Stunting and Wasting, the morbidity and mortality seen in children admitted to ANGAU Memorial General Hospital

Diploma in Child Health Project

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AIM

To determine whether stunting with wasting has a greater morbidity and mortality than wasting or stunting alone in children admitted to the Paediatric Ward at Angau.

OBJECTIVES

- To determine the prevalence and severity of stunting, wasting and combination of the two.
- To determine the diseases affecting stunting, wasting and combination of two
- To determine the mortality rate in children with each anthropometric deficit alone or combinations (stunting, wasting).

INTRODUCTION

- Malnutrition is one of the leading causes of morbidity and mortality worldwide.
- WHO defines Severe Malnutrition - weight for height <-3SD or presence of oedema of both feet or clinical signs of severe malnutrition
- Anthropometric measurements with deviation from the median have been used as a way of assessing under-nutrition.
- Stunting, wasting and underweight.
- Higher risk of dying from common childhood illnesses
- Affects both cognitive function and development
- Poverty, maternal education and under-nutrition risk factors of malnutrition

- Globally 6.6 million deaths of children under 5 in 2012, malnutrition a contributing factor in 45% of deaths. *WHO Global Health Observatory, Under 5 Mortality.2012*
- The PNG National nutrition survey 2005 showed 44% of children physically stunted, 5% wasted, 18% underweight. *National Nutrition Survey 2005*
- In PNG Severe Malnutrition accounted for 15% of hospital admissions and malnutrition contributed or was the direct cause of 33% of deaths
- In 2013 ANGAU Paediatric Hospital reporting showed deaths due to Severe Malnutrition were 26% and hospital admissions due to severe malnutrition were 19%
- With our STM, weight for age and clinical signs of malnutrition have been used in the assessment of severe malnutrition.
- Little is known about the effects of being stunted or wasted in PNG children.

- *Higher prevalence of stunting seen in PNG Children. Wand et al*

- *Low nutritional status is associated with increased risk and severity of acute lower respiratory tract infections and with increased severity of diarrhoea. Lehmann et al*

- *Children with multiple deficits are at a heightened risk of mortality. Mcdonald et al*

Methods

- Descriptive prospective study
- May-July 2014 at Paediatric Ward, Angau Memorial General Hospital
- Inclusion criteria-
- -Any child between the ages of 1 month and 5 years
- -With Height for age <-2 SD or <-3SD and Weight for Height/Length <-2SD or <-3SD according to WHO Growth standard charts 2006
- Exclusion criteria- Any child <1month or >5 years, or parents refused to participate or not able assess due to not being available at that time
- Verbal consent
- Open ended questionnaire-clinical and demographic

Methods cont..

- Anthropometric measurements:
- Weight
- Height/length
- MUAC
- Data analysis using SPSS Version 21 and Microsoft Excel 2013

RESULTS

- Total of 160 patients admitted to the paediatric ward for study
- Male 94 (58.8%)
- Female 66 (41.2%)
- Age: Mean age 16 months Interquartile range- 5-24 months
- 101 patients were stunted/wasted (63 %)

Anthropometric deficit	n=101	%
Stunted	24	23.8
Wasted	35	34.7
Stunted and wasted	42	41.6

