

## Short Communication

## Nutrition education in Japanese medical schools: a follow-up survey

Hideo Orimo MD, PhD<sup>1,2</sup>, Takahiro Ueno MD, PhD<sup>1,3</sup>, Hiroshi Yoshida MD, PhD<sup>1,4</sup>, Hirohito Sone MD, PhD<sup>1,5,8</sup>, Akira Tanaka MD, PhD<sup>1,6</sup>, Hiroshige Itakura MD, PhD<sup>1,7</sup>

<sup>1</sup>Committee for promotion of nutrition education in medical schools, The Japanese Society of Clinical Nutrition, Tokyo, Japan

<sup>2</sup>Division of Metabolism and Nutrition, Department of Biochemistry and Molecular Biology, Nippon Medical School, Tokyo, Japan

<sup>3</sup>Division of Nephrology and Metabolism, Department of Internal Medicine, Nihon University School of Medicine, Tokyo, Japan

<sup>4</sup>Department of Laboratory Medicine, Jikei University School of Medicine, Tokyo, Japan

<sup>5</sup>Department of Internal Medicine, University of Tsukuba School of Medicine, Tsukuba, Japan

<sup>6</sup>Nutrition Clinic, Kagawa Women's Nutrition College, Tokyo Japan

<sup>7</sup>Ibaraki Christian University, Mito, Japan

<sup>8</sup>Present address: Department of Internal Medicine, Niigata University Faculty of Medicine, Niigata, Japan

A questionnaire survey was used to determine the status of nutrition education in Japanese medical schools in 2009. A similar survey was conducted in 2004, at which time nutritional education was determined to be inadequate in Japanese medical schools. The current questionnaire was sent to the directors of Centers for Medical Education of 80 medical schools, who represented all medical schools in Japan. Sixty-seven medical schools (83.8%) responded, of which 25 schools (37.3%) offered dedicated nutrition courses and 36 schools (53.7%) did not offer dedicated nutrition courses but offered something related to nutrition in other courses; six schools (9.0%) did not offer any nutrition education. Overall, 61 schools (91.0%) offered at least some nutritional topics in their undergraduate education. Nevertheless, only 11 schools (16.4%) seem to dedicate more than 5 hours to substantial nutrition education as judged by their syllabi. Although the mean length of the course was 11 hours, substantial nutrition education accounted for only 4.2 hours. Of the 25 medical schools that offered dedicated nutrition courses, seven schools offered the nutrition course as a stand-alone course and 18 schools offered it as an integrated course. In conclusion, the status of nutrition education in Japan has improved slightly but is still inadequate.

**Key Words:** nutrition education, medical schools, Japan, questionnaire, curriculum

### INTRODUCTION

Diet is widely recognized as a crucial factor in the development of age-related chronic diseases such as obesity, diabetes, atherosclerosis, hypertension, and coronary heart disease. Physicians are considered to have enough knowledge about nutrition for consultations with patients affected by these chronic diseases. In addition, malnutrition among elderly people in hospitals and healthcare facilities is a problem during care. However, most medical practitioners feel that their knowledge about nutrition is insufficient, due to a lack of nutrition education in medical school. Traditional medical education has neglected nutrition education. The "model core-curriculum for medical education" revised in 2010, which provides a national standard curriculum guideline for Japanese medical schools, does not treat nutrition as an essential course.<sup>1</sup> The guidelines for the national medical licensing examination also do not treat nutrition as an independent objective.<sup>2</sup>

In 2004, we performed a questionnaire survey study about nutrition education in all Japanese medical schools and concluded that nutrition education in Japanese medical schools was inadequate.<sup>3</sup> Five years later, in 2009, we used a similar questionnaire survey to determine whether medical nutrition education had improved.

### SUBJECTS AND METHODS

In November 2009, a questionnaire (Table 1) was sent to the directors of Centers for Medical Education at 80

**Corresponding Author:** Dr Hideo Orimo, Division of Metabolism & Nutrition, Department of Biochemistry & Molecular Biology, Nippon Medical School, 1-1-5 Sendagi, Bunkyo-ku, Tokyo 113-8602, Japan.

