

Original Article

Attitudes of Health Care Professionals Towards Gastrostomy Feeding in Older Adults in Malaysia[☆]Mohamad Hasif Jaafar¹, Sanjiv Mahadeva², Kit Mun Tan^{1,2}, Maw Pin Tan^{1,2*}¹ Ageing and Age-Associated Disorders Research Group, Health and Translational Medicine Cluster, ² Department of Medicine, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia

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SUMMARY

Background: The uptake of percutaneous endoscopic gastrostomy (PEG) tube insertion for long-term enteral feeding in the Malaysian population is poor. This study investigates the perception of Malaysian health care professionals (HCPs) towards gastrostomy feeding.**Methods:** A survey on knowledge, awareness of, and barriers to gastrostomy feeding was conducted among HCPs attending a national geriatrics conference. Responses were evaluated according to profession, years of experience, and specialty.**Results:** The questionnaire was completed by 180 participants. Of these, 119/180 (66%) agreed PEG feeding should be used for long-term enteral feeding (>8 weeks). Doctors were more likely to agree because they were convinced of the benefit of PEG feeding [odds ratio (OR), 95% confidence interval (CI) = 2.76 (1.06, 7.17)]. HCPs with >5 years' experience were more likely to agree because of family members' opinion [2.56 (1.11, 5.92)] and geriatrics workers were more likely to agree due to previous experiences [3.29 (1.30–8.34)]. Doctors were more likely to disagree due to unavailability of a PEG service [40.29 (5.59–290.42)], HCPs with >5 years' experience were more likely to disagree due to risks of the procedure [3.35 (0.92, 12.24)] and geriatrics workers were more likely to disagree as they were not convinced of the benefit of PEG feeding [5.57 (1.00–31.05)].**Conclusion:** This survey indicated that most HCPs involved in the care of geriatric patients would advocate PEG feeding. Important factors inhibiting the use of PEG tube feeding in Malaysia were identified. Future studies should explore the barriers to acceptance in order to identify potential solutions to improving PEG feeding use in Malaysia.

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1. Introduction

Dysphagia has been reported in 11% of community dwelling older individuals¹. It is associated with malnutrition, which can prolong the length of hospital stay²; and increased treatment costs, complications, and mortality³. Tube feeding is therefore often required to address nutrition, with the most common methods of

tube feeding being nasogastric (NG) tube feeding and percutaneous endoscopic gastrostomy (PEG) tube feeding.

Guidelines from the British Association of Parenteral and Enteral Nutrition (BAPEN) suggest that PEG feeding should be considered if patients are likely to receive enteral tube feeding for > 4–6 weeks⁴. While studies have shown that PEG feeding is superior to NG feeding in terms of complication rates⁵, many patients still remain on long-term NG feeding in Asian countries^{6,7}. In Malaysia, a small pilot survey revealed that half of the clinicians interviewed would not recommend PEG feeding due to reluctance from family members and the perceived risk of the procedure⁷. No previous study has evaluated the opinion of health care professionals (HCPs) on the route of enteral feeding in Asia. The current study investigates the perception of Malaysian HCPs towards gastrostomy feeding, and explores potential differences in perception according to clinical experience, profession, and specialty.

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* Corresponding author: Maw Pin Tan, Department of Medicine, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia.

E-mail addresses: hasifjaafar@siswa.um.edu.my (M.H. Jaafar), sanjiv@um.edu.my (S. Mahadeva), tankitmun@um.edu.my (K.M. Tan), mptan@ummc.edu.my (M.P. Tan).

2. Materials and methods

A brief survey was conducted among HCPs attending a geriatric medical conference in Kuala Lumpur. The delegates of the conference included doctors, nurses, pharmacists, therapists, and carers in a variety of fields of interest from all over Malaysia, including the East Malaysian states of Sabah and Sarawak. The survey questionnaire enquired as to whether individual respondents would recommend PEG tube feeding for patients who are likely to require enteral feeding for >8 weeks. They were also asked to select their reasons for agreeing or disagreeing from a list of responses. Respondents were allowed to choose more than one reason for agreeing or disagreeing. The questionnaire had previously been assessed by an expert panel, and pretested in a smaller survey⁷. As the conference was conducted entirely in English, participants had adequate English proficiency to complete the questionnaire which was short and used simple English. Information about years of experience, occupation, and specialty were collected from all participants through the questionnaire. To encourage truthfulness, no personally identifiable information was collected within the questionnaire and participants were informed that the questionnaires were anonymous. This study received a favorable ethical opinion from the University of Malaya Medical Centre Medical Ethics Committee.

