

Review Article

Dietetics in China at the crossroads

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Background: A dietetics profession that conforms to the international standards for dietetics exists in many countries but not in the Peoples' Republic of China (China). Might China benefit from the presence of the dietetics profession? **Objective:** The article reviews the current dietetic situation in China, summarizes the gaps between current realities in China with respect to meeting needs for nutritional care, and recommends improvements. **Results:** Gaps and barriers exist between current practice in dietetics and a more optimal system for meeting China's nutritional care needs. Recommendations for actions over the near term that would lead to fuller development of the field of dietetics in China are summarized, following the model suggested by the International Confederation of Dietetic Associations. Alternative personnel deployment strategies over the next decade are also discussed. **Conclusion:** Whether there is a role for the profession of dietetics in China today or in the near future will depend on the attitudes and political will of Chinese government authorities, health professionals, educators, and consumers.

Key Words: dietetics, dietitian, China, gaps, nutrition

INTRODUCTION

The Peoples' Republic of China (China) is the most populous country in the world. Although the health of its citizens is improving, major food and nutrition problems still exist, including under- and malnutrition-especially among physiologically vulnerable groups, food borne illness, diet related chronic diseases, and obesity. Nutrition problems are evident both among community residents, as well as the ill in hospitals or other medical facilities. In other countries, many of the food and nutritional aspects of these problems are dealt with by dietitians who apply scientific nutrition principles to the art of feeding and educating people.¹ The International Confederation of Dietetic Associations (ICDA) is an international organization of national associations of dietitians and nutritionists. It aims to provide "an integrated communications system, an enhanced image for the profession, and increased awareness of standards of education, training and practice in dietetics".² It defines a dietitian as a person with a qualification in nutrition and dietetics who is recognized by national authorities and who applies the science of nutrition to the feeding and education of individuals or groups in both health and disease states.³ The ICDA's international standards for dietetic education require both formal didactic requirements (a bachelor's degree at a minimum) and a period of at least 500 hours of supervised professional practice to develop required practical skills in the field.⁴

Many of the 40 countries that have national dietetic associations are both members of ICDA and signatories to this definition.⁵ In twenty of them, dietitian or registered dietitian (RD) is a title that is recognized by national dietetics associations (3 countries), by a government body (14 countries), or by other organizations (3 countries).

The ratio of dietitians to the total population varies from country to country, from 0.3/100,000 in India, 25/100,000 population in Denmark, Israel,⁶ and the USA,^{7,8} to 56/100,000 in Japan.⁶ China is not a member of ICDA, nor does it currently have uniform didactic educational curricula for dietetics and supervised training.

However, Chinese culture recognizes the health significance of food and appropriate feeding. The use of dietary methods to prevent and treat diseases is an ancient Chinese tradition that dates to over 3000 years ago. In those days, physicians were categorized by those who practiced dietary medicine, internal medicine, dermatological and external medicine, and veterinary medicine.⁹ Those practicing traditional Chinese "dietary medicine" were the earliest dietetic oriented practitioners in China.⁹ Traditional Chinese medical literature emphasized dietary therapies for many diseases. Early in the 20th century Western medical missionaries in China introduced the concepts of nutritional science and the profession of dietetics with a few small training programs in hospitals affiliated with them; these thrived. However, dietetic education based on the Western model virtually ceased after World War II with the establishment of the Peoples' Republic of China. Only a few colleges and universities kept nutrition and

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dietetics or clinical nutrition as a minor (“sub-major”).¹⁰

The profession of dietetics as defined in international standards does not currently exist in China, although some individuals without baccalaureate degrees call themselves dietitians. A variety of personnel with varying levels of expertise deal with food and nutrition problems or services for them are lacking altogether. The reasons for the dearth of dietitians are not immediately apparent, but they probably include the lack of indigenous historical precedents for such a profession and the view, until recently, that this profession was an unnecessary or undesirable Western influence.

This article addresses the question of whether China might benefit from the presence of a dietetic profession with standards in line with the ICDA model. It describes the relevant government agencies and initiatives currently dealing with food and nutrition issues in China. It describes current education and training of Chinese personnel in disciplines that involve functions that dietitians perform elsewhere. The gaps between what exists now and optimal practice as specified in the ICDA model are summarized, and some recommendations for actions that might be taken to fill the gaps are provided.

