



---

## KNOWLEDGE AND ATTITUDES AMONG SRI LANKAN PRE-INTERN DOCTORS ON NUTRITIONAL ASSESSMENT AND COUNSELING

Mathangasinghe Y<sup>1</sup>

Department of Anatomy, Faculty of Medicine, University of Colombo, Colombo, Sri Lanka<sup>1</sup>,  
[yasithmathangasinghe@gmail.com](mailto:yasithmathangasinghe@gmail.com)

Ranasinghe D<sup>2</sup>

Society for Health Research and Innovation, Colombo, Sri Lanka<sup>2</sup>,  
[dineshanrana2000@yahoo.com](mailto:dineshanrana2000@yahoo.com)

Padeniya A<sup>2,3</sup>

Society for Health Research and Innovation, Colombo, Sri Lanka<sup>2,3</sup>,  
Department of Paediatrics, Faculty of Medicine, University of Rajarata, Anuradhapura, Sri Lanka,  
[anuruddhapadeniya@yahoo.com](mailto:anuruddhapadeniya@yahoo.com)

---

### ABSTRACT

*Nutritional assessment and counselling are core clinical skills of a doctor. Our objective was to describe the knowledge and attitudes on nutritional assessment and counselling among pre-intern doctors of Sri Lanka. A descriptive cross sectional study was conducted from August to October 2016. All the pre-intern doctors of Sri Lanka participating in the Good Intern Program 2016 were invited for the study. An online self-administered questionnaire was used. Knowledge and attitudes on nutrition were measured using a validated modified 17-item Nutrition in Patient Care Survey questionnaire. All analyses were conducted on SPSS version 22 with a priori alpha of .05. Of 616 respondents, 57.8% (n=356) were females. The mean age was 26.2±0.8 years. Forty four (7.1%) had participated in some kind of special projects in nutrition. A total of 317 (51.5%) had close friends/relatives with a medical condition which needed greater than normal attention to nutrition. Median knowledge score was 65% (IQR=58%–73%). Median positive attitudes score was 65% (IQR=60%–70%). Although 68.7% (n=423) agreed that nutritional assessment should be included in any routine consultation, 80.8% (n=498) agreed that most pre-intern doctors are not adequately trained to discuss nutrition issues with patients. Spearman's rank correlation coefficient test found a positive correlation between positive attitudes and self-reported knowledge ( $r_s=.204$ ,  $n=616$ ,  $p<.0001$ ). Mann Whitney U tests did not show significant differences of knowledge or attitudes depending on sex ( $p>.05$ ). Those who participated in some kind of special projects in nutrition had a higher knowledge ( $U=9499.5$ ,  $p=.007$ ,  $r=0.109$ ) and attitudes ( $U=9267.0$ ,  $p=.003$ ,  $r=0.120$ ) scores. Those who had a close friend/relative with a medical condition which needed greater than normal attention to nutrition had higher attitude scores ( $U=42099.0$ ,  $p=.014$ ,  $r=0.099$ ), but there was no significant difference in the knowledge scores ( $U=43726.0$ ,  $p=0.096$ ,  $r=0.067$ ). The internal consistency of the scale (Cronbach's alpha) was 0.82. In conclusion, perceived knowledge and positive attitudes on nutritional assessment and counselling are inadequate among pre-intern doctors.*

**KEYWORDS:** Nutrition, doctors, self-perceived, counselling, knowledge, attitudes

Corresponding Author: Mathangasinghe Y, email:[yasithmathangasinghe@gmail.com](mailto:yasithmathangasinghe@gmail.com)

## **1 INTRODUCTION**

Nutritional assessment and counselling are core clinical skills expected from a medical graduate. Preparing health care professionals to manage nutritional needs of a patient is an important objective in any undergraduate medical curriculum. However, there is relatively little information available on knowledge and attitudes on nutrition related issues among intern medical doctors who are the first contacts of the patients. Since there are regional variations among nutritional needs and practices, it is important to assess the knowledge in a National context based on National policies and guidelines. The purpose of this study was to describe the knowledge and attitudes on nutritional assessment and counselling among pre-intern doctors of Sri Lanka.

