

NUTRITION RESEARCH DIVISION

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The Nutrition Research Division is primarily involved in research activities of the following areas: micro-nutrient deficiencies, protein energy malnutrition, non-communicable diseases.

RESEARCH PROJECTS

1. NON-COMMUNICABLE DISEASES

1.1. MALNUTRITION

1.1.1 Assessment of nutritional status through body composition measurement by deuterium dilution technique in children living in areas targeted agricultural interventions for food security (Diet and Anthropometry)

Agricultural interventions can directly affect food and nutrition security by alterations in the production of nutrient-dense foods and/or income derived through agricultural livelihoods. Therefore, a longitudinal study was carried out to assess the nutritional status of two to five years old children living in *Kyar Hone*, *Kyein Pike*, *Yaeso*, *Thanpayarkhone* and *Lamutangyi* Village, *Htan Ta Pin* Township, Yangon Region. The first, second, third and end line survey were conducted in October 2014, May 2015, January 2016 and September 2016 respectively. Selection criteria for intervention villages (*Kyar Hone*, *Kyein Pike* and *Yaeso*) and control (*Thanpayarkhon* and *Lamutangyi*) villages are numbers of farmer population, access to villages and nutrition data of under 5 years old children. Agricultural interventions have been carried out by Welth Hunger Hilfe (WHH- International Non-Governmental

Organizations of Food Security Working Group) in intervention villages since June, 2014. Measurements of body weight, height, mid upper arm circumference, and skinfold thickness were done and diet diversity of children were interviewed with questionnaire and one pre and two post deuterium enrichment saliva samples from those children were also taken. A total of 140 children aged between 2- 5 years at the baseline and 125 children at the end line were participated in the data collection. Among 125 children who were participated both in first time and end line survey, 53.6% were boys and 46.4% were girls. A total of 63 children were participated in intervention villages and 62 children were participated in control villages. Mean height of the children were significantly increased at end line survey (94.4cm vs. 108.1cm, p value=0.000). Mean BMI of children in first time and end line data collections were 14.3 kg/m² vs. 13.6 kg/m² and 14.7 kg/m² vs. 13.8 kg/m² among intervention and control group respectively. Mean BMI decreased at end line measurement in both intervention and control group. Prevalence of wasting among children in intervention villages were 20.6% in baseline study and 19.0% at end line study. But, prevalence of wasting was increased in control villages at end line study (4.8% in base line and 12.9% at end line study). Mean diet diversity indexes of children living in intervention villages and those of children in non-intervention villages were 9.02 (SD 0.96) and 8.34 (SD 1.2) (p=0.001)

1.1.2 Mini-nutrition assessment of elderly living in the selected townships in Yangon Region

Elderly are generally at greater risk of malnutrition than the younger adults. Malnutrition in elderly is common and results in many negative health outcomes. Nutritional assessment of the elderly to detect malnutrition or risk of malnutrition is essential to avoid adverse nutrition-related outcomes. So, this study aims to find out the risk of malnutrition of elderly people living in the selected townships in Yangon Region. A cross sectional descriptive study was conducted in the period from November 2015 to October 2016. Three hundred and sixty-three elderly living in the Lamadaw Township, South Okkalapa Township and North Dagon Township were involved in this study. An interviewed administered questionnaire about socioeconomic characteristics and Mini Nutritional Assessment (MNA) were carried out. The MNA can detect malnutrition or risk of malnutrition before severe weight loss. The MNA consists of 18 self- reported questions derived from four parameters of assessment: anthropometric assessment (weight, height, upper arm circumference and calf circumference), general assessment, dietary assessment and self- assessment administered. In this study there were 129 male (35.5%) and 234 (64.5%) female elderly with a mean age of 69.6 ± 7.7 years. The mean body mass index BMI was 23.64 ± 5. The mean body weight and height of elderly male were 60.43 Kg and 162.34 cm and that of elderly females were 54.22 Kg and 149.94 cm respectively. According to MNA, 21 (5.8%) were malnourished (MNA < 17 points), 124 (34.2%) at risk for malnutrition (17-23.5 points) and 218 (60.1%) well nourished (MNA >23.5 points). The mean MNA score was 24. Elderly females were more likely to be affected by malnutrition than males (6.8% vs. 3.9%). These results highlighted that assessment of risk of malnutrition is essential for early diagnosis and prevention of chronic nutrition related problems in older people and enhances their well-being and quality of life. The nutritional status of the elderly according to the age is shown in following table.

	Malnourished	At risk of malnutrition	Normal nutritional status	Total
60-69 years	6 (2.9%)	61(29.6%)	139 (67.5%)	206 (100%)
70-79 years	10 (8.8%)	37 (32.7%)	66 (58.4%)	113 (100%)
>80 years	5 (11.4%)	26 (59.1%)	13 (29.5%)	44 (100%)

Total	21 (5.8%)	124 (34.2%)	218 (60.1%)	363 (100%)
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(p <0.001)

1.1.3. Determination of iron and zinc contents of foods by Atomic Absorption Spectrometry (AAS)

The study aimed to determine iron and zinc contents of selected foods in the diet of school children by Atomic Absorption Spectrometry (AAS) for updating the food composition data by adding micronutrient contents of food during 2015 and 2016. Based on the findings of the data on dietary intake collected in three days dietary recall interviews among middle school children of BEHS No. (4) Ahlone township, Yangon in 2012 and the data on dietary pattern and nutritional status of primary school children of BEHS No. (1) Dagon township and BEMS No. (10) Shwepaukkan township, Yangon in 2016, the commonly consumed foods by school children were identified. The identified dishes and snack foods were bought from the randomly chosen shops. The same package food products from two different grocery outlets were bought. For mix dishes, the same dishes from two sellers were bought. Some dishes were cooked at Nutrition kitchen at Nutrition Research Division. A total of 99 item of foods which were 45 dishes (meat dishes, fish dishes, vegetable dishes, mixed dishes) and 54 snack food (cake, bread, biscuits, package snack food, traditional Myanmar snack foods, mix dishes). Foods were analyzed for iron and zinc content with Flame Atomic Absorption Spectrophotometer according to standard method. Mean (SD) of zinc and iron content of foods were tabulated as follow in the table.

