



BOOSTING NUTRITION INTEGRATION IN THE PUBLIC HEALTH SYSTEM: CASE OF NUTRITIONALLY AT-RISK PATIENTS IN THE PROVINCE OF TARLAC

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ABSTRACT

Hospital malnutrition is a significant public health concern, particularly in resource-constrained provincial hospitals where nutrition services may not be consistently integrated into routine patient care. This study examined the cases of nutritionally at-risk patients and the integration of the Nutrition Care Process (NCP) in selected public hospitals in Tarlac Province. A qualitative case study design was used with 30 purposively selected nutritionally at-risk patients from seven public hospitals. Data were gathered through Department of Health nutrition risk screening and semi-structured interviews and analyzed using thematic analysis, supported by descriptive frequencies and percentages. Half of the participants were overweight or obese (50%), while 36.7% were underweight and 13.3% had normal nutritional status, demonstrating that nutritional risk extended beyond visible undernutrition. The most frequently reported dietary risk factors were high sodium intake (40.0% of cases), high sugar intake (33.3%), and high fat intake (30.0%). Across the cases, nutrition assessment was the most visible NCP component, while nutrition diagnosis, individualized intervention, monitoring and evaluation, referral to nutritionist-dietitians, and discharge planning were inconsistently implemented. Individualized nutrition intervention or counseling was absent in 86.7% of cases, and 76.7% of participants were unaware of available hospital nutrition services. The findings indicate that hospital meal provision and general dietary advice alone are insufficient. Nutrition integration requires standardized screening and referral, individualized counseling, stronger dietitian involvement, caregiver education, discharge planning, and hospital-to-community continuity systems. From a public administration perspective, effective nutrition integration requires policy operationalization through staffing, protocols, training, monitoring, resource allocation, and interagency coordination.

KEYWORDS: Nutrition Integration; Nutrition Care Process; Nutritionally At-Risk Patients; Public Hospitals; Tarlac Province; Nutritionist-Dietitian; Public Health Management

1. INTRODUCTION

Malnutrition in hospitals includes both undernutrition and nutrition-related overweight and obesity and remains an important clinical and public health concern. Hospitalized patients may become nutritionally vulnerable because illness, inflammation, reduced intake, altered metabolism, feeding difficulties, and treatment-related factors can compromise nutritional status. The consequences may include delayed recovery, infections, prolonged hospitalization, readmission, and increased healthcare resource use (Doganay et al., 2025; Pierzak et al., 2020). The World Health Organization (2017, 2021) likewise emphasizes that malnutrition encompasses multiple forms, including undernutrition, overweight, obesity, micronutrient deficiencies, and diet-related noncommunicable diseases.

Nutritional risk is not synonymous with low body weight. Patients with chronic disease, inflammation, reduced intake, recent weight loss, feeding difficulty, or metabolic stress may be nutritionally at risk despite normal or elevated body mass index. The Global Leadership Initiative on Malnutrition (GLIM) framework and clinical nutrition guidance therefore support assessment that considers disease burden and changes in intake and body composition rather than relying on BMI alone (Cederholm et al., 2019; European Society for Clinical Nutrition

and Metabolism [ESPEN], 2021). This broader understanding is particularly relevant to public hospitals managing patients with chronic diseases, infection, cancer, pregnancy complications, pediatric feeding problems, and advanced illness.

The Nutrition Care Process provides a structured approach consisting of nutrition assessment, nutrition diagnosis, nutrition intervention, and nutrition monitoring and evaluation. It is intended to promote systematic, individualized, evidence-based nutrition care and clearer communication among nutrition professionals and other healthcare providers (Academy of Nutrition and Dietetics, 2017; Lövestam et al., 2019). Evidence from hospital quality-improvement initiatives indicates that structured nutrition processes can improve identification of malnutrition, documentation, care delivery, and selected patient outcomes (Sriram et al., 2016; Bell et al., 2021; Valladares et al., 2020).

