Amerta Nutrition
e-ISSN: 2580-1163 (Online)
p-ISSN: 2580-9776 (Print)
Yenni et al. | Amerta Nutrition Vol. 8 Issue 1 (March 2024). 130-138

LITERATURE REVIEW
English Version
OPEN ACCESS

The Relationship between Quality of Nutrition Care and Length of Hospitalization: a Literature Review

Hubungan Mutu Asuhan Gizi dengan Lama Rawat Inap Pasien di Rumah Sakit: Sebuah Studi Literatur

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ARTICLE INFO

Received: *09-02-2023*
Accepted: *31-12-2023*
Published online: *08-03-2024*

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DOI:
10.20473/amnt.v8i1.2024.130-138

Available online at:
https://e-journal.unair.ac.id/AMNT

Keywords:
Malnutrition, Quality of Nutritional Care, Length of Hospitalization

ABSTRACT

Background: Inpatients' needs for nutrition are fulfilled by providing food services based on their specific requirements. Further, interventions focusing on improving their nutritional wellbeing can reduce their length of stay and at the same time improve the hospital's service quality.
Objectives: The objective of this study is that to identify the relationship between quality of nutritional care and the patient's length of stay.
Methods: This research reviews past quantitative studies available in the databases of NCBI-PUBMED, Springer Link, Cochrane and Google Scholar. They must be peer-reviewed articles published in English from 2017 to 1 October 2022, and the mean age of the patients being discussed is 18 years or more. As this study only reviews full articles, abstract-only texts were excluded. In addition, the data form the selected papers were extracted by three researchers.
Discussion: From many factors influencing patient's length of stay, besides the fact that comorbidities affect the duration of the disease suffered by the patient, malnutrition during illness is the most dominant one. Comorbidities affect the duration of the disease suffered by the patient. Length of stay is influenced by patients' nutritional intake, so screening on which at hospital admission is crucial for their health status and length of stay.
Conclusions: For hospitals, improving the quality of their nutrition services helps focus their attention to nutritional care, and rapid intervention can shorten length of stay. In addition, malnutrition is significantly worsened by mealtime barriers and poor food intake and prolongs length of stay.

INTRODUCTION

Hospital is a health service institution which provides comprehensive individual health services and inpatient services. One of its focus is nutritional services, a system provided and adjusted to the patient's clinical condition, nutritional status, and metabolism. The nutritional needs of inpatients are met by providing food suitable for each patient's specific requirements. For optimal nutritional fulfillment, various healthcare disciplines be involved and collaborated to support the nutritional care team whenever needed. Nutritional care is a series of organized and structured activities which allow for the identification of nutritional needs and the provision of care to meet those needs. The quality of hospitals' nutritional care is determined by 1) the timely provision of assessment or study plan, 2) documented nutritional care plan in the medical record, 3) patient response-based care plan revision, 4) monitoring on the care plan's implementation, and 5) suitability intervention according to the patient's condition[1,2].

Issues concerning nutritional care service were recognized by, one of which, Adhyka & Machmud (2020). Conducting their research at Reginal Public Hospital X in Solok, they found that the problem was caused by poor food processing equipment, unavailability of Nutrition Service Guide as well as poor SOPs and documentation[3]. Furthermore, Mardianingsih, et al. (2020), who had her research in a regional public hospital in Manokwari of Papua, which is considered underperforming in terms of nutritional care, described that inadequate nutritional care is characterized by untimely food distribution, high amount of food leftover, and inaccuracy in providing diets for patients[4]. Gliseer et al. (2020) stated that there are differences in the quality of nutritional care in state hospitals in Austria, Switzerland and Turkey. Austrian and Swiss hospitals have better nutritional care than Turkish hospitals, as proven by the fact that the prevalences of

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patient malnutrition in Austria and Switzerland are 16.5% and 14.5%, lower than in Turkey of 33.7%. In addition, the rates of referral to nutritionists in Austria and Switzerland are 35.8% and 37.7%, while those in Turkey reaches 61%[4,5].