## **2 METHODOLOGY**

A descriptive cross sectional study was conducted among Sri Lankan doctors who are awaiting internship in 2016. This was conducted in accordance with the guidelines set forth by the Declaration of Helsinki. All the pre-intern doctors were invited to participate in the study via electronic mails and social media. Data were collected from August to October 2016 using an online self-administered questionnaire. The questionnaire consisted of two sections. The section one was used to collect socio-demographic data. Whether the doctors had participated in special projects on nutrition during undergraduate years or after graduation and if they had close friends/family members with medical problems that need greater than average attention to nutrition were recorded since they were potential confounders of the study. Self-perceived knowledge and attitudes on nutrition were measured in the section two using a modified version of Nutrition in Patient Care Survey questionnaire (McGaghie et al., 2001). This consisted of 15-items (11 items for knowledge; 4 items for attitudes) measured on a five point Likert scale (1=strongly disagree to 5=strongly agree). Face validation of this scale was achieved by a panel of experts and a psychometrician. The instrument was pilot tested on 88 final year medical students who

have completed their undergraduate curricula. The survey was revised based on the results of the original Principal Component Analysis and internal consistency (as measured by Cronbach's alpha). Standard descriptive statistics were used to describe the knowledge and attitudes of the population. Non-parametric tests were used to examine the relationships between knowledge, attitudes and their determinants. All statistical analyses were performed on SPSS version-22 with a priori alpha of .05.

## **3 RESULTS**

Of 737 invited pre-intern doctors, 616 responded. The positive response rate was 83.6%. Of 616 respondents, 57.8% (n=356) were females and 42.2% (n=260) were males. The mean age was 26.2±0.8 years. The sample was comprised of 124 (20.1%) foreign graduates and the graduates from all nine state Universities: University of Colombo (19.6%, n=121), University of Sri Jayewardenepura (13.6%, n=84), University of Kelaniya (13.1%, n=81), University of Rajarata (11.5%, n=71), University of Ruhuna (8.1%, n=50), University of Peradeniya (6.2%, n=38), Kotelawala Defence University (3.6%, n=22), Eastern University (3.4%, n=21) and University of Jaffna (6.0%, n=4). Forty four (7.1%) had participated in some kind of special projects in nutrition. Majority (68.2%, n=30) of them were electives, of which all were regarding a specific component of nutrition (e.g. nutrition among patients with inflammatory bowel disease, nutrition among patients with diabetes mellitus, common misconceptions regarding breast feeding, perceptions among parents on complementary feeding). Four (9.1%) had completed online courses which had inputs on nutrition in specific diseases (e.g.: diabetes mellitus). Forty-three (47.8%) had close friends/relatives with a medical condition which needed greater than normal attention to nutrition. A total of 317 (51.5%) had close friends/relatives with a medical condition which needed greater than normal attention to nutrition. Of them, the majority (74.8%, n=237) had diabetes.

Median knowledge score was 65% (IQR = 58% – 73%). Median positive attitudes score was 65% (IQR

= 60% – 70%). Although 68.7% (n=423) agreed that nutritional assessment should be included in any routine consultation, 80.8% (n=498) agreed that most pre-intern doctors are not adequately trained to discuss nutrition issues with patients. There were substantial variations in knowledge among closely related topics. Pre-intern doctors perceived that there were deficiencies in their knowledge on areas such as the amount of calories in a tea-spoon of oil, providing examples of serving sizes of meat and vegetables according to Food based Dietary Guidelines, providing dietary advice to a patient who underwent total gastrectomy and prescribing a diet suitable to a patient with hepatic encephalopathy. Students' perceived self-efficacy was high in advising a mother regarding the correct technique of breast feeding and providing dietary advices to a newly diagnosed patient with diabetes.