Items	Zn(mg/100g)	Fe(mg/100g)
1. Biscuits/Cookies/Cakes and Bread	0.8(1.8)	1.2(2.1)
2. Traditional snack foods	0.8(0.1)	0.7(0.2)
3. Pulses based snack foods (e.g. fried mung bean)	1.6(0.6)	1.4(0.4)
4. Fried packaged snack foods	0.7(0.5)	1.4(0.5)
5. Wheat based snack foods (e.g. Parata)	3.9(0.8)	0.9(0.7)
6. Other snack foods	0.5(0.1)	0.7(0.2)
7. Vegetables dishes	0.5(0.2)	1.0(0.5)
8. Vegetables and meat/fish dishes	0.9(0.8)	0.8(0.3)
9. Pulses based dishes	0.6(0.02)	0.8(0.04)
10. Duck egg dishes	0.8(0.01)	1.41(0.04)
11. Fish dishes	0.5(0.2)	1.6(0.4)
12. Meat dishes	1.1(0.6)	2.1(2.5)
13 Mixed snack dishes(e.g. mhone-hin-khar)	0.9(1.1)	1.3(1.5)

Results from this study showed that the iron and zinc contents of food were varied. Wheat based snack food, meat dishes and pulses based snack foods has high zinc content and meat dishes, duck egg dishes, pulses based snack foods, fried packaged snack foods and mixed snack dishes(e.g., mhone-hin-khar) has high iron content than other foods .

1.2. CONGENITAL DEFECTS

1.2.1. Detection of birth defects among newborns at seven tertiary hospitals in Yangon Region

The study was a retrospective, hospital-record review study to find the prevalence of birth defect in newborns at seven tertiary hospitals during the period of January 2014-

December 2015 in Yangon Region. Seven hospitals in Yangon Region where both OG wards and baby units are co-existed were selected purposively. The selected hospitals were Central Women's Hospital (CWH), Thingankyun Sanpya General Hospital, South Okkalapa Women and Children's Hospital, North Okkalapa General Hospital (NOGH), Insein General Hospital (IGH), East Yangon General Hospital and West Yangon General Hospital. During the study period, the prevalence of birth defect in CWH, Thingankyun Sanpya General Hospital, South Okkalapa Women and Children's Hospital, NOGH, IGH, East Yangon General Hospital and West Yangon General Hospital were 1.21%, 0.99%, 0.57%, 0.45%, 0.17%, 0.33% and 0.21% in 2014 and 1.11%, 0.93%, 0.54%, 0.88%, 0.5%, 0.48% and 1.49% in 2015 respectively. The number and percentages of birth defect according to the system effects are shown in the table.

System	Number of birth defect	
	No (%)	
	2014	2015
CNS	41 (15.9%)	72 (17.8%)
CVS	8 (3.1%)	30 (7.4%)
Respiratory System	1 (0.4%)	4 (1%)
Gastrointestinal System	35 (13.6%)	32 (7.9%)
Genito-urinary System	20(7.8%)	29(7.2%)
Musculo-skeletal System	37 (14.3%)	77(19%)
Eye, ear, face and neck	18 (7%)	27(6.7%)
Cleft lip and cleft palate	40 (15.5%)	57 (14.1%)
Skin and soft tissue	2 (0.5%)	0(0%)
Miscellaneous	17 (6.6%)	19(4.7%)
Syndromic baby	56 (21.7%)	84(20.7%)
Vascular System	3 (1.2%)	2(0.5%)

SERVICES PROVIDED

ACADEMIC

No.	Name	Course	Responsibility
1.	Dr. Moh Moh Hlaing	MPH	Examiner External Examiner
		Master of Preventive and Tropical Medicine, University of Medicine (2)	Examiner
		Workshop on Research Methodology	Lecturer
		1 st Year MMedSc (Physiology) University of Medicine(1) University of Medicine(2) University of Medicine(Mandalay)	Teaching
		Master of Preventive and Tropical Medicine, University of Medicine(1)	Teaching
		Master of Preventive and Tropical Medicine, University of Medicine (2)	Teaching
2.	Dr. Mya Ohnmar	MPH	Supervisor Examiner External Examiner
		Workshop on Research Methodology	Facilitator
		1 st Year MMedSc (Physiology) University of Medicine(1) University of Medicine(2) University of Medicine(Mandalay)	Teaching
3.	Dr. Khin Mittar Moe San	1st Year MMedSc (Physiology) University of Medicine(1) University of Medicine(2) University of Medicine(Mandalay)	Teaching
		Training for Caregivers to elders, Day Care Centre for the Aged, Yangon	Teaching
4.	Daw Sandar Tun	1 st Year MMedSc (Physiology) University of Medicine(1) University of Medicine(2) University of Medicine(Mandalay)	Demonstration
5.	Daw Thidar Khine	1 st Year MMedSc (Physiology)	Demonstration