Abrha et al. (2019) stated that the quality of nutritional care is the main predictor for patients' length of stay. They recommended nutritional screenings on patients upon their arrival and food provision according to their nutritional status, the results of which is quicker responses to the unfavorable condition[6]. Siegil et al. (2019) also emphasized that actions by hospitals focusing on the quality of nutritional care can shorten the time required for malnutrition diagnosis and treatment, which can also significantly reduce length of stay. In addition, supervision to nutritional screening officers can speed up the nutritional care delivery. Therefore, interventions focusing on inpatients' nutrition improvement, apart from reducing the length of stay, also serve as a strategy for improving the hospital's services quality. Moreover, experts have even recommended a number of efforts to ensure effective nutritional care in hospitals by involving all patients, clarifying and defining roles for all doctors, using routine screening to identify nutritional risks, using validated, easy-to-implement, and easy-to-use screening tools, initiating nutritional interventions immediately for patients at the risk of malnutrition, preparing and implementing individualized nutrition plans, monitoring patients' nutritional status during their hospital stay, and creating a post-discharge nutritional plan[6,7].

Past studies have left research gaps in terms of nutrition services from nutritional care or other nutrition service programs in hospitals. Several obstacles were found in in several hospitals in the effort of reducing length of stay; one of which is sub-optimal quality of nutritional care. Some have never assessed the quality of their nutritional care for inpatients. Insufficiency in time and resources for assessing such quality. Therefore, the acquired data was still below 100% even though this program must continue. Due to the several identified obstacles, further study is of great importance. Therefore, this study explores more deeply in the relationship between the quality of nutritional care and the patient's length of stay. Apart from being a comparison and lesson, the findings of this study are expected to contribute in providing suggestions and recommendations for hospitals to pass the obstacles and solve the problems about nutritional care.

METHODS

This research reviews quantitative studies conducted in a number of countries. The included ones are those which use patients of all ages as the population and discuss length of stay and nutritional care quality measurement. Further, the studies were limited to papers which had undergone peer-reviewed selection, were published in English from 2017 to October 1st 2022 with preference on the more recent ones, could be accessed in full, and had the average population age of 18 years and older. The article search was conducted from November 6 to 19 in 2022 on PubMed, Springer Link, Google Scholar, Cochrane and SAGE databases. Abstract-only texts, proceedings, and dissertations were excluded, and articles with duplicates were removed. Table 1 details the search keywords, and table 2 describes the characteristics of the selected articles. The data form the selected papers were extracted by three researchers. Following the search, the articles were screened independently and assessed based on predetermined inclusion and exclusion criteria. The exclusion also applied should the research had inappropriate population characteristics, conducted interventions, or came up with findings irrelevant with the purpose of this study. The screenings resulted in eight articles. They were then selected for data extraction and analyzed. The analysis were performed on the reference details, research objectives, and research design (i.e., type of research, sample size, setting, data collection methods, and instruments), and findings.

Table 1. Keywords for the titerature search

Search Keywords	Journal Database	Number of Articles
Quality of nutritional care; length of hospitalization	NCBI – PUBMED	12249
	Springer Link	4348
	Cochrane	16
	Google Scholar	15100

NCBI (The National Center for Biotechnology Information); PUBMED (Publisher Medline)