	Stunted	Wasted	Stunted & Wasted
Gender (M:F)	13:11	21:14	25:17

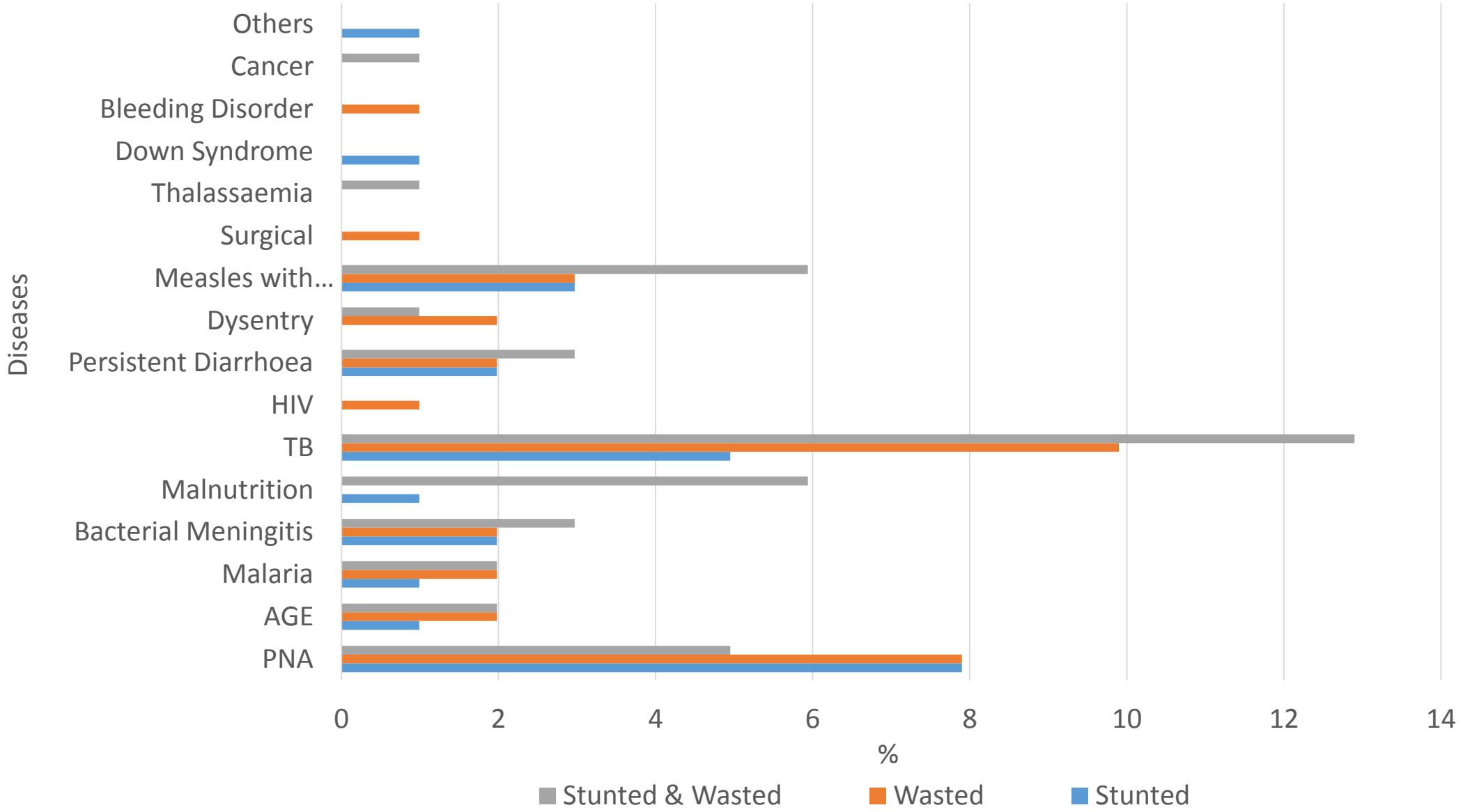
	Median	IQR	Median	IQR	Median	IQR
Age (months)	14	9-25	14	7-30	16	7-32

Outcomes

	Died		Survived (Discharged/Abscond)
Stunted	2 (1.98%)	(n=101)	21 (20.8%)
Wasted	3 (2.97%)	(n= 101)	30 (29.7 %)
Stunted & Wasted	7 (6.93%)	(n=101)	34 (33.7%)

