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# Stunting among aged 6-59 months Children in Urlabari Municipality, Morang, Nepal

Jamuna Dhimal,[1]* Deepa Khadka,[1] Prajita Mali[1]

[1] Department of Public Health, Om Health Campus, Kathmandu, Nepal.

## ABSTRACT

**Introduction:** Stunting is a condition in which a child has a low height for their age as a result of inadequate nutrition over time, recurring illnesses, and a lack of social stimulation. Poor nutrition in a child's first 1000 days of life can cause stunted development, which is linked to poorer cognitive capacity, lower school performance, lower economic production, and a higher chance of nutrition-related chronic illness. This study aimed to assess stunting among aged 6-59 months of children in Urlabari Municipality, Morang, Province-1.

**Methods:** A descriptive cross-sectional study was conducted among 338 respondents in Urlabari Municipality, Morang, Province-1 after the ethical clearance from Institutional Review Committee, Nobel College. Stunting was studied among 6 to 59 months children where the child's mothers were face-to-face interviewed using a semi-structured questionnaire. A convenient sampling technique was used for data collection. Informed consent was taken before the interview. Collected data were analyzed and interpreted using SPSS version 20.

**Results:** Out of 338 respondents, the prevalence of stunting was found to be 11.2% among 6-59 months of children with 0.9% being severely stunted.

**Conclusions:** According to this study more than half of the children were normal for Height-for-age which was good for their nutritional growth status. There was good practice in Antenatal Care (ANC) visits while there was a lack of knowledge and practice in Postnatal Care (PNC) visits. Furthermore, good practices in exclusive breastfeeding, complementary feeding, and environmental sanitation were also observed.

**Keywords:** *Children; Stunting; Under-five; Nepal.*

## INTRODUCTION

Stunting is one of the primary forms of malnutrition characterized by low height for age worldwide.[1,2] It is majorly associated with poor nutrition in the first 1000 days of a child's life, repeated infections, and poor social stimulation.[3] Globally, 144 million children under the age of 5 were stunted, with an estimated one million associated child deaths annually among which nearly 50% were reported in Asia.[4,5]

According to the (Nepal Demographic and Health Survey) NDHS report 2016, 36% under-five were stunted.[6] World Health Organization (WHO) has set the target of reducing the number of stunting by 40% by 2025, whereas Nepal with 3.9% annually.[7,8] This study aimed to assess stunting among aged 6-59 months of children in Urlabari Municipality, Morang, Province-1, Nepal.

## METHODS

A descriptive cross-sectional study was conducted among 338 respondents to study under-5 (6-59 months) children stunting in Urlabari municipality after ethical clearance from IRC, Nobel college (Ref no.

*Correspondence: jamunadhimal321@gmail.com
Department of Public Health, Om Health Campus, Kathmandu, Nepal

EPYIRC339/2021). The data collection period was one month from January to February, 2021. Written consent was taken from the mothers.

Eligible mothers of children aged 6 to 59 months were selected and interviewed. Children with chronic illness and congenital abnormality which affect the feeding pattern of children were excluded.

Sample size was calculated using the formula:

Sample size (n) = $z^2pq/d^2$

= $(1.96)^2 0.33*0.67/ (0.05)^2$

= 338

Where,

Prevalence (p) = (33%) 0.33 (Prevalence from Nepal Demographic and Health Survey)[9]

q= 1-p = 1-0.33 = 0.67

Confidence Interval (CI) =95%, Z= 1.96

Margin of error (d) = 5% = 0.05

Therefore, the sample size was 338. The study was conducted using a convenience sampling technique.

A semi-structured tool was used for the collection of data which consisted of socio-demographic factors, economic factors, maternal and child-related factors, and environmental factors which may be associated with stunting. The materials used during the survey were: weighing machine, height measuring scale, questionnaire, WHO growth reference, and WHO Anthro app.[10]

The data was collected and was checked for completeness and consistency. The collected data were edited, organized, coded, and entered into Epi Data software and was analyzed using SPSS version 20.

Standard of WHO Anthropometric measures (height for age) based on Z-scores was calculated based on the criteria using WHO Anthro application.[10,11]

## RESULTS

The prevalence of stunting for 6 to 59 months children was found to be 11.2%, with 0.9% of respondents being severely stunted.

