Nutrition training in residency and fellowship programme: time for a change

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Abstract

Background: Despite several measures, the nutrition education during undergraduate and postgraduate training has been identified to be suboptimal. The objective of this study was to assess the nutrition knowledge, attitudes and practice of residents, fellows and teaching faculties, following a reformation in the training curriculum, in a tertiary teaching hospital.

Method: We conducted an anonymous survey involving residents, fellows and teaching faculties in medical and surgical specialties. We assessed four domains: (a) recognition, (b) knowledge, (c) application of basic principles of nutritional and (d) attitude towards clinical nutrition during residency and fellowship training. Each domain had five multiple choice questions and the attitude section was assessed using a five-point Likert scale.

Result: We distributed the survey to 305 doctors: 265 completed the first three domains and 259 completed all the domains. The overall mean ± SD score between residents (6.5 ± 1.9), fellows (6.8 ± 1.8) and teaching faculties (6.5 ± 2.2) was similar. All scored similarly in the recognition, knowledge and application domain of the questionnaire. When subcategorised, the gastroenterology sub-speciality scored significantly higher than the rest (8.1 ± 2.2 vs. 6.4 ± 1.9, p = 0.001). Sixty-three per cent and 44% of the responders felt there was lack of adequate focus on clinical nutrition training in residency and during daily ward round, respectively. Only 10% of responders felt confident in providing nutritional counselling and treatment for malnourished patients.

Conclusion: Our study shows the current nutritional education during residency and fellowship training is still inadequate and falls short in achieving the recommended goals.

Keywords

Education, nutrition, residency programme

Introduction

Lack of nutritional education during training is often highlighted as the cause for insufficient nutrition knowledge among physicians. In fact studies assessing the residency and fellowship programme in America and Europe have repeatedly shown deficiency in nutrition training across medical provider.1-3

Considerable efforts have since been made by the nutrition societies and the nutritional task force to improvise the training and curriculum. In Singapore, the Accreditation Council for Graduate Medical Education (ACGME-I, USA) approved training system was introduced in 2013, with an aim to provide a structured training. The residents and fellows get evaluated regularly based on the six ACGME-I core competencies. However, their proficiency in clinical nutrition is not specifically assessed. It is therefore important to know if the training programme has addressed the previously reported deficiencies and implemented the nutrition training recommendation in the curriculum.

The objective of this study was to assess the nutrition knowledge, attitudes and practice of residents, fellows and teaching faculties in a tertiary teaching hospital in Singapore.

Methods

Setting and participants

We conducted an anonymous survey at Singapore General Hospital in December 2016. We involved residents and fellows from the medical and surgical residency programme, and the teaching faculties trained in the pre-ACGME-I training model to...
participate in the survey. We distributed the questionnaire during hospital meetings, and the participants were not informed before the survey administration. The institutional review board approved the study (registration number: 2016/3021).

Questionnaire development

We reviewed the list of common clinical nutrition contents covered by the training curriculum and studied the education resources (American Society for Parenteral and Enteral Nutrition adult nutrition support core curriculum, second edition) made available to the residents and fellows.4–6 Utilising these resources, and prior published studies as a reference, the authors (RA and ES) developed the study questionnaire.7,8 The survey comprised common clinical scenarios that are frequently encountered during daily practice (see online supplementary file).

We assessed four domains: (a) recognition, (b) knowledge, (c) application of basic principles of nutrition and (d) attitude towards clinical nutrition during residency and fellowship training. Each domain had five multiple choice questions and the attitude section was assessed using a five-point Likert scale (1 = strongly agree to 5 = strongly disagree). We derived the questions for attitude section from the validated Nutrition in Patient Care Survey.9 The Nutrition in Patient Care Survey comprised 45 questionnaires which looked into nutrition in routine care, clinical behaviour, physician–patient relationship, patient behaviour and physician efficacy. For our questionnaires, the authors modified one questionnaire from each domain to be part of the five questionnaires in the attitude survey (see survey questionnaires).

Statistical analysis

We calculated the scores obtained by the participants in the three domains (recognition, knowledge and application). These results were expressed as mean ± SD. We used analysis of variance (ANOVA) and t-test to calculate differences between the groups. For attitude domain, the result was expressed in percentages. We used IBM-SPSS Statistics 23.0 software for analysis.

Results

We distributed the survey to 305 doctors: 265 completed the first three domains and 259 completed all the domains. The details of the participants are shown in Table 1. We found no difference in the overall mean score between residents (6.5 ± 1.9), fellows (6.8 ± 1.8) and teaching faculties (6.5 ± 2.2) (Table 2). All scored similarly in the recognition, knowledge and application domain of the survey (Table 3). When subcategorised, we found that the gastroenterology sub-speciality (n = 25) scored significantly higher than those outside gastroenterology (8.1 ± 2.2 vs. 6.4 ± 1.9, p = 0.001). Their residents (n = 10) and fellows (n = 4) scored significantly higher than their peers in other specialties (7.5 ± 2.1 vs. 6.5 ± 1.8, p = 0.05).

Most felt that there is lack of adequate focus on clinical nutrition in residency (63%) and during daily ward rounds (44%). One-third (33%) performed nutrition assessment on admission and very few (10%) felt confident in providing nutritional counselling and treatment for undernourished/ malnourished patients. Only half (49%) agreed to make a nutritional plan after discussion with a dietician.

Discussion

Our study shows that the current training programme lacks effective nutrition education as evidence by the dismal performance of the residents and fellows. Even the teaching faculties performed sub-optimally.

Several factors may have contributed to this suboptimal performance. These include: (a) inadequate time for teaching, (b) absence of qualified faculty member trained in nutrition, (c) lack of collaboration with nutrition support service and (d) absence of regular assessment in nutrition competency during residency. The majority of the participants felt the residency programme lacks adequate focus on nutrition which implies the nutritional curriculum guidelines are not strictly adhered.

