

Experience of Healthcare Providers on Enteral Nutrition: Challenges and Ways to Improve Current Practice

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ABSTRACT

The aim of this qualitative study is to explore the experience of Healthcare Providers (HCPs) in Enteral Nutrition (EN) practice in hospital settings, the challenges they encounter, and the possible ways to improve the current practice. The study involved conducting in-depth interviews with expert panels, including clinicians, dietitians, nurses, and academic professionals who are involved in clinical or teaching practices related to EN. The recording of the interview was transcribed verbatim after each session. The coding process was done using the computer-assisted qualitative data analysis software Atlas-ti. The thematic analysis procedure by Braun and Clarke is used to analyze the transcription. At the end of the study, eleven interviews were conducted, transcribed, and analyzed. Six themes addressing the challenges in EN were identified. The themes are standardization of EN practice, enteral feeding provision, knowledge of nurses, attitude of HCPs, skills of nurses, and resources in the healthcare facility. In addition to that, four themes addressing the current needs of EN practice were also documented. The themes identified are EN guidelines and protocols, improving Knowledge, Attitude, and Practice (KAP) on EN, continuous education on EN, and improving healthcare facilities. The insights shared by the participants can be thoroughly examined to develop strategies for enhancing existing EN processes.

Keywords: enteral nutrition, enteral nutrition training, qualitative study

INTRODUCTION

Enteral Nutrition (EN) is a form of nutrition therapy given to hospitalized patients alongside Parenteral Nutrition (PN) (McClave *et al.* 2016). The provision of EN is a comprehensive process that begins with nutrition screening and assessing nutritional needs, followed by planning the nutrition intervention that includes the prescription of energy and nutrients and selecting enteral products, implementing the plan, and finally, monitoring and evaluating the plan (Ukleja *et al.* 2018). A multidisciplinary team, such as a Nutrition Support Team (NST), is needed to implement an effective EN intervention. European Society for Parenteral and Enteral Nutrition (ESPEN) Guidelines listed clinicians, nurses, dietitians, and pharmacists as part of an NST in a hospital. Each member has their own role to ensure that the quality of patient care could be improved (Cederholm *et al.* 2017).

EN support has become an integral aspect of hospitalized patients with functional gastrointestinal tract who cannot meet their nutritional needs orally. There are many EN guidelines available to assist Healthcare Providers (HCPs) in providing EN to patients. These guidelines provide general and specific recommendations to HCPs on patient assessment, tube management, feeding administration and monitoring, hygiene and infection control, and patient education. Despite the existence of these evidence-based guidelines, ensuring adequate enteral feeding for tube-fed patients remains a persistent challenge. As a result, malnutrition is still prevalent among hospitalized patients (Eu *et al.* 2019; Inciong *et al.* 2020; Latiff *et al.* 2016). Research has demonstrated that there are several barriers that can hinder the successful implementation of EN for patients. These barriers can be classified into different categories: resources, guideline recommendations, guideline

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implementation strategies, healthcare provider behavior, and patient-related factors (Cahill *et al.* 2012).

To overcome these obstacles and optimize EN, it is crucial to understand the current practices and challenges and plan strategies for improvement. Regrettably, there is a lack of research on the perspectives of HCPs regarding EN provision in Malaysia. This study aims to address this gap by exploring HCPs' experiences with EN practice in hospital settings, the challenges they face, and potential solutions for improvement.

METHODS

Design, location, and time

This study utilized a phenomenology qualitative design. We conducted a one-to-one in-depth interview with expert panels in EN from a university hospital in East Peninsular Malaysia. The interview used open-ended, semi-structured questions as guidance to explore current EN practices, the challenges that may arise while providing them, and ways to improve current practices. Previous relevant research was studied to formulate the interview guide. It was outlined in English, but the interviews were conducted in English and Malay according to the participants' preferences.