Tel: +81-3-3822-2131 ext. 5238; Fax: +81-3-5685-3054

Email: orimohd@nms.ac.jp

Manuscript received 5 June 2012. Initial review completed 1 August 2012. Revision accepted 29 September 2012.

doi: 10.6133/apjcn.2013.22.1.13

**Table 1.** Questionnaire sent to medical schools (in Japanese)

A. In undergraduate education of your medical school	
1. Do you offer a “nutrition” or “clinical nutrition” course?	(yes, no)
α. If a course is offered, please answer the following questions.	
a. The name of the course.	( )
b. During what academic year do you offer the course?	( ) year
c. How many hours do you offer?	( )-minute lectures ( ) times
d. Is the course a part of an integrated course or a stand-alone course?	(integrated, stand-alone)
e. Describe the name of the department that offers the course. In the case of the integrated course, <u>underline the department in charge</u> .	( )
f. Is the course required or elective?	(required, elective, others)
g. Do you offer a laboratory or practical class in the course?	(yes, no)
h. Describe the topics of the curriculum.	
β. If a course is not offered, please answer the following questions.	
a. In what course do you provide nutrition education?	( )
b. Do you plan to offer a dedicated nutrition course?	(yes, under consideration, no)
2. Do you offer practice on nutrition in clinical practice?	(yes, no)
3. Are registered dietitians in the hospital involved in clinical practice?	(yes, no)
B. In postgraduate education in your medical school	
1. Do you offer a medical or clinical nutrition course?	(yes, no)
2. If a course is not offered, do you plan to offer a course?	(yes, under consideration, no)
3. If a course is not offered, how do you provide nutrition education during postgraduate education?	

medical schools, who represented all medical schools in Japan.

These medical schools were the same as those approached for the questionnaire survey in 2004, because no novel medical schools have been established in the last 40 years in Japan. For medical schools that did not have a Center for Medical Education, the questionnaire was sent to the deans. The questionnaire was designed to be similar to the questionnaire used in 2004.<sup>3</sup>

## RESULTS

By December 2009, 67 of 80 medical schools (83.8%) had responded. Of these 67 schools, 36 were national medical schools (83.7% of a total of 43 national medical schools), 6 were municipal medical schools (75.0% of a total of 8 municipal medical schools), and 25 were private medical schools (86.2% of a total of 29 private medical schools). Twenty-five medical schools (37.3% of the responding schools) offered dedicated “nutrition” or “clinical nutrition” courses, 36 schools (53.7%) did not offer dedicated nutrition courses but offered lectures related to nutrition in other courses, and 6 schools (9.0%) did not offer any nutrition education. Overall, 61 schools (91.0%) offered at least some nutritional topics in their undergraduate education (Figure 1A). In addition, two schools planned to offer nutrition courses and five schools, including four schools offering nutrition education, answered that dedicated nutrition courses were under consideration.

Of the 25 schools that offered dedicated nutrition courses, six schools offered it during the second year, six schools offered it during the third year, seven schools offered it during the fourth year, two schools offered it during the third and the fourth year, two schools offered it during the fourth to the sixth year, one school offered it during the third and the sixth year, and one school offered