FOOD AND NUTRITION IN CHINA

In China today, the prevalence of overweight, obesity, and diet-related chronic degenerative diseases (such as hyper-

tension, gastroenteritis, and diabetes) has increased dramatically in both children and adults in both rural and urban areas, over the past few decades, and are expected to continue to do so in the future.¹¹⁻¹⁷ Figures 1 and 2 show trends and comparison regarding the prevalence of overweight and obesity among children and adults.^{12,14,17}

Figure 3 shows the comparison in prevalence of three chronic degenerative diseases in 2002 and 2007.¹³ Stunting, undernutrition, food adulterations, food safety related problems and food borne illness also remain serious problems that must be dealt with.^{18,19}

To deal with these food and nutrition related problems and other issues, six Chinese government agencies at the national level exist. They include the Ministry of Health, the Chinese Center for Disease Control and Prevention, the Food and Drug Administration, the Administration for Industry and Commerce, the Ministry of Agriculture, and the Ministry of Human Resources and Social Security. The agencies are highly centralized nationally, with provincial offices and branches that carry out the directives and regulations, and share information and records. Collaboration among the agencies is not always optimal in dealing with these food and nutrition issues.^{18,19}

DIETETICS IN CHINA TODAY

There appears to be a growing awareness and increasing emphasis on dietetics and nutrition on the part of authori-

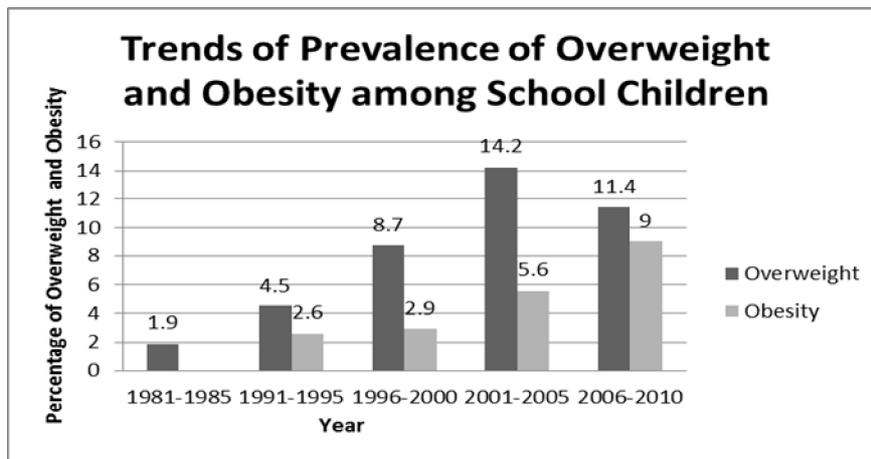


Figure 1. The Trends with respect to the Prevalence of Overweight and Obesity among Chinese Children from 1981 to 2010¹²⁻¹⁷

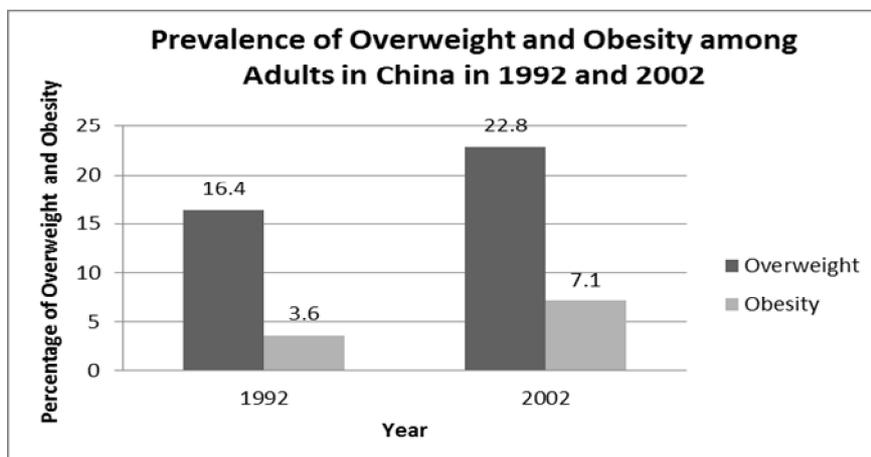


Figure 2. Comparison of the Prevalence of Overweight and Obesity among Chinese Children in 1992 and 2002*¹⁴. * Chinese standard: obesity BMI>28 kg/m² and overweight 24<BMI<28 kg/m².

