Original Research Article

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20202452

Factors associated with nutritional status of under five children among Satar Community of Bhadrapur Municipality, Jhapa, Nepal

Raj Kumar Sangroula¹, Srijana Uprety²*

¹Department of Nutrition and Dietetics, College of Applied Food and Dairy Technology, New-Baneshower Kathmandu, Nepal

Received: 31 March 2020 Revised: 30 April 2020 Accepted: 01 May 2020

*Correspondence: Ms. Srijana Uprety,

E-mail: upretysrijana8@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Adequate feeding is basic right of human being. According to NDHS 2016, prevalence of stunting, wasting and underweight are 36%, 10% and 27% respectively. The prevalence may be more in underprivileged community like Satar community who reside in eastern part of Nepal. This study was conducted to assess the factors associated with under nutrition of under five years children of Satar community in Bhadrapur Municipality.

Methods: A community based cross sectional study was conducted in Bhadrapur Municipality of Jhapa district which were purposively selected. Four wards where Satar community reside were selected for collection of data. Verbal informed consent was taken from the mothers of the under five children and approval was taken from research committee of Central Institute of Science and Technology College. Bivariate analysis was performed to detect the factors associated with nutrition status of children.

Results: In the study, prevalence of stunting, wasting and underweight were high as compared to national data i.e. 39.5%, 14.2% and 29.5% percent respectively. The study found that maternal education, paternal education, family income, exclusive breastfeeding and food frequency was significantly associated with under nutrition (stunting, wasting and underweight). Stunting was significantly associated with age of child and mother and religion. Underweight was associated with religion and weaning of children.

Conclusions: High prevalence of stunting, wasting and underweight are due to socio demographic factors like religion, educational status of father and mother, family income and child feeding practice. Programs should be focused on socio demographic and economic factors and child feeding practice to reduce problem of malnutrition.

Keywords: Satar community, Stunting, Underweight, Wasting

INTRODUCTION

Good nutrition is essential for growth and development of children. Income is one of major determinant of stunting: food insecurity, diets lacking in diversity, high rates of infectious diseases and inappropriate infant feeding and care practices, and poor sanitation and hygiene practices also contribute to persistent stunting. Nutritional status is defined as the state of the body resulting from the intake,

absorption and utilization of food.³ According to the Global Nutrition Report, 2016 a third of the people worldwide are either under -nourished or overweight. The document points out that malnutrition are responsible for nearly half of all deaths of children under five worldwide.⁴ The World Health Organization estimates that childhood underweight is the cause for about 35% of all deaths of children under the age of five years worldwide.⁵ More than 83% of population resides in rural

²Department of Public Health, Central Institute of Science and Technology, Mid-Baneshwar Kathmandu, Nepal

area according to the census of Nepal.⁶ Recent data from the 2016 Nepal demographic and health survey indicated that 36% of children under 5 years of age were stunted and 12% were severely stunted, whereas prevalence is high in rural area (40%) then in urban area (30%), 10% were wasted and 2% were severely wasted and 27 were underweight were as prevalence is high in rural (31%) then in urban (23%).⁷ The aim of the study was to assess the factors affecting the nutritional status of under five years children of Satar community in Bhadrapur Municipality of Nepal.

METHODS

This was a descriptive cross-sectional study carried out to estimate stunting, wasting and underweight and their associated factors among children of age under 5 years of Satar community in Bhadrapur Municipality of Jhapa district which is located in province number 1, is one of the 77 districts in Nepal. Satar is one of the backward and disadvantaged community in Nepal.⁸ The study was conducted from November 2018 to March 2019. Ethical approval was taken from research committee of Central Institute of Science and Technology. Verbal Informed consent was taken from the respondent before starting data collection process.

The sample size is calculated by using prevalence of stunting. Following formula is used to estimate the required sample size.

Sample size (n)=
$$\frac{Z^2 \times p (1-p)}{d^2}$$

Where,

z=critical value which is equal to 1.96 in two-tailed test. p=prevalence of stunting will be taken as a reference 36% (NDHS 2016).

d=absolute sampling error that can be tolerated and it is fixed at 7%.

The total sample size for the study is 181. Non-response rate was taken as 5% of the sample size which gives the final sample size of 190. Municipality was selected purposively. Four wards with highest population of Satar community were selected. Fifty children each from four wards were selected randomly. The randomly selected children of age under five years from Satar community and their mothers were included in the study. The children who were ill for more than 7 days, and had physical deformities were excluded from the study.