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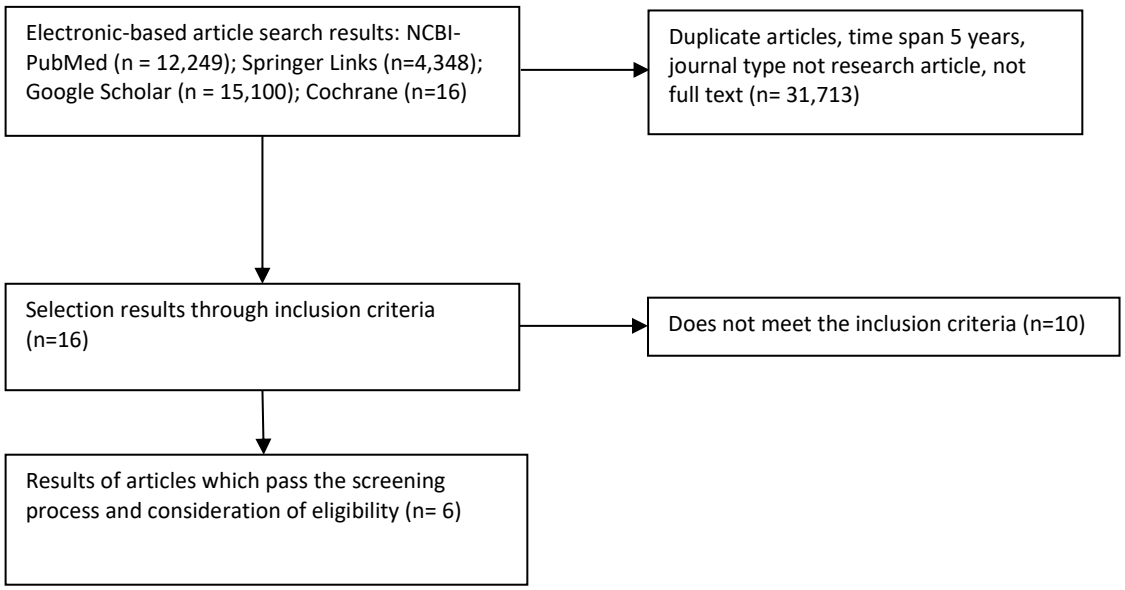

Figure 1. Prism flow diagram of the article selection process

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Table 2. Literature related to the relationship between quality of nutritional care and patient's length of stay

No	Author	Research Title	Research Location	Research Design	Year	Research Characteristics
1.	Kiss Noemi, et al[8].	Predicting Hospital Length of Stay at Admission Using Global and Country-Specific Competing Risk Analysis of Structural, Patient, and Nutrition-Related Data from nutritionDay 2007-2015	Sixty countries (155,524 patients in nutrition Day data)	Cross Sectional	2021	▪ Average age: 18-70 years ▪ Method: Global Observational Data ▪ Inclusion: Inpatients who were treated on the day of the study, were willing to participate and were willing to be followed up 30 days later. ▪ Instruments: Questionnaires regarding hospital departments, questionnaires regarding patients from the perspective of medical professionals, data on hospital nutritional care and questionnaires from the patient's perspective.
2.	Vong Tyrus, et al[9].	Malnutrition Increases Hospital Length of Stay and Mortality among Adult Inpatients with COVID-19	Five affiliated hospitals: Johns Hopkins Hospital, Baltimore, Maryland; Bayview Hospital, Baltimore, Maryland; Howard County General Hospital, Columbia, Maryland; Suburban Hospital, Bethesda, Maryland; and Sibley Hospital, Bethesda, Maryland	Retrospective Cohort Study	2022	▪ Number of samples: 4,311 patients ▪ Average age: 58.78 years ▪ Method: Database of inpatients from related hospitals. ▪ Inclusion: Malnourished patients diagnosed with mRNA Covid-19 ▪ Instrument: Patient medical record
3.	Abrha Mulugeta, et al[6].	Nutritional Status Significantly Affects Hospital Length of Stay among Surgical Patients in Public Hospitals of Northern Ethiopia: Single Cohort Study	Ethiopia	Single cohort study	2019	▪ Number of samples: 324 patients ▪ Average age: > 18 years ▪ Method: multi-stage random sampling ▪ Inclusion: Hospital patients who underwent surgery during the research study period and were willing to be the research sample ▪ Instrument: Questionnaire containing sociodemographic characteristics, clinical information, dietary assessment and biochemical tests
4.	Ringel Joanna, et al[12]	Impact of Gaps in Care for Malnourished Patients on Length of Stay and Hospital Readmission	New York Presbyterian-Weill Cornell Medical Center.	Retrospective study	2019	▪ Number of samples: 229 malnourished patients ▪ Average age: > 18 Years ▪ Method: Registration data from two dietitians ▪ Inclusion: Patients with the minimum age of 18 years registered in the medicine unit during the study period who were diagnosed with malnutrition (ICD9 code 262 or 263.0) ▪ Instrument: Two data registers in the medicine unit of New York Presbyterian-Weill Cornell hospital.