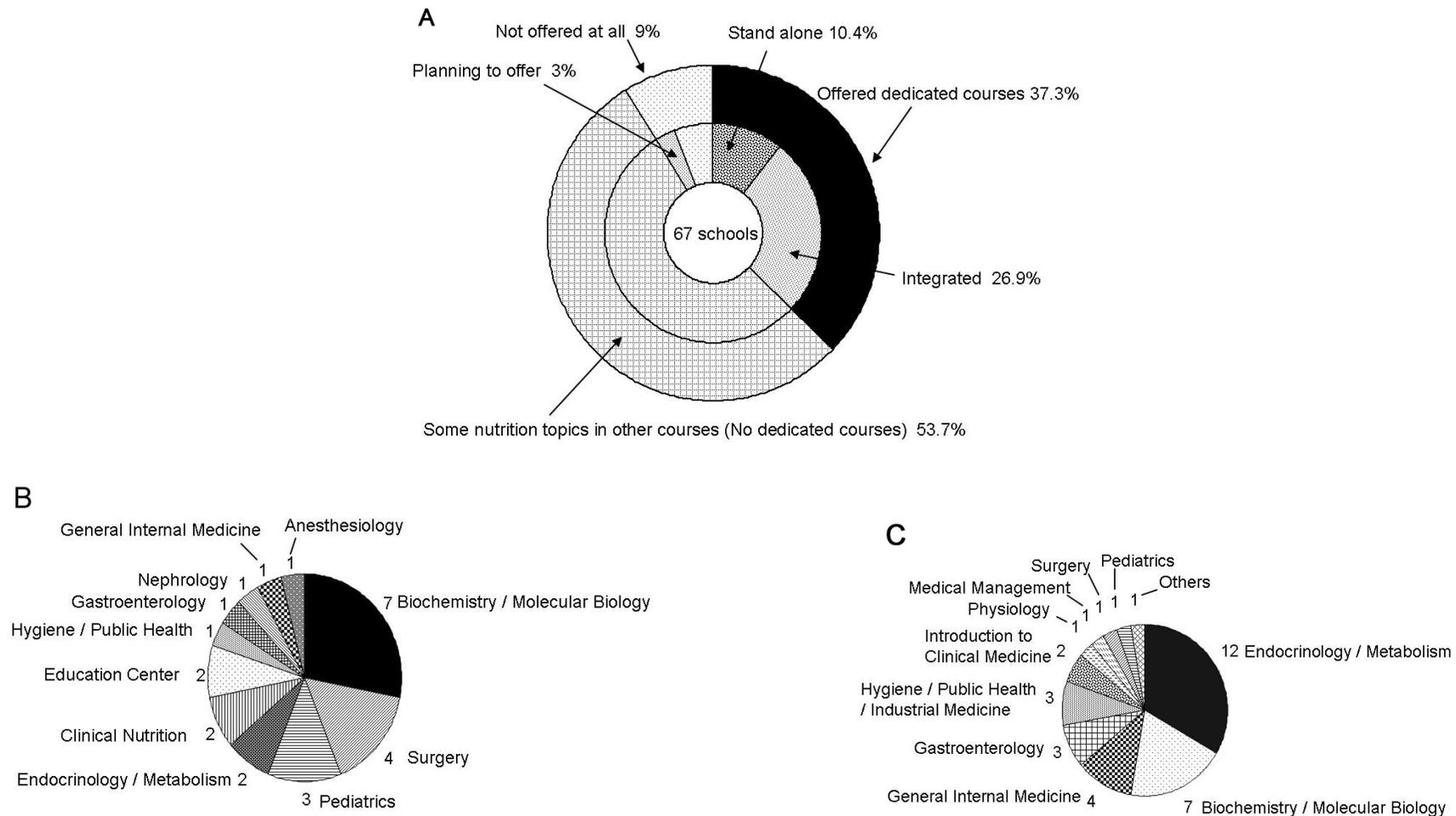
**Table 2.** Length of nutrition curriculum content in dedicated nutrition courses

	Length of course (h)	Number of medical schools	Nutrition content (h)
	1	2	1
	2	2	2
	3	5	3
	5	3	5
	6	3	6
	7	1	7
	8	1	8
	10	2	10
	≤20	6	1 – 5* <sup>1</sup>
Mean	11		4.2
Total		25	

\*<sup>1</sup>The nutrition content in hour was based on the syllabi.

it during the sixth year. The length of the dedicated nutrition course varied from 1 to 56 hours (Table 2). Nevertheless, only 11 schools (16.4%) seem to dedicate more than 5 hours to substantial nutrition education as judged by their syllabi. Although the mean length of the course was 11 hours, substantial nutrition education accounted for only 4.2 hours (Table 2). In the case of the 11 schools that offered substantial nutrition education for more than 5 hours, the mean length of the education was 6.6 hours.

Of the 25 medical schools that offered dedicated nutrition courses, seven schools offered the nutrition course as a stand-alone course and 18 schools offered it as an integrated course. With regard to the department in charge of teaching nutrition, the department of biochemistry/molecular biology, the department of surgery, and the department of pediatrics were in charge in many schools (Figure 1B). In addition, the dedicated course was required in 23 schools and two schools offered it as an optional course. Four medical schools (6.0%) answered that they offered