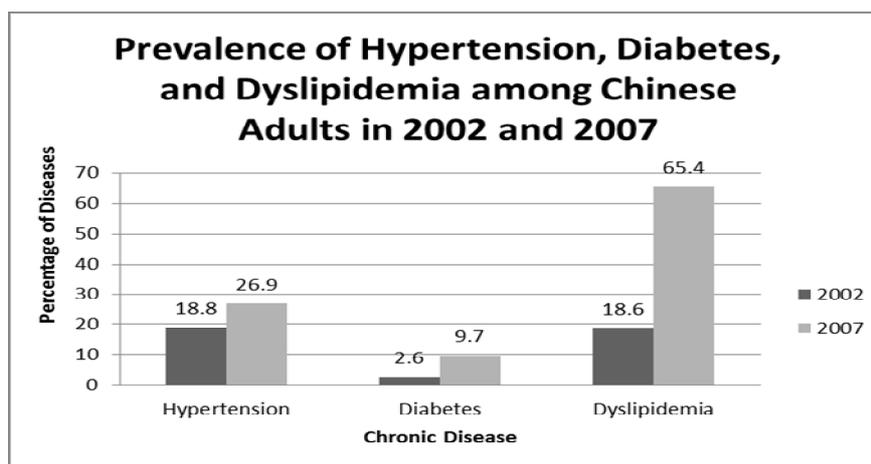


Figure 3. Prevalence of Hypertension, Diabetes, and Dyslipidemia for Chinese Adults in 2002 and 2007¹³

ties in the Chinese government, as suggested by the promulgation of certain policies, regulations, and government working plans in the past few years and which continue today.¹⁸⁻²² The Chinese Medical Doctor Association and its subcommittee on specialist physicians have recently established a “Clinical Nutrition Development Foundation” to encourage clinical nutrition research and development.²³ A plethora of both public and privately sponsored nutrition conferences, seminars, online lectures, discussions, journals, and nutrition books for Chinese professional exists, and there is abundant attention to food and nutrition on the part of the mass media attention such as television, online blogs, and Weibo (Chinese Twitter).

However, in spite of these innovations, didactic education and training in dietetics in China remain very limited. Only a few degree programs in universities have majors in nutrition at the baccalaureate level, and those that do emphasize basic nutritional science with very little emphasis on applying nutritional science to human food and population nutrition problems. Baccalaureate programs that offer public health majors with nutrition minors are more plentiful. However, very few programs offer a clinical nutrition major at either baccalaureate’s or masters’ level although there are 20 or more masters programs offering a major in food hygiene and nutrition at that level. Some hospitals offer clinical dietetic training at the undergraduate level with training of various lengths. West China Hospital also offers a 2 years after-an-undergraduate, supervised clinical dietetic training program. However, these supervised dietetic training programs vary in length, quality, rigour, and training components they aim to instill, and thus the competencies developed also vary greatly.

Many nutrition and dietetics related certification programs are present today. They are confusing to both the public and to students who want to enter the field. There are three certification credentials that are issued at the national level: “Public Dietitian” (4 levels), “Clinical Nutrition Physician”, and “Clinical Nutrition Technician” (Table 1).²⁴⁻²⁶ The certificates are issued to individuals who have different skill sets, very different educational levels, and whose clinical or public health training is of varying lengths. The modest requirements for entry for the Public Dietitian Certification has led to numerous private short-term training programs for taking the exam;

the preparation they provide varies in quality and in the nutritional knowledge they instill. Some programs even advertise that they guarantee certification for all pupils who complete the program. There are still other personnel who perform some dietetic functions although they neither hold university degrees nor dietetics related education and training. Therefore the situation in China today is that there is a proliferation of didactic programs in nutrition and dietetics of different quality, educational level, and duration of supervised clinical training. The country appears to be at crossroads, and the status quo is becoming increasingly untenable.