We observed higher scores among residents and fellows from gastroenterology. A similar finding was also observed in a European study.10 This implies that supervised training with a faculty trained in nutrition, like in gastroenterology, and attention to nutritional disorders during practice may improve the approach to clinical nutrition. However, a long-term change in attitude can only be achieved by continuous reinforcement throughout training.

Newer approaches are required to overcome these challenges. Measures like interactive case-based clinical discussion and short courses on clinical nutrition may improve understanding of the basics and specialty-specific fundamentals of nutrition.11 The e-resources like Nutrition in Medicine modules or the structured course developed by the European Society for Clinical Nutrition and Metabolism may be utilised to promote long-term nutrition learning. Importantly, nutrition-trained faculty in each specialty should be identified and involved in undergraduate and postgraduate curriculum planning to enhance the overall learning experience.

Our study is the first survey to evaluate physician knowledge, attitudes, and practices on clinical nutrition, since the
introduction of ACGME-approved training in Singapore. A relatively large number of trainees and teaching faculty participated and the response rate (87%) was very high. We adapted the KAP survey model and modified questionnaire to include common clinical scenario to reflect the real world practice. Our study, however, is limited by its cross sectional design. We did not record the years of experience and place of undergraduate education. This may not have influenced the results as the overall performance was similar between the groups.

In conclusion, the current current training programme, despite recommendations, lacks adequate emphasis on clinical nutrition. Increased adherence to curriculum guidelines and regular competency assessment may improve the overall nutrition knowledge of doctors.

Acknowledgements

We would like to thank all the residents and faculties who agreed to participate in the survey.

Authors’ contributions

Both RA and ES researched literature and conceived the study. ES was involved in protocol development. RA and ES involved in patient recruitment RA involved in data analysis. ES wrote the first draft of the manuscript. All authors reviewed and edited the manuscript and approved the final version of the manuscript.

Availability of data

The datasets generated and/or analysed during the current study are available from the corresponding author.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Table 2. Comparison of the mean scores between the different groups and subgroups (ANOVA and t-test).

| Respondents (n = 265) | Mean ± SD | p-value |
|----------------------|-----------|---------|
|                      |           |         |
| Staff grade          |           |         |
| (a) Residents        | 6.5 ± 1.9 | 0.64    |
| (b) Fellows          | 6.8 ± 1.8 | 0.64    |
| (c) Teaching faculty | 6.5 ± 2.2 | 0.64    |
| Medical specialty    | 6.5 ± 2.0 | 0.41    |
| General surgery      | 6.8 ± 1.8 | 0.41    |
| Gastroenterologist   | 8.1 ± 2.2 | 0.001   |
| Non-gastroenterologist | 6.4 ± 1.9 | 0.001   |

ANOVA, analysis of variance.

Table 3. Survey scores in each domain.

|                      | Residents | Fellows | Consultant |
|----------------------|-----------|---------|------------|
| Recognition          | 48%       | 48%     | 50%        |
| Knowledge            | 38%       | 34%     | 38%        |
| Application          | 44%       | 54%     | 44%        |

Ethical approval

Ethical approval was sought for this article as anonymous survey involving questionnaires which impose minimal or no risk to participants.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Informed consent

Informed consent was not sought for this article as it was an anonymous survey involving questionnaires which impose minimal or no risk to participants.

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Supplemental material

Supplemental material for this article is available online.

References

1. Vetter LM, Herring SJ, Sood M, et al. What do resident physicians know about nutrition? An evaluation of attitudes, self-perceived proficiency and knowledge. J Am Coll Nutr 2008; 27: 287-298.
2. Goiburú ME, Alfonzo LF, Aranda AL, et al. Clinical nutrition knowledge in health care members of University Hospitals of Paraguay. Nutr Hosp 2006; 21: 591-595.
3. Mowe M, Bosaeus I, Rasmussen HH, et al. Insufficient nutritional knowledge among healthcare workers? Clin Nutr 2008; 27: 196-202.
4. Cuerda C, Schneider SM and Van Gossum A. Clinical nutrition education in medical schools: results of an ESPEN survey. Clin Nutr 2017; 36: 915-916.
5. American Association for the Study of Liver Diseases, American Gastroenterological Association, et al. Training the gastroenterologist of the future: the gastroenterology core curriculum. Gastroenterology 2003; 124: 1055–1104.
6. Mueller CM, Kovacevich DS, McClave SA, et al. ASPEN adult nutrition support core curriculum. 2nd ed. Silver Spring, MD: American Society for Parenteral and Enteral Nutrition, 2012, p.740.
7. Karim AS, Ibrahim B, Tangisuran B, et al. What do healthcare providers know about nutrition support? A survey of knowledge, attitudes and practice of pharmacists and doctors towards nutrition support in Malaysia. J Parenter Enteral Nutr 2015; 39: 482-488.
8. Award S, Herrod P JJ, Forbes E, et al. Knowledge and attitudes of surgical trainees towards nutritional support: food for thought. Clin Nutr 2010; 29: 243-248.
9. McGaghie WC, Van Horn L and Fitzgibbon M. Development of a measure of attitude toward nutrition in patient care. Am J Prev Med 2001; 20: 15-20.
10. Johansson U, Rasmussen HH, Mowe M, et al. Clinical nutrition in medical gastroenterology: room for improvement. Clin Nutr 2009; 28: 129-133
11. Castro MG, Pompilio CE, Horie LM, et al. Education program on medical nutrition and length of stay of critically ill patients. Clin Nutr 2013; 32: 1061-1066.