In the Philippines, Republic Act No. 10862, or the Nutrition and Dietetics Law of 2016, establishes the professional role of nutritionist-dietitians, while Department of Health Administrative Order No. 2019-0033 provides guidelines for implementation of the NCP in hospitals. However, implementation may be affected by staffing, training, documentation, competing clinical priorities, institutional support, and continuity between hospital and community services (Delomen et al., 2024; Sherry et al., 2017). Philippine evidence



also suggests variation in nutrition screening and NCP implementation, particularly across healthcare settings.

Tarlac Province includes district, community, and provincial public hospitals that serve populations with varying socioeconomic circumstances and healthcare needs. Yet localized evidence on how nutritionally at-risk patients experience nutrition care and how the NCP is operationalized in these settings remains limited. This study therefore examined 30 nutritionally at-risk patient cases in selected public hospitals in Tarlac Province, with emphasis on nutritional conditions, dietary risk factors, patient awareness, implementation of the NCP, and implications for public health administration.

Objectives

The study aimed to analyze cases of nutritionally at-risk patients in Tarlac Province, identify health programs relevant to their needs, propose nutrition intervention measures, and determine implications for public administration.

2. METHODS

Research Design and Setting

A qualitative case study design was employed to examine the experiences of nutritionally at-risk patients and the integration of nutrition care in selected public hospitals in Tarlac Province. The study included district, community, and provincial government hospitals. The case study approach was selected to capture patient experiences within their real hospital and socioeconomic contexts and to identify recurring patterns in nutrition care delivery.

Participants and Sampling

Purposive sampling was used to select information-rich cases. Thirty nutritionally at-risk patients admitted to seven public hospitals were included: Concepcion District Hospital, Congressman “Henry” M. Cojuangco Memorial District Hospital, Gilberto O. Teodoro Memorial Hospital, La Paz Medicare and Community Hospital, Ospital Ning Capas, Paniqui General Hospital, and Tarlac Provincial Hospital. Three participants were selected from each of the first six hospitals and 12 from Tarlac Provincial Hospital. Participants were identified as nutritionally at risk in relation to medical conditions or other circumstances that could compromise nutritional status and were included if they met the study criteria, were willing to participate, and could provide relevant information.

Data Collection

Data were gathered using the Department of Health Nutrition Risk Screening Form and a semi-structured interview guide. Interviews covered demographic and socioeconomic information, anthropometric and medical profiles, usual dietary practices, appetite and weight changes, nutrition screening, nutrition care and intervention, monitoring, access to nutrition services, continuity of care, unmet needs, and suggested improvements. Informed consent was obtained, participation was voluntary, and confidentiality and anonymity were maintained.

Data Analysis

Interview data were transcribed, reviewed, coded, and organized into categories and themes using thematic analysis. The NCP served as an organizing framework for examining nutrition screening, assessment, diagnosis, intervention, and monitoring and evaluation. Descriptive frequencies and percentages were used to summarize participant characteristics and selected recurring patterns. Because this was a qualitative case study with purposive sampling, the descriptive statistics describe patterns within the 30 cases and are not estimates of prevalence in the wider Tarlac population.

Ethical Considerations

The study followed ethical principles for voluntary participation, informed consent, confidentiality, anonymity, and the protection of participant information. The research also considered the requirements of the Data Privacy Act of 2012 (Republic Act No. 10173) and obtained the necessary institutional and hospital permissions before data collection.

3. RESULTS

Participant Profile and Nutritional Risk

Characteristic	n	%
Male	14	46.7
Female	16	53.3
Total	30	100

Female participants comprised 53.3% of the sample and males 46.7%. The distribution is descriptive of the selected cases and should not be interpreted as a provincial prevalence estimate.