2.1. Statistical analysis

Data analysis was conducted using SPSS Version 20 (SPSS Inc., Chicago, IL, USA). Years of experience was nonparametric and therefore expressed as median with interquartile ranges and compared using the Mann-Whitney *U* test. Categorical variables were presented as frequencies with percentages. Participants were grouped according to whether they were doctors, whether they have had >5 years' experience, and whether they were workers in geriatric medicine (WGMs). Preplanned comparisons were made according to the above characteristics, and presented as odds ratios (OR) with 95% confidence intervals (CI). Statistical significance was determined with the χ^2 -test. Potential confounders were adjusted for using logistic regression analysis. A *p* value of <0.05 was considered statistically significant. No corrections were made for multiple comparisons.

3. Results

3.1. Baseline characteristics

A total of 281 delegates registered for the conference. Of these, 87 (31%) were doctors, and 202 (72%) were women. One hundred and seventy (60%) conference delegates worked for the Ministry of Health, 73 (26%) for universities, and 28 (14%) for the private sector. Two hundred and one (72%) worked in a hospital, 46 (16%) in the community, and 34 (12%) in academia. Table 1 shows the states of origin of the 281 delegates compared to the population distribution of Malaysia according to the 2010 national census⁸. Twelve of the 14 states of Malaysia were represented within the conference.

A total of 180 (61%) respondents participated in this survey. Of these, 107 (59%) respondents were nurses, 43 (24%) were doctors, and the remaining 30 (17%) were other allied health professionals. There was no significant difference in the proportion of doctors attending the conference compared with the proportion of doctors responding to the survey (*p* = 0.268). Of the 180 respondents, the median years of experience (range) of doctors was 5 (3–10) years and other respondents was 6 (3–13) years. Eighty of the 180 (44%) respondents had ≥ 5 years' experience as a HCP. There was no significant difference in the proportion of doctors and other

Table 1
State of origin of delegates versus population distribution by state.

States	Number of Malaysian delegates	Percentage	Population distribution of Malaysia
Johor	11	4%	12%
Kedah	2	1%	7%
Kelantan	6	2%	5%
Kuala Lumpur	115	41%	6%
Labuan	1	0%	0%
Melaka	6	2%	3%
Negeri Sembilan	12	4%	4%
Pahang	2	1%	5%
Penang	6	2%	6%
Perak	26	9%	8%
Sabah	9	3%	11%
Sarawak	29	10%	9%
Selangor	54	19%	19%
Perlis	0	0%	1%
Terengganu	0	0%	4%
Total	279	100%	100%

respondents with ≥ 5 years' experience (52% vs 44%; *p* = 0.335). Forty (22%) of respondents worked within the specialty of geriatric medicine, the remaining 140 worked in: general medicine (36%), psychiatry (8%), intensive care (6%), nursing homes (2%), other medical specialties (26%), and no specific specialty (23%). WGMs were significantly more likely to have ≥ 5 years' experience compared with non-WGMs [28/40 (70.0%) vs. 66/134 (49.3%); *p* = 0.021].

3.2. Perceptions of gastrostomy feeding

One hundred and nineteen (66%) respondents agreed that PEG feeding should be used for patients requiring long-term enteral feeding, defined as requiring enteral feeding for > 8 weeks (Fig. 1). Using categorical analysis, there was no significant difference in

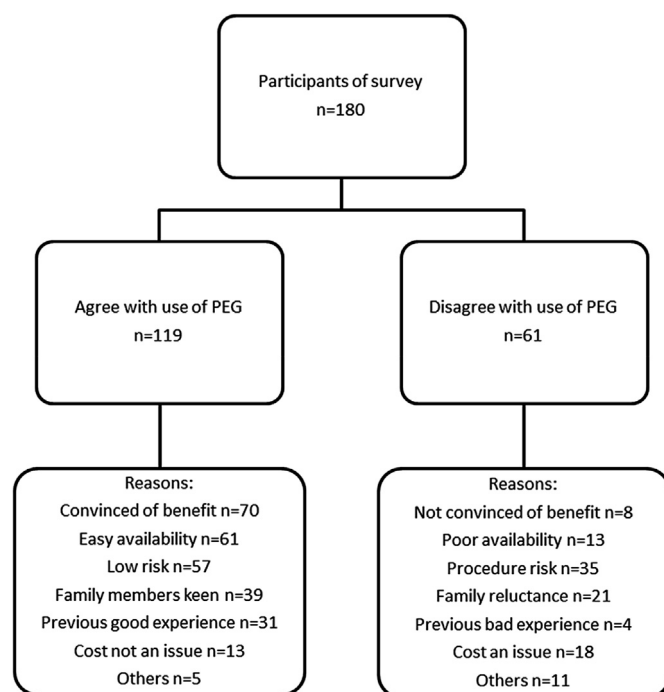


Fig. 1. Flow chart of participants agreeing and disagreeing to percutaneous endoscopic gastrostomy feeding.

likelihood of acceptance of PEG tube feeding according to profession, years of experience or subspecialty interest (Table 2).