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Table 2. Literature related to the relationship between quality of nutritional care and patient's length of stay

No	Author	Research Title	Research Location	Research Design	Year	Research Characteristics
5.	Liu Hongpeng, et al[13]	Nutritional Status According to the Short-Form Mini Nutritional Assessment (MNA-SF) and Clinical Characteristics as Predictors of Length of Stay, Mortality, and Readmissions among Older Inpatients in China: A National Study	China	Prospective cohort study	2021	▪ Number of samples: 5,516 inpatients ▪ Average age: > 65 years ▪ Method: Database of inpatients from related hospitals ▪ Inclusion: Inpatients aged over 65 years whose data is complete ▪ Instruments: MNA-SF Screening Tool, structured Case Report Form (CRF), communication platform based on WeChat Application for timely feedback.
6.	Keller, et al[14]	Improving the Standard of Nutritional Care in Hospital: Mealtime Barriers Reduced with Implementation of the Integrated Nutrition Pathway for Acute Care	Five hospitals in Canada	Observational	2018	▪ Number of samples: 1,250 Patients ▪ Average age: Adult patients ▪ Method: Observation ▪ Inclusion: Inpatients, not experiencing cognitive impairment, willing to be research respondents, consuming oral diet ▪ Instruments: Nutrition screening form, Mealtime Audit Tool (MAT), My Meal Intake Tool (M-MIT).

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DISCUSSION

Nutrition services are one of the hospital services engaged in standardized nutritional care process. This process is the responsibility of professional nutritionists or dietitians, whose work is oriented to disease prevention and treatment especially in the field of food and nutrition, in either hospitals or other health service units. In addition, this process ensures that patients' food intake needs are met since food is a basic human need and is believed to be a factor in preventing and curing disease[15].

Malnutrition and poor diet have been linked to incidence of death in hospitals. Identifying patients at risk and providing nutritional care are fundamental aspects for optimizing medical care in hospitals[8]. For nutritionists, measuring the impact of nutritional care on a patient's clinical course is a challenge while making evidence-based decisions. Furthermore, lack of information regarding nutritional care can lead to inappropriate measurements of clinical parameters, which can potentially result in inefficient care[8]. A study on the nutritional health of inpatients was also conducted by Hariani et al. (2021). They found that the availability of workers who are expert in conducting food services for patients and planning suitable menu can accelerate patient's healing period[16]. In addition, providing nutritional intake to patients is more complex than providing for healthy people in general since patients' appetite and mental condition change due to the disease they suffer from, the reduced physical activity and their reactions to medications[17].

The high prevalence of malnutrition in hospitals reflects the quality of their services. The recovery time of patients is influenced by the severity of the disease, the treatment process run by the hospital, and the nutritional intake. Patients with low nutritional status have longer time of stays, incur higher hospital costs, and have a higher risk of dying in hospital[15]. Tesfay et al. (2020) explained that the median length of stay from hospitalization to recovery is estimated at fifteen days; this finding was obtained by including patients with malnutrition and comorbidities[10].

