Stunting in children

Defining stunting

Stunting is a result of combination of factors which includes childhood malnutrition, chronic illnesses and infections and psychological deprivation. Stunting or being short for age is defined as a height that is more than two standard deviations below the World Health Organization (WHO) child growth standard median. As the definition itself indicates, stunting can be detected by the simple method of measuring height and plotting it in a standard growth chart. Height is recommended to be measured every six months in children below five years of age in routine child health clinics. This facilitates early detection and proper referral of stunted children, at a primary care level.

Burden

Even though the prevalence of stunting is decreased over the past two decades, it still affects a significant portion of children worldwide. Yet it goes undiagnosed most of the time. Globally, stunting affects 162 million children under five years and the cases are largely concentrated in South Asia and Sub Saharan Africa. Number of stunted children in India accounts for 33% of stunted children worldwide. It is estimated that, if the current trend continues, 127 million children will be stunted by year 2025. As for the outcome of stunting, it is responsible for nearly half of childhood deaths. Even if they survive, there can be at least 10% decrease in future outcome over the lifetime of a stunted individual.

Causes and risk factors

A variety of causes produce stunting. Mainly childhood malnutrition, chronic illnesses and infections and psychological deprivation contribute to this. Apart from this, children who are not malnourished or not affected by infections or not psychologically deprived can also appear short due to other causes. This include familial short stature, constitutional delay of growth and puberty, endocrine causes and chromosomal disorders.

Childhood malnutrition causes stunting as well as wasting. Childhood malnutrition can be traced back to maternal malnutrition. Poor diet of the mother, teenage pregnancies and poor spacing between pregnancies can lead to maternal under nutrition. During the intra uterine life, the foetus solely depends on the mother for nutrition. Therefore, maternal under nutrition can lead to Intra Uterine Growth Restriction (IUGR). In fact 20% of childhood stunting is due to IUGR produced by maternal undernutrition. A research done to find Factors associated with underweight and stunting among children in rural Terai of Eastern Nepal has demonstrated that low maternal BMI is a risk factor for stunting.

Not only nutrition during intrauterine life, but also inadequate childhood and young child feeding result in stunting. Inadequate breast feeding, non exclusive breast feeding, poor weaning and inadequate complimentary feeding which is limited in quality, quantity and variety contribute to this.

Infections is another leading cause for stunting as well as wasting. With increasing severity, increasing duration and increasing number of recurrences, the possibility of developing stunting is more. There is bidirectional association between infections and malnutrition. Infections as well as chronic illnesses increase Basal Metabolic Rate (BMR) and reduce energy available for growth. Due to infections there can be reduced food intake and reduced gut absorption of nutrients which lead to malnutrition. Malnutrition on the other hand reduces immunity and increases infections. Thus, this vicious cycle produces long term effects like stunting. Chronic illnesses such as chronic kidney disease, Coeliac disease, congenital heart disease, bronchiectasis, crohns disease etc can also lead to stunting.

Apart from this, good nurturing and stimulation are essential for adequate growth of a child. Therefore, psychological deprivation can produce stunting. A research done in Pakistan has demonstrated poor household income and overcrowded living conditions as risk factors for stunting.

Effects of stunting

Stunting has many adverse consequences to the affected children. Not only individually, it is also a constraint to economic development as a country. Effects of stunting can be both long term and short term.

Stunting affects health of the individual and increases both morbidity and mortality. Stunting also reduces cognitive, motor and language development of the affected children. Specially, stunting before 2 years is a well established risk factor for poor cognitive development. Increasing number of children with stunting also increases health sector expenditure on them as these children are more likely to get hospitalized than normal children. Stunted children may also require specialized treatments which are expensive. This in turn increases the burden on the economy of the country.

Stunting poses long term adverse consequences as well. At individual level, stunted children who gain weight rapidly after 2 years of age are at increased risk of being obese and overweight in later adult life. Risk of developing coronary heart disease, stroke, type 2 diabetes mellitus and hypertension are also high in these children. Reproductive health can also be affected in stunted children. As stunting affects cognitive and intellectual development, school performances of stunted children can be sub optimal, thus preventing them from achieving their true potential. This negative impact on individual learning capacity and health ultimately leads to reduction of work capacity and productivity. This in turn affects the economic progress of the country. Research evidence suggest that stunting can reduce gross domestic productivity of a country by up to 3%. According to the World Bank estimates, a 1% loss in adult height due to childhood stunting is associated with a 1.4% loss in economic productivity. It is also estimated that stunted children earn 20% less as adults than non stunted individuals.