This study was conducted between October 2022 and January 2023 and received ethical approval from the International Islamic University Malaysia (IIUM) Research Ethics Committee (reference number IIUM/504/14/11/2/IREC 2022-127) and MARA University of Technology (UiTM) Research Ethics Committee (reference number REC/07/2022 (PG/MR/152)). The study ensured confidentiality by not disclosing participant names and saving recordings and transcripts in a password-protected computer. This study applied the Consolidated Criteria for Reporting Qualitative Studies (COREQ) as a guide in reporting data (Tong *et al.* 2007).

Sampling

For the in-depth interview, expert panels in EN with at least five years of experience in clinical or teaching practice related to EN were carefully selected through a purposive sampling method. Twenty-five individuals from a university hospital in Pahang were approached via email and phone call invitations with a brief explanation of

the study's objectives. Only eleven participants were recruited after the initial invitations. Others declined, mentioning being occupied or lack of experience as reasons. Some of the participants are working in the same university hospital as the interviewer, while others are acquaintances from the university campus. This common ground helped establish a positive, trusting relationship and facilitated a smooth interview process.

Data collection

A one-to-one in-depth interview was conducted on a medium preferred by the participants. A physical or face-to-face interview was done in the participant's office and recorded using a Philips audio recorder, while online interviews were done on Microsoft Teams and recorded using the online medium. The study's first author conducted the interviews. Before starting data collection, she received training from a senior researcher with experience in in-depth interviews who supervised the first two interview sessions for quality control and guidance.

The interview guide was reviewed by a dietetic and a nursing lecturer with experience in qualitative methodology. It was then pilot-tested in a pre-interview with a dietitian and a nurse. To ensure that all relevant topics were covered, additional probes and follow-up questions were added based on the emerging facts and points revealed by the participants throughout the interview. The interviewer also took field notes during the interview session to enrich the data.

Before each interview, participants were briefed about the interview's purpose and expected duration. Informed consent was obtained, and the interviews were conducted for 40–60 minutes. Participants were informed about the handling, security, and preservation of their data. However, due to practical limitations, transcripts were not provided to them. Nonetheless, participants have the option to request access to their transcripts.

Data analysis

Qualitative data analysis was done simultaneously with data collection. The interviews were transcribed in Malay and English using a true verbatim approach, integrating them with field notes. The non-verbal background was excluded from the analysis. The transcribed data in Malay were not translated into English to avoid potential limitations in the data analysis.

However, to make the qualitative report more accessible, standardized, collaborative, and inclusive of diverse perspectives, certain quotes were translated into English.

The 6-step procedure of thematic analysis by Braun and Clarke is used to analyze the transcription (Braun & Clarke 2006). The process comprises familiarizing with the data, generating initial code, searching themes, reviewing themes, defining themes, and producing the report. The coding process of the data set was done using the computer-assisted qualitative data analysis software Atlas-Ti® version 23. The software is primarily utilized to tag and name the codes extracted from the transcription and to generate links or networks between the codes. To ensure credibility, all research team members worked systematically to analyze all datasets.

RESULTS AND DISCUSSION

Table 1 describes the characteristics of participants in the study. Eleven expert panels were interviewed, and data saturation was reached during the eleventh interview, with no further relevant information obtained. The participants' ages ranged from 32 to 44 years old. The average

Table 1. Demographic data of in-depth interviews

Participant (n=11)	Gender*	Age	Profession	Year of clinical experience (years)
P1	F	39	Academician	13
P2	F	32	Dietitian	5
P3	F	32	Dietitian	6
P4	F	39	Academician	13
P5	F	39	Academician	13
P6	F	42	Nurse	19
P7	M	35	Nurse	10
P8	F	43	Nurse	20
P9	M	44	Clinician	19
P10	M	36	Clinician	11
P11	M	41	Clinician	15

F: Female; M: Male; P1-P11: Participant 1 to participant 11

years of the expert panels involved in clinical or teaching practice related to enteral nutrition were 13 years.

Following the thematic analysis, ten themes were identified. Six of these addressed challenges in EN, while the remaining four addressed the current needs of EN practice. Table 2 and Table 3 provide a comprehensive summary of the themes and sub-themes identified.

Themes addressing EN challenges

Six themes emerged from the question related to EN challenges faced by the HCPs in their setting.