3.3. Reasons for agreeing to PEG feeding

Fig. 2 summarizes the reasons reported by all HCPs agreeing to PEG feeding. The three most common reasons for agreeing to PEG feeding were: (1) being convinced of the benefit of PEG tube feeding [70 (59%)], (2) easy availability of PEG tubes [61 (51%)], and (3) perceived low procedural risk [57 (48%)]. Table 3 summarizes the reasons behind HCPs agreeing to PEG feeding according to profession, years of experience and subspecialty. As individuals were allowed to choose more than one answer, the total is greater than 100%. Doctors were significantly more likely than other respondents to indicate that they were convinced of the benefit of PEG feeding as their reason for agreeing to PEG feeding ($p = 0.032$). Respondents other than doctors were significantly more likely to agree to PEG feeding because they felt the procedural risk of PEG insertion was low ($p = 0.003$). HCPs with >5 years' experience were significantly more likely to consider PEG tube feeding because they felt family members would be agreeable to PEG tube insertion ($p = 0.009$), they had previous good experience ($p = 0.014$), or they felt the cost of PEG tube insertion was not an issue ($p = 0.013$), compared with HCPs with ≤ 5 years' experience. WGMs were significantly more likely to agree to PEG tube feeding based on previous good experience ($p = 0.001$) and lack of cost issues ($p = 0.008$) than non-WGMs.

3.4. Reasons for disagreeing to PEG tube feeding

Fig. 3 summarizes the reasons reported by HCPs disagreeing to PEG tube feeding. The three most common reasons for disagreeing to PEG tube feeding were (1) the perceived procedural risk of PEG tube insertion [35 (57%)], (2) reluctance of family members [21 (34%)], and (3) the perceived high procedural and equipment cost [18 (30%)]. Table 4 summarizes the reasons for disagreeing to PEG feeding based on profession, years of experience, and subspecialty. Doctors were significantly more likely than other respondents to disagree with the use of PEG tube feeding due to lack availability of PEG tubes ($p < 0.001$), and significantly less likely to disagree with use of PEG tube feeding due to the fear of complications ($p < 0.001$). HCPs with >5 years' experience were significantly more likely to disagree with PEG tube insertion due to the risk of the procedure ($p = 0.016$) than those with ≤ 5 years' experience. WGMs were significantly more likely to indicate the issue of high costs ($p = 0.044$) as well as to report being unconvinced of the benefit of PEG tube feeding as their reasons for disagreeing ($p = 0.012$) than those who were working in other medical disciplines including nonspecialized areas.

4. Discussion

This study found that the majority of HCPs involved in the care of older people would advocate PEG tube feeding should patients require enteral feeding beyond eight weeks. These survey results appear incongruent with the uptake of PEG tube feeding in the Asian region^{6,7}. A previous study showed that a proportion of patients had gotten used to NG feeding even though they recognize the benefit of PEG¹. Some authors have advocated that if NG tube feeding is well tolerated, the placement of PEG is not necessary^{9,10}. A previous study demonstrated that individuals on NG tube feeding in our setting were significantly poorer nourished than orally fed individuals ($p < 0.001$) and that 70% of NG tube fed individuals did not receive their required calories⁷. Other studies also demonstrated that patients who received PEG feeding had better serum

Table 2
Factors associated with agreement to PEG feeding.

	N	Yes (%) ^a	No (%)	OR (95% CI)	p
Doctor	180	29 (67.4)	90 (65.7)	1.082 (0.522–2.242)	0.833
5YE	174	61 (64.9)	56 (70.0)	0.385 (0.696–2.557) ^b	0.474
WGM	182	29 (72.5)	92 (64.8)	0.347 (0.309–1.511) ^c	0.361

^a "Yes" implies belonging to the profession in the first column, while "No" implies not belonging to the profession in the first column.

