

Hygiene Practices among Toddlers in Rural Area of Bangladesh

Md. ABUL HOSSAIN¹

Managing Director and Chief Researcher, TRIMAN Nutraceuticals Limited, Bangladesh

SHEULY SULTANA

Research Officer, TRIMAN Nutraceuticals Limited, Bangladesh

Md. ABDUL AWAL

Lab In-Charge, Ibn Sina Medical College Hospital, Dhaka, Bangladesh

DULALI RAHI SAHA

Assistant Professor, Department of Education Uttara University, Bangladesh

Md. BADIUZZAMAN

Medical Technologist, MH Samorita Medical College & Hospital, Bangladesh

MOHAMMAD AL-AMIN

Senior Research Officer, TRIMAN Nutraceuticals Limited, Bangladesh

S. M. SHAMIUL HOQUE CHOWDHURY

Assistant Professor & Head, Dept. of Biostatistics

Bangladesh University of Health Sciences

Abstract

Background: Hygiene practices are the most important issues in human life. The “toddler” period of human life from one to three years is the dependency on breast milk weaning and others food feeding with hygiene practices on others people.

Objectives: To assess the hygiene practices of toddlers in rural areas of Bangladesh.

Methods: A cross-sectional descriptive study was conducted with pre-tested semi-structured questionnaire and data entry, analysis done by SPSS 16.

Results: Maximum (69.71%) participant was in the age group of 12 to 24 months and close to hundred percent (97%) was Muslims, 55.8% was boys and 44.2% girl. 33.17% immature mother delivered first baby (below 18.7 years of age), This study reveals that most of the toddlers were with normal weight (76.7%) and 23.3% was moderate to severe underweight (<2Z). 96.15% mother fed their breast milk to the

¹ Corresponding author: mahsujon71@gmail.com

children and 91.35% mother had sufficient breast milk. 74.04% had eaten seasonal fruits and vegetables. The study found a positive weak correlation ($r = 0.145$, $p = 0.04$) between the breast feeding and height of toddlers and there was no relation between the breast feeding and weight ($r = 0.00$, $p = 0.99$) by a Pearson product-moment correlation coefficient.

Conclusion: *Good hygiene practices were upward trend and sufficient.*

Keywords: Toddler, Malnutrition, Hygiene practice, Breast milk weaning, Nutritional food.

INTRODUCTION:

The term “toddler” is used for a period of 1-3 years of human life. It makes a transition from dependent milk-fed infancy to independent feeding and a typical omnivorous diet. This stage of human life is an important time for physicians to monitor growth, using growth charts and body mass index to make recommendations for healthy eating. This period is a crucial life stage regarding the nutrition, as the child undergoes significant social, cognitive and emotional growth (Lucas et al 2012), during which food preferences and feeding behaviors are established and which, in turn, affects future eating habits, as well as general long-term health (Addessi et al 2005 and Agvei 2015). Nutrition is the major part of the most essential factors that determine the relationship between people and the environment and is crucial for health, efficiency, and resistance to negative surrounding impacts. Of particular importance for the health of a child is a full and regular supply with all the necessary macro- and micronutrients, vitamins and minerals (Michaelsen et al 2003 and Gidding et al 2006). The adequate and balanced food for child's further development and health, especially for the first 3 years of life are very important. On the other hand, inadequate or poor nutrition during the first years of life may lead to significant negative consequences for health, including delayed psychomotor and mental development, behavioral problems, lack of social skills, disorders of attention, learning problems, etc. (Haschke et al 2013). Malnutrition is associated with about half of child deaths

