

Assessing the Prevalence and Associated Determinants of Prematurity and Pediatric Malnutrition in Lesotho

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Research Question: What is the prevalence of premature birth and pediatric malnutrition in Queen 'Mamohato Memorial Hospital in Lesotho and what are the associated environmental and pathological factors?

BACKGROUND

Preterm birth, defined as birth before 37 weeks gestation, and pediatric malnutrition are major contributors of neonatal and infant morbidity and mortality worldwide. In 2017, Lesotho's leading cause of neonatal death was preterm birth complications and the country's preterm birth rate is 12% (1). Stunting rates (one measure of malnutrition) of children under 5 years of age in Lesotho are also high at 33% (2), and contribute to the poor health outcomes of many of the children hospitalized at Queen 'Mamohato Memorial Hospital.

QUEEN 'MAMOHATO HOSPITAL

Queen 'Mamohato Memorial Hospital, recently opened in 2011, primarily serves the patients from the Maseru district of Lesotho and surrounding areas. Although the hospital has been recording medical data electronically since its inception, there has been no formal analysis of the associated determinants of prematurity and pediatric malnutrition at this hospital. The goal is to provide informed recommendations for how this facility can appropriately address and potentially reduce these outcomes and their negative consequences.



<<https://www.netcare.co.za/News-Hub/Articles/queen-visits-the-queen-mamohato-memorial-hospital>>

TABLES

	Anthropometric measures	Nutritional Screening Questions	Lab Measurements	Miscellaneous
52 y/o	Length (cm)	Are you using a malnutrition screening tool?	Hemoglobin	Area of residence (rural or urban)?
	Weight (kg)	Has the child unintentionally lost weight lately?	Serum iron	Living situation
	Head circumference (cm)	Has the child had poor weight gain over the last few months?	Ferritin	Parental status
	Weight-for-length	Has the child been eating/feeding less in the last few weeks?	Total iron binding capacity (TIBC)	Is/was the child breast fed or formula fed and for how long?
≥ 3 y/o	Height (cm)	Is the child obviously underweight?	MCV	Is the stool measured for parasites?
	Weight (kg)	Is there an underlying illness with risk for malnutrition or expected major surgery?	Complete blood count	
	BMI (weight (kg)/Height (m) ²	Is the patient in a poor nutritional status?	Albumin	
all ages	Mid-upper arm circumference (cm)	Is present diarrhea, reduced food intake, pre-existing nutritional intervention, or inability to consume adequate nutritional intake because of pain present?	Prealbumin (PAB)	
	Growth Curves	Is there weight loss and/or no increase in weight/height during the last few week-months?	Transferrin	
		Assessment of stunting		
		Appropriateness of current weight for Height		
	Changes in body weight			
	Assessment of dietary intake and changes to dietary intake			
	Gastrointestinal symptoms			
	Functional capacity/patient's energy			
	Metabolic stress of disease			
	Loss of subcutaneous fat			
	Muscle wasting			
	Edema			

Table 1. Measures and factors contributing to nutritional status in children under 5 years of age

City, Country of Hospital	Study Type	Total # Deliveries	Prevalence of Preterm Birth	Significant Associated Factors
Axum and Adwa, Ethiopia ³	Cross sectional	472	13.3%	Rural area, interpregnancy interval <24 mo, history of preterm birth, PROM, multiple pregnancy outcomes, malaria exposure, chronic medical disorders
Enugu, Nigeria ⁴	Retrospective review	3,760	16.9%	N/A
Gondar town, Ethiopia ⁵	Cross sectional	540	4.4%	Pregnancy induced hypertension, HIV
Ilorin, Nigeria ⁶	Cohort study	2,489	12.0%	Low socio-economic class, previous preterm delivery, antepartum hemorrhage, PROM, UTI, pregnancy-induced hypertension, induced labor
Lagos, Nigeria ⁷	Cross sectional	4,314	19.9%	No antenatal care, HIV, hypertension, antepartum hemorrhage
Lagos, Nigeria ⁸	Cross sectional	5,561	16.8%	Maternal age >35, hypertension, rupture of membranes
Malawi ⁹	Cross sectional	2,149	16.3%	History of preterm birth, maternal underweight, anemia, malaria
Nairobi, Kenya ¹⁰	Cross sectional	322	18.3%	Pregnancy induced hypertension, antepartum hemorrhage, PROM

Table 2. Prevalence and associated factors of preterm birth as determined by similar, previous studies

METHODS

A review of the literature was performed and experts in the field were consulted to determine the variables needed to assess both prevalence and potential risk factors for malnutrition and preterm birth. We aim to conduct facility-based cross sectional studies that include a retrospective chart review of births and children under 5 admitted at this hospital from 2015 to 2020. For the nutritional assessment, proposed variables for the study include anthropometric measures, biomarkers for blood (e.g. anemia) and stool (parasites), nutrition screening questions, and demographic data. For the prematurity assessment, variables include fetal factors (e.g. intraventricular hemorrhage, retinopathy of prematurity), maternal factors (age, number of antenatal visits, parity, COVID-19 status), and environmental factors (environmental temperature, newborn thermal care practices).

RESULTS

IRB protocols were prepared and submitted and the survey tools that identify pertinent data to be collected were sent to stakeholders in Lesotho for review. Due to the COVID-19 pandemic, data collection has not yet begun.

DISCUSSION

Assessing the prevalence of acute/chronic malnutrition and preterm birth and its determinants may inform future quality improvement programs. One possible program could be the implementation of screening tests for malnutrition at Queen Mamohato Memorial Hospital which may help assess a patient's risk of malnutrition, guide hospital treatments, and plan for follow-up after discharge.

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