

# Consequences of adult malnutrition and admission micronutrient status on peri-operative outcomes in a tertiary hospital in South Africa

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## Description of the initiative

**Background:** The global prevalence of adult malnutrition on admission to hospital varies between 11 – 74% and is known to be associated with adverse outcomes.<sup>1,2</sup> Available data indicates that 61% of adults admitted to African hospitals were deemed at risk of malnutrition.<sup>1</sup> In South Africa 53.7% of adult patients were at risk of malnutrition on admission; this was associated with an increased length of stay and mortality.<sup>1</sup> European comparative studies report a significantly lower prevalence (14 – 38%).<sup>1</sup> Additionally, European countries reporting a higher incidence of malnutrition mostly classified this only as moderate malnutrition.<sup>2</sup> In South Africa malnutrition presents on both sides of the spectrum, with 50% of the adult population classified as overweight or obese. Despite being classified as a middle-income country, persistent economic inequalities in South Africa contribute greatly to disparities in access to healthcare services. This increases the complexity of disease and the interplay between disease and malnutrition seen in the public healthcare sector.

**Rationale:** Adult malnutrition data pertaining to Africa, and particularly to South Africa, is limited. This study aims to investigate the incidence and extent of malnutrition, both in terms of macro- and micronutrients, in a general surgery population presenting to a central tertiary hospital in South Africa. We further aim to correlate the nutritional status on admission with severity of peri-operative morbidity. In a significantly resource constrained environment this information will help guide medical nutrition therapy interventions that aim to optimize nutritional care, minimise complications and improve surgical morbidity and mortality.

**Objectives:** 1) To evaluate the micronutrient profile of an adult surgical population and its effect on peri-operative outcomes. 2) To determine the prevalence of malnutrition according to the GLIM\* criteria in an adult surgical population in South Africa. 3) To correlate malnutrition to surgical outcomes. 4) To validate the phenotypic and etiological criteria of GLIM within the South African context.

## Planned activities & deliverables

**Steps to be taken:** The protocol has been approved by the University of Cape Town Human Research Ethics Committee (HREC 494/2022). Once funding is available enrolment can begin in the subspecialty surgical units within a tertiary level public hospital.

**What are the concrete deliverables of the project:** The study will aim to enrol 264 participants presenting for either elective or emergency surgical admission. Data collected will include demographics, surgical admission diagnosis, Charlson Co-morbidity Index, clinical parameters (qSOFA score), nutritional assessment on admission (including weight, height, NRS 2002, SGA, Bioelectrical impedance, handgrip dynamometry and mid-upper arm circumference) and a micronutrient panel. Outcomes will be recorded in terms of post-operative morbidity (Clavien-Dindo Accordion classification) and mortality, 6-month mortality and number of days readmitted within 6 months of discharge. From this data a number of publications based on the study objectives will be possible.

**What achievements are possible in the next 12 and 24 months:** Data collection on 264 participants will be concluded within 12 months. First publication of results is achievable within 24 months.

## Resources & enablers

- Personnel and financial needs:** A multidisciplinary team of dietitians, surgeons and nursing staff will perform the evaluation and assessment of patients as part of routine care. Funds are required for laboratory costs, a data logger and statistician.
- What factors will make it successful:** Collaboration between the different surgical units, dietetics department and ward staff are well-established. The study concept and protocol has been approved. Financial support to perform the micronutrient panel remains the last, but essential, determining factor for the success of this project.

## How the grant will be spent

Cost Item	Estimated cost (South African rand converted to Euro. 1 Euro = R20.08)
Translation of patient informed consent forms and patient information leaflets into isiXhosa and Afrikaans	350 Euro
Publication cost (for 3 potential publications from the data)	6000 Euro
<b>Laboratory costs:</b> Pre-albumin Hepcidin Vitamin D Zinc Copper CRP	120 Euro per patient  Total for estimated sample size of 264 patients = <b>31 680 Euro</b>
Data Logger (4hours per day for 6mths @ 5 euro/hr)	2400 Euro
Statistician	500 Euro
<b>Total</b>	<b>40 930 Euro</b>

## Results/outcomes & expected impact

- How will the findings be implemented?** The results of this study will be published in peer reviewed journals. Within the institution it will be used to guide decision making regarding optimization targets for adults presenting for surgery. As a university hospital it will be used in teaching of medical students and surgical registrars to improve knowledge on clinical nutrition, identifying and diagnosing malnutrition according to the GLIM criteria and improving nutritional practices in surgical units. As an institution with international surgical trainees from the African continent and Middle East within the surgical faculty it will also have an impact beyond our borders.
- How will this project advance patient care / contribute to optimal nutritional care?** We aim to highlight the important link between nutrition and surgical outcomes. It will guide decision making regarding optimization strategies to improve the outcome of adult surgical populations in South Africa.
- What makes the project innovative?** Within the South African and African context, most nutrition research is focussed on paediatrics and critical care. This project will provide much needed insight into the nutritional status of an adult population presenting for elective/emergency surgery. Improving awareness of the nutritional status of our local adult surgical population will guide clinical decision making and improve peri-operative outcomes.
- Will the project be likely to influence national nutrition policy?** Availability of this data will guide national policy regarding nutrition support for adults presenting to healthcare facilities. It will provide valuable information to focus resources on interventions that can change outcome. On a local level it will influence institutional policy and protocols related to nutritional management of adult surgical patients. These findings could lead to improvements in screening policies and practices in the public and private sector to timeously identify and diagnose malnutrition.
- Is the project transferable to other settings / countries?** Yes, due to the standardized parameters investigated it can easily be replicated within South Africa or elsewhere and has relevance to other adult patient populations (eg. medical, critical care, trauma).



**Please tick to confirm the PEN letter of endorsement is attached. Incomplete submissions will not be considered.**



## 2024 MNI Grant Submission Initiative/Research Project for Optimal Nutritional Care