worldwide due to frequent illness; their nutritional status saps down which lead to vicious cycle of recurring sickness and faltering growth (WHO, 2004). The World Health Organization (WHO) estimates that some 3 billion people suffer from malnutrition of one kind or other. One out of five people suffer from the worst of variants of malnutrition hunger (www.who.int/nutrition, cited on January 25, 2020). All forms of malnutrition are associated with significant morbidity, mortality, and economic costs, particularly in countries where both under and over-nutrition co-exist as is the case in developing countries undergoing epidemiological transition (Park, 2007). It has been proven today that features of early life nutrition not only play an important role in the formation of optimal physical health and intellectual development of a child, but may even determine a substantially higher risk of chronic disease in adulthood (Agostoni et al. 2011, Hayman et al. 2007, American Diabetic Association 2008, Koletzko et al. 2009). During the toddler phase a diet rich in energy and nutrients from a variety of food sources should be provided in order to ensure optimum nutritional status, growth and development (Addesssi et al. 2005, Chaudhury 1984). However, many researchers reveals that millions of toddlers across the globe, in both developed and developing countries like South Africa (SA), suffer from malnutrition, which includes both under nutrition, as reflected by underweight, wasting and stunted linear growth, as well as over nutrition, as reflected by overweight/obesity (Dietary guidelines for Americans (DGA), 2010 and Agvei, 2015). It affects almost 800 million people, with most of them in the developing countries. The proportions are 70% in Asia, 26% in Africa and 4% in Latin America and Caribbean (Ergin et al. 2007). Malnutrition in toddlers are related to diets of poor nutritional quality and limited variety, often characterized by high intakes of saturated fatty acids, refined carbohydrates and sugar-sweetened beverages, and/or inadequate fruit and vegetable consumption (Altman et al. 2009, Daly et al. 1996). In addition, there is evidence that iron stores decline during the second year of life (Virtanen et al. 2001, Stevens et al. 1995, AAP 2001). Iron deficiency (ID) is the most commonly reported nutritional disorder during early childhood in the UK and other countries (Butte et al. 2010, HMSO-UK, 1994). Young children are at increased risk due to their high physiological demands during this period of rapid growth and development. Malnutrition of toddlers is one

of the comprehensive spread public health problems. India is facing a great threat on it presently. Among the highly susceptible groups are infants and toddlers (0-3 years old), who constitute nearly 10% of Indian's population (De-Maeyer et al. 1985). Unfortunately, they are largely ignored from a nutritional standpoint (Scientific opinion, 2010). Bangladesh is the most fast growing and densely populated country in the world. Half of the children who die worldwide are related to mild and moderate degree of malnutrition but there is very scanty information about children who live in remote areas in Bangladesh. The objective of the study was to assess the food intake patterns and nutritional status of toddlers in rural areas of Bangladesh.

MATERIALS AND METHODS:

A descriptive cross-sectional study was conducted from November 2018 to April 2019. Data were collected with pre tested, modified and semi-structured questionnaire. Study subjects were toddlers (1-3 years of age), sample size was 208 from the ten villages in selected rural area Sundarpur Union of Chapai Nawabgonj District of Bangladesh were selected purposively. Data were entered and analyzed using SPSS software 16 version. Results were expressed in number, percentage, mean \pm SD in table and figures.

RESULTS:

Table 1: Distribution of the toddler's age, sex and religion (n=208)

Relation with child who answered the questions	Number	Percentage
Age group		
12 to 24 months	145	69.71
25 to 36 months	63	30.29
Mean \pm SD = 21.72\pm6.88		
Gender		
Son	116	55.8
Daughter	92	44.2
Religion		
Islam	202	97
Hindu	4	2
Christian	2	1
Total	208	100

Table 2 showed, maximum (69.71%) toddler's age was the age group of 12 to 24 months and only 30.29% was of 25 to 36 months of age group. Among the subjects 55.8% was boys and 44.2% girl. Besides, nearly hundred percentage (97%) was Muslims, 2% Hindus and 1% was Christian.

