

Nutrition Assessment of Surgical Patients Using Subjective Global Assessment

Ilyas Fiaz¹, S H Waqar², Samar Firdos³, Ayesha Khan⁴, Fatima Shahzad⁵

¹Postgraduate Resident, Department of General Surgery, PIMS, Islamabad

²Professor & Head, Department of General Surgery, PIMS, Islamabad

³House Officer, Department of General Surgery, PIMS, Islamabad

Author's Contribution

^{1,2}Substantial contributions to the conception or design of the work; or the acquisition, ²Final approval of the study to be published, ³⁻⁵Drafting the work or revising it critically for important intellectual content, analysis, or interpretation of data for the work,

Conflict of interest: None

Funding source: None

Article received: 12-02-25

Article accepted: 18-05-25

Correspondence

*E: waqardr@yahoo.com

ABSTRACT

Objective: The aim of the present study was to assess nutritional status of surgical patients by utilizing a Subjective Global Assessment (SGA) scale.

Methodology: A total of 277 admitted patients in the General Surgery department were evaluated for their nutritional status. Demographic and clinical characteristics such as gender, medical history, nutritional intake, SGA category, symptoms, and metabolic requirement recorded. SPSS version 27 used for descriptive statistics.

Results: Out of 277 patients, there were 149 (53.8%) male and 128 (46.2%) female. Only 44 (15.2%) patients required nutrition whereas 235 (84.8%) had no metabolic requirement. Patient's distribution based on weight loss was that 21 (7.6%) patients lost 2 kg, 84 (30.3%) 3 kg, 65 (23.5%) 5 kg, and 21 (7.6%) lost 8 kg whereas 44 (15.3%) patients showed no weight loss. Based on SGA findings, the incidence of well-nourished, mild/moderately malnourished, and severely malnourished cases were 105 (37.9%), 169 (61%), and 3 (1.1%), respectively.

Conclusion: Malnutrition is common in majority of patients admitted to General Surgery, which adversely effects the surgical outcomes in terms of complications and mortality. Nutritional support is playing vital role in treating serious patients worldwide, but Pakistan is lagging behind to implement nutritional support in their health system.

Keywords: Malnutrition, Subjective global assessment, nutritional status

Introduction

The practice of nutritional assessment has been established over time as a key element in managing patients, helping to identify malnourishment and anticipate adverse health outcomes. Malnutrition has always been associated with adverse outcomes like increased morbidity, mortality, and a decreased patient's quality of life.¹

Malnutrition, defined as a lack of nutrients due to insufficient intake or inefficient utilization. Changes in body composition may occur due to this imbalance leading to reduction in fat-free mass and body cell mass.² Malnutrition frequently underestimated in surgical patients and believed to contribute to adverse outcomes during hospitalization following surgery. Approximately half (50%) adult patients hospitalized for surgical procedure had malnutrition as most prevalent and common comorbidities.³ Globally, the incidence of malnutrition is increasing and high.⁴ Malnutrition contributes significantly to the complications such as surgical site infection, delayed wound healing, and

prolonged hospital stay. Patients of trauma in hospitals, especially those who are malnourished, often struggle to maintain adequate nutrition due to factors such as inadequate entertained feeding or extended periods of fasting.⁵

The malnutrition of a patient can be assessed using the subjective global assessment (SGA), which is a standardized scale for evaluation of nutrition conditions. An earlier study reported that the incidence of moderately malnourished and severely malnourished was 22.3% and 10%, respectively among malnutrition risked 54.5% patients of the total investigated cases.⁶ Similarly, a another study identified malnutrition in 37% of the 528 hospitalized patients, of which 32.4% were marginally malnourished and 4.6% were in critical condition.⁶ A previous study reported that the rate of malnutrition between 30% to 50% in hospitalized patients, deteriorating over time.^{7,8} By discharge, 75% of patients experienced a decline in nutrition. Their findings have shown that 47% of hospitalized

patients were malnourished, classified as one-fourth.⁹

Studies indicate that malnutrition affected between 10% and 50% hospitalized patients, causing

postoperative complications and the chances of mortality, especially in abdominal surgery. Addressing nutritional deficit in these patients is important to improve recovery results and reduce the risks related to the hospital.^{10,11} In Asian hospitals, malnutrition affects about 27% to 39% of patients; its proliferation is particularly higher between the elderly (88%) and surgical patients (56%).¹² Surgery applies adequate physical stress, activating various inflammatory and catabolic routes in the body. Adequate nutritional support plays an important role in increasing the body's ability to deal with this stress and promotes recovery that is more that are efficient.¹³

Malnutrition is a significant concern among patients admitted to hospital, especially those admitted to general surgery wards. Poor nutrition conditions are associated with postoperative complications, delayed wounds, long hospitalized hospital and high sickness and mortality. Therefore, the initial identification and evaluation of malnutrition is important to customize patient results. Despite the known effects of malnutrition on surgical results, nutritional evaluation is often ignored in regular clinical practice. The purpose of this study is to assess the nutritional status of patients admitted in general surgery department through SGA, identifying malnutrition and exposing its effectiveness in guiding proper nutritional support. By integrating SGA in standard preoperative and postoperative care, healthcare can improve the recovery of the patient, reduce complications, and increase overall treatment results.