**Figure 1.** Distribution of nutrition education and the department in charge of teaching nutrition in Japanese medical schools. A. Distribution of nutrition education in 67 Japanese medical schools that responded to the survey. Of the 67 responded medical schools, 25 (37.3%) offered dedicated nutrition courses, 36 (53.7%) did not offer dedicated courses and six (9.0%) offered nothing about nutrition. Of the 25 schools that offered dedicated nutrition courses, seven (10.4%) offered the course as a stand-alone course and 18 (26.9%) offered it as an integrated course. Thirty-six schools (53.7%) that did not offer dedicated nutrition courses provided some nutrition topics in other courses. Two (3.0%) of the six schools that offered nothing were planning to offer the course. B. Distribution of the department in charge of teaching nutrition among 25 schools that offered a dedicated nutrition course. The number indicates the number of medical schools in which each corresponding department was in charge. A stand alone department was in charge in seven schools; the department of biochemistry/molecular biology in three schools, the department of gastroenterology in one school, the division of nutrition therapy (a division of the internal medicine) in one school, the department of surgery in one school, and the department of anesthesiology in one school. In contrast, 18 schools offer it as an integrated course including the departments of biochemistry/molecular biology, surgery, pediatrics, endocrinology/metabolism, clinical nutrition and medicine, education center, and general internal medicine. C. Distribution of the department in charge of teaching nutrition among 36 schools that did not offer a dedicated nutrition course. The number indicates the number of medical schools in which each corresponding department was in charge. These schools provided some nutrition topics in the course of endocrinology/metabolism, biochemistry/molecular biology, general internal medicine, gastroenterology, social medicine, and an introduction to clinical medicine.

a laboratory or practical class in their dedicated nutrition courses. However, as judged by their syllabi, only two schools (3.0%) offered any substantial clinical nutrition practice during their courses. Thirty-six schools (53.7%) that did not offer dedicated nutrition courses provided with some nutritional topics in the other courses (Figure 1C).

In clinical practice, 16 schools (23.9%) offered nutrition education. Eleven schools (16.4%) answered that registered dietitians were involved in the clinical practice. Nutrition education during postgraduate education was poor. Only four schools (6.0%) offered nutrition courses in the postgraduate school and six schools (9.0%) answered that they were planning such a course. However, the answers were not limited to postgraduate medical schools but also included in other co-medical schools; detailed information about postgraduate education could not be obtained. In most schools, postgraduate nutrition training was performed in the departments of internal medicine, surgery, and pediatrics and by the nutrition support team (NST).

## DISCUSSION

We performed a questionnaire survey study of nutritional education in Japanese medical schools in 2009. Five years ago, a similar survey was performed, in which 57 medical schools (72.2%) responded.<sup>3</sup> In 2004, 24.6% of the responding schools offered dedicated nutrition courses and 84.2% of the responding schools offered some nutrition topics. These results indicated that nutrition education in Japanese medical schools was inadequate. As compared with this survey, the 2009 survey showed that nutrition education in Japanese medical schools has improved to a certain extent, but is still inadequate and needs additional improvement.

In the 2009 survey, we sent questionnaire to the directors of Centers for Medical Education. In contrast, the former questionnaire was sent to the deans of the schools, and this difference may have contributed to the better response rate in the more recent study (83.8% versus 72.2%). Thirteen medical schools did not respond, and we were not able to determine whether these particular schools actually offered any nutrition education. Although contacting individuals responsible for teaching nutrition would have given us more reliable results, a list of teaching staff was not available when the survey was conducted. We had similar problems when the former survey was conducted in 2004. Given that there are no departments of nutrition in Japanese medical schools, it is not easy to identify the teaching staff in charge of nutrition education. To increase the development of nutrition education in medical schools, staff names should be available and these teachers should be able to contact each other and share ideas. The Nutrition Academic Award (NAA) Program developed the medical nutrition education curriculum in the United States,<sup>4,5</sup> and a similar program is needed to develop an educational curriculum in Japan. The latest survey of nutrition education in the United States indicated that most medical schools (94.5%) that completed the survey required some form of nutrition education.<sup>6</sup> Although medical nutrition education appeared have improved in the United States, the authors of

that study concluded that the amount of nutrition education that medical students receive continues to be inadequate.<sup>6</sup> Before the start of the NAA Program, a lack of nutrition education in medical schools was identified.<sup>7</sup> A survey of US medical schools in 2004, when the NAA Program had just finished, indicated that the amount of nutrition education was inadequate and integration of a nutritional curriculum into the medical school curriculum was necessary.<sup>8,9</sup> The current situation of nutrition education in the United States is still poor and needs improvement.<sup>10</sup> Medical nutrition education seems to be inadequate in other industrialized countries as well. Nevertheless, the learning outcomes after a 2-day nutrition education intervention were recently reported in England,<sup>11</sup> which implies new successful nutrition educational methods in an industrialized society.