Nutritional status	n	%
Underweight	11	36.7
Normal	4	13.3
Overweight/Obese	15	50.0
Total	30	100

Half of the participants were overweight or obese, while more than one-third were underweight. Only 13.3% had normal nutritional status. The coexistence of undernutrition and excess weight illustrates the double burden of malnutrition within the cases. Several participants with normal or elevated BMI nevertheless had chronic disease, poor dietary quality, reduced appetite, feeding difficulties, or other indicators of nutritional vulnerability.

Clinical characteristic	n	%
With documented comorbidities	8	26.7
Without documented comorbidities	22	73.3
With chronic disease	10	33.3
Without documented chronic disease	20	66.7

Comorbidities were documented in 26.7% of participants, while 33.3% had chronic disease. Conditions represented across the cases included diabetes mellitus, hypertension, cardiovascular disease, chronic kidney disease, cancer, gout, liver cirrhosis, hypothyroidism, and other long-term conditions requiring



sustained dietary management. The combination of medical and nutrition-related conditions increased the need for individualized care.

Dietary Risk Factors

Dietary risk factor	Responses	% of cases
High sodium intake	12	40.0
High sugar intake	10	33.3
High fat intake	9	30.0
Processed food consumption	7	23.3
Irregular meal patterns	6	20.0
Low vegetable intake/poor diet quality	5	16.7
Alcohol consumption	3	10.0

The most common dietary risks were high sodium, high sugar, and high fat intake. Because multiple responses were allowed, the percentages exceed 100% when summed. High sodium intake was associated in the narratives with frequent use of salty condiments, processed foods, instant foods, and convenience meals. Other recurring factors included food affordability, occupational demands, family eating patterns, limited dietary variety, and difficulty translating general dietary advice into practical home practices.

Awareness of Nutrition Services

Awareness	n	%
Aware	7	23.3
Not aware	23	76.7
Total	30	100

Only 23.3% of participants were aware of available hospital nutrition services, while 76.7% were not. Many participants equated nutrition care primarily with the meals served by the hospital and did not recognize nutritionist-dietitians as providers of assessment, individualized counseling, therapeutic diet planning, monitoring, or follow-up. This low visibility may reduce patients' willingness or ability to seek nutrition support.

Implementation of the Nutrition Care Process

Across the 30 cases, NCP implementation was inconsistent. Nutrition assessment was the most visible component, but implementation varied from basic measurement of height and weight or brief questions about appetite to more detailed assessment when a nutritionist-dietitian was involved. In many cases, dietary intake, recent weight change, food access, meal patterns, swallowing or feeding difficulty, and socioeconomic barriers were not comprehensively explored.

Nutrition diagnosis was the least visible component. Medical diagnoses were generally documented, but specific nutrition problems—such as inadequate energy intake, excessive sodium intake, nutrition knowledge deficit, feeding difficulty, or poor glycemic control related to dietary practices—were often not formally identified or communicated. The absence of a nutrition

diagnosis weakened the link between assessment and individualized intervention.

Nutrition intervention frequently consisted of hospital meal provision or general instructions such as reducing salt, sugar, or fat. Some participants received therapeutic diets, enteral feeding support, or dietitian counseling, but individualized counseling was not consistent. Practical issues such as affordable food substitutions, portion sizes, culturally familiar foods, meal timing, and the patient's household resources were often insufficiently addressed.

Monitoring and evaluation were generally limited. In several cases, monitoring focused on whether the patient consumed meals rather than on adequacy of intake, tolerance, symptoms, weight trends, laboratory indicators, understanding of diet instructions, or readiness for discharge. Post-discharge nutrition follow-up and referral to community services were also frequently absent.

Major gap/challenge	% of cases	Rank
Absence of individualized nutrition intervention/counseling	86.7	1
No formal nutrition diagnosis	83.3	2
Incomplete nutrition assessment	80.0	3
Limited nutrition monitoring/evaluation	80.0	4.5
Limited dietitian referral/involvement	73.3	4.5
Limited discharge planning/continuity	70.0	6
Generalized dietary advice	63.3	7
Behavioral/lifestyle/psychosocial barriers	56.7	8
Limited patient/caregiver nutrition knowledge	50.0	9
Financial/socioeconomic barriers	40.0	10
Health-system barriers	33.3	11

The cross-case ranking shows that the most frequent gap was absence of individualized nutrition intervention or counseling (86.7%), followed by absence of formal nutrition diagnosis (83.3%), incomplete assessment (80.0%), limited monitoring and evaluation (80.0%), limited dietitian involvement (73.3%), and inadequate discharge planning or continuity (70.0%). These findings indicate that nutrition care was often present in partial form rather than as a complete NCP cycle.

