20)	14	(21.2)	31	(36.5)		
Birth Order	1	16	(18.8)	18	(21.2)	34	(40)	3.533	0.316
	2	13	(34.1)	16	(18.8)	29	(34.1)		
	3	5	(5.9)	9	(10.6)	14	(16.5)		
	>4	1	(1.2)	7	(8.2)	8	(9.4)		

in India reported the prevalence of underweight ranging from 40 - 60% among under five children [6,13,12,14].

Wasting

Wasting was prevalent in 32.9% of the study subjects. Similar studies conducted at Maharashtra (Mali et al at Panvel Taluka) also reported that 36% of fewer than five children were victim of wasting. Prevalence of wasting lower than this study was reported in study by Divya et al (22.1%) and Agarwal and Srivastava (17.6%).

According to National Family Health Survey (NFHS 2015-2016), the prevalence of stunting, wasting, and underweight is 38.4%, 21%, and 35.7% respectively. The percentage of stunting (28.2%) among migrant children in this study was less than the national average. The percentage of underweight children (41.2%) and wasting (32.9%) was noticeably higher.

Birth spacing and childhood malnutrition

Analysis of the H/A and W/H measurement showed a significant association between malnutrition and Birth spacing. The findings of this study are similar as well as comparable [15]. This could be explained by the fact that if a pregnancy occurs too soon after the previous birth, the mother may not have recovered her nutritional status, which can contribute to preterm birth and low birth weight. Knowledge regarding birth spacing among women will allow women to recover and be healthy for their next pregnancy. Mothers who adequately space their pregnancies are able to provide their children with the necessary nutrition for growth development and a strong immune system, thereby reducing the likelihood of childhood under nutrition [12].

A survey in urban setting of Indore, Madhya Pradesh by Ahmed Shahjada reported that the children with birth interval of less than 24 months suffered more from different grades of malnutrition [16]. Survey by NFHSIII (2006, India) confirmed that 48% children were malnourished when interval between two pregnancies was ≤ 24 months [3]. All evidences support low birth spacing as a risk factor of children malnutrition irrespective of demography of population.

IFA and childhood malnutrition

The major cause of anemia among pregnant women in India is Iron deficiency [17]. There has been a focus on providing IFAs to pregnant women through national nutritional programmes. Iron-deficiency anemia is still prevalent in India despite of various nutritional programmes [16]. A study conducted on the role of IFA supplements in influencing the birth weight through the data from NFHS 2005-06 findings state that birth weight increased by 6.46 g after intake of IFAs during pregnancy for 1 month [16]. In this study, 20 % of mothers did not buy/receive IFA tablets during their last pregnancy. About 38.8 % reported intake of IFA for less than 120 days during pregnancy and 24.7% for more than 120 days during pregnancy. Nutritional status of pregnant women can be improved through multi-pronged approach. All private and public health centers should have IFA tablets accessible for women. Sessions should be offered for adequate intake of IFA tablets. Intake of IFA tablets should be monitored throughout the pregnancy.

Source of drinking water at construction sites and childhood malnutrition

In this study source of drinking water showed a significant association with child malnutrition. A similar study in Bangladesh and Rwanda reports a significant association between the source of drinking water and malnutrition [10,17]. These are plausible because safe source of drinking water is the pre-conditions for maintaining good hygiene and nutrition among children. Various water-borne illnesses can be prevented with the improved supply of drinking water. Therefore, increasing access to safe drinking water is important to improve the nutritional status of under-five children [10,17]. The study did not find any association with the mother's education, birth order, caste which is consistent with other studies [1,6,7].

Conclusion & Recommendation

Indian economy will continue to expand and urbanize. Labour migration will play an important role in expanding the Indian economy. Labor migration will undoubtedly continue as a mode of

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survival among rural households. In India over the last decade in spite of economic growth the improvement in childhood nutritional status has been slow. The values of undernutrition have changed in the last two NFHS surveys. The present values of stunting, wasting, and underweight are still high among children below five years of age. The nutritional status of fewer than five children is also considered as a measurement of quality of life along with a susceptible indicator of the health of a country.

The government programs should expand their services. Also, special provisions should be made to reach migrant communities. These communities are among the most vulnerable communities in the country. Through this study a critical gap in the literature have been addressed. This study also explains the need to broaden the policy framework to incorporate and address the concerns of migrant workers.

When children have adequate access to affordable food, variety of nutrient-rich food, combined with good maternal health and childcare practices, then the optimal nutritional status of children can be achieved. Also access to good healthcare services along with good environmental conditions has an influence on child's nutritional status. These factors are further influenced by Social, economic, and political variables. This study proposes the urgent need for strengthening the existing health and nutritional programmes which will help to reduce the prevalence of malnutrition in such children of the migratory population. As growth impairment during childhood has several consequences on physical and cognitive development. These consequences include decreased school performance and productivity in general. It adds to being a risk factor for chronic diseases later in life. These consequences are more prevalent in the children of the migratory population. Migrant children living in poverty will have similar labor and productivity outcomes as their parents, thereby continuing the poverty and malnutrition cycle.

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