^b Adjusted for differences in subspecialty.

^c Adjusted for differences in years of experience.

5YE = > 5 years' experience; CI = confidence interval; OR = odds ratio; PEG = percutaneous endoscopic gastrostomy; WGM = worker in geriatric medicine.

albumin levels^{11,12} and experienced improved survival and better tube tolerance than those with NG tube feeding¹³. The reasons behind this apparent discrepancy between HCPs' preference for PEG tube feeding and the uptake of PEG tube feeding among patients remains unclear, and therefore deserves further evaluation. A Taiwanese study highlighted a decline in uptake of tracheostomy among older ventilated patients compared with a slight increase among younger patients. The authors suggested that the decline could be attributed to an increase in palliative care services¹⁴. Similarities in the opinions of HCPs on tracheostomy tube insertion and PEG tube insertion are likely to be present. Some of our findings may therefore also apply for the reluctance in tracheostomy tube use among older people in this region.

The most common reason for disagreeing to PEG feeding was concerns with the risk of PEG tube insertion. Interestingly, respondents other than doctors reported their main reason for agreeing to PEG tube feeding as being due to a perception of low procedural risk, and at the same time this group reported their main reason for disagreeing to PEG feeding was due to the perceived high procedural risk. The perceived risk of a procedure is therefore more likely to influence the decision-making process for or against PEG tube feeding among HCPs other than doctors. Procedure-related mortality and morbidity for PEG tube insertion is considered low^{11,13,15}, including site infection^{16,17}, leakage¹⁵, and postprocedural pain. The main complication of the minor operation is infection, but this is nearly always mild and appropriately treated with a course of antibiotics¹⁷. Antibiotic prophylaxis has also led to a significant reduction in wound infections ($p = 0.04$)¹⁸. Other complications of PEG insertion are infrequent.

WGMs and more experienced HCPs based their decision for or against PEG tube feeding on previous good experience, while more experienced HCPs were more likely to consider the opinion of patients' family members. However, previous studies suggested that substitute decision makers may not be adequately informed to make such decisions^{1,19}. Educational programs targeted at more experienced HCPs and geriatricians should include experiential learning. This would be less relevant for younger, less experienced workers, and workers in other specialty areas. Effective delivery methods for educational programs are often ignored by academics and it is often assumed that presentation of research evidence is adequate to convince clinicians and HCPs.

This study revealed that doctors were more likely not to recommend PEG tube feeding if they felt that the procedure of PEG tube insertion was not easily available. Feeding tubes are not seen as an essential medical item and most patients have to bear the cost of PEG tubes, which comes in the form of prepacked commercial kits. Some hospitals, especially government hospitals, could not afford to buy PEG tubes in large quantities due to their high cost. This issue was raised in studies reporting that the overall cost for patients with PEG feeding was higher when compared with NG tube feeding^{15,20}. Half of the geriatrics workers in our study who were against PEG tube feeding (55%) would not recommend PEG

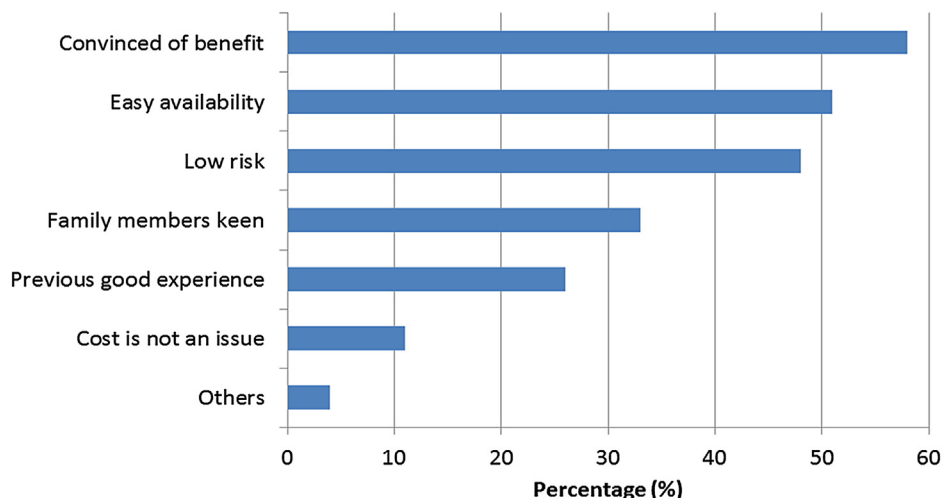


Fig. 2. Percentage of participants based on the reasons for agreeing to percutaneous endoscopic gastrostomy feeding.