REALITIES AND POSSIBLE ALTERNATIVE FUTURES FOR DIETETICS IN CHINA

Dietitians play a critical role on health care teams; they help to prevent, as well as treat diseases. Studies in Europe have found that physicians and nurses have better attitudes toward clinical nutrition when they have more access to clinical dietitians.²⁷ Dietitians provide significant additional contributions in caring for the very ill by supervising and implementing the progression of feedings in a timely manner, and in achieving energy balance; these efforts have been shown to decrease hospital stays in critical care units.²⁸ Research in the US have further confirmed that the nutrition counseling provided by Registered Dietitians has positive effects in treating type 2 diabetes and cardiovascular diseases, and is associated with significant reductions in risk factors for obesity and related chronic diseases.²⁹⁻³¹ After discharge from hospital, the functional and nutritional status of geriatric medical patients have shown positive effect related to follow-up by Registered Dietitians.³²

Benefits that might result from the development of a dietetics profession in China include more rigorous dietetic practice standards that will ultimately promote the health of the public by better integrating preventive and curative medical therapies in hospitals and in the community. They further ensure that food safety standards are met in facilities they work in.

Table 2 compares the actual and desirable situations with respect to personnel performing dietetics related functions in China today, using the functions specified in the ICDA model. Standards for scope of work for dietitians that were developed by the Academy of Nutrition

Table 1. Government issued dietetic certifications in China ²⁴⁻²⁶

Certification	Certification Issue Agency		Eligibility	Where to work
Public Dietitian Certification	Ministry of Human Resources and Social Security at the national level Certification exam hosted at province level	Level 1	Bachelor degree in medicine or food, plus at least 13 years related working experience; OR master's or PhD degree in medicine or food, plus at least 10 years related working experience; OR continuing nutrition related working experience at least more than 19 years; OR hold level 2 certification plus related 4 years working experience And passed the certification examination.	Various: Private practices, hospitals, dietary supplements companies, fitness center, or other facilities related to food and nutrition.
		Level 2	Continuous nutrition related working experience for at least 13 years; OR hold level 3 certification plus 5 years related working experience; OR Bachelor degree in medicine or food, hold level 3 certification, plus at least 4 years related working experience; OR Master's or PhD degree in medicine or food, plus at least 2 years related working experience And passed the certification examination.	
		Level 3	Continuous nutrition related working experience for at least 6 years; OR hold level 4 certification plus 4 years related working experience; OR Bachelor degree in medicine or food; OR Bachelor degree, plus one year related working And passed the certification examination.	
		Level 4	Continuous nutrition related working experience for at least 1 year; OR technical secondary school diploma (after finishing middle school, students go to the technical school instead high school) ; OR 1-3 months certified training And passed the certification examination.	
Clinical Nutrition Technician Certification	Ministry of Health at the national level Certification exam hosted at the national level		A bachelor or an associated degree in preventive medicine, public health, food science, or nutrition; And work in clinical setting; And passed the certification examination.	Hospitals or health care companies and facilities. In some hospitals, they are not allowed to see inpatients by themselves, nor write note in medical chart. They are eligible for raises and a more advanced title or promotion to a different position through the technician track.
Clinical Nutrition Physician Certification			Medicine degree (bachelor or above); And work in clinical setting; And passed the certification examination.	Hospitals. They have the same prescription privileges as other physicians and are eligible for raises and a more advanced title or promotion to a different position through the physician track.

Table 2. Analysis of gaps between current practices on dietetics related issues in China and the model practice patterns suggested by the International Confederation of Dietetic Associations (ICDA)