With regards to teaching staff, it is important to train nutrition experts who can teach nutrition in medical schools, because Japanese medical schools suffer from a shortage of teaching staff. In addition, it is also difficult to find space for nutrition education in an already crowded curriculum. However, there has been a recent shift toward preventive medicine as hospitals struggle with a shortage of resources, particularly financial resources. Furthermore, nutritional deficiencies are common in the care facilities for elderly people. Recently, the nutrition support team (NST) was developed in Japan, because the government has financially supported medical management by the NST in the national health insurance system.<sup>12</sup> This is a good opportunity to incorporate nutrition into integrated medical education. To incorporate nutrition into the curriculum, however, no other subjects can be omitted but concentrated to make space for nutrition.

The NAA Program in the United States produced the nutrition curriculum guide for training physicians in 2002.<sup>13</sup> It would be useful to refer teaching staff in nutrition in many medical schools to such a guideline. We are currently developing a guideline for nutrition education for medical schools. Disseminating this guideline to every medical school may help in teaching and training future physicians so that they have important nutritional skills to use with their patients.

This survey has a limitation in that learning outcomes of nutrition education were not identified. Lack of assessment of learning outcomes is a problem in medical nutrition education. The guidelines for the national medical licensing examination in Japan do not treat nutrition as a stand-alone subject, and it is difficult to evaluate nutritional knowledge and skills of the examinees. Although "Basic medical education World Federation for Medical Education (WFME) global standards for quality improvement" has been edited by WFME office as an international standard on education in medical schools, it does not mention specifically nutrition.<sup>14</sup> Moreover, the teaching methods are important. The recent tendency of reducing lectures and using more problem-oriented learning or small group learning should be incorporated into medical nutrition education. Our survey, however, did not elucidate these teaching methods. In addition, we need a multidisciplinary teaching team including registered dietitians to help teach nutrition education in medical schools.

We are actively developing a guideline that should be incorporated into the model core-curriculum for medical education and the guidelines of national medical licensing examination in Japan. We believe that such action is necessary to incorporate nutrition topics into medical education systems in order to teach nutrition to future physicians.

#### ACKNOWLEDGEMENTS

We are grateful to the directors of centers for medical education and the deans at all of the medical schools that responded to the survey. We are also grateful to the secretaries of the Japanese society of clinical nutrition, who summarized the questionnaires.

#### AUTHOR DISCLOSURES

No author reports any conflict of interest. This work was supported by the Japanese Society of Clinical Nutrition.