Theme 1. Standardization of EN practice.

Participants pointed out that the unstandardized EN practice could be due to the lack of local EN guidelines or protocols and a lack of integration:

“So far, if you asked me all those standard protocols, we still do not have a clear standard protocol, be it Ministry of Health, private sector, or local universities. Most of the protocols come in silos. Meaning that dietitian comes out with their own protocol, nurses have their own protocol, and doctors have their own guidelines. However, talking about the integration of discipline in taking care of the client with enteral nutrition feeding, actually, it should not be isolated. We need one standard protocol whereby every profession has their own responsibility to look upon this patient”. (P5)

Another participant supported this by highlighting the varying practices across different disciplines:

“The practice is totally different from one ward to the other and from one specialty to the other. Medical practiced differently, so is surgery”. (P9)

Variations in EN practices may stem from a lack of established local guidelines or non-adherence to the already established guidelines or protocols (Cahill *et al.* 2010; Kozeniecki *et al.* 2016; Quenot *et al.* 2010). In this study, it is found that there is a lack of standard protocols, integration, and diverse healthcare provider backgrounds, which results in varying EN practices. Similarly, another study also reported that differences in EN practices might be caused by the absence of national guidelines and protocols (Alsoqeah *et al.* 2023).

Theme 2. Enteral feeding provision. One of the most frequently voiced concerns with

Table 2. Themes and sub-themes addressing EN challenges

Themes	Sub-themes
Standardization of EN practice	Lack of EN guidelines and protocol Lack of integration of practice
Enteral feeding provision	Feeding interruption Feeding advancement Feeding intolerance and complication Improper handling of EN equipment and formula Continuation of enteral feeding at home
Knowledge of nurses	Lack of knowledge on the provision of EN feeding Only following orders without understanding the justification of the practice
Attitude of HCPs	Lack of awareness Lack of monitoring Miscommunication
Skills of nurses	Lack of experience handling EN Poor skills
Resources in the healthcare facility	Adequacy and availability of feeding equipment Supply of enteral formula Too much workload for nurses

EN: Enteral Nutrition; HCPs: Healthcare Providers

Table 3. Themes and sub-themes addressing current needs of EN practice

Themes	Sub-themes
Improve KAP on EN	Having own EN guideline Enhance knowledge and understanding of EN Good attitude toward EN Monitoring of practice in the ward
Continuous education on EN	Conduct EN training for nurses Provide EN education materials Coaching in the ward Educate caregiver on home EN
Improve healthcare facility	Support from management Availability of enteral feeding equipment and formula

KAP: Knowledge, Attitude, and Practice; EN: Enteral Nutrition

regard to EN provision is related to feeding intolerance and complications.

“Yes, feeding intolerance does happen. Some patients are unable to tolerate modular protein powder in which they will have loose stool. Some could not digest the formula, causing vomiting or gastric residual. So far, what has

been practiced by clinicians is to change the enteral feeding regime, for example, omitting the protein powder”. (P7)

Feeding interruption is another challenge faced while providing EN to patients.

“For example, if the patient is still on ongoing treatment and so happens, their feeding

has to be stopped because of one particular procedure or treatment. Or, when new medications were introduced to the patient, it affected our feeding". (P3)

A participant raised concerns about continuing enteral feeding at home after the patient is discharged:

"... as I mentioned earlier, when the patient is discharged, how to continue the enteral feeding at home. We must educate both the caregiver and nurse on how to continue enteral feeding at home. Tube care, maintaining good hygiene, and managing the enteral formula. Sometimes, the caregiver does not understand why the patient needs to be tube-fed. We have to tell them why". (P3)

Theme 3. Knowledge of nurses. Lack of EN knowledge among nurses is also one of the challenges highlighted by many.

"From a nursing perspective, the challenges in EN are mostly due to a lack of knowledge, which can be caused by the variety of backgrounds of the nurses". (P6)

It is also reported that due to a lack of knowledge, most nurses only followed orders without understanding the justification of each practice.