Tables 2: Socio-economic conditions regarding living room (n=208)

Types of living room	Number	Percentage
Tiles	6	2.88
Mosaic	1	0.48
Normal floor	52	25
Brick bedded floor	2	0.96
Mud	146	70.19
Others	1	0.48
Type of bed		
Khat	203	97.6
Floor	3	1.44
Others	2	0.96
Window in living room		
Yes	164	78.85
No	44	21.15
Total	208	100

Table 5 have given the findings that the maximum (70%) floor was mud, 25% was normal floor, 2.88% was tiles, 0.48% mosaic, brick bedded (not carpeting) 0.96% and others 0.48%. Among the study subjects 97.6% laid on Khat (Cot), 1.44% on direct floor and 0.96% on others. 78.85% respondent's living room had window and no window of 21.15%.

Table 3: Nutritional habits of toddlers and care givers (n=208)

The study expressed some nutritional habits and practices of toddlers and caregivers. Among toddlers 74.04% washed fruits before eating and 25.96% were not regular, the cooked food for family and children were kept wrapped 99.04%. The caregivers used to wash their hands 95.19% before had eaten the toddlers. The caregivers made children's habit to wash their own hands 87.02% before eating something and 12.98% did not. After using toilet 94.23% caregiver washed their hands and still 5.77% did not by any means. Among the caregivers 91.83% used Sandal while they used toilet and 8.17% go to toilet bare footed. More than half (58.65%) toddlers was made to practice to use Sandal while go to toilet but remain 41.35% did not use.

Md. Abul Hossain, Sheuly Sultana, Md. Abdul Awal, Dulali Rani Saha, Md. Badiuzzaman, Mohammad Al-Amin, S. M. Shamiul Hoque Chowdhury- **Hygiene Practices among Toddlers in Rural Area of Bangladesh**

Wash fruits before eating	Frequency	Percentage
Yes	154	74.04
No	54	25.96
Always keep cooked foods with covered		
Yes	206	99.04
No	2	0.96
Wash children hand's before eating by care givers		
Yes	198	95.19
No	10	4.81
Habit of hand wash of children him/her self		
Yes	181	87.02
No	27	12.98
Use soap after toilet by care givers		
Yes	196	94.23
No	12	5.77
Using sandal of care givers during toilet		
Yes	191	91.83
No	17	8.17
Using sandal of children during toilet		
yes	122	58.65
No	86	41.35
Source of drinking water for children		
Tubewel	204	98.08
Others	4	1.92
Total	208	100

Table 4: Distributing of personal hygiene practices of toddlers (n=208)

The showed that among the age group of 12-24 months76.55% had not cut their nails by teeth but this percentage stood at 87.30 for the age group of 25-36 months. 57.24% and 77.78% of 12-24 months and 25-36 months age group respectively kept hands on mouth during coughing and sneezing. In every point like- regular bathing, teeth brushing and nails cutting found the greater percentage in 25-36 months age group than in 12-24 months age group except in wearing clean cloths/dresses.

Age in month		Number	%	Age in months		Number	%
Did not cut nails by teeth							
12-24	Yes	111	76.55	25-36	Yes	55	87.30
	No	34	23.45		No	8	12.70
Kept hand(s) on mouth and nose during sneezing and coughing							
12-24	Yes	83	57.24	25-36	Yes	49	77.78
	No	62	42.76		No	14	22.22
Regular bathing every day							
12-24	Yes	130	89.65	25-36	Yes	60	95.24
	No	15	10.34		No	3	4.76
Brushed their teeth regularly							
12-24	Yes	51	35.17	25-36	Yes	43	68.25

	No	94	64.83		No	20	31.75
Cut their nails once a week regularly							
12-24	Yes	46	31.72	25-36	Yes	25	39.68
	No	99	68.28		No	38	60.32
Wore clean dress							
12-24	Yes	112	77.24	25-36	Yes	60	95.24
	No	33	22.76		No	3	4.76
Total		145	100	Total		63	100

Table 5: Social behaviors, disciplines and hygiene practices of the toddlers (n=208)

This study found 69.66% of 12-24 months and 85.71% of 25-36 months age group child did not fall cough and 61.38% among 12-24 months, 77.78% among 25-36 months age group toddler did not fall spit any place of their environment. Among 12-24 months age group 95.17% and 100% of 25-36 months age group could understand their stool pressure and went to toilet self and/or asked the caregivers to go to toilet. Nearly hundred percentage of the children in 25-36 months age group and a considerable number less than that in 12-24 months age group did not urinate, discard the remains of food and fall down the breakable and useless materials/things anywhere. Almost same percent (79 and 85) of both age groups did not keep unwashed hands on their mouth and nose frequently.