The distributions of the knowledge and attitudes scores were examined for the normality. The knowledge score had a skewness of -0.372 (SE=0.098), kurtosis of -0.137 (SE=0.197) and the Shapiro Wilk test= .981 (df=616,  $p<.0001$ ). The attitudes score had a skewness of 0.113 (SE=0.098), kurtosis of 1.068 (SE=0.197) and the Shapiro Wilk test= .950 (df=616,  $p<.0001$ ).

The relationship between the knowledge and attitudes scores was investigated using the Spearman's rank correlation coefficient. There was a strong, positive correlation between the two variables, ( $r_s=.204$ ,  $n=616$ ,  $p<.0001$ ), with high levels of knowledge on nutrition associated with positive attitudes on nutrition. Mann-Whitney U tests were conducted to examine if there were significant differences of knowledge and attitudes depending on sex, participating in some kind of special projects in nutrition, or having a close friend/relative with a medical condition which needed greater than normal attention to nutrition. There were no significant differences in the knowledge scores of males (median=63,  $n=260$ ) and females (median=65,  $n=356$ ),  $p=.984$ ). No statistically significant differences in attitudes were found between males (median=66,  $n=260$ ) and females (median=64,  $n=356$ ),  $p=.725$ ). Knowledge levels were not significantly different between those who had a close

friend/relative with a medical condition which needed greater than normal attention to nutrition (median=65.5%,  $n=317$ ) and to those who did not have (median=65.5%,  $n=299$ ), ( $U=43726.0$ ,  $p=0.096$ ,  $r=0.067$ ). But those who had such friend/relative showed more positive attitudes on nutrition (median=65.0%,  $n=317$ ) when compared with those who did not have (median=65.0%,  $n=299$ ), ( $U=42099.0$ ,  $p=.014$ ,  $r=0.099$ ). Subjects with prior experience in special projects on nutrition had significantly higher knowledge scores (median=70.9%,  $n=572$ ) compared to those who were not involved in such projects (median=65.5%,  $n=44$ ), ( $U=9499.5$ ,  $p=.007$ ,  $r=0.109$ ). Similarly those who had involved in special projects on nutrition had higher positive attitudes (median=70.0%,  $n=572$ ) compared to those who had not had such experience (median=65.0%,  $n=44$ ), ( $U=9267.0$ ,  $p=.003$ ,  $r=0.120$ ). The internal consistency of the scale (as measured by Cronbach's alpha) was 0.82.

#### **4 DISCUSSION**

This descriptive cross-sectional study intended to assess the perceived self-efficacy and attitudes towards nutritional assessment in various disciplines of medicine among doctors awaiting internship. We found that a considerable proportion of doctors (35%) believe that they are not adequately knowledgeable and skilled in conducting a nutritional assessment and counselling on a routine patient encounter. A similar proportion (35%) has predominantly negative attitudes towards nutritional assessment and counselling.

A descriptive cross sectional study conducted among 528 senior medical students from nine Universities of Taiwan (Hu et al., 1997a) concluded that there is a necessity of improving knowledge and attitudes among medical students towards nutrition. They assessed the knowledge on general and clinical nutrition and the median scores were 59.9% and 51.5%. The positive attitude score of the study was 66.7% which is comparable to our study (65%). The same authors conducted a similar research to assess the knowledge, attitudes and practices related to nutrition among primary care physicians in Taiwan (Hu et al., 1997b). In comparison to the study