Current Nutrition/ Dietetics Related Issues in China	Gaps at Present	Standards for and Role of Dietitian as Specified in ICDA Model (eg: USA) <ul style="list-style-type: none"> ◦ Baccalaureate with credential courses in food and nutrition. ◦ Supervised practice program (at least 1200 hours) at a certified facility. ◦ Passing grade on national examination accrediting. ◦ Maintenance of continuing professional educational requirements.³⁷
Health and nutrition related policies, regulations, and work plans are released by the government agencies at the national level to cope with public health problems, but they are not implemented, or only implemented in part of the country.	<ul style="list-style-type: none"> - Lack of authority legislation of infrastructure and personnel for implementation.³⁸ - Lack of awareness of the policies and/or problems on the part of provincial and local governments. - Lack of nutrition education programs to train professionals for providing nutrition services and supporting implementation. 	<ul style="list-style-type: none"> - Advocate to increase awareness of government agencies and public on shortfalls and work to correct them. - Assist in implementing regulations that apply to food service facilities, schools, community health centers and other settings, inpatient and outpatient health care facilities, assisted living facilities and nursing homes, and other public health settings.
Serious food borne illness and food safety problems in spite of recommendations and aspirations at the national level focused on improving food safety by better legislation, monitoring and surveillance, better application of food technology, less fraud and corruption and higher ethical standards. ¹⁸	<ul style="list-style-type: none"> - Lack of an effective food and drug regulatory system. - Lack of enforcement of existing regulations. - Large numbers of small farms and small food production units make it difficult to monitor food safety issues. - Scandals and corruption of food safety problems on the part of officials in the community, which gives rise to skepticism on the part of the public about the veracity of existing conditions and of the ability or desire of appointed officials to cope with the problems. - Lack of individuals trained in food safety monitoring, surveillance and enforcement along the entire food supply chain. 	<ul style="list-style-type: none"> - Work in food service settings and food industries, and apply dietetic expertise to ensure food safety. - Work in community and popularize science to educate the community.
Recent regulations on the evaluation criteria of level three class A hospitals (tertiary level hospitals for patients with most complicated problems) required all level three class A hospitals to have a clinical nutrition department, but these newly established departments have not been given a clear idea of what they are to do, what services they are to provide, with whom, nor are budgets provided to implement these measures, with the result that clinical nutrition practice are ineffective in many hospitals. ³⁹⁻⁴¹	<ul style="list-style-type: none"> - Lack of a clear scope of work for dietetic professionals. - Lack of an identified budget or a viable billings system to provide a way to pay for food and nutrition services in hospital settings. - Lack of clinical nutrition education programs to train professionals for providing clinical nutrition services. 	<ul style="list-style-type: none"> - Play an integral part on the multidisciplinary healthcare team to ensure patients' nutrition needs are being met: provide appropriate diet recommendation and nutrition support when needed for hospitalized patients. - Develop guidelines for feeding of patients when or if the hospital does not provide food to patients on usual or only slightly modified diets. - Ensure that measures are taken to minimize food borne illness and maximize food safety. - Advocate for optimal hospital nutrition services for all patients. - Provide nutrition counseling and other nutritional care in outpatient settings.

and Dietetics in the USA are used as the standard.

Several gaps between the two are apparent. These include the need for more professionals who are skilled in promoting and implementing the prevention of chronic disease and obesity, providing community nutrition services, assisting management of food borne disease and food safety issues, and providing clinical nutrition care for hospitalized patients. Existing personnel are not avail-

able to meet these needs.

Five barriers that stand in the way of remediating food and nutrition problems amenable to dietetic interventions are summarized in Table 3. Some possible remedial actions are also summarized in the table. The barriers include lack of didactic programs and supervised training in dietetics, and lack of a clear career path for individuals who are trained. There is no clear scope of work for

Table 3. Barriers that must be overcome to remedy food and nutrition problems that could be addressed by dietetics in China