Methodology

A cross-sectional study investigated 277 patients undergoing various surgical procedures in the General Surgery Department, Pakistan Institute of Medical Sciences (PIMS), Islamabad from Jan 2024 to March 2024 after getting approval from the hospital ethical committee. (FMTI/ERRB/06/09, dated 15th November 2023) Non-probability convenient sampling technique was used to include patients during the study period. All patients aged

above 18 years admitted to the general surgery ward for elective or emergency surgical procedures and who consented to participate were included in the study. Patients admitted for minor outpatient surgical procedures, with severe psychotherapy disorders and pregnant and breastfeeding women were excluded. Demographic details like gender, medical history, and type of surgery, and data for subjective global assessment (SGA) like history of recent weight loss, diet intake was recorded.

Data analysis was done using SPSS version 27. Meaning, standard deviations, and frequency distribution will be used to abbreviate demographic and clinical characteristics. Categorical variables compared using Chi-square test by taking 5% level of significance.

Results

Out of 277 patients, there were 149 (53.8%) male and 128 (46.2%) female. Of the total 277 patients, 44 (15.2%) patients required nutrition whereas 235 (84.8%) had no metabolic requirement. Patient's distribution based on weight loss were as follows; 21 (7.6%) 2 kg, 84 (30.3%) 3 kg, 65 (23.5%) 5 kg, and 21 (7.6%) 8 kg whereas 44 (15.2%) patients showed no weight loss. Based on SGA ratings, the incidence of well-nourished, mild/moderately malnourished, and severely malnourished cases were 105 (37.9%), 169 (61%), and 3 (1.1%), respectively. There was insignificant association between SGA ratings and gender distribution. Baseline characteristics are shown in Table-I. Table-II represents patient's distribution based on weight loss. SGA rating illustrated in Figure-1.

Table I: Baseline characteristics .(N=277)	
Variables	N (%)
Gender	
Male	149 (53.8%)
Female	128 (46.2%)
Nutritional Intake	
2 days	21 (7.6%)
Minimal	42 (15.2%)
No	214 (77.3%)
Metabolic requirement	
Yes	44 (15.2%)
No	235 (84.8%)

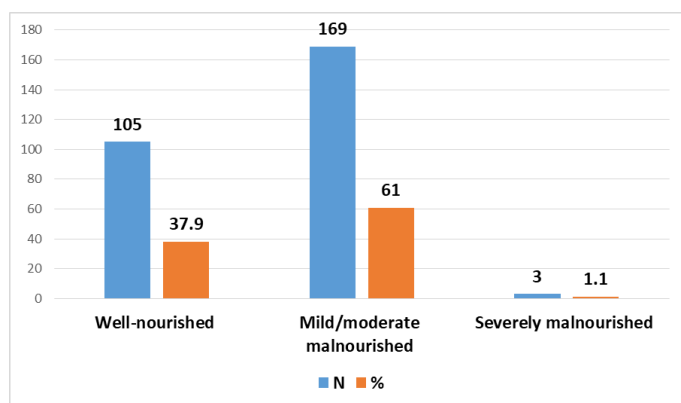


Figure 1. SGA Rating. (N=277)

Discussion

The present study mainly focused on the nutritional assessment of admitted patients in General surgery through subjective global assessment and reported that malnutrition is common in majority of patients admitted to General Surgery, which adversely effects the surgical outcomes in terms of complications and mortality.

Malnutrition is a significant health concern in developing countries, where the diet often lacks essential macro and micronutrients. This nutritional deficiency contributes to adverse patient results and increases the cost of health care, which highlights the requirement of standardized screening and evaluation protocols. Recognizing this, various studies have demonstrated the effectiveness of the subjective global evaluation (SGA) in identifying the risks related to malnutrition and predicting poor clinical results.^{14,15} Therefore, our study used SGA as a reliable tool to assess the nutritional status of recruitment surgical patients. Earlier study emphasized on the importance of continuous postoperative nutrition monitoring to reduce complications and promote rapid recovery, enabling patients to resume daily activities.¹⁶

