ORIGINAL ARTICLES

Nutrition education and communication activities at the class I Da Nang general hospital in 2025 and its associated factors: Feedback of inpatients and hospital staffs

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ABSTRACT

Objective: This study aimed to assess nutrition education and communication (NEC) activities using inpatient feedback and to explore factors influencing the implementation of NEC at a class I hospital in Da Nang, Vietnam, in 2025.

Methods: A mixed-methods study integrating a cross sectional quantitative component and a phenomenological qualitative approach was conducted from November 2024 to November 2025. Quantitative data were collected from 112 inpatients. Qualitative data were obtained through five in-depth interviews and three focus group discussions involving hospital administrators, physicians, nurses and inpatients. Quantitative data were analyzed descriptively, while qualitative data were analyzed thematically to identify enabling and constraining factors affecting NEC activities.

Results: Individual nutrition counseling was the most commonly implemented NEC activity, reported by 87.5% of inpatients. However, level of inpatient satisfaction were modest, with the overall satisfaction rates for individual counseling and indirect communication were 30.6% and 45.9%, respectively. Key enabling factors included strong leadership commitment and the development of annual implementation plans for NEC activities. Major barriers included the lack of mandatory integration of NEC into standard clinical treatment protocols and limited coordination between the Nutrition Department and clinical departments.

Conclusion: Despite high coverage of NEC activities particularly individual counseling (87.5%), patient satisfaction remained low. The gap between coverage and perceived effectiveness appears to be driven primarily by systemic barriers, particularly the absence of formal integration of NEC into clinical protocols and suboptimal interdepartmental coordination.

Keywords: *nutrition education and communication, nutrition counseling, indirect communication, inpatients.*

INTRODUCTION

Nutrition Education and Communication (NEC) in hospital settings plays a critical role in enabling patients to acquire essential knowledge and skills for self-care, thereby supporting and enhancing treatment effectiveness. In Vietnam, the Ministry of Health issued Circular No. 18/2020/TT-BYT, which provides regulations on nutritional activities in hospitals (1). Based on this regulatory framework, many hospitals have developed and implemented NEC activities for both inpatients and outpatients.

Despite increased attention to NEC for inpatients in recent years, hospitals continue to face significant challenges in implementing NEC activities. A study conducted in 2022

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Submited: 9 January, 2026
Revised version received: 28 February, 2026
Published: 28 February, 2026
DOI: https://doi.org/10.38148/JHDS.0901SKPT26-007_E

at a hospital in Ho Chi Minh city reported that only 40.3% of inpatients participated in nutrition education sessions (2). Another study in 2021 found that while 100% of inpatients received individual nutrition counseling, only 63.8% participated in group-based nutrition communication activities (3). Evidence from previous studies conducted at a hospital in Ho Chi Minh City (2021) and at a hospital in Thai Binh province (2017) indicates that NEC implementation is influenced by multiple factors, including the availability of regulations and operational guidelines, training of healthcare staff in nutrition and communication skills, and the level of coordination between nutrition department and clinical departments (2,4).

This study was conducted at a class I general hospital in Da Nang, which is responsible for providing healthcare services for officials from the Central and Central Highlands regions of Vietnam. At this hospital, the Nutrition Department serves as the focal unit for coordinating with clinical departments to deliver NEC activities for patients. However, hospital reports from 2023–2024 indicated that NEC activities remained limited. Some patients reported that they did not receive adequate or comprehensive information regarding their nutritional regimens during hospitalization and after discharge.

Despite initial reports on NEC implementation from several hospitals, studies still lack comprehensive and especially qualitative evidence on the factors influencing NEC effectiveness in specific clinical settings (6,7). Therefore, this study employed a mixed-methods approach to describe the current status of NEC activities for inpatients at a hospital in 2025 and to explore the facilitators and barriers influencing their implementation. The findings are expected to provide scientific evidence to inform improvements in hospital-based nutrition services and enhance patient satisfaction.

STUDY DESIGN METHODS

Study participants

Quantitative component: Inpatients aged ≥18 years who had been admitted for at least three days participated in the quantitative survey. Patients unable to provide informed responses due to mental health disorders or cognitive impairments affecting perception or communication were excluded.