Structured questionnaires, weighing machine and measuring tapes were used as the tools for data collection. The weight of the participants was measured in kilogram and height was measured in the unit cm with nearest 0.1 cm. The mothers of the children were interviewed and the children were measured using weighing machine and measuring tape for determining undernutrition. The data

generated were compared with WHO standards for determining stunting, wasting and underweight. The data was recorded in Microsoft Excel sheet, and was analyzed using Statistical Package for Social Sciences version 23. A descriptive analysis was done using mean, frequency, percentage and standard deviation. Chi square Test for categorical variables to test the level of significance. Significance level was observed at p value less than 0.05..

RESULTS

Table 1 shows the descriptive analysis related to different variables of children of under five years of Satar community in Bhadrapur Municipality of Nepal.

Table 1: Descriptive analysis of the variables.

		_
Characteristics	Frequency	Percentage
Sex of child		
Male	90	47.4
Female	100	52.6
Age of child		
>24 months	69	36.3
≥24 months	121	63.7
Age of mother		
<20 years	31	16.3
≥20 years	159	83.7
Family type		
Nuclear	76	40
Joint	144	60
Education status of mother	r	
No education	37	19.5
Primary level	153	80.5
Education status of father		
No education	18	9.5
Primary level	126	66.3
Secondary level	46	24.2
Monthly income		
Nrs.<13500	40	21.1
Nrs.≥13500	150	78.9
Religion of respondent	-	-
Hindu	164	86.3
Christian	26	13.7
Main source of income		
Agriculture	52	27.4
Business	41	21.6
Remittance	43	22.7
Labour/daily wages	54	28.4
Exclusive breastfeeding		
<6 months	56	29.5
≥6 months	134	70.5
Weaning of child		
Before 6 months	40	21.1
More or equal to 6 months	150	78.9
Food frequency in a day	-	
<4 times	69	36.3
≥ 4 times	121	63.7

Among the total participants, more than half (52.6%) were female and almost two-third (63.7%) were of age more than 24 months. The age of more than four-fifth (83.7%) of the mothers was more than or equal to 20 years and sixty percent of the participants had joint family.

Regarding education status, almost one-fifth (19.5%) of mothers and almost one-tenth (9.5%) of the fathers were illiterate. More than four-fifth (86.3%) of the participants followed Hindu religion and labor/daily wages was the main source of income (28.4%) followed by agriculture (27.4%). Almost four-fifth (78.9%) had family income more than equal to Nrs. 13500 is 78.9%. Food frequency of more than one-third (36.3%) of the participants was less than 4 times. Regarding weaning and exclusive breastfeeding of children, 21.1% were weaned before 6 months 70.5% of the participants were exclusively breastfed (Table 1).

Figure 1 shows the nutritional status of the under five years children. Among the children, 39.5% were stunted, 29.5% were underweight and 14.2% were wasted (Figure 1).

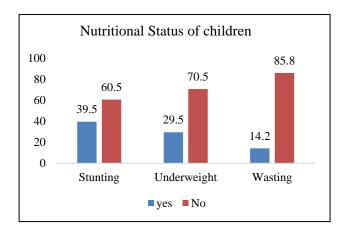


Figure 1: Nutritional status of children under five years of age.

Table 2 shows the association between stunting and different socio-demographic, socio-economic and nutritional variables of the participants. Among the variables, age of children (p=0.004), age of mother (p=0.002), education of mother (p<0.001), education of father (p=0.002), religion of the participants (p=0.041), source of income and monthly income (p<0.001), weaning of the children (p=0.003), exclusively breast feeding (p=0.001) and food frequency (p=0.003) were significantly associated with stunting (Table 2).

Table 3 shows the association between underweight and different variables under study.

Among the variables, family type (p=0.038), education of mother (p<0.001), education of father (p<0.001), religion of the participants (p=0.013), source of income and

monthly income (p<0.001), weaning of the children (p=0.042), exclusively breast feeding (p=0.001) and food frequency (p=0.004) were significantly associated with wasting of under five years children (Table 3).

Table 2: Association between stunting and other variables.