The increasing trend of nutrition-related disease cases requires special nutritional management. Therefore, quality nutritional services are needed to achieve and maintain optimal nutritional status and accelerate healing[1]. Improvements in nutritional quality emphasizes the importance of validated nutritional screening, in addition to their association with better adherence to dietary intake, nutritional care, as well as lower prevalence of malnutrition[18,19]. Furthermore, nutritional screening, assessment and intervention during the patient's stay and post-discharge nutritional plan are important components of the nutritional care process[20]. In addition, it is essential to measure patients' nutritional status upon their departure from the treatment room. A 3-month long food intake data collection should be held to find out exactly the incidence of malnutrition experienced by patients and to speed up their healing process[21].

Sriram et al. (2017) stated that appropriate nutritional care based on the previously done screening process can reduce patient's length of hospitalization and hospital costs. Nutritional sufficiency measurement and its documentation, assessment, treatment, and discharge planning are important priorities for nutrition quality improvement initiatives[22]. In addition, Keller et al. (2018) found that malnutrition is significantly worsened by mealtime barriers and poor food intake and prolongs the duration of hospitalization[14].

The largest areas of required quality improvement in nutritional care process are the use of validated tools for nutrition screening, increased emphasis on malnutrition diagnosis, and discharge planning. Moreover, poor nutritional status and malnutrition have been shown to be adversely associated with several functional, clinical, and economic outcomes. They also increase the risk of comorbid complications, longer hospital stays, more frequent hospitalizations, mortality, and health care cost addition. These are not found in treated patients who are given adequate nutritional care[23-25].

This review research has a number of strengths and weaknesses which can be opportunities for further research. It involves studies that used large and representative samples for populations in all age groups and involves research from various countries so that trends in differences in results based on distinctiveness in ethnicity, race, inter-group and sexual orientation can be identified. However, the completeness and optimality of this study in measuring the quality of nutritional care in nutrition services in hospitals could not be achieved. Furthermore, to date there has been no research which has assessed and measured the quality of nutritional care in nutrition services in hospitals in order to optimize inpatient services for malnourished patients. Therefore, further research is needed regarding the relationship between the quality of nutritional care and the length of hospitalization of patients in Indonesia as it can be used as the basis for strengthening, improving and optimizing nutritional care quality policies for nutrition services in hospitals.

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Table 3. Summary of included studies related to quality of nutritional care and length of stay

No	Author	Data Type	Research Result
1.	Kiss Noemi, et al[8].	Secondary data from the nutritionDay Population of 2006-2015	Length of hospitalization has a strong relationship with age, affected organs and disease incidence in the study sample.
2.	Vong Tyrus, et al[9].	Covid-19 data obtained from hospital platforms; malnutrition data obtained from patient screening	In the overall, adult patients diagnosed with Covid-19 and malnutrition are associated with an 87.9% increase in length of stay.
3.	Abrha Mulugeta, et al[6].	Primary data acquired via standardization, structuring, direct interviews and direct biochemical and clinical test measurements	Length of illness, history of surgery, nutritional status (BMI and MUAC) are the predictors of length of hospitalization for patients undergoing surgery. There is a great need for malnutrition screening when admitting patients so that the supplements given to patients suit their nutritional status and specific malnutrition deficiencies.
4.	Ringel Joanna, et al[12].	Secondary data harvested from two entities which handle patient's register	The procedure/test gap in the hospital has a twice higher impact on patients' longer hospitalization time. Mitigation of care gaps can reduce hospitalization, which is expected to reduce the risk of infection and the treatment costs.
5.	Liu Hongpeng, et al[13].	Secondary data from eligible study subjects recruited from selected hospitals, enrolled consecutively; from surveys administered by trained nurses using a structured Case Report Form (CRF); data quality assured by nurses training and testing before assessing patients; a quality control team being developed by the researchers; a WeChat-based communication being developed to guarantee timely feedback; a proxy interviewees (usually a spouse or other legal guardian) being interviewed in the case of the participant being unable to answer the questions by themselves	The result of this study demonstrates that the low MNA-SF score was related to a significant increase in length of hospitalization. The average hospitalization for patients with a low MNA-SF score (i.e., 0-7 or malnourished) is 9-13 days. Meanwhile, patients with an MNA-SF score of 12-14 have the average length of stay of 7-9 days. In addition to increasing the length of hospitalization in hospital, malnutrition in the elderly also has an impact on the risk of death and readmission within ninety days. The use of nutritional assessment tools in all hospitalized patients in China is urgently needed. Moreover, MNA-SF combined with hemoglobin levels can be used to identify older hospitalized patients with a high risk of adverse clinical outcomes. The results of this study have important implications for hospital service planning.
6.	Keller, et al[14].	Primary data obtained from observations on meal times and patient's food intake; Secondary data acquired from the patient's medical records and nutritional screening result	In this study changes within and across locations were observed over time in food intake and length of hospitalization. The study shows that malnutrition is significantly worsened by mealtime barriers and poor food intake and prolongs hospitalization