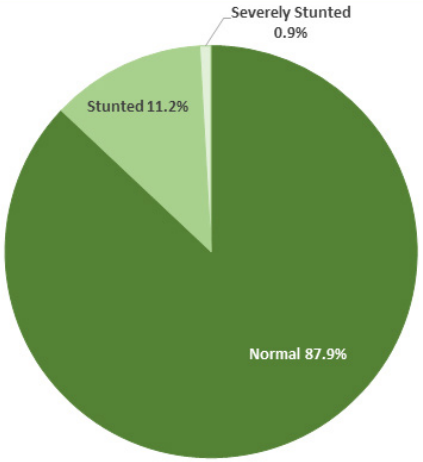


**Figure 1. Prevalence of stunting (n=338)**

Among the total Under-5 children, most of them were male children (58.3%) with the age range of 24-35 months (40.5%).

**Table 1. Characteristics of child (n=338)**

| **Gender of a child** | **n(%)** |
|---|---|
| Male | 197(58.3) |
| Female | 141(41.7) |
| **Age range( in months)** | |
| 6-11 | 58 (17.2) |
| 12-23 | 32 (9.5) |
| 24-35 | 137 (40.5) |
| 36-48 | 59 (17.5) |
| 49-59 | 52 (15.4) |

The majority of the surveyed household heads were found to be husbands accounting 44.1%. Most of them followed Hinduism (83.4%) as their main religion and almost half of them belong to the Janajati (45%) ethnic group. 53% of respondents were found to be living in a joint family and more than two-thirds (76.6%) had family members less than 6. Nearly half of the babies were born with a birthing gap of up to four years. About 92.3% of mothers were aged 20 years and above. Most mothers were housewives (78.1%) while fathers were overseas (29.9%). Both the parents had a secondary level of education making up a total of 66.6% and 69.5% respectively.

**Table 2. Socio-demographic characteristics (n=338)**

| **Socio-demographic Characteristics** | **n (%)** |
|---|---|
| **Head of the Household** | |
| Wife | 39 (11.5) |
| Husband | 149 (44.1) |
| Father in law | 85 (25.1) |
| Mother in law | 65 (19.2) |

| Socio-demographic Characteristics | n (%) |
|---|---|
| **Religion** | |
| Hindu | 282 (83.4) |
| Buddhist | 29 (8.6) |
| Christian | 9 (2.7) |
| Muslim | 6 (1.8) |
| Kirat | 12 (3.6) |
| **Ethnicity** | |
| Brahmin | 69 (20.4) |
| Chhetri | 68 (20.1) |
| Janajati | 152 (45.0) |
| Dalit | 36 (10.7) |
| Madhesi | 13 (3.8) |
| **Types of Family** | |
| Nuclear | 159 (47.0) |
| Joint | 179 (53.0) |
| **No. of Family Members** | |
| less than 6 | 259 (76.6) |
| More than 6 | 79 (23.4) |
| **Birth gap** | |
| 1st child (No gap) | 173 (51.2) |
| Others (up to 4 years) | 165 (48.8) |
| **Age of a child mother's** | |
| Less than 20 years | 26 (7.7) |
| 20 years and above | 312 (92.3) |
| **Mother's Occupation** | |
| Agriculture | 19 (5.6) |
| Housewife | 264 (78.1) |
| Daily wages | 7 (2.1) |
| Teacher | 9 (2.7) |
| Business | 34 (10.1) |
| Others | 5 (1.5) |
| **Father's Occupation** | |
| Agriculture | 36 (10.7) |
| Daily wages | 78 (23.1) |
| Teacher | 7 (2.1) |
| Business | 73 (21.6) |
| Driver | 35 (10.4) |
| Abroad | 101 (29.9) |
| Others | 8 (2.4) |
| **Mother's Education level** | |
| Illiterate | 6 (1.8) |
| Literate | 23 (6.8) |
| Primary level | 50 (14.8) |
| Secondary level | 225 (66.6) |
| Certificate level or more | 34 (10.1) |
| **Father's Educational level** | |
| Literate | 15 (4.4) |
| Primary level | 48 (14.2) |
| Secondary level | 235 (69.5) |
| Certificate level or more | 40 (11.8) |

Most of the household decisions were taken by the husband (38.8%). The majority of the respondents reported enough food to eat in a year (89.6%). The monthly income of the family was less than NPR. 31,000 which was found among 68.9% of respondents.