Characteristics	Stunting		
	Yes	No	P value
Sex	_		
Male	30	60	0.100
Female	45	55	0.100
Age of child (months	s)		
<24	18	51	0.004*
≥24	57	64	0.004*
Age of mother (years	s)		
<20	20	11	0.002*
≥20	55	104	0.002*
Family type			
Nuclear	27	49	0.262
Joint	48	66	0.363
Education status of 1	nother		
No education	28	9	<0.001*
Primary	47	106	<0.001
Education status of f	ather		
No education	11	7	
Primary	55	71	0.002*
Secondary	9	37	
Religion of responde	nt		
Hindu	60	104	0.041
Christianity	15	11	0.041
Monthly income			
<13500	29	11	<0.001*
≥13500	46	104	<0.001**
Main source of incor	ne		
Agriculture	13	39	
Business	9	35	
Remittance	15	25	<0.001*
Labour or daily	38	16	
wages	J0	10	
Exclusive breastfeed	ing (montl	ns)	
<6	30	26	0.010
≥6	45	89	0.010
Weaning of child (m	onths)		
Before 6	19	21	0.242
≥6	56	94	0.272
Food frequency in a			
<3 times	37	32	0.003*
≥4 times	38	83	0.003
*p<0.05			

^{*}p<0.05

Table 4 shows the association between wasting and different socio-demographic, socio-economic and nutritional variables of the participants.

Of the variables, education of father and mother (p<0.001), religion of the participants (p=0.046), main source of income (p=0.001), family income (p<0.001), exclusive breast feeding (p=0.022) and food frequency (p=0.007) were significantly associated with wasting of the under five years children (Table 4).

Table 3: Association between underweight and other variables.

Characteristics	Underweight		Davolaro
	Yes	No	P value
Sex			
Male	27	63	0.000
Female	29	71	- 0.880
Age of child (months))		
<24	15	54	0.077
≥24	41	80	0.077
Age of mother (years))		
<20	11	20	0.422
≥20	45	114	0.422
Family type		•	
Nuclear	16	60	0.0204
Joint	40	74	0.038*
Education status of m	other		
No education	27	10	0.0041
Primary	29	124	<0.001*
Education status of fa	ther		
No education	12	6	
Primary	33	93	0.001*
Secondary	11	35	
Religion of responder			
Hindu	43	121	
Christianity	13	13	0.013*
Main source of incom			
Agriculture	7	45	
Business	8	36	
Remittance	11	29	<0.001*
Labour or daily			
wages	30	24	
Monthly income			
<13500	24	16	0.0047
≥13500	32	118	<0.001*
Exclusive breastfeeding			
<6 months	28	28	
>6 months	28	106	<0.001*
Weaning of child (mo			
Before 6	17	23	
≥6	39	111	0.042*
Food frequency in a d			
<4 times	29	40	0.004*
≥4 times	27	94	
*n<0.05	,	<i></i>	

^{*}p<0.05

Table 4: Association between wasting and other variables.

Characteristics	Wastin	g	n
Characteristics	Yes	No	P value
Sex			
Male	17	73	0.000
Female	10	90	- 0.080
Age of child (mont	hs)	-	
<24	8	61	0.425
≥24	19	102	0.435
Age of mother (yea	rs)		
<20	6	25	0.370
≥20	21	138	0.370
Family type			-
Nuclear	10	66	0.724
Joint	17	97	0.734
Education status o	f mother		
No education	16	21	.0.001
Primary	11	142	<0.001*
Education status of	f father	-	
No education	8	10	
Primary	16	110	<0.001*
Secondary			
Religion of respond	dent		
Hindu	20	144	0.046%
Christianity	7	19	0.046*
Main source of inc	ome		
Agriculture	3	49	-
Business	2	42	
Remittance	6	34	0.001*
Labour or daily	1.0	20	
wages	16	38	
Exclusive breastfee	eding (mon	ths)	
<6	13	43	0.022*
≥6	14	120	0.022*
Weaning of child (months)		
Before 6	7	33	0.502
≥6	20	130	
Food frequency in	a day		
<3 times	16	53	0.007*
≥4 times	11	110	0.007*
Monthly income			
<13500	13	27	<0.001*
	14	136	

DISCUSSION

The prevalence of stunting, wasting and underweight was found to be 39.5 percent, 14.2 percent, and 29.5 percent respectively among children of Satar community in Bhadrapur Municipality of Jhapa district.

Stunting, wasting and underweight were higher than the national data of Nepal demographic and health survey. The prevalence of stunting, wasting and underweight in province number 1 of Nepal where Bhadrapur Municipality lies is 33%, 12% and 24.4% which is lower than the undernutrition in children of Satar community of this study. The study of the study.