Age in month		Number	%	Age in month		Number	%
Did not fall cough any where							
12-24	Yes	101	69.66	25-36	Yes	54	85.71
	No	44	30.34		No	9	14.29
Did not fall spit anywhere in the room							
12-24	Yes	89	61.38	25-36	Yes	49	77.78
	No	56	38.62		No	14	22.22
Did not pass faecaeate any where							
12-24	Yes	138	95.17	25-36	Yes	63	100
	No	7	4.83		No	0	0
Did not urinate any where							
12-24	Yes	121	83.45	25-36	Yes	62	98.41
	No	24	16.55		No	1	1.59
Did not discard the remains of food							
12-24	Yes	121	83.45	25-36	Yes	60	95.24
	No	24	16.55		No	3	4.76
Did not fall down breakable and useless things any where							
12-24	Yes	105	72.41	25-36	Yes	59	93.65
	No	40	27.59		No	4	6.35
Did not keep unwashed hand(s) in mouth and nose in any time							
12-24	Yes	79	54.48	25-36	Yes	54	85.71
	No	66	45.52		No	9	14.29
Total		145	100	Total		63	100

DISCUSSION:

Dietary habits which play major role in toddler age under the influence of parents. This study found Maximum (69.71%) participants were in the age group of 12 to 24 months and 30.29% was of 25 to 36 months, close to hundred percent (97%) were Muslims but another study (Yesmin F 2019) showed 83% Muslim and 16.67% Hindu. This study found 55.8% was boys and 44.2% girl. The study revealed 75.96% mother had no income and led poor lives similar as Chindime et al 2006 study. The study also found 68.27% father's income was between BDT 10000-19999 similar SARS 2015: Online. They got (Cows, Formula, Goat) highest meat 46.15%, milk 37.5%, eggs 30.29%, fish 33.17%, fruits 27.4%, vegetables 32.69%, and sweets 27.4% that similar to Ntab et al. 2004. Juice and sweetened beverages have been found to displace milk in children's diets when they are as young as 15 to 24 months of age (Skinner et al. 2004). But the level of protein consumption in children aged 13–18 months exceeds the recommended one by 254% in France, 150% in Italy, 186% in Luxembourg (Lambert et al. 2004). The average protein intake in European countries is 40 g/day at the age of 2 years and 60 g/day at the age of 3 years (about 3 g/kg/day), which determines the consumption of more than 16% of energy from protein (Lambert et al. 2004). This study found most of the toddlers with normal weight (76.7%) and 23.3% was moderate to severe underweight (<2Z). The results also showed, 83.7% was normal height/length and moderate to severe stunted were 16.3%. But considering the wasting, 91.6% was normal and only 8.4% was moderate to severe wasting. Another study (Haque MM 2014) showed the similar results. 96.15% mother feeding their breast milk to the children and 91.35% mother had sufficient breast milk. Indeed, prolonged breast-feeding was associated with faster linear growth, as was shown previously (Marquis et al. 1997, Onvango et al. 1999 and Simondon et al. 2001). Another study showed breastfed children had lower mean height-for-age (Simodon et al. 1998 and Simondon et al. 2001).

CONCLUSION:

Although this study presents the economic conditions of the parents of the toddlers are maximum not sound, the malnutrition among toddlers

in Bangladesh is on a decreasing trend. Still in present era malnutrition is a severe public health problem in rural area. This study reveals that most of the toddlers were with normal weight (76.7%) and 23.3% was moderate to severe underweight ($<-2Z$) that is higher than moderate to severe stunted and wasting. Most of the study subjects took eggs, milk, and processed sweetened food. The positive weak correlation ($r = 0.145$, $p = 0.04$) found between the breast feeding and height but no relation found between the breast feeding and weight ($r = 0.00$, $p = 0.99$).