Note: NCBI (The National Center for Biotechnology Information); BMI (Body Mass Index); MUAC (Mid-Upper Arm Circumference measure); MNA-SF (Mini Nutritional Assessment-Short Form).

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CONCLUSIONS

For hospitals, improving the quality of nutrition services helps them focus on nutritional care, while rapid intervention can shorten the length of hospitalization. Health and economic outcomes among malnourished inpatients can be significantly improved through nutrition-focused quality improvement interventions.

ACKNOWLEDGMENTS

The researchers would like to express their gratitude to the authors of the research journals used in this study and to all people who have supported and assisted in them in providing data and information for the completion of this study.

Conflict of Interest and Funding Disclosure

REFERENCES

1. Kemenkes, R. I. Pedoman Pelayanan Gizi Rumah Sakit. Jakarta: Kemenkes (2013).
2. Sari Siska, P. Pengaruh penanganan asuhan gizi kolaborasi antar profesi tenaga medis terhadap asupan makanan pasien geriatri rawat inap RSUP dr. Sardjito Yogyakarta. Univ. Gadjah Mada (2009).
3. Adhyka, N. & Machmud, R. Upaya Peningkatan Pelayanan Pengolahan Makanan di Instalasi Gizi RSUD X Kota Solok. J. Ris. Hesti Medan Akper Kesdam I/BB Medan **5**, 149–155 (2020).
4. Mardianingsih, N., Utami, F. A. & Palupi, I. R. Capaian standar pelayanan minimal gizi di rumah sakit umum daerah (RSUD) Manokwari Papua Barat. J. Gizi Klin. Indones. **16**, 152–167 (2020).
5. Eglseer, D. et al. The quality of nutritional care in hospitals: Austria, Switzerland, and Turkey compared. Nutrition **79**, 110990 (2020).
6. Abrha, M. W., Seid, O., Gebremariam, K., Kahsay, A. & Weldearegay, H. G. Nutritional status significantly affects hospital length of stay among surgical patients in public hospitals of Northern Ethiopia: single cohort study. BMC Res. Notes **12**, 1–6 (2019).
7. Siegel, S. et al. Impact of a nutrition-focused quality improvement intervention on hospital length of stay. J. Nurs. Care Qual. **34**, 203–209 (2019).
8. Kiss, N. et al. Predicting Hospital Length of Stay at Admission Using Global and Country-Specific Competing Risk Analysis of Structural, Patient, and Nutrition-Related Data from nutritionDay 2007–2015. Nutrients **13**, 4111 (2021).
9. Vong, T. et al. Malnutrition Increases Hospital Length of Stay and Mortality among Adult Inpatients with COVID-19. Nutrients **14**, 1310 (2022).
10. Tesfay, W., Abay, M., Hintsa, S. & Zafu, T. Length of stay to recover from severe acute malnutrition and associated factors among under-five years children admitted to public hospitals in Aksum, Ethiopia. PLoS One **15**, e0238311 (2020).
11. Tirore, M. G., Atey, T. M. & Mezgebe, H. B. Survival status and factors associated with treatment outcome of severely malnourished children admitted to Ayder referral hospital: a cross-sectional study. BMC Nutr. **3**, 1–9 (2017).
12. Ringel, J. B. et al. Impact of gaps in care for malnourished patients on length of stay and hospital readmission. BMC Health Serv. Res. **19**, 1–6 (2019).