Barriers	Possible Remedial Actions
<p>Lack of Dietetic Education Programs and Career Paths</p> <ul style="list-style-type: none"> - Both didactic education and supervised training in dietetics in China remain limited. - No clear dietetics career path exists in China today. No positions are available for nutrition graduates who are trained. Graduates who are nutrition majors have no clear or rewarding career path after they graduate and their education is thus often wasted. - Few well trained clinical nutrition physicians exist in hospitals who have skills in parenteral and enteral nutrition and medical nutrition therapy; these physicians are only trained in a few hospitals. Presently even those who are well trained have low status and income. 	<p>Establish Undergraduate Program for Dietetics</p> <ul style="list-style-type: none"> - Nutrition should be established as an undergraduate major rather than simply a minor. Nutrition majors can then branch into medical schools, or public health schools, or in special nutrition schools within the university and offer tracks with different emphasis (clinical, community, food service) to better fit students' different interests and career goals. Training institutions should be supervised by the Chinese Ministry of Education. <p><Examples></p> <p>Didactic Training: The undergraduate nutrition program in Shanghai Jiaotong University has an excellent curriculum example with field training in both clinical and public health settings.⁴²</p> <p>Supervised training: West China Hospital (the only program offers 2 year-long post undergraduate clinical supervised training).</p> <ul style="list-style-type: none"> - Alternative strategies to improve current dietetic professional skills for physicians: <ul style="list-style-type: none"> o Improve clinical nutrition practice of physicians and surgeons through annual short term training programs. o Improve nutrition knowledge of medical students, public health and preventive medicine major students, through the clinical rotations in addition to the academic track.
<p>Lack of Sound Credentialing Systems for Dietetic Professionals</p> <ul style="list-style-type: none"> - Lack of clear definitions of their scope of work and sound credentialing system for current dietetic practitioners in China. - Currently certified individuals are often incompetent and cannot ensure quality practice. 	<p>Establish Dietetic Professional Positions and a Process for Certified Dietitians to Fill these Positions</p> <ul style="list-style-type: none"> - Establish a fair and sound credentialing system and dietetic professional positions to regulate dietetic professionals and to ensure qualified practice and competency. - The title of dietitian that follows international standards should be easily distinguished and not be confused with those who currently hold lesser certifications. The enhanced dietetic credential should be authorized and regulated by a government body.
<p>Clinical</p> <ul style="list-style-type: none"> o The clinical dietetic setting is dysfunctional: physicians are unwilling to carry out the chores of clinical nutrition physicians; clinical nutrition technicians lack clinical and medical expertise and work under very difficult conditions (in some hospitals, they are not allowed to sign clinical notes and visit patients individually). 	<p>Clinical Dietetics</p> <ul style="list-style-type: none"> o Clinical dietitians should have their own departments and reporting arrangements in hospitals, which is not simply subordinate to either the physician system or the technician system (the current staffing system in Chinese hospitals). In the recommended dietetic department approach, the dietetic profession would have its own career and promotion pathway, and its own credential to ensure standard and effective practice.
<p>Community</p> <ul style="list-style-type: none"> o Currently certified public dietitians are at 4 different levels and many have low entry level educational requirements (high school or equivalent) for certification, leading to confusion in the workplace and also often to a poor quality of dietetic practice. o There are many private and commercial schools that prepare individuals for taking public dietitian certification examinations and centers that provide short term training (mostly part-time month training over 1 to 3 months), with undue emphasis on passing the examination rather than on the training. 	<p>Community Dietetics</p> <ul style="list-style-type: none"> o Community dietitians who hold the credentials should conform to international standards to better serve the community and assist effective implementation of community and public health nutrition programs and better support government nutrition interventions. <p>Examples</p> <ul style="list-style-type: none"> o Establish a new credential entitled "dietitian" (such as a Registered Community Dietitian, RCMD) and Registered Clinical Dietitian (RCLD) with several requirements, including: (1) at least a bachelor's degree with a major in food, nutrition, or public health major; (2) at least 1 year supervised training in various community nutrition or clinical nutrition related work settings. (3) passing of an examination on core knowledge; (4) required registration at the government agency regulating practice; (5) compulsory requirements for continuous education credits each year. o Promulgate regulations that (1) specify the job description and scope of work for dietitians in key positions. For example, as many countries have dietitians in community centers and hospital food services, regulations can include all school meal services might be required to employ a food service dietitian or all community health centers might be required to be staffed with a dietitian, all eating facilities with meal services for those with special medical nutrition therapy needs might be required to be supported by a dietitian. (2) include mandatory continuing education each year with specific instructions on what can be counted as continuous education credits.

Table 3. Barriers that must be overcome to remedy food and nutrition problems that could be addressed by dietetics in China (cont.)