"I believe that currently, we simply follow the doctor's orders and carry out their instructions. However, our nurses may not always understand the reasoning behind the dietary and nutritional plans we implement for our patients". (P7)

KAP of the HCPs is a significant factor that contributes to the challenges in EN. The expert panels have expressed concerns about the insufficient knowledge and understanding of EN, particularly among nurses. This would cause variation in the enteral feeding process and could be one of the reasons for a delay in EN optimization (Kozeniecki *et al.* 2016). Several studies that have been carried out to evaluate nurses' KAP on EN disclosed insufficient knowledge among nurses concerning EN practices (Hadera *et al.* 2022; Hamdan *et al.* 2022; Mooi & Ncama 2020). On the other hand, some studies have shown that nurses possess adequate knowledge in certain areas of EN, such as overall management (Al-Qalah & Alrubaiee 2020) and the correct placement of nasogastric tubes (Mula *et al.* 2014).

The primary sources of EN information among nurses are hospital protocols and dietitians, but only a small number of them

follow the protocol and have access to a dietitian outside of office hours (Morphet *et al.* 2016). Other common sources of EN knowledge include postgraduate studies, journal articles, hospital in-service training, the Internet, and nursing schools (Darawad *et al.* 2015; Morphet *et al.* 2016; Persenius *et al.* 2006).

Theme 4. Attitude of HCPs. A participant expressed concerns about the attitude of HCPs, citing they are lack of awareness of EN guidelines:

"Sometimes, the behavior and attitude of the healthcare professionals themselves. Whether you want to follow the guidelines or not, that is the attitude of that particular person". (P5)

Effective communication between HCPs is also crucial to ensuring successful EN provision to patients.

"The nurses did not inform us, dietitian, when there is feeding intolerance such as diarrhea." (P2)

Some participants have highlighted the lack of awareness among HCPs regarding the importance of EN. This attitude is similar to what was revealed in a qualitative study on barriers and enablers to nutrition care in oesophageal cancers (Martin *et al.* 2016). Contrary to the findings, other studies conducted in China and Malaysia found that HCPs have a positive outlook toward nutrition support (Hamdan *et al.* 2022; Karim *et al.* 2015; Lyu *et al.* 2021). While an individual's attitude may not directly affect their practice, having a positive outlook toward a specific clinical practice can lead to improved clinical service and patient care (Rekisso *et al.* 2022). Additionally, it is a key indicator of how HCPs perceive and make decisions regarding various matters (Melariri *et al.* 2021).

Theme 5. Skills of nurses. Many healthcare practices, including enteral feeding, require a skillful staff to ensure smooth and correct practice. Having poor enteral feeding skills would certainly affect the feeding administration.

"...third is actually the method of feeding the patient -the preparation and administration of enteral feeding. It is best to have our own protocol, how to administer, and how to prevent blocked tubes. All these are very important because inserting a feeding tube is not an easy task. So, taking good care of the feeding tube wholesomely is very important". (P9)

One of the determinants of a good EN practice and skillful HCPs is the experience of the practitioner.

“The first one is the nurses who have had experiences giving enteral nutrition to patients before, so they know the flow and the -how to initiate the feeding. They also know how to monitor the patient afterward and what are the monitoring aspects we want to know if the patient does not tolerate the feeding. That is one. Then, there is another kind of nurse; this kind of nurse is one who does not have any experience regarding the feeding regime before. So, they are completely clueless, or maybe just waiting for us to start everything and instruct them on the proper feeding regime”. (P3)

One of the participants emphasized that while experience is not the sole factor in determining good skills and practices, it is still an important determinant to consider:

“When situations like this arise, we need to provide education to those who may need a refresher on proper enteral nutrition administration. For instance, some staff members who have only worked in clinics may not have had experience with enteral feeding. Others may not have had much exposure to EN practice during their studies”. (P6)

In a hospital setting, nurses play important roles in EN provision, from initiation of feeding to monitoring and evaluating outcomes of EN (Schaefer *et al.* 2019). Inadequate experience in handling EN and substandard skills in providing it can affect the feeding provision. Several participants listed that insertion of the feeding tube, preparation and handling of enteral formula, and management of feeding intolerance and complications are vital EN processes that must be mastered. Other research evaluating nurses' EN practice reported areas of practice that need improvement include the evaluation of gastrointestinal system tolerance (Hamdan *et al.* 2022; Özyürek & Gürlek Kisacik 2021), assessment of patient's nutrition condition (Lyu *et al.* 2021), and early initiation of enteral feeding (Ramuada *et al.* 2023).