Qualitative component: Three groups of participants participated in in-depth interviews or focus group discussions: (1) hospital leaders and departmental managers, including representatives of the hospital directorate and heads of the Department of Nutrition and clinical departments; (2) physicians and nurses working in the Department of Nutrition and clinical departments; and (3) inpatients.

Study setting and duration

The study was conducted from November 2024 to November 2025 at a Class I hospital in Da Nang City. Data collection was conducted in July 2025.

Study design

An explanatory sequential mixed-methods design was employed, in which a cross-sectional quantitative study was conducted first, followed by a qualitative phase to further explain the quantitative findings.

Sample size and sampling

Quantitative sample size and sampling

The sample size was calculated using the formula for estimating a single population proportion:

$$n = Z^2_{(1-\alpha/2)} \frac{p(1-p)}{d^2}$$

In which: $\alpha = 0.05$, , $p = 0.4$ (proportion of tobacco advertising violations in period 2009

– 2015 to obtain the largest require sample) (7); ε = 0.15. The required sample size was 256 POS; To accommodate up to 15% potentially invalid observation forms, the sample size was increased to 300 POS per province.

Study variables and qualitative research topics

General information: Socio-demographic characteristics of POS included the type of POS (categorized as convenience store, café, pushcart, restaurant, and others) and location (urban and rural areas).

The primary outcome variables were violations of bans on tobacco advertising, promotion, and display at POS.

Violation of tobacco advertising at POS: A POS was identified as violating tobacco advertising ban if investigators observed any of 14 methods used to showcase tobacco products to public. This included, but was not limited to: using counters/poster/billboards (with logo, symbol, brand names, colors of tobacco products); Umbrellas, ribbons carrying tobacco branding; Tobacco display shelf/shelves with logo, symbol, brand name, color of tobacco products; branded display in other objects such as lighters, ash-trays etc.;

Violation of tobacco promotion at POS: any of 7 promotional activities such as offering promotion prices, buying in bulk and getting discount, free gifts, free coupons, were recorded.

Violation of tobacco display at POS: display more than one pack/carton per brand.

Tools and methods of data collection: An observational checklist was used to record violations of tobacco advertising, promotion, and display at POS. The checklist was adapted from a survey used in 2015 (10). It was piloted at selected POS in Hanoi and adjusted before the data collection. After obtaining permission from the POS owner, investigators observed from outside to inside of the POS and recorded any violations using the checklist form. For promotional violations, investigators combined direct observation with asking the POS's owner or staff about promotion activities.

Processing and analyzing data: Quantitative data were entered using EpiData 3.1 software and analyzed using Stata version 16.0. Descriptive statistics, including frequency (n) and proportion (%) were used to summarize the data. The Chi-squared test with 95% confidence intervals was used to determine differences in proportions and to examine associations between violations and factors such as province, location, and POS type.

Research ethics: The study was reviewed and approved by the Ethics Committee of the Hanoi University of Public Health under Decision No. 354/2024/YTCC-HD3, dated August 19, 2024.

The study protocol was approved by the Research Ethics Committee of Hanoi University of Public Health (Decision No. 322/2025/YTCC-HD3, dated July 2, 2025). Permission to conduct the study was obtained from the hospital administration. All participants were fully informed about the study objectives and procedures and provided voluntary written informed consent prior to participation.

RESULTS

Socio-demographic characteristics of study participants

Table 3.1. Socio-demographic characteristics of the study participants (n=112)

Category	Frequency (n)	Percentage (%)
Gender		
Female	58	48.2
Male	54	51.8
Age group		
40-59 years	35	31.2
≥60 years	77	68.8
Mean age: 65.4; standard deviation (SD): 10.4		
Residence		
At Da Nang	99	88.4
Other provinces	13	11.6
Educational level		
Below High School	20	17.9
High School	42	37.5
Intermediate / College	19	17
University or higher	31	27.6
Occupation		
Civil servants / Public officials	9	8.0
Retired	96	85.7
Others	7	6.3
Clinical Department		
Geriatrics	19	17.0
General surgery	29	25.9
Respiratory medicine	23	20.5
Endocrinology	25	22.3
Others	16	14.3

Table 3.1 summarizes the socio-demographic characteristics of the participants. The sample included a comparable proportion of males (51.8%) and females (48.2%). The mean age was 65.4 years (SD = 10.4), with 68.8% aged 60 years or older. Most participants resided in Da Nang City (88.4%). Participants with intermediate/college or higher education accounted for 44.6%, and the majority were retired (85.7%). Patients were mainly admitted to General Surgery (25.9%), Endocrinology (22.3%), and Respiratory Medicine (20.5%).