Similarly, another study revealed that malnutrition identified as a major factor, which contributes to the extended hospital, has increased ICU readmissions, and reduces the postoperative quality of life.¹⁷ A multi-level study with a large sample size will provide more accurate and general results. A remarkable limit was dependence on SGA for nutritional evaluation, as it classifies patients into only three extensive groups, possibly ignoring micro variations in nutrition conditions.¹⁸ To reduce

the supervisor bias, a single examiner made all assessments, but this approach can limit the fertility of the results. Additionally, as the study was limited to a single tertiary care hospital, findings may not be widely applied to various healthcare settings. Long-term research of the future should detect the impact of nutrition status on surgical results using more comprehensive evaluation tools to increase the accuracy and purpose of conclusions.²⁰

A previous study, which examined the effect of nutrition status on surgical patients using subjective global evaluation (SGA), found that, out of 1227 patients, 892 (72.2%) was well-nurtured, as light or moderately malnourished, 333 (27.1%) as mildly or moderately malnourished, and seriously malnourished. Postoperative results showed that 135 patients (11.0%) developed a surgical site infection, with an average hospital 3.92 ± 1.66 days. Additionally, 23 patients (1.9%) unfortunately succumbed due to their conditions. These findings highlight the potential links between nutrition status and surgical results, strengthening the need for initial nutritional evaluation and intervention to reduce complications.²⁰

Hospitalized patients who are malnourished, often struggle to maintain adequate nutrition conditions due to several factors, including the period of being inadequate bowel feeding or zero-by-mouth conditions. The prevalence of malnutrition in hospitalized patients reported from 10% to 50%, and this condition is closely associated with increased complications and mortality, especially after abdominal surgery.^{21,22} Common surgery literature constantly highlights the adverse effects of malnutrition, emphasizing timely nutritional intervention to improve the patient's results and reduce the risk of post-subsequent complications.²³

Conclusion

Malnutrition is common in majority of patients admitted to General Surgery, which adversely effects the surgical outcomes in terms of

Table II: patient's distribution based on weight loss. (N=277)

Weight loss (kg)	N (%)
2	21 (7.6%)
3	84 (30.3%)
5	65 (23.5%)
8	21 (7.6%)
No weight loss	44 (15.2%)

complications and mortality. Nutritional support is playing vital role in treating serious patients worldwide, but Pakistan is lagging behind to

implement nutritional support in their health system.