Theme 6. Resources in the healthcare facility. The last theme related to the challenges in the current EN practice concerns resources in the healthcare facility. A shortage of equipment and enteral formula might affect the nutrition management of the patient.

“I think the main issue we are facing is a shortage of equipment. If you ask me personally, there are a few types of equipment that we still

need. For instance, our wards only have a limited number of feeding pumps, which means that not all patients who require them are able to receive them”. (P11)

Finally, an excessive workload for nurses also poses a challenge:

“... another challenge is if one particular nurse has too many patients under her supervision. Therefore, it is quite difficult to manage patient's enteral feeding”. (P1)

Healthcare facilities need adequate resources in order to provide proper nutrition support to patients. The participants in this study identified three resources crucial for EN and may pose a challenge if insufficient: the availability of feeding equipment, the supply of enteral formula, and adequate nursing staff to administer enteral feeding. The said resources are also among the major barriers to effective EN acknowledged by previous studies, alongside other barriers such as other aspects of patient care taking priority over nutrition and lack of dietitian support (Cahill *et al.* 2012; Darawad *et al.* 2018; Mirhosiny *et al.* 2021).

Themes addressing current needs of EN practice

Following the in-depth interview that delved into the challenges encountered, the participants then proceeded to examine ways to improve the current EN practice. Four themes related to the current needs of EN practice were identified.

Theme 7. EN guidelines and protocol. For an institution, having its own EN local guidelines and protocol would help standardize EN practice.

“We must have a proper EN guideline, not just for us, but also for our nurses. For instance, a protocol must be in place to address inadequate feeding. Currently, our nurses are simply carrying out orders without knowing what steps to take in such a situation”. (P11)

According to the study participants, developing local guidelines or protocols for EN would help overcome this challenge. Research has demonstrated that implementing such protocols or guidelines can enhance EN practices and lead to improved clinical outcomes (Kim *et al.* 2017; Padar *et al.* 2017). Developing and implementing EN guidelines or protocols has been proven to enhance the delivery of EN and increase the adequacy of nutritional consumption (O'Leary-Kelley & Bawel-Brinkley 2017). It

is recommended by the American Society of Parenteral and Enteral Nutrition (ASPEN) that organizations establish policies and evidence-based guidelines for assessing and caring for patients receiving EN. Developing guidelines that align practices across professions, departments, and settings, as well as fostering interdisciplinary collaboration and standardization, are crucial components of this process (Boullata *et al.* 2017).

Theme 8. Improving Knowledge, Attitude, and Practice (KAP) on EN. Enhancing the knowledge and understanding of HCPs on EN is crucial for them to deliver more efficient and effective patient care. The expert panels in the interview have identified this as one way to improve their KAP:

"I think it's good to educate the nurses to have more knowledge on EN practice, from initiation of feeding until monitoring. Not only related to feeding administration, like preparation of formula, but also extend to the whole guideline of EN practice; initiation of feeding, when and how much to start with clear fluid, how to step up the feeding regime, preparation of formula, dilution, and what to monitor". (P2)

Apart from knowledge and good clinical skills, it is important to have a positive attitude towards nutrition.

"...preparing enteral formula may seem simple, but it is often overlooked as unimportant. Nevertheless, initiating enteral feeding starts with formula preparation". (P8)

The expert panels also emphasized the importance of monitoring EN practice in hospital wards:

"We have to have an assessment of the practice by their supervisor. Regular checks on the practice are necessary, whether the tube is okay or the feeding administration is appropriate. The team leader or educator must conduct the assessments". (P6)

Theme 9. Continuous education on EN. The panels also discussed the importance of continuous education for HCPs to improve EN provision. The first one is conducting EN training for nurses.