Current status of NEC activities at the hospital based on inpatient feedback

According to the hospital's 2024 annual report, the main nutrition education and communication (NEC) activities for inpatients included direct communication methods, such as individual and group counseling, as well as indirect communication through leaflets, banners, and posters. Digital channels, including websites, social media platforms, and video had not yet been implemented. Patients' feedback on nutrition education and communication activities is summarized in the tables below.

Table 3.2. Participation rates in NEC activities during hospitalization (n=112)

Categories	Frequency (n)	Percentage (%)
Direct communication		
Individual counseling	98	87.5
Group communication	7	6.3
Indirect communication		
Handouts / Leaflets	84	75
Panels / Posters	76	67.9

Table 3.2 shows that individual nutrition counseling**,** the primary direct NEC activity**,** was reported by 87.5% of inpatients, while participation in group nutrition communication was limited (6.3%). Among indirect NEC activities, most patients received information through handouts or leaflets (75.0%) and panels or posters (67.9%), whereas exposure to digital videos and images was minimal (1.8%).

Table 3.3. Inpatients' evaluation of individual nutrition counseling (n=98)

Category	Frequency (n)	Percentage (%)
Counseling Content		
Food selection	91	92.9
Proper food preparation	23	23.4
Meal portioning	84	85.7
Daily fluid intake	81	82.7
Exercise and rest regimen	15	15.3
Disease progression monitoring	67	68.4
Periodic laboratory testing	69	70.4
Counseling Duration		
< 10 minutes	84	85.7
10- 20 minutes	10	10.2
> 20 minutes	4	4.1
General feedback		
Useful and practically applicable content	48	49.0
Detailed, comprehensible, and comprehensive content	47	48.0
Appropriate methodology	69	70.4
Appropriate duration	42	42.9
Appropriate timing	50	51.0
Overall Positive Evaluation	**30**	**30.6**

Table 3.3 shows that individual nutrition counseling covered multiple content areas, most commonly food selection (92.9%), meal portioning (85.7%), daily fluid intake

(82.7%), and periodic laboratory testing (70.4%). Most counseling sessions lasted less than 10 minutes (85.7%). While specific aspects such as counseling methodology received relatively high ratings (70.4%), only 30.6% of patients reported an overall positive evaluation of individual nutrition counseling.

Table 3.4. Inpatients' evaluation of indirect communication

Category	Frequency (n)	Percentage (%)
General feedback on indirect communication (n=74)		
Useful content	36	48.6
Clear and comprehensive content	49	66.2
Visually appealing and professional format	58	78.3
Placed in highly visible locations	42	56.7
Overall positive evaluation	34	45.9
Reasons for not reading handouts/leaflets (n=28)		
Lack of interest	5	17.8
Did not notice the communication corner	13	46.4
Visual impairment / Poor eyesight	10	35.7
Reasons for not reading panels/posters (n=36)		
Lack of interest	7	19.4
Did not notice the panels	22	61.1
Visual impairment / Poor eyesight	7	19.4

Table 3.4 shows that 45.9% of inpatients who were exposed to indirect NEC activities reported an overall positive evaluation. Among specific aspects, the visual appeal and professional format of communication materials received the highest rating (78.3.0%), followed by clear and comprehensive content (66.2%). Regarding barriers to accessing handouts/leaflet materials, nearly half of the patients reported not noticing the communication corner for handouts or leaflets (46.4%), and more than one-third cited visual impairment or poor eyesight (35.7%). Similarly, among patients who did not read panels or posters, the most common reason was not noticing the panels (61.1%).

Factors influencing nutrition education and NEC activities for inpatients

Facilitating factors

Several participants perceived strong leadership commitment as facilitating NEC implementation. NEC has been formally incorporated into the hospital's 2025–2030 strategic plan as well as its annual operational plans. Based on these plans, the hospital allocated appropriate human and financial resources dedicated to communication activities, reflecting a high level of institutional commitment.