REFERENCES:

1. Ahmed SS, Jahan K, and Arefin S (2005). Nutritional Status of Under Six Children in Bangladesh: Evidence Based From Nutrition Survey of Bangladesh, 1995- 96. *Jalalabad Medical Journal*, vol. 2, pp. 17-19.
2. Agostoni C, Braegger C, Decsi T, Kolacek S, Koletzko B, Mihatsch W, (2011). Role of dietary factors and food habits in the development of childhood obesity: a commentary by the ESPGHAN Committee on Nutrition. *J Pediatr Gastroenterol Nutr*, 52: 662-669.
3. Addressi E, Galloway AT & Visalberghi E (2005). Specific social influences on the acceptance of novel foods in 2-5-year-old children, *Appetite*, 45: 264.
4. Agyei D (2015). Bioactive proteins and peptides from soybeans. *Recent Patents on Food, Nutrition and Agriculture*, 7(2): 100.
5. Altman M, Hart T, and Jacobs P (2009). Food security in South Africa, Centre of Poverty Employment and Growth: 13-15.
6. American Academy of Pediatrics (AAP) (2001). The use and misuse of fruit juice in paediatrics. *Pediatrics*, 107(5): 1212.
7. American Heart Association (AHA) (2014). Dietary recommendations for healthy children: 168.
8. Brakohiapa LA, Yartey J, Bille A (1988). Does prolonged breastfeeding adversely affect a child's nutritional status? *Lancet*, ii: 416-18.
9. Butte NF, Fox MK, Briefel RR, Siega-Riz AM, Dwyer JT, Deming DM. (2010). Nutrient intakes of US infants, toddlers, and pre-schoolers meet or exceed Dietary Reference Intakes. *J Am Diet Assoc*, 110(3): 27-37.
10. Chaudhury RL (1984). Determinants of dietary intake and dietary adequacy for pre-school children in Bangladesh. *Food Nutr Bull*, 6(4): 24-33.
11. Daly A, MacDonald A, Aukett A (1996). Prevention of anaemia in inner city toddlers by an iron supplemented cows' milk formula. *Arch Dis Child*, 75: 9-16.
12. Dietary guidelines for Americans (2010). US Department of Agriculture, US Department of Health and Human Services, 7th ed., Washington, DC: US Government Printing Office; 2011.
13. De Maeyer E, Adiels-Tegman M. (1985). The prevalence of anaemia in the world. *World Health Stat. Q.* 38: 302-316.