4. DISCUSSION

The findings demonstrate that nutritional risk among hospitalized patients is multidimensional. The presence of both underweight and overweight/obesity among the participants supports the concept of a double burden of malnutrition. A patient may have excess body weight while simultaneously experiencing poor intake, chronic inflammation, metabolic stress, or disease-related nutritional deterioration. Therefore, screening and



assessment based solely on BMI may miss clinically important nutrition risk (Cederholm et al., 2019; ESPEN, 2021).

The high frequency of sodium, sugar, and fat-related dietary risks also shows the close relationship between nutrition and chronic disease management. These patterns were not simply matters of individual choice; the narratives linked them to food affordability, availability, work schedules, family practices, convenience, and limited nutrition knowledge. This is consistent with evidence that social and environmental factors influence the ability of adults with chronic disease to adopt and sustain healthier eating patterns (Deslippe et al., 2023). Nutrition counseling is therefore more likely to be effective when it is practical, individualized, and adapted to the patient's socioeconomic context.

A central finding was the gap between hospital meal provision and comprehensive nutrition care. Participants often appreciated hospital meals, particularly when these offered foods not regularly available at home. However, provision of meals alone does not constitute the complete NCP. Evidence and professional guidance emphasize screening, assessment, diagnosis, individualized intervention, monitoring, and transition planning as interconnected elements of nutrition care (Academy of Nutrition and Dietetics, 2017; ESPEN, 2021).

The limited visibility of nutrition services is another important concern. More than three-fourths of participants were unaware of available nutrition services. Patient awareness affects whether individuals ask for dietary guidance, understand the role of the nutritionist-dietitian, and continue nutrition care after discharge. Improving service visibility therefore requires active patient orientation, clear referral pathways, bedside education, and discharge information that identifies nutrition services as part of routine healthcare.

The findings also reflect implementation barriers reported in other settings. Nutrition screening may be inconsistent because of workload and competing priorities, while documentation and referral systems may be insufficiently standardized. Studies of hospital nutrition care have similarly identified gaps in malnutrition diagnosis, documentation, discharge care, and quality improvement (Sherry et al., 2017; Delomen et al., 2024). The present cases suggest that policy mandates alone are insufficient unless they are translated into organizational routines supported by staffing, training, documentation systems, and accountability.

Continuity of care emerged as a major weakness. Chronic diseases and long-term feeding needs do not end at discharge, and patients return to communities where food insecurity, limited nutrition literacy, and access barriers may persist. Hospital-to-community referral systems involving rural health units, barangay

health stations, local nutrition programs, and primary care can help sustain nutrition management. This is consistent with the principles of integrated and people-centered care under the Universal Health Care Act and with evidence supporting nutrition-focused follow-up and quality-improvement programs (Sulo et al., 2017).

5. PUBLIC ADMINISTRATION IMPLICATIONS

The study shows that nutrition integration is not only a clinical issue but also a public administration concern involving policy implementation, resource allocation, workforce planning, service coordination, documentation, and accountability. Republic Act No. 10862 and DOH Administrative Order No. 2019-0033 provide a policy basis for nutrition care, but the cases indicate that implementation depends on whether hospitals have functioning mechanisms that translate policy into routine practice.

For hospital administrators, nutrition should be incorporated into quality improvement systems, admission procedures, referral pathways, patient education, discharge planning, and monitoring. Standardized nutrition screening and referral protocols can establish clear criteria for identifying high-risk patients and accessing nutritionist-dietitians. Nutrition indicators may also be integrated into patient records and quality-monitoring systems.