**Table 3. Socio-economic characteristics (n=338)**

| Characteristics | n (%) |
|---|---|
| **Decision of the house** | |
| Father in law | 73 (21.6) |
| Mother in law | 57 (16.9) |
| Husband | 131 (38.8) |
| Wife | 32 (9.5) |
| All members | 45 (13.3) |
| **Enough food to eat in a year** | |
| Yes | 303 (89.6) |
| No | 35 (10.4) |
| **Months it last** | |
| less than 6 months | 35 (10.4) |
| 6 months and above | 303(89.6) |
| **Family monthly income(NPR)** | |
| Less than 31000 | 233 (68.9) |
| More than 31000 | 105 (31.1) |

As shown in table 4, 98.8% of the mother's group had gone for ANC check-up and 80.5% had gone for ANC more than 4 times. However, a 100% absence rate of PNC visits was found.

Most of the children were born at the hospital (95.3 %.) weighing more than 2500 grams (92.6%). 96.5% were breastfed after birth with 3.3% being fed with honey. More than half of the women (60.4%) followed the exclusive breastfeeding practice; the rest (39.5%) did not, indicating insufficient breast milk as a cause (23.7 %).

65.1% of children were still breastfed and the duration of breastfeeding was mostly 1 hour. (47.7%). On average, most of the respondents started complementary feeding at age of 6 months (79.6%) with an average of 4 times

and more per day (42.9%). On recalling the history of sickness, most of the children were found to be healthy (72.2%) with the rest being sick mostly due to common cold (71.3%).

A 100% immunization rate was found where 65.7% were fully vaccinated and 98.8% of mothers were vaccinated against TT. The BMI of the majority (60.1%) of mothers was normal.

**Table 4. Maternal and Child (n=338)**

| Characteristics | n (%) |
|---|---|
| **ANC checkup** | |
| Yes | 334 (98.8) |
| No | 4 (1.2) |
| **Times for ANC Visit** | |
| Less than 4 times | 62 (18.3) |
| More than 4 times | 272 (80.5) |
| **PNC checkup** | |
| No | 338 (100.0) |
| **Child born** | |
| Home | 16 (4.7) |
| Hospital | 322 (95.3) |
| **Baby weight after birth** | |
| </2500 gram | 25 (7.4) |
| >/2500 gram | 313 (92.6) |
| **Anything else than breast milk after birth** | |
| Yes | 11 (3.3) |
| No | 327 (96.7) |
| **If Yes then (n=11)** | |
| Honey | 11 (3.3) |
| Exclusive breast feeding | |
| Yes | 204 (60.4) |
| No | 134 (39.6) |
| **Reason behind(n=134)** | |
| Did not come breast milk | 41 (12.1) |
| Not enough breast milk | 80 (23.7) |
| Child refuses to eat | 11 (3.3) |
| Others | 2 (0.6) |
| **Still breast feeding to child** | |
| Yes | 220 (65.1) |
| No | 118 (34.9) |
| **Duration of breast fed (n=220)** | |
| 0-1 hour | 105 (47.7) |
| 2-6 hours | 92 (41.8) |
| 7-12 hours | 14 (6.3) |
| within 12 hours | 9 (4.1) |
| **Complementary feeding started** | |
| </6 month | 69 (20.4) |
| >/6 month | 269 (79.6) |
| **Total times to complementary fed (per day)** | |
| 1 time | 7 (2.1) |
| 2 time | 42 (12.4) |
| 3 time | 144 (42.6) |
| 4 time and more | 145 (42.9) |
| **History of child's sickness in past two weeks** | |
| Yes | 94 (27.8) |
| No | 244 (72.2) |
| **If Yes(n=94)*** | |
| Diarrhea | 8 (8.5) |
| Fever | 40 (42.5) |
| Pneumonia | 5 (5.3) |
| Common cold | 67 (71.3) |
| Others | 6 (6.4) |
| **Liquid foods (n=94)*** | |
| ORS | 5 (5.3) |
| Milk | 16 (17.0) |
| Lentils | 72 (76.6) |
| Others | 6 (6.4) |
| **National immunization** | |
| Yes | 338 (100.0) |
| **Status of vaccination** | |
| Completed | 222 (65.7) |
| Incomplete | 4 (1.2) |
| Remaining | 112 (33.1) |
| **TT vaccination for mothers** | |
| Yes | 334 (98.8) |
| No | 4 (1.2) |
| **Mother's BMI** | |
| Underweight | 41 (12.1) |
| Normal | 203 (60.1) |
| Overweight | 73 (21.6) |
| Obese | 21 (6.2) |