Reducing stunting

Stunting is multifactorial. Therefore, it is important to carry out efforts to reduce stunting through different approaches. .

The critical 1000-day window period from a woman's pregnancy to her child's second birth day is considered as the most important time period for optimal growth of the child. Maternal nutrition during this period plays a major role. In fact, interventions should be carried out from the adolescent age onwards to achieve a satisfactory level of maternal nutrition. Regular micronutrient supplementation including Iron and folate and prevention and treatment of infections during pregnancy is of critical importance.

Ensuring exclusive breast feeding by increasing awareness, assessing breast feeding technique and provision with support are needed to maintain adequate nutrition in early childhood. However, changing from breast milk to complimentary feeding after 6 months should also be encouraged. It is important to make sure that complimentary feeding is comprised of high quality, nutrient rich foods. Food fortification and supplementation are important to improve micronutrient intake.

Strengthening community based interventions to improve water, sanitation, hygiene and food safety are important to prevent infections.

Sources

WHA Global Nutrition Targets 2025: Stunting Policy Brief available at *http://www.who.int/nutrition/topics globaltargets stunting policybrief.pdf*

UNICEF official web site

Childhood Stunting: Context, Causes and Consequences available at *http://www.who.int/nutrition/events/2013 ChildhoodStunting colloquium 14Oct ConceptualFramework colour.pdf*

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Table 1: Selected notifiable diseases reported by Medical Officers of Health　　23rd - 29th July 2016 (31th Week)

RDHS Division	Dengue Fever A	Dengue Fever B	Dysentery A	Dysentery B	Encephalitis A	Encephalitis B	Enteric Fever A	Enteric Fever B	Food Poisoning A	Food Poisoning B	Leptospirosis A	Leptospirosis B	Typhus Fever A	Typhus Fever B	Viral Hepatitis A	Viral Hepatitis B	Human Rabies A	Human Rabies B	Chickenpox A	Chickenpox B	Meningitis A	Meningitis B	Leishmaniasis A	Leishmaniasis B	WRCD T*	WRCD C**
Colombo	332	10125	1	105	1	5	0	41	0	27	2	145	0	7	0	24	0	0	1	274	0	36	0	0	63	94
Gampaha	52	3357	1	80	0	9	1	18	0	18	0	183	0	10	1	24	0	0	0	229	0	30	0	4	27	60
Kalutara	57	2297	2	69	0	7	0	22	1	23	3	309	0	6	0	19	0	0	0	180	2	53	0	0	50	71
Kandy	204	2556	2	114	1	15	0	13	0	29	1	93	1	63	1	40	0	0	3	120	0	31	0	8	87	96
Matale	27	564	0	42	0	1	0	11	0	3	1	67	0	17	0	14	0	1	2	25	0	47	0	17	62	92
NuwaraEliya	20	279	2	66	0	1	0	40	0	15	1	36	3	53	0	28	0	0	3	90	1	30	0	0	85	85
Galle	77	1308	7	98	0	8	1	6	2	7	1	194	5	69	1	7	0	0	5	204	0	29	0	3	85	95
Hambantota	20	561	1	41	0	1	0	2	1	54	1	82	3	42	10	35	0	0	1	158	0	11	1	216	67	92
Matara	49	764	4	89	1	13	0	6	0	35	9	132	5	35	3	22	0	0	3	123	0	18	2	139	100	100
Jaffna	61	1530	9	166	0	3	3	60	0	46	1	10	5	564	0	8	0	0	3	123	0	36	0	1	100	100
Kilinochchi	1	58	0	30	0	0	0	32	0	5	0	12	0	23	0	0	0	0	0	10	0	9	0	0	75	100
Mannar	0	105	0	16	0	4	0	18	0	5	0	8	0	38	0	0	0	0	0	7	0	1	0	0	80	100
Vavuniya	1	184	1	10	0	3	0	64	0	30	0	12	0	9	0	6	0	0	0	23	0	8	0	6	25	75
Mullaitivu	7	137	0	22	0	2	0	17	0	36	0	23	0	5	0	1	0	0	1	15	0	6	0	4	60	80
Batticaloa	12	382	7	209	0	0	0	28	1	89	1	35	0	5	0	9	0	0	2	71	1	9	0	1	79	100
Ampara	4	165	0	32	0	1	0	0	0	20	0	23	0	0	0	7	0	0	0	96	0	2	0	5	14	71
Trincomalee	8	319	2	45	0	2	0	10	0	24	2	25	0	21	0	32	0	1	1	120	0	10	1	5	67	83
Kurunegala	99	1734	7	223	0	8	0	1	0	13	1	115	3	25	0	19	0	2	4	207	0	42	0	58	79	97
Puttalam	35	768	2	56	0	4	0	4	0	0	0	33	0	59	0	0	0	0	0	54	0	28	0	2	69	85
Anuradhapura	11	418	0	55	0	3	0	5	0	26	2	228	0	24	0	15	0	0	2	162	1	30	0	153	63	84
Polonnaruwa	14	322	3	23	0	3	0	9	0	12	0	81	0	1	0	2	0	0	2	78	0	14	4	88	71	86
Badulla	27	523	1	84	2	12	0	7	0	22	4	94	11	75	2	88	0	0	5	136	3	132	0	3	76	94
Monaragala	16	249	1	41	0	1	0	2	0	10	1	152	1	88	1	108	0	2	2	51	0	18	0	33	100	100
Ratnapura	108	2021	6	258	0	26	0	23	0	23	10	389	0	24	5	98	0	0	3	135	0	103	0	1	72	89
Kegalle	21	946	0	62	0	17	3	23	0	47	1	137	0	22	0	16	0	0	2	213	0	34	0	1	64	91
Kalmune	3	388	2	59	0	3	0	5	0	42	1	13	0	0	0	3	0	4	0	57	1	18	0	0	77	100
SRILANKA	1266	32060	61	2095	5	152	8	467	5	661	43	2631	37	1285	24	625	0	10	45	2961	9	785	8	748	72	90