P value= O.2

Types of diseases



Socio-Demographic Factors With Stunted & Wasted

Factors	Stunting/Wasting	P Value
Mothers Education		0.46
Formal education	77 (48.1%)	
None	24 (15 %)	
Fathers Education		0.26
Formal Education	80 (50%)	
None	9 (5.6%)	
Fathers Employment		0.51
Employed	53 (33.1%)	
Unemployed	46 (28.8%)	
Residence		0.06
Urban	8 (5%)	
Settlement	67 (41.9 %)	
Village	26 (16 %)	
Origin by Regions		0.77
Southern	5 (3.1%)	
Momase	51 (31.9 %)	
Highlands	42 (26.2%)	
New Guinea Islands	3 (1.9 %)	

	Stunting and Wasting	P Value
Water Supply		0.382
Town Water Supply	16 (10 %)	
Own Supply	7 (4.4%)	
Communal	17 (16.8 %)	
Others (Rivers, Creeks, Wells, Catchment Rainwater)	61 (38.1%)	
Type of Toilet		0.311
Septic Toilet	9 (5.6%)	
Pit Toilet	87 (54.4 %)	
Others (Bush, sea, river)	5 (3.1%)	

	Stunting and Wasting	P Value
Feeding practices (1-6 months)		0.005
Exclusive BF	4 (2.5 %)	
Infant formula	1 (0.63 %)	
Mixed Feeding (BF + Infant formula)	1 (0.63 %)	
BF + Solids	12 (7.5 %)	
Infant formula + Solids	2 (1.3 %)	
6months-5 years		0.018
BF + Complementary Feeds	48 (30 %)	
Other fluids + Complementary feeds	34 (21.3 %)	

	Stunted & Wasted	P Value
Immunisation Status		1.0
Fully Vaccinated for Age	28 (17.5 %)	
Partially Vaccinated For Age	55 (34.4 %)	
Unvaccinated	18 (11.3 %)	
Anaemia	64 (40%)	0.05
Mother Knowledge on Balance meal		0.181
Some Knowledge	21 (13.1 %)	
None	80 (50 %)	
Mother Knowledge on required no. of meals		0.2
Some Knowledge	4 (2.5%)	
None	97 (60.6 %)	

DISCUSSION

- Prevalence of stunting 24%, while wasting 32%, and higher , 42 % with combination of stunting and wasting
- The prevalence of Stunting and wasting lower in this study then study done by Wand et al, whereby 59% patients found to be Stunted 49% found to be wasted
- The prevalence of combination of being stunted and wasted was higher than the other two alone. And evidence of wasting greater than stunting according to this study.
- However prevalence of stunting was greater than wasting in the National Nutritional Survey which was 44% and 5% respectively.
- Mortality in the combination of stunting and wasting was 2-3 fold greater then stunting or wasting alone. Whereby Mcdonald etal suggested that there was a threefold risk of mortality with three anthropometric deficits stunting, wasting and underweight.
- Diseases which were commonly found with stunting or wasting alone or the combinations in this study were TB, PNA and measles with complications. With combination of stunting and wasting higher in TB
- In the study done by Lehmann et al it suggested that higher incidence of Acute Lower respiratory tract infection were due to lower nutritional status. This was not the case in this study whereby TB had the higher number of patients, however pneumonia was still 2nd leading cause of diseases which patients were stunted or wasted or combination of both.

CONCLUSION

- There is a high prevalence of combination of stunting and wasting, then both stunting or wasting alone
- There seems to be a higher mortality as well with combination of stunting and wasting then the deficits on their own.
- TB, pneumonia and measles are the diseases by which nutritional status is affected

RECOMMENDATIONS

- In this study, sample size was not large enough to show a statistical significance. Probably a larger study for a longer period of time would display better relationships between stunting and wasting and their mortality and morbidity.
- With some evidence of stunting and wasting and the greater risk of mortality with further studies, there may be a place in the future for addition of Height for Age and Weight for length in our standard treatment books to better assess children's nutritional status.
- Improve education of mothers on nutrition and frequency of meals for children

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