"There has been greater attention from the hospital leadership and the heads and deputy heads of departments. Clinical nutrition is considered an indispensable part of comprehensive patient care. That

is why communication activities have been incorporated into the strategic plan. Each year, the Nutrition Department serves as the focal point for proposing human and financial resources for nutrition communication activities, and these proposals are consistently approved by the hospital leadership"(FGD 01)

Barriers to NEC implementation

Participants also highlighted **limitations in human resources capacity** within the Nutrition Department. Existing staff were reported to not fully meet the required competencies in clinical nutrition and NEC implementation. Due to staffing constraints, the development of nutrition communication materials has not progressed as planned. In addition, nurses reported limited access to training in specialized clinical nutrition for different disease conditions, leading to gaps in both knowledge and communication skills.

"It could be said that not much has been achieved. General health education is lacking, let alone specialized training for nutrition education. The lack of nutritional knowledge and communication skills is a concern that needs to be addressed. Currently, we have received almost no formal training on specialized nutrition topics." (FGD 02)

Limited coordination between the Nutrition Department and clinical units was also identified as a barrier. The lack of clearly defined inter-departmental regulations was reported to hinder the implementation of disease-specific NEC activities at the ward level. Furthermore, the Nutrition Department was perceived as lacking sufficient capacity to function as a central coordinating unit.

"The Nutrition Department cannot yet serve as a central coordinating unit due to both a quantitative and qualitative shortage of personnel. Collaborative activities between clinical departments and the Nutrition Department lack specific regulations and are, therefore, loosely organized." (IDI 02)

Despite the leadership commitment**, the absence of mandatory NEC requirements** within standardized treatment protocols was reported as a major barrier, resulting in inconsistent implementation across clinical departments.

"Nutrition communication is a critical field in treatment; however, there is currently a major gap in mandatory regulations and the integration of nutrition during clinical treatment for patients in each specialty." (IDI 02)

Financial constraints were identified as a barrier to the effective implementation of NEC activities. Although some infrastructural improvements were observed, such as the installation of televisions and LED screens in public areas, available funding was considered insufficient to support the expansion of modern communication channels. Participants also reported that the lack of financial incentives for staff involved in communication activities reduced staff engagement and participation in these activities.

"Funding for nutrition education and communication must be balanced within the hospital's overall revenue and expenditure. Therefore, the budget available for innovation and investment in modern communication methods, particularly through social media, remains limited, which consequently affects implementation" (IDI 02).

"Most of the funding is typically allocated to strengthening clinical services. There is no specific funding to support implementation or to provide incentives for those directly involved. As a result, nurses responsible for these activities are not very motivated due to the lack of incentives." *"* (FGD 02).

Table 3.5 summarizes the key facilitators and barriers influencing the implementation of nutrition education and communication (NEC) activities for inpatients, as identified through in-depth interviews and focus group discussions. The findings highlight the roles of management and policy, human resources, and facilities and financial capacity in shaping the effectiveness of NEC implementation.

Table 3.5. Summary of factors influencing NEC activities for inpatients

Category	Facilitators	Barriers
Management & policy	• Strong leadership commitment to NEC activities. • Integration of NEC into the hospital's 2025–2030 strategic plan and annual operational plans.	• Lack of disease-specific clinical nutrition guidelines. • NEC not yet mandated within standardized treatment protocols.
Human resources	• Presence of a dedicated Nutrition Department	• Insufficient NEC-related training activities. • Suboptimal coordination between the Nutrition Department and clinical departments.
Facilities & finance	• Improved communication infrastructure (TVs and LED screens in public areas).	• Limited funding for the development of modern communication channels (websites, fanpages, videos). • Lack of financial incentives for staff involved in communication activities

DISCUSSION

Current status of nutrition education and communication for inpatients

Circular No. 18/2021/TT-BYT issued by the Ministry of Health clearly stipulates that *"hospitals must develop communication materials on dietetics and food safety and organize nutrition education for patients, their families, and hospital staff"*(1). In recent years, hospitals nationwide have established nutrition networks and strengthened hospital-based nutrition activities. In general, NEC for inpatients has been implemented through various modalities, including group education sessions, individual nutrition counseling, and multimedia-based communication combined with traditional approaches such as printed materials (6). However, in many hospitals, NEC activities have not yet been implemented with sufficient frequency or effectiveness (3,8).