"It's necessary because it is one of the required skills that the nurses need to have, especially in the general ward. We need to train them not only on the administration of enteral feeding but also on how to educate the patient on the importance of good nutrition. Those two are actually important". (P9)

Secondly, providing EN education materials such as posters, booklets, and pamphlets is also a good way to impart knowledge.

"Besides that, we can produce a nice poster and display it on the workstation so that can always look at it". (P1)

Continuous education also involves monitoring practices, particularly in the ward.

"...especially if you have junior staff members in the ward who lack confidence in taking care of a patient, it is advisable to pair them with a senior staff member. Implement a six-month close monitoring period". (P5)

Continuous education is not only limited to HCPs but is extended to the caregivers who will continue the enteral feeding at home.

"One thing is education on both sides, to the -same goes to the nurses, same goes to the family members because they will be continuing -some of the patients will be continuing the enteral feeding at home". (P10)

During the interview, the expert panels discussed various strategies to enhance the delivery of EN, and one of them was to improve the KAP of HCPs. They agreed that continuous education is crucial in achieving this goal, which can be done by providing EN training, producing EN educational materials, and coaching nurses in the ward. This aligns with other studies that highlight the importance of clinical nutrition education for HCPs to improve EN practice (Al-Qalah & Alrubaiee 2020; Boland *et al.* 2022; Lyu *et al.* 2021; Morphet *et al.* 2016; Özyürek & Gürlek Kisacik 2021).

In addition, the panels also emphasized the need to educate caregivers in cases where home EN is needed. These are supported by ASPEN, which recommends EN training for both HCPs and caregivers at home to ensure safe and effective care (Boullata *et al.* 2017).

Theme 10. Improve healthcare facility. Resources such as enteral feeding equipment and formula are important to ensure successful EN provision.

"Secondly, for nasogastric tube, most of the time, there's no problem. Except for patients with gastroparesis, we prefer nasojejunal tube feeding. However, the insertion of the tube can only be done by a few people in our hospital, specifically the upper GI team. On top of that, we require a special tube for the nasojejunal route that the patients have to buy themselves". (P11)

Finally, in order to implement all the recommendations, support from management is required.

“Besides training and following guidelines, having support from the managerial system is crucial to implement all the suggestions and recommendations to improve the service”. (P5)

Malaysia's healthcare sector is a top priority for the government. The Total Expenditure on Health (TEH) in 2019 was RM64.3 billion, equivalent to 4.3% of the country's GDP. The largest TEH was spent on curative care services, while education and training for health personnel ranked fifth (Ministry of Health Malaysia 2021). Although these statistics show the government's commitment to providing quality healthcare services, managing resources is crucial for a government-funded hospital. To overcome resource limitations but at the same time enhance facilities, internal strategies are necessary. Prioritizing patients with urgent nutrition needs, creating EN protocols to optimize resources, and implementing loan schemes for enteral feeding equipment and formula among hospitals are among the effective strategies that can be recommended.

To the best of our knowledge, this is the first study that focuses on the challenges and needs of EN in Malaysia, as seen by HCPs. The study used a qualitative approach to gather a detailed and comprehensive understanding of the participants' thoughts and views. However, there are some limitations in this study. First, the study's findings cannot be generalized widely, and further research that uses a quantitative approach and a larger sample size is necessary to strengthen the current results. Second, there is a gap in addressing patient-related factors in the findings of EN practice among HCPs. The focus on procedural aspects of EN, such as feeding administration and tube care, lacks a comprehensive consideration of a patient-centered approach.

CONCLUSION

Our study identified the challenges and ways to improve current EN practice from the perspective of various HCPs. The input from expert panels in EN from this study can be used to plan strategies to improve EN provision to patients, such as continuous education on EN to the HCPs, development of EN guidelines and

protocols, and strategies to improve healthcare facilities. On the institutional level, this can be achieved by organizing EN training for the HCPs and developing EN guidelines and protocols.

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DECLARATION OF CONFLICT OF INTERESTS

The authors have no conflict of interest.

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