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 29th July, 2016 Total number of reporting units 339 Number of reporting units data provided for the current week: 310 C**-Completeness

A = Cases reported during the current week. B = Cumulative cases for the year.

Table 2: Vaccine-Preventable Diseases & AFP

23rd – 29th July 2016 (31th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2016	Number of cases during same week in 2015	Total number of cases to date in 2016	Total number of cases to date in 2015	Difference between the number of cases to date in 2016 & 2015
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	02	00	00	00	00	00	00	02	00	42	45	-6.6%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Mumps	00	01	01	01	00	00	01	02	00	06	01	247	237	+4.2%
Measles	00	00	00	00	01	00	00	00	00	01	71	304	1681	-82.1%
Rubella	00	00	00	00	00	00	00	00	00	00	00	06	07	-14.2%
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	07	12	-41.6%
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	00	12	07	+71.4%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	02	36	56	-35.7%
Tuberculosis	103	10	13	06	23	05	09	07	21	197	212	5646	5661	-0.2%

Key to Table 1 & 2

Provinces: W: Western, C: Central, S: Southern, N: North, E: East, NC: North Central, NW: North Western, U: Uva, Sab: Sabaragamuwa.

RDHS Divisions: CB: Colombo, GM: Gampaha, KL: Kalutara, KD: Kandy, ML: Matale, NE: Nuwara Eliya, GL: Galle, HB: Hambantota, MT: Matara, JF: Jaffna, KN: Killinochchi, MN: Mannar, VA: Vavuniya, MU: Mullaitivu, BT: Batticaloa, AM: Ampara, TR: Trincomalee, KM: Kalmunai, KR: Kurunegala, PU: Puttalam, AP: Anuradhapura, PO: Polonnaruwa, BD: Badulla, MO: Moneragala, RP: Ratnapura, KG: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,

Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis

CRS** =Congenital Rubella Syndrome

AFP and all clinically confirmed Vaccine Preventable Diseases except Tuberculosis and Mumps should be investigated by the MOH

Dengue Prevention and Control Health Messages

Look for plants such as bamboo, bohemia, rampe and banana in your surroundings and maintain them

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ON STATE SERVICE

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