The findings of this study regarding NEC activities based on inpatient feedback are largely consistent with those of previous studies. In our study, individual nutrition counseling was the predominant NEC modality, with a high coverage rate of 87.5%. This finding aligns with a study conducted in 2024 at Vinh Phuc General Hospital, which reported that 91.5% of inpatients received nutrition counseling, while 8.6% had not participated any IEC activities (9). Similarly, another study carried out in 2020 at a hospital in Ho Chi Minh City reported that 83% of patients received nutrition counseling during hospitalization, although patient satisfaction with this activity remained at a moderate level (7).

The evaluation of indirect NEC activities in

this study also corresponds with findings from previous assessments. An evaluation of hospital nutrition departments based on the Vietnam Hospital Quality Criteria showed that although leaflets and posters for common diseases had been developed, several limitations persisted, including insufficient coordination across clinical departments, limited communication corners, underutilization of modern communication channels, and content that was not fully beneficial to patients (9). These limitations likely contributed to the moderate satisfaction rate for indirect NEC observed in our study (45.9%).

Factors influencing NEC activities for inpatients

The findings indicate that strong hospital leadership commitment positively influences NEC activities, which is consistent with other studies. In recent years, nutrition education and counseling in hospitals have received increased attention, and some facilities have successfully developed plans and protocols that promote NEC implementation for inpatients (4,7,10,11).

Human resources were identified as a critical determinant of NEC effectiveness. Similar to previous research, limitations in nutrition counseling are often attributed to heavy workloads among healthcare staff, insufficient training opportunities, and infrequent updates in nutrition knowledge (7,10). In this study, the reported lack of specialized NEC training and communication skills among nurses corresponds with the modest patient satisfaction levels related to counseling content, duration, and timing, as reflected in the quantitative results, where only 30.6% of patients provided an overall positive evaluation of individual nutrition counseling.

In addition, the absence of clearly defined regulations regarding responsibilities and coordination between the Nutrition Department and clinical departments has led to inconsistent NEC implementation across clinical units. This finding is consistent with earlier studies highlighting the importance of inter-departmental coordination in effective hospital-based nutrition education (7,10).

As this study was conducted in a hospital located in a socio-economically developed urban setting, there is an evident demand for NEC activities to utilize modern communication channels. Although the hospital has invested in communication infrastructure in public areas, visual and verbal communication methods remain particularly suitable for elderly patients, who accounted for 68.8% of the study population. These methods facilitate easier access to and application of nutrition knowledge tailored to patients' clinical conditions. Nevertheless, the hospital still requires dedicated funding for both equipment investment and the operation of modern communication platforms, as reported in previous studies (7,12).

Importantly, the qualitative findings reveal that the absence of mandatory integration of NEC into standardized clinical pathways represents a major systemic barrier. This regulatory gap helps explain why, despite the high coverage rate of individual nutrition counseling (87.5%), the overall positive evaluation remained low (30.6%). Without formal protocols defining the timing, content, and departmental responsibilities for NEC, activities tend to be fragmented and lack sufficient depth to support meaningful behavioral change. This finding is consistent with existing evidence emphasizing that nutrition should be institutionalized as an integral component of clinical treatment rather than an optional service (7,10).

Study limitations

This study has several limitations. First, the relatively small sample size (n = 112) and the single-hospital setting may limit the generalizability of the findings. Second, the cross-sectional design precludes the assessment

of changes over time. Third, reliance on patient self-reported evaluations may introduce recall bias. Nevertheless, by employing a mixed-methods approach that integrates qualitative insights from hospital managers and healthcare providers, the study offers a comprehensive understanding of systemic facilitators and barriers and provides a solid foundation for targeted improvements in hospital-based NEC activities**.** Continuous monitoring and periodic evaluation may further support the refinement and sustainability of hospital-based NEC activities.

CONCLUSION AND RECOMMENDATIONS

This study revealed high coverage of NEC activities, particularly individual counseling (87.5%), whereas patient satisfaction remained low. Overall satisfaction with individual nutrition counseling and indirect NEC activities was 30.6% and 45.9%, respectively. Qualitative findings suggested several systemic barriers, including the lack of mandatory integration of NEC into standardized clinical protocols and suboptimal coordination between departments.

To improve NEC effectiveness, hospitals should formally incorporate nutrition education into discharge planning processes, develop standardized clinical nutrition guidelines, and strengthen coordination between the Nutrition Department and clinical departments and implement sustained professional training in nutrition and communication skills for healthcare staff.

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