conducted among students, the doctors demonstrated a better knowledge (59.9%) and attitudes towards nutrition despite variations observed among each component of the nutrition assessed. The knowledge on general nutrition was better than on the clinical nutrition components. In contrast to the regional studies, the physicians in other countries showed an increased awareness and better attitudes regarding nutrition. An American study conducted among 292 physicians (Krause and Fox, 1977) showed a better knowledge score (65%) and favourable attitudes towards nutrition. A national survey among 3416 physicians in the United States (Levine et al., 1993) concluded that the study sample stated 82% positive attitude statements which exceed the positive attitude scores of regional studies. We found that there was a strong positive correlation between knowledge and attitudes scores ( $r_s=.204$ ,  $n=616$ ,  $p<.0001$ ). This finding is consistent with the findings of a Taiwan study (Hu et al., 1997b) ( $r_s=.227$ ,  $n=335$ ,  $p<.0001$ ). But there was no such correlation found between knowledge and attitudes in an American study (Krause and Fox, 1977).

A survey on nutrition in cancer conducted among medical students and physicians concluded that female physicians score better on nutritional knowledge questions (Cooper-Stephenson and Theologides, 1981). In contrast to that study, we found no differences in knowledge and attitudes between males and females. Knowledge and attitudes towards nutrition were significantly high among the doctors who participated in the special projects on nutrition. This cross sectional study could not assess the causal relationship whether this special nutrition related projects improve the knowledge and attitudes of the students or they score better because of their inherent enthusiasm towards medical nutrition.

The Cronbach's alpha of the scale we used in the present study was 0.82 demonstrating an excellent internal consistency. This exceeds the internal consistency values of the original Nutrition in Patient Care Survey (McGaghie et al., 2001) from which the present questionnaire is derived.

Self-perceived scores are influenced by non-test-relevant response determinants such as social desirability bias. This means some may respond in a

favourable manner whereas some others may respond in a negative manner depending on their personality in a self-reported questionnaire. This overestimation or underestimation can be corrected by assessing social desirability using questionnaires and statistically controlling for the bias. A short version of the Malrowe-Crowne instrument (Reynolds, 1982) was used to assess the social desirability bias in the pilot study. The findings of the pilot study did not support the presence of social desirability bias (self-over-estimation) in students' reporting of knowledge and attitudes. Thus we did not include the social desirability scale in the present study.

## 5 CONCLUSIONS

Perceived self-efficacy and positive attitudes on nutritional assessment and counseling were inadequate among pre-intern doctors. Significantly high knowledge and attitudes were seen among the doctors who participated in the special projects on nutrition. Studies are necessary to find the strategies to enhance knowledge and attitudes among medical students on nutrition.

## 6 REFERENCES

- Cooper-Stephenson, C. & Theologides, A. (1981): Nutrition in cancer: physicians' knowledge, opinions, and educational needs. *Journal-American Dietetic Association*.
- Hu, S.-P., Liu, J.-F. & Shieh, M.-J. (1997a): Nutrition knowledge, attitudes and practices among senior medical students in Taiwan. *Journal of the American College of Nutrition*, (16), 435-438.
- Hu, S.-P., Wu, M.-Y. & Liu, J.-F. (1997b): Nutrition knowledge, attitude and practice among primary care physicians in Taiwan. *Journal of the American College of Nutrition*, (16), 439-442.
- Krause, T. & Fox, H. (1977): Nutritional knowledge and attitudes of physicians. *Journal of the American Dietetic Association*, (70), 607-609.
- Levine, B. S., Wigren, M. M., Chapman, D. S., Kerner, J., Bergman, R. & Rivlin, R. (1993):

A national survey of attitudes and practices of primary-care physicians relating to nutrition: strategies for enhancing the use of clinical nutrition in medical practice. *The American Journal of Clinical Nutrition*, (57), 115-119.

McGaghie, W. C., Van Horn, L., Fitzgibbon, M., Telser, A., Thompson, J. A., Kushner, R. F. & Prystowsky, J. B. (2001): Development of a measure of attitude toward nutrition in patient care. *American Journal of Preventive Medicine*, (20), 15-20.

Reynolds, W. M. (1982): Development of reliable and valid short forms of the Marlowe-Crowne Social Desirability Scale. *Journal of Clinical Psychology*, (38), 119-125.