For local governments and the Department of Health, hospital nutrition services should be connected with primary and community care. Patients with chronic disease, undernutrition, obesity, pediatric feeding problems, or enteral feeding needs may require continuing support after discharge. Linkages with Rural Health Units, barangay health services, local nutrition programs, and PhilHealth primary-care mechanisms can provide a pathway for follow-up.

Workforce capacity is also a governance issue. Adequate numbers of nutritionist-dietitians, continuing professional development, multidisciplinary collaboration, and clear role delineation are necessary for consistent NCP implementation. Administrative support should ensure that nutrition care is not dependent solely on individual initiative but is embedded in hospital systems.

6. RECOMMENDED NUTRITION INTEGRATION STRATEGY

Based on the recurring gaps identified in the cases, the following priority measures are proposed for public hospitals and their community partners:



Priority measure	Primary implementation	Expected contribution
Routine nutrition screening and standardized referral	Hospital: NDS, nursing, physicians, administration	Earlier identification and timely dietitian intervention
Mandatory referral of high-risk patients	Hospital clinical teams and NDS	Individualized assessment and therapeutic nutrition care
Bedside, practical nutrition counseling	Nutritionist-dietitians and care team	Improved understanding and dietary adherence
Individualized low-cost meal planning	NDS with patients/caregivers	More realistic and sustainable dietary changes
Caregiver training for enteral/home nutrition	NDS and multidisciplinary team	Safer feeding and stronger home-care capacity
Nutrition education materials	Hospital and LGU	Reinforcement of instructions after discharge
Hospital-to-community referral linkage	Hospitals, RHUs, LGUs, BNS/BHWs	Continuity of nutrition care
Nutrition follow-up for chronic disease	Hospital NDS and primary care	Long-term monitoring and disease management
Multidisciplinary case conferences	Hospital clinical team	Coordinated management of complex cases
Workforce strengthening and training	Hospital, DOH, LGUs	Consistent NCP implementation

These measures should be implemented as an integrated system rather than isolated activities. Screening should trigger referral; assessment should inform diagnosis and individualized intervention; monitoring should guide adjustments; and discharge planning should connect patients to appropriate community or primary-care services. Existing national programs such as the Philippine Plan of Action for Nutrition, NCP implementation under DOH policy, chronic disease programs, maternal and child nutrition initiatives, and PhilHealth primary-care services can provide platforms for implementation, but the study indicates that their hospital-level integration should be strengthened.

7. CONCLUSION

The study found that nutritionally at-risk patients in selected public hospitals in Tarlac Province experienced a broad range of nutritional vulnerabilities, including undernutrition, overweight and obesity, chronic disease-related risks, unhealthy dietary patterns, feeding difficulties, and socioeconomic barriers. The most common dietary risks were high sodium, high sugar, and high fat intake. Although nutrition assessment was the most visible NCP component, complete nutrition care was inconsistently implemented. Individualized intervention and counseling, formal nutrition diagnosis, comprehensive assessment, monitoring and evaluation, dietitian referral, and discharge continuity were major gaps. Patient awareness of available nutrition services was also low.

The findings indicate that strengthening nutrition integration requires more than providing hospital meals or general dietary reminders. Public hospitals need standardized screening and referral systems, adequate nutritionist-dietitian involvement, individualized and affordable counseling, caregiver support, structured monitoring, discharge planning, and hospital-to-community linkages. From a public administration perspective, these improvements require institutionalization through policies,

staffing, training, budgets, documentation, monitoring, and interagency coordination.

Because the study involved 30 purposively selected cases and relied substantially on patient narratives, the findings are context-specific and should not be generalized as prevalence estimates for all hospitals in Tarlac. Future research may include larger samples, healthcare-provider and administrator perspectives, comparative hospital assessments, and evaluation of standardized nutrition referral and continuity systems.

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