References

1. Malik TAM, Akhtar F, Farrukh K, Arslan M, Sakhizada F, Waqar S. Effect Of Nutritional Status On The Surgical Patients Using Subjective Global Assessment. *JRMC*. 2025 Jan. 1;28(4):716-720. <https://doi.org/10.37939/jrmc.v28i4.2689>.
2. Kushwaha NS, Rana DB, Singh A, Saxena S, Srivastava S, Sharma V, et al. Assessment of Nutrition Status and Its Effect on Outcomes in Patients With Limb Injuries Using the Subjective Global Assessment as a Screening Tool. *Cureus*. 2023;15(9): e44953. <https://doi.org/10.7759/cureus.44953>
3. Mignini E, Scarpellini E, Rinninella E, Lattanzi E, Valeri M, Clementi N, et al. Impact of patients nutritional status on major surgery outcome. *European Review for Medical & Pharmacological Sciences*. 2018;22(11):3524-33. https://doi.org/10.26355/eurrev_201806_15179
4. Serón-Arbeloa C, Labarta-Monzón L, Puzo-Foncillas J, Mallor-Bonet T, Lafita-López A, Bueno-Vidales N, et al. Malnutrition screening and assessment. *Nutrients*. 2022;14(12):2392-6.11. <https://doi.org/10.3390/nu14122392>
5. Kamal F, Fazal MI, Cheema MA. Nutritional Status of Patients Admitted in a General Surgical Ward at a Tertiary Hospital of Punjab. *J Coll Physicians Surg Pak*. 2016 Apr;26(4):334-5.
6. Khan S, Durrani Z, Sayeed Z, Afridi S. An audit of nutritional status of pre-operative surgical patients in Rehman Medical Institute. *J Rehman Med Inst*. 2016;2(4):29-7.
7. Akad F, Filip B, Preda C, Zugun-Eloae F, Peiu SN, Akad N, Crauciuc DV, et al. Assessing Nutritional Status in Gastric Cancer Patients after Total versus Subtotal Gastrectomy: Cross-Sectional Study. *Nutrients*. 2024 May 14;16(10):1485. <https://doi.org/10.3390/nu16101485>
8. Zhang J, Xu W, Zhang H, Fan Y. Association between risk of malnutrition defined by patient-generated subjective global assessment and adverse outcomes in patients with cancer: a systematic review and meta-analysis. *Public Health Nutrition*. 2024 Mar 27;1-22. <https://doi.org/10.1017/s1368980024000788>
9. Weimann A, Braga M, Carli F, Higashiguchi T, Hubner M, Klek S, Laviano A, et al. ESPEN guideline: *Clin. Nutr*. 2017, 36, 623–650. <https://doi.org/10.1016/j.clnu.2017.02.013>
10. Wang HM, Wang TJ, Huang CS, Liang, SY, Yu CH, Lin TR, Wu KF. Nutritional Status and Related Factors in Patients with Gastric Cancer after Gastrectomy: A Cross-Sectional Study. *Nutrients*. 2022; 14: 2634. <https://doi.org/10.3390/nu14132634>
11. Gazouli A, Georgiou K, Frountzas M, Tsourouflis G, Boyanov N, Nikiteas N, Gazouli M, Theodoropoulos GE. Perioperative nutritional assessment and management of patients undergoing gastrointestinal surgery. *Annals of Gastroenterology*. 2024 Feb 16;37(2):142. <https://doi.org/10.20524/aog.2024.0867>
12. Petra G, Kritsotakis EI, Gouvas N, Schizas D, Toutouzas K, Karanikas M, Pappas-Gogos G, Stylianidis G, Zacharioudakis G, Laliotis A, Christodoulidis G. Multicentre prospective study on the diagnostic and prognostic validity of malnutrition assessment tools in surgery. *British Journal of Surgery*. 2025 Feb;112(2):znaf013. <https://doi.org/10.1093/bjs/znaf013>
13. Debonis D, Pizzolato M. Quantitative nutritional assessment of 102 consecutive patients admitted to a general surgery ward in Buenos Aires, Argentina. *Nutr Int*. 2011; 2:16.
14. Kumar NB. Assessment of malnutrition and nutritional therapy approaches in cancer patients. *Nutr Manage Cancer Treat Eff* 2012; 7-41. https://doi.org/10.1007/978-3-642-27233-2_2
15. Hou TY, Lin YH, Liu YW, Liu YY, Li WF, Kuo MC et al. The impact of preoperative nutritional status on postoperative outcomes: an insight from Geriatric Nutritional Risk Index in elderly pancreaticoduodenectomy patients. *BMC Surg*. 2024 Apr 5;24(1):100. <https://doi.org/10.1186/s12893-024-02397-0>.
16. Feyzabadi Z, Jamalie S, Fazli B, Shams SS, Badpeyma M, Sedaghat A. The Nutritional Status of Patients Hospitalized in the ICUs of Iranian Hospitals: A Systematic Review. *Evidence Based Care*. 2024 Jul 1;14(2):67-84. <https://doi.org/10.22038/ebcj.2023.72238.2880>
17. Henriksen C, Paur I, Pedersen A, Kvaerner AS, Raeder H, Henriksen HB, et al. Agreement between GLIM and PG-SGA for diagnosis of malnutrition depends on the screening tool used in GLIM. *Clinical Nutrition*. 2022; 41(2): 329-336. <https://doi.org/10.1016/j.clnu.2021.12.024>.
18. Petra G, Kritsotakis EI, Gouvas N, Schizas D, Toutouzas K, Karanikas M et al. Multicentre prospective study on the diagnostic and prognostic validity of malnutrition assessment tools in surgery. *British Journal of Surgery*. 2025 Feb;112(2):znaf013. <https://doi.org/10.1093/bjs/znaf013>
19. Tan S, Jiang J, Qiu L, Liang Y, Meng J, Tan N, Xiang B. Prevalence of malnutrition in patients with hepatocellular carcinoma: a comparative study of GLIM criteria, NRS2002, and PG-SGA, and identification of independent risk factors. *Nutrition and Cancer*. 2024 Apr 20;76(4):335-44. <https://doi.org/10.1080/01635581.2024.2314317>
20. Haile RG, Haile AT, Habtewolde AW, Debebe Z, Getu G. Prevalence and associated factors of malnutrition among patients undergoing surgery at Saint Peter Hospital, Addis Ababa, Ethiopia. 2023. <http://dx.doi.org/10.21203/rs.3.rs-4103358/v1>
21. Hussen L, Tadesse E, Teferi DY. Preoperative Nutritional Status and Its Consequences on Abdominal Surgery in Wolaita Zone, Southern Ethiopia: An Institution-Based Observational Study. *J Nutr Metab*. 2020 Jun 9;2020:2324395. <https://doi.org/10.1155/2020/2324395>.
22. Katundu KG, Mutafya TW, Lozani NC, Nyirongo PM, Uebele ME. An observational study of perioperative nutrition and postoperative outcomes in patients undergoing laparotomy at Queen Elizabeth Central Hospital in Blantyre, Malawi. *Malawi Med J*. 2018 Jun;30(2):79-85. <https://doi.org/10.4314/mmj.v30i2.5>.
23. Heutlinger O, Acharya N, Tedesco A, Ramesh A, Smith B, Nguyen NT, Wischmeyer PE. Nutritional Optimization of the Surgical Patient: A Narrative Review. *Adv Nutr*. 2025 Jan;16(1):100351. <https://doi.org/10.1016/j.advnut.2024.100351>.