Sex of children were not significantly related to stunting, wasting and underweight of under five years children and the results were supported by a study conducted in east Gojjam zone, Northwest Ethiopia.⁹

Age of children under five years was significantly associated with stunting and the study is supported by a analysis of demographic and health survey of Zambia in 2014. 10 The study also was supported by a study conducted in North Maluku province of Indonesia. 11 Underweight were not significantly associated with age of the children in this study and the result is not supported by national service analysis of the data of different southeast Asian countries in which wasting was associated with age of the children. 12 The different results may be due to the smaller sample size in this study. Underweight is also not significantly associated with age of the children in this study and the results are supported by a study carried out in Wonsho Woreda, Sidama Zone Southern Ethiopia. 13

Maternal age was significantly associated with stunting in this study with p=0.002 and the result is supported by a study conducted to find out the risk factors of stunting in Gianyar District, Bali. Wasting was not significantly associated with maternal age in this study and is supported by evidence from demographic and health survey of Pakistan. Underweight was also not significantly associated with maternal age in this study.

Children were more likely to be stunted, wasted and underweight if the mothers were uneducated (p<0.01) and the result is supported by different studies conducted around the world. Paternal education was also significant with undernutrition of under five years children and is supported by different studies. 18,19

Religion of the participants was significantly related with stunting, wasting and underweight of children in the study. Association between wasting and underweight with religion is supported by a analysis of Demographic and health survey in Nepal.²⁰ Regarding income of the family of the children in the community, all stunting, wasting and underweight were significantly associated with p<0.001. The finding is supported by different studies conducted in low-middle income countries.^{9,17,21,22}

The children who were weaned after six months were less likely to be underweight than the children who were weaned before six months and was statistically significant (p=0.042). the finding is supported by a study conducted in Indonesia. These studies also have shown that stunting and wasting are related to weaning period but in

our study, it is not statistically significant. This may be due to different population and sample size.

All the forms of malnutrition were statistically significant with exclusive breastfeeding in the study as the results are supported by the study conducted in Sri Lanka and India.^{24,25} All the forms of malnutrition (stunting, wasting and underweight) were significantly associated with food frequency of children and the study is supported by a study conducted in Nepal.²⁶

CONCLUSION

There was higher prevalence of stunting, wasting and underweight in the children of Satar community in Bhadrapur district of Nepal than the national and provincial figure. The study revealed that maternal education, paternal education, family income, exclusive breastfeeding and food frequency was significantly associated with under nutrition (stunting, wasting and underweight). Stunting was associated with age of child and mother and religion. Underweight was associated with religion and weaning of children. The municipality as well as province should focus on different nutrition related activities to upgrade the status of indigenous community like Satar.

ACKNOWLEDGEMENTS

Authors are grateful to Dr. Karina Diaz-Rios, Cooperative Extension Specialist in Nutrition, University of California, Merced for her valuable suggestions in preparing the article.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

REFERENCES

- Nutrition. UNICEF Nepal. Available at https://www.unicef.org/nepal/nutrition. Accessed on November 10, 2019.
- Bhattarai M, Bashyal C, Al-Omair AA. Study of operational strategies to reduce malnutrition in Nepal. Available at http://documents.worldbank. org/curated/en/474451508933829359/Study-of-operational-strategies-to-reduce-malnutrition-in-Nepal. Accessed on 12 January 2020.
- 3. Joshi HS, Joshi MC, Singh A. Determinants of protein energy malnutrition (Pem) in 0-6 years children in rural community of Bareilly. Indian J Prev Soc Med. 2011;42(2):1-4.
- 4. 2018 Global Nutrition Report Global Nutrition Report. Available at https://global nutritionreport. org/reports/global-nutrition- report-2018/. Accessed on 21 February 2020.
- WHO. Safer water, better health: costs, benefits, and sustainability of interventions to protect and