Table 3

The perceptions of health care professionals based on the reported reasons for agreeing to PEG feeding.

Reasons for agreeing	Total, N (%)	Doctors vs. non-doctors ^a			Experience ^a			Geriatrics vs. non-geriatrics ^b			
		Doctors	Non-doctors	p	>5 y	≤5 y	p	Geriatrics	Non-geriatrics	p	
Convinced of benefit	70 (58)	n (%)	22 (31)	48 (69)	0.032*	39 (56)	31 (44)	0.344	18 (25)	54 (75)	0.747
		OR (95% CI)	2.76 (1.06–7.17)			1.46 (0.68–3.17)			1.02 (0.41–2.52)		
Easy availability	61 (51)	n (%)	11 (18)	50 (82)	0.099	28 (48)	31 (52)	0.307	13 (21)	49 (79)	0.428
		OR (95% CI)	0.51 (0.21–1.22)			0.75 (0.35–1.59)			0.83 (0.34–1.98)		
Low risk	57 (48)	n (%)	7 (12)	50 (88)	0.003*	34 (60)	23 (40)	0.113	17 (29)	41 (71)	0.186
		OR (95% CI)	0.21 (0.08–0.57)			1.91 (0.87–4.23)			1.81 (0.72–4.58)		
Family members keen	39 (33)	n (%)	7 (18)	32 (82)	0.255	27 (69)	12 (31)	0.009*	13 (33)	27 (67)	0.122
		OR (95% CI)	0.51 (0.19–1.39)			2.56 (1.11–5.92)			1.79 (0.72–4.45)		
Previous good experience	31 (26)	n (%)	8 (26)	23 (74)	0.828	22 (71)	9 (29)	0.014*	14 (45)	17 (55)	0.001*
		OR (95% CI)	0.91 (0.33–2.52)			2.51 (1.00–6.27)			3.29 (1.30–8.34)		
Cost is not an issue	13 (11)	n (%)	4 (31)	9 (69)	0.569	11 (85)	2 (15)	0.013*	7 (54)	6 (46)	0.008*
		OR (95% CI)	1.12 (0.29–4.39)			4.87 (1.00–23.70)			3.29 (0.95–11.41)		
Others	5 (4)	n (%)	1 (20)	4 (80)	0.816	3 (60)	2 (40)	0.719	3 (60)	2 (40)	0.054
		OR (95% CI)	0.62 (0.06–6.08)			1.05 (0.16–7.03)			4.98 (0.76–32.75)		

*Significant at p < 0.05.

^a Adjusted for differences in subspecialty experience.

^b Adjusted for years of experience.

PEG = percutaneous endoscopic gastrostomy.

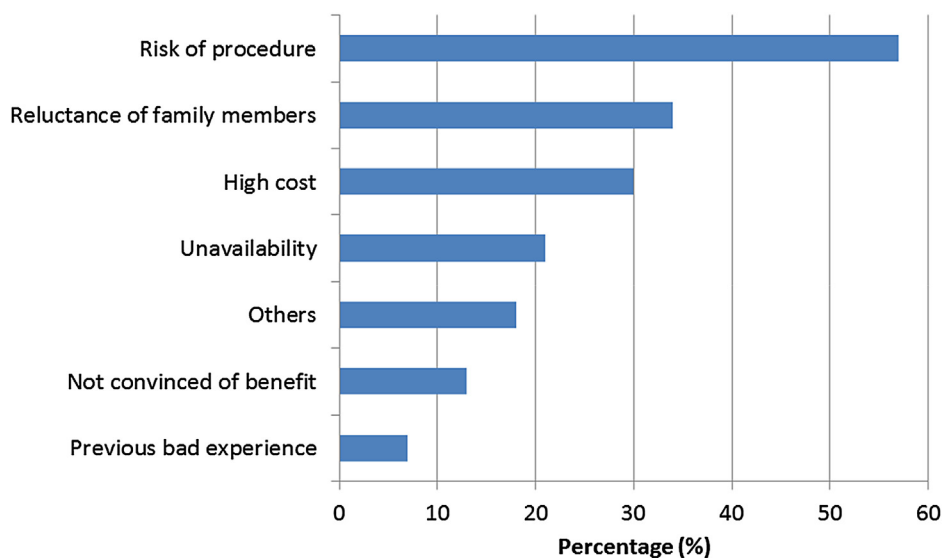


Fig. 3. Percentage of participants based on the reasons reported for disagreeing to percutaneous endoscopic gastrostomy feeding.