#### REFERENCES

1. Committee on revise of model core-curriculum of medical education. Model core-curriculum of medical education, 2010 version. Tokyo: The Ministry of Education, Culture, Sports, Science & Technology; 2011. (In Japanese)
2. Medical Professions Division, Health Policy Bureau, The Ministry of Health, Labour and Welfare. The guidelines of national medical licensing examination, 2013 version. Tokyo; The Ministry of Health, Labour and Welfare; 2012. (In Japanese)
3. Orimo H, Shimura T, Shimada T. Nutrition education in medical schools in Japan: results from a questionnaire survey. *Asia Pac J Clin Nutr*. 2006;15:323-8.
4. Pearson TA, Stone EJ, Grundy SM, McBride PE, Van Horn L, Tobin BW. Translation of nutritional sciences into medical education: the Nutrition Academic Award Program. *Am J Clin Nutr*. 2001;74:164-70.
5. Van Horn L. The nutrition academic award: brief history, overview, and legacy. *Am J Clin Nutr*. 2006;83(suppl): 936S- 40S.
6. Adams KM, Kohlmeier M, Zeisel SH. Nutrition education in U.S. medical schools: latest update of a national survey. *Acad Med*. 2010;85:1537-42.
7. Torti FM, Adams KM, Edwards LJ, Lindell KC, Zeisel SH. Survey of nutrition education in U.S. medical schools - an instructor-based analysis. *Med Educ Online* [serial online] 2001;6:8. [cited 2012/3/9]; Available from: <http://www.Med-Ed-Online.org>
8. St Jeor ST, Krenkel JA, Plodkowski RA, Veach TL, Tolles RL, Kimmel JH. Medical nutrition: a comprehensive, school-wide curriculum review. *Am J Clin Nutr*. 2006;83 (suppl):963S-7S.
9. Adams KM, Lindell KC, Kohlmeier M, Zeisel S. Status of nutrition education in medical schools. *Am J Clin Nutr*. 2006;83(suppl):941S-4S.
10. Frantz DJ, Munroe C, McClave SA, Martindale R. Current perception of nutrition education in U.S. medical schools. *Curr Gastroenterol Rep*. 2011;13:376-9.
11. Ray S, Udumyan R, Rajput-Ray M, Thompson B, Lodge K-M, Douglas P et al. Evaluation of a novel nutrition education intervention for medical students from across England. *BMJ Open*. 2012;2:e000417
12. Hirata K, Kawasaki K, Tatsumi H, Mizuguchi T, Meguro M, Hasegawa I, Sasaki K, Ishizaka E, Fujita A, Nobuoka T. Present status and future prospects of nutritional support teams. *Nihon Geka Gakkai Zasshi*. 2010;111:341-7. (In Japanese)
13. Hark L. Lessons learned from nutrition curricular enhancement. *Am J Clin Nutr*. 2006;83(suppl):968S-70S.
14. WFME Executive Council. Basic medical education WFME global standards for quality improvement. WFME Office: University of Copenhagen, Denmark 2003. [cited 2012/9/14]; Available from, 2012. <http://www.wfme.org/standards/bme>

## Short Communication

**Nutrition education in Japanese medical schools:  
a follow-up survey**

Hideo Orimo MD, PhD<sup>1,2</sup>, Takahiro Ueno MD, PhD<sup>1,3</sup>, Hiroshi Yoshida MD, PhD<sup>1,4</sup>,  
Hirohito Sone MD, PhD<sup>1,5,8</sup>, Akira Tanaka MD, PhD<sup>1,6</sup>, Hiroshige Itakura MD, PhD<sup>1,7</sup>

<sup>1</sup>Committee for promotion of nutrition education in medical schools, The Japanese Society of Clinical Nutrition, Tokyo, Japan

<sup>2</sup>Division of Metabolism and Nutrition, Department of Biochemistry and Molecular Biology, Nippon Medical School, Tokyo, Japan

<sup>3</sup>Division of Nephrology and Metabolism, Department of Internal Medicine, Nihon University School of Medicine, Tokyo, Japan

<sup>4</sup>Department of Laboratory Medicine, Jikei University School of Medicine, Tokyo, Japan

<sup>5</sup>Department of Internal Medicine, University of Tsukuba School of Medicine, Tsukuba, Japan

<sup>6</sup>Nutrition Clinic, Kagawa Women's Nutrition College, Tokyo Japan

<sup>7</sup>Ibaraki Christian University, Mito, Japan

<sup>8</sup>Present address: Department of Internal Medicine, Niigata University Faculty of Medicine, Niigata, Japan

**日本醫學院的營養教育：一個追蹤調查**

以問卷調查評估日本在 2009 年醫學院的營養教育狀況。2004 年曾進行類似的調查，在當時日本醫學院的營養教育被認為是不足的。現行的問卷被寄送給 80 所醫學院的醫學教育中心的主管，他們代表所有日本的醫學院。計 67 所 (83.8%) 醫學院回覆，其中 25 所 (37.3%) 提供專門的營養課程，36 所學校 (53.7%) 沒有提供專門的營養課程，但在其他課程有提供營養相關資訊；6 所學校沒有提供任何的營養教育。整體來看，61 所學校 (91.0%) 在他們的大學學程中，提供至少一些營養主題。不過，依據他們的教學大綱判斷，似乎只有 11 所學校 (16.4%) 給予超過 5 小時實質的營養教育。雖然課程的平均長度為 11 小時，實質上營養教育只有 4.2 小時。提供專門營養課程的 25 所醫學院當中，有 7 所學校提供獨立的營養課程，另 18 所學校的營養課程是整合性課程的一部份。總結，日本營養教育的狀況已經稍微改善但仍然是不足的。

**關鍵字：**營養教育、醫學院、日本、問卷、課程