- promote health; Updated table 1: WSH deaths by region, 2004. 2008. Available at http://whqlibdoc.who.int/publications/2008/9789241596435_eng.pdf. Accessed on 21 February 2020.
- Kathmandu N. National population and housing census 2011 social characteristics tables Government of Nepal National Planning Commission Secretariat Central Bureau of Statistics. 2014. Available at www.cbs.gov.np. Accessed on 21 February 2020.
- 7. Ministry of Health and Population. Nepal Demographic and Health Survey. 2016. Available at: https://www.dhsprogram.com/pubs/pdf/fr336/fr336.pdf. Accessed on 5 February, 2020.
- 8. Subedi BP. Demographic Situation of Satar/Santhal in Nepal. Scholarly Res J Interdis Studies. 2014;2(12):1490-9.
- Zeray A, Kibret GD, Leshargie CT. Prevalence and associated factors of undernutrition among underfive children from model and non-model households in east Gojjam zone, Northwest Ethiopia: a comparative cross-sectional study. BMC Nutr. 2019;5(1):27.
- Mzumara B, Bwembya P, Halwiindi H, Mugode R, Banda J. Factors associated with stunting among children below five years of age in Zambia: evidence from the 2014 Zambia demographic and health survey. BMC Nutr. 2018;4(1):51.
- 11. Ramli H, Agho KE, Inder KJ, Bowe SJ, Jacobs J, Dibley MJ. Prevalence and risk factors for stunting and severe stunting among under-fives in North Maluku province of Indonesia. BMC Pediatr. 2009;9:64.
- 12. Harding KL, Aguayo VM, Webb P. Factors associated with wasting among children under five years old in South Asia: Implications for action. PLoS One. 2018;13(7):e0198749.
- Gamecha R, Demissie T, Admasie A. The magnitude of nutritional underweight and associated factors among children aged 6-59 months in Wonsho Woreda, Sidama Zone Southern Ethiopia. Open Public Health J. 2017;10(1):7-16.
- 14. Manggala AK, Kenwa KWM, Kenwa MML, Sakti AAGDPJ, Sawitri AAS. Risk factors of stunting in children aged 24-59 months. Paediatr Indones. 2018;58(5):205-12.
- Khan S, Zaheer S, Safdar NF. Determinants of stunting, underweight and wasting among children <
 years of age: evidence from 2012-2013 Pakistan demographic and health survey. BMC Public Health. 2019;19(1):358.
- 16. Harding KL, Aguayo VM, Webb P. Factors associated with wasting among children under five

- years old in South Asia: implications for action. PLoS One. 2018;13(7):0198749.
- 17. Derso T, Tariku A, Biks GA, Wassie MM. Stunting, wasting and associated factors among children aged 6-24 months in Dabat health and demographic surveillance system site: A community based cross-sectional study in Ethiopia. BMC Pediatr. 2017;17(1):96.
- 18. The association of parental education with childhood undernutrition in low- and middle-income countries: comparing the role of paternal and maternal education. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5420755/. Accessed on 22 February 2020.
- 19. Alderman H, Headey DD. How important is parental education for child nutrition? World Dev. 2017;94:448-64.
- 20. Osguei KN, Taylor CN. Association of nutritional status with socio-economic and demographic variables of under five year old Nepalese children. Med J Islam Repub Iran. 2019;33:28.
- 21. Tariq J, Sajjad A, Zakar R, Zakar MZ, Fischer F. Factors associated with undernutrition in children under the age of two years: secondary data analysis based on the Pakistan demographic and health survey 2012–2013. Nutrients. 2018;10(6):1-20.
- 22. Yalew MB. Prevalence and factors associated with stunting, underweight and wasting: a community based cross sectional study among children age 6-59 months at Lalibela Town, Northern Ethiopia. J Nutr Disord Ther. 2014;04(02):10-4.
- 23. Gadappa SM, Behera KM. Nutritional status and feeding practices in relation to IYCN policy among children under 2 years of age in tertiary care centre. Int J Contemp Med Res. 2016;3(6):1649-51.
- 24. Karthigesu K, Sandrasegarampillai B, Arasaratnam V. Breastfeeding practices and nutritional status of children aged one to five years in Jaffna District, Sri Lanka. Indian J Nutr Diet. 2017;54(2):172.
- 25. Giashuddin MS, Kabir M, Rahman A, Hannan MA. Exclusive breastfeeding and nutritional status in Bangladesh. Indian J Pediatr. 2003;70(6):471-5.
- 26. Ruwali D. Nutritional status of children under five years of age and factors associated in Padampur VDC, Chitwan. Health Prospect. 2011;10:14-8.

Cite this article as: Sangroula RK, Uprety S. Factors associated with nutritional status of under five children among Satar Community of Bhadrapur Municipality, Jhapa, Nepal. Int J Community Med Public Health 2020;7:2059-64.