Table 4

The perceptions of health care professionals based on the reported reasons for disagreeing to PEG feeding.

Reasons for disagreeing	Total, N (%)		Doctors vs. non-doctors ^a			Experience ^a			Geriatrics vs. non-geriatrics ^b		
			Doctors	Non-doctors	p	≥5 y	<5 y	p	Geriatrics	Non-geriatrics	p
Risk of procedure/complications	35 (57)	n (%) OR (95% CI)	1 (3) 0.04 (0.00–0.35)	34 (97)	<0.001*	23 (72) 3.35 (0.92–12.24)	9 (28)	0.016*	8 (23) 1.00 (0.20–4.86)	27 (77)	0.255
Reluctance of family members	21 (34)	n (%) OR (95% CI)	7 (33) 2.07 (0.53–8.06)	14 (64)	0.162	10 (50) 0.62 (0.19–1.95)	10 (50)	0.375	5 (24) 2.38 (0.57–10.00)	16 (76)	0.395
High cost	18 (30)	n (%) OR (95% CI)	3 (17) 0.67 (0.14–3.16)	15 (83)	0.450	9 (50) 0.47 (0.14–1.61)	9 (50)	0.412	6 (33) 3.64 (0.85–15.66)	12 (67)	0.044*
Unavailability	13 (21)	n (%) OR (95% CI)	10 (77) 40.29 (5.59–290.42)	3 (23)	<0.001*	6 (50) 1.63 (0.26–10.18)	6 (50)	0.533	1 (8) 1.47 (0.12–18.15)	12 (92)	0.274
Others	11 (18)	n (%) OR (95% CI)	3 (27) 1.05 (0.22–4.98)	8 (73)	0.707	7 (64) 1.67 (0.40–6.94)	4 (36)	0.668	0 (0) 0.00 (0.00–0.00)	11 (100)	0.086
Not convinced of benefit	8 (13)	n (%) OR (95% CI)	0 (0) 0.00 (0.00–0.00)	8 (100)	0.098	5 (71) 1.27 (0.20–8.21)	2 (29)	0.439	4 (50) 5.57 (1.00–31.05)	4 (50)	0.012*
Previous bad experience	4 (7)	n (%) OR (95% CI)	1 (25) 0.79 (0.07–8.78)	3 (75)	0.920	2 (50) 0.79 (0.10–6.42)	2 (50)	0.740	0 (0) 0.00 (0.00–0.00)	4 (100)	0.332

*Significant at $p < 0.05$.^a Adjusted for differences in subspecialty experience.^b Adjusted for years of experience.

PEG = percutaneous endoscopic gastrostomy.

due to concerns about cost. Sixty percent of delegates attending the conference where the study questionnaire was distributed were from government hospitals where patient affordability is often an issue. However, PEG tube feeding is likely to be more cost-effective in the long term, as while NG tubes may be cheaper than PEG tubes initially, this cost saving may be offset by the increased cost of frequent tube changes required for NG tubes, and increased hospitalization due to NG complications.

The main limitation of this study is the fact that the delegates who attended the conference were likely to already be aware of the benefits of PEG tube feeding. Furthermore, while respondents from nearly all the states of Malaysia were included in this survey, the composition of respondents was not necessarily representative of the population distribution of the states, which may lead to some bias in the results. As one third of our respondents were against the use of PEG tube feeding, this study has confirmed that PEG feeding is still not widely accepted in our setting. In view of the discrepancies between the opinion of HCPs on the benefits of PEG tube feeding and the use of the percutaneous gastrostomy route as an alternative to oral feeding in our setting, future research should aim to expose the barriers behind the acceptance and use of PEG tube feeding, in order to identify modifiable factors which could increase the use of PEG tube feeding.

5. Conclusion

Two-thirds of HCPs surveyed agreed with PEG tube feeding as the preferred route for long-term enteral feeding. There was no significant difference in opinion on PEG tube feeding according to profession, years of experience, or specialty. The most common reason for agreeing to PEG tube feeding was being convinced of the evidence while the most frequently selected reason for disagreeing with PEG tube feeding was fear of complications. There were significant differences in reasons for agreeing as well as disagreeing to PEG tube feeding according to profession, years of experience, and specialty. The information gleaned from this study will therefore inform future interventions to improve the use of PEG tube feeding among our HCPs. Future studies should also evaluate the barriers to acceptance of PEG tube feeding among patients.

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