*multiple response

Table 5 shows the source of drinking water of most of the respondents (49.7%) was tap water. 52.4% of the respondents used purification methods whereas filtration was the most commonly used method by the majority of respondents (87%). The toilet facility and the septic tank were found in the house of all respondents. The practice of washing hands before and

after cooking was followed by all the respondents. More than two-thirds of respondents (67.8%) were involved in animal husbandry where raising hen and duck was most common among the majority of participants (79%) mainly for the purpose of meat (81.6%). About 71.6% of respondents had a kitchen garden in their house where 97.1% grew green leafy vegetables. Nearly half of the respondents (47%) managed their waste by burning.

**Table 5. Environmental Characteristics (n=338)**

| Characteristics | n (%) |
|---|---|
| **Source of Drinking water** | |
| Tap water | 168 (49.7) |
| Hand pump | 166 (49.1) |
| Well | 4 (1.2) |
| **Purify Drinking water** | |
| Yes | 177 (52.4) |
| No | 161 (47.6) |
| **Method of Purification (n=177)** | |
| Boiling | 23 (13.0) |
| Filter | 154 (87.0) |
| **Toilet facility** | |
| Yes | 338 (100.0) |
| **Types of toilet** | |
| Septic Tank | 338 (100.0) |
| **Wash your hand before and after cooking** | |
| Yes | 338 (100.0) |
| **Animal Husbandry** | |
| Yes | 229 (67.8) |
| No | 109 (32.2) |
| **Animal raised (n=229)*** | |
| Buffalo | 16 (6.9) |
| Cow | 65 (28.4) |
| Pig | 80 (34.9) |
| Goat | 101 (44.1) |
| Hen and Duck | 181 (79.0) |
| **For what Purpose (n=229)*** | |
| Milk | 72 (31.4) |
| Egg | 108 (47.1) |
| Meat | 187 (81.6) |
| To Sell for Money | 167 (72.9) |
| **Kitchen gardening (n=338)** | |
| Yes | 242 (71.6) |
| No | 96 (28.4) |
| **Vegetables grown (n=242)*** | |
| Green leafy vegetable | 235 (97.1) |
| Garlic | 181 (74.8) |
| Potato | 160 (66.1) |
| Maize | 16 (6.6) |
| Others | 23 (9.5) |
| **Manage Waste management (n=338)*** | |
| Burn | 159 (47.0) |
| Throw in drain | 14 (4.1) |
| Municipal garbage | 141 (41.7) |
| Compost | 31 (9.1) |
| River site | 20 (5.9) |

*multiple response

## DISCUSSION

We found out that 11.2% of children of age 6-59 months were stunted. Contrary to our findings, a similar study conducted in southern Ethiopia found 47.9% of stunting among children of 6-59 months which is comparatively higher than our result.[12] This variance in the prevalence might have occurred due to the difference in the sample size of both studies. Furthermore, we found severe stunting among 0.9% of children but a contrasting result was found in the study conducted in Zimbabwe where severe stunting was among 9.9% of children.[13]

Although there has been some improvement in the overall status of women, the differences in the society on the ground of gender still exists in Nepal which might be the reason behind the majority of husbands as a decision-maker in the family as reported by our study.[14] This finding is also similar to one of the previous studies.[15] At around 6 months of age, an infant's energy and nutrient needs begin to exceed which is provided by breast milk and complementary foods are needed to meet these needs.[16] In this context we found out more than two-thirds of mothers practiced complementary feed at the age of six months which is identical to the findings reported by the study in Malawi.[17]

Regarding the maintenance of hygiene of the mothers we found similarities with one of the previous studies where almost all the mothers had the practice of washing hands while preparing foods for their children.[18] Previous studies reported a history of diarrhea in the past 2 weeks among the children.[18,19] Although we found few children with diarrhea, common cold was most common among more than two-thirds of children. This might be linked with the conduction of our study in the peak winter season.

## CONCLUSIONS

According to this study, more than half of children were normal for Height-for-age which was good for their

nutritional growth status. There was good practice in ANC visits while there was a lack of knowledge and practice in PNC visits. Furthermore, good practices in exclusive breastfeeding, complementary feeding, and environmental sanitation were also observed.

**ACKNOWLEDGEMENT**

Not Applicable

**CONFLICT OF INTEREST**

None

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