13. Liu, H. et al. Nutritional status according to the short-form mini nutritional assessment (MNA-SF) and clinical characteristics as predictors of length of stay, mortality, and readmissions among older inpatients in China: a national study. Front. Nutr. 10 (2022).
14. Keller, H. H. et al. Improving the standard of nutritional care in hospital: mealtime barriers reduced with implementation of the Integrated Nutrition Pathway for Acute Care. Clin. Nutr. ESPEN **28**, 74–79 (2018).
15. Wijayanti, T. & Puruhita, N. Studi kualitatif proses asuhan gizi terstandar di ruang rawat inap RS St. Elisabeth Semarang. J. Nutr. Coll. **2**, 170–183 (2013).
16. Hariani, Muchlis, N. & Kurnaesih, E. Studi Kualitas Pelayanan Gizi Pasien dengan Pendekatan Input, Proses, Output di Instalasi Gizi di RSUD Salewangang Maros. J. Muslim Community Heal. (2021).
17. Rachmawati, I. & Afridah, W. MUTU PELAYANAN GIZI DENGAN TINGKAT KEPUASAN PASIEN. J. Heal. Sci. (2018) doi:10.33086/jhs.v7i2.508.
18. Yordy, B. M., Roberts, S. & Taggart, H. M. Quality improvement in clinical nutrition: screening and mealtime protection for the hospitalized patient. Clin. Nurse Spec. **31**, 149–156 (2017).
19. Eglseer, D., Halfens, R. J. G. & Lohrmann, C. Is the presence of a validated malnutrition screening tool associated with better nutritional care in hospitalized patients? Nutrition **37**, 104–111 (2017).
20. Sherry, C. L., Sauer, A. C. & Thrush, K. E. Assessment of the nutritional care process in US hospitals using a web-based tool demonstrates the need for quality improvement in malnutrition diagnosis and discharge care. Curr. Dev. Nutr. **1**, e001297 (2017).
21. Santoso, S. P., Desiana, N. R., Kusumastuty, I. & Restyani, I. Hubungan Antara Status Gizi Dengan Lama Rawat Inap Pada Pasien Diabetes Melitus Tipe 2 Di Instalasi Rawat Inap I Ilmu Penyakit Dalam RSUD Dr. Saiful Anwar Malang. Maj. Kesehat. **8**,.
22. Sriram, K. et al. A comprehensive nutrition-focused quality improvement program reduces 30-day readmissions and length of stay in hospitalized patients. J. Parenter. Enter. Nutr. **41**, 384–391 (2017).
23. Lim, S. L. et al. Malnutrition and its impact on cost of hospitalization, length of stay, readmission and 3-year mortality. Clin. Nutr. **31**, 345–350 (2012).
24. Sauer, A. C. et al. Prevalence of malnutrition risk and the impact of nutrition risk on hospital outcomes: results from nutritionDay in the US. J. Parenter. Enter. Nutr. **43**, 918–926 (2019).

How to cite: *Yenni, P., Purba, M. B. R., & Syauqy, A. (2024) The Relationship between Quality of Nutrition Care and Length of Hospitalization: a Literature Review: Hubungan Mutu Asuhan Gizi dengan Lama Rawat Inap Pasien di Rumah Sakit: Sebuah Studi Literatur. Amerta Nutrition, 8(1), 130–138.*

25. Hudson, L., Chittams, J., Griffith, C. & Compher, C. Malnutrition identified by Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition is associated with more 30-day readmissions, greater hospital mortality, and longer hospital stays: a retrospective analysis of nutrition a. J. Parenter. Enter. Nutr. **42**, 892–897 (2018).

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