14. Ergin F, Okyay P, Atasoylu G, Beser E (2007). Nutritional status and risk factors of chronic malnutrition in children under five years of age in Aydin, a western city of Turkey. *The Turkish Journal of Pediatrics*, **49(3)**: 283–289.
15. Gidding SS, Dennison BA, Birch LL, Daniels SR, Gilman MW, Lichtenstein AH (2006). Dietary recommendations for children and adolescents: a guide for practitioners. *Pediatrics*, **117**: 544–559.
16. Grummer-Strawn LM (1993). Does prolonged breast-feeding impair child growth? A critical review. *Pediatrics*, **91**: 766–71.
17. Haque MM (2014). Food Intake Pattern and Nutritional Status of Pre-school Children of Chakma Tribe. M. Phil thesis, Department of Community Nutrition, Bangladesh Institute of Health Sciences, Bangabandhu Sheikh Mujib Medical University, Bangladesh.
18. Haschke F, Haiden N, Detzel P, Yarnoff B, Allaire B, Haschke-Becher E (2013). Feeding patterns during the first 2 years and health outcome. *Ann Nutr Metab*, **62(3)**: 16–25.
19. Jansen GR (1985). The nutritional status of preschool children in Egypt. *World Rev Nutr Diet*, **45**: 42–67.
20. Jennifer A, Nelson, Kathleen Carpenter K, Chiasson MA (2006). Diet, Activity, and Overweight among Preschool-Age Children Enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Preventing Chronic Disease; Public Health Research, Practice, and Policy, Centers for Disease Control and Prevention, **3(2)**: 1-12.
21. Koletzko B, von Kries R, Closa R, Escribano J, Scaglioni S, Giovannini M, (2009). Can infant feeding choices modulate later obesity risk? *Am J Clin Nutr*, **89(Suppl.)**: 1502–1508.
22. Koletzko B, Cuernonniere V, Desjeux JF, Krause E (2004). Nutritional Needs of Children. Proceedings of the workshop on “Nutrition in children and adolescents in Europe: what is the scientific basis”. *Br J Nutr.*, **92(2)**.
23. Lambert J, Agostoni C, Elmadfa I, Hulshof K, Krause E, Livingstone B (2004). Dietary intake and nutritional status of children and adolescents in Europe. *Br J Nutr.*, **92(2)**: 147–211.
24. Lucas B, L, Feucht S, A & Ogata N B, (2012). Nutrition in childhood, in KL Mahan, S Escott-stump & JL Raymond (editors). Krause’s food and nutrition care process, 13th edition, Philadelphia: WB Saunders Company: 388-391, 393-396, 398.
25. Marquis GS, Habicht JP, Lanata CF, Black RE & Rasmussen KM (1997). Human milk or animal protein foods improve linear growth of Peruvian toddlers on marginal diets. *Am. J. Clin. Nutr.*, **66**: 1102–1109.
26. McCance RA, Widdowson EM (2002). The composition of foods, 6th ed., Cambridge: Royal Society of Chemistry.
27. Ntab B, Kirsten B, Simondon, Milet J, Cisse B, Sokhna C, Boulanger D, Franc, Simondon O (2004). A Young Child Feeding Index Is Not Associated with Either Height-for-Age or Height Velocity in Rural Senegalese Children. *American Society for Nutritional Sciences*: 457-464.
28. Onyango AW, Esrey SA & Kramer MS (1999). Continued breastfeeding and child growth in the second year of life: a prospective cohort study in western Kenya. *Lancet*, **354**: 2041–2045.

29. Park K (2007). Park's textbook of Preventive and Social Medicine. 19th ed. Jabalpur India: M/s Banarisidas Bhanot.
30. Skinner JD, Ziegler P, Ponza M (2004). Transition in infants' and toddlers' beverage patterns. *J Am Diet Assoc*, **104(1)**: 45-50.
31. Simondon KB, Simondon F, Costes R, Delaunay V & Diallo A (2001). Breast-feeding is associated with improved growth in length, but not weight, in rural Senegalese toddlers. *Am. J. Clin. Nutr.*, **73**: 959-967.
32. Simondon KB, Costes R, Delaunay V, Diallo A. & Simondon F (2001). Children's height, health and appetite influence mothers' weaning decisions in rural Senegal. *Int. J. Epidemiol.*, **30**: 476-481.
33. Stevens D, Nelson A (1995). The effect of iron in formula milk after 6 months of age. *Arch Dis Child*, **73**: 216-220.
34. Virtanen MA, Svahn CJ, Viinikka LU, Raiha NC, Siimes MA (2001). Axelsson IE. Iron-fortified and unfortified cow's milk: effects on iron intakes and iron status in young children. *Acta Paediatr*, **90**: 724-731.
35. World Health Organization and Food and Agricultural Organization of the United Nations. Vitamins and minerals requirements in human nutrition. 2nd ed. Bangkok: WHO/FAO; 2004.
36. Yesmin S (2019). Pattern of Birth of Babies Conducted in a Selected Rural Area in Bangladesh. *European Academic Research*, **VI(10)**: 5925-5932.