Barriers	Possible Remedial Actions
<p>Lack of Professional Practice Guidelines</p> <ul style="list-style-type: none"> - Newly established clinical nutrition departments have not been given a clear idea of what they are to do, what services they are to provide, with whom, nor are budgets provided to implement these measures. - No practice guidelines for current certified community dietitian. 	<p>Promulgate and Publish Regulations for Practice Standards</p> <ul style="list-style-type: none"> - Provide guidelines on practice standards to improve effective and efficient clinical nutrition departments. - Government agencies should not only promulgate regulations and practice standards, but they should see to it that actual implementation occurs; regulations enforce them, and periodically monitor and evaluation guidelines to improve them. - Institute more and better collaboration between the Chinese Ministry of Health, the Chinese Nutrition Society, the Chinese Clinical Nutrition Association, the Chinese Society of Parental and Enteral Nutrition, and the Chinese Medical Doctor Association Nutrition Physicians Specialization Committee. - Periodically update those guidelines as experience is gained and changes are deemed necessary for the actual clinical and community situations. - Institute regular monitoring and evaluation to tailor the guidelines and update them as new scientific evidence emerges that needs to be translated into practice.
<p>Lack of Clear Scope of Work for Dietetic Professionals (and others who perform similar functions)</p> <ul style="list-style-type: none"> - No clear scope of work for dietitians either in clinical or community settings. Everyone claims but no one practices dietetics in its totality (For example, doctors play a role in outpatient nutrition education, nurses provide bed side inpatient diet education, and surgeons play roles in directing nutrition support). - Job responsibilities are unclear because a clear scope of work is lacking, and this hinders the delivery of optimal nutrition services. 	<p>Pass Nutrition Legislation</p> <ul style="list-style-type: none"> - Nutrition legislation is needed to clarify who can call themselves dietitians, what education and training they should have, and what their scope of work is, standards to ensure the effectiveness of nutrition intervention. - The legislation should clearly state the responsibilities and scope of work for clinical dietetic professionals and how the patient care team should work together. - Establish legislation that institutes national nutrition surveys on a regular basis to reveal food borne illness, chronic disease prevalence, and nutrition status.
<p>Lack of Billing</p> <ul style="list-style-type: none"> - No payment or billing systems exists for clinical nutrition services provision (inpatient and outpatient basis). - Nutrition service is not a part of hospital care service due to lack of billing system. So clinical dietitians are unable to actively participate in patients' care; they only provide service based on doctors' consultation. - The amount of nutrition consultations are very low in many hospitals because clinical nutrition departments are new and consulting is uncommon in most hospitals, with few patients being referred for outpatient visits. - Since clinical nutrition departments do not bring revenue but are cost centers, hospital administrators have little interest in them. 	<p>Develop a Billing System or Some Other Means of Supporting Clinical Nutrition Services in Hospitals</p> <ul style="list-style-type: none"> - Billing systems or ways to pay for services are essential to assure clinical nutrition service is an essential part of hospital care services, and clinical nutrition departments can be actively involved in patients' care. - Clear billing systems also help to clarify scope of work and responsibility in hospitals care. - Billing or some other mechanism for paying for services is required for future developments of clinical nutrition department. - Since it would be a new addition into the hospital and medical billing system, evaluation should be scheduled more frequently to adjust the billing system to better fit the optimal practices.

dietitians, and a sound credentialing system that is accepted and approved of by the government is also absent. There are also no mechanisms for billing or otherwise accounting for the costs of clinical nutrition services.

RECOMMENDATIONS

We reviewed recently released government working plans and regulations.^{20-23,33-35} One of us (LS) also visited several clinical nutrition departments in Beijing, Chengdu, and Kunming, and interviewed nutrition and food science professors who were leaders in several universities in Beijing for field work. It is recognized that for such a large and complex country that what was observed and learned is only a small piece of the larger reality. More rigorous surveys of training opportunities, gaps and successes are needed. Nevertheless certain trends seem quite clear, and therefore we propose the following tentative recommen-

dations that follow in the article. Although the title "dietitian" has been recognized and listed by Chinese Ministry of Labor since 2005 as a new profession, at present in 2013 it appears to hardly exist at all. Considering the current confusion about what constitutes dietetic practice in China today, there is little likelihood of being able to establish the dietetics profession upholding ICDA model standards in the near future throughout China, unless the situation changes considerably, and other important priorities may make it impossible to institute such changes. National authorities must decide if they have the political will and are willing to devote the resources to develop a viable profession of dietetics in China. If so, national and local government policies will need to change, and much audacious, innovation and dedication will be required of the provincial and local authorities in the various government agencies that are involved. Moreover there must

be agreement on the part of public health and medical professionals, academics, non-government organizations, and current dietetics related professionals that change is needed. This may be too much to ask of a country that is growing rapidly and that has many important competing priorities, many competing professionals, and excesses of university graduates already in some of the most geographically desirable locations.

One way of filling these gaps and rapidly populating major hospitals and community settings with dietitians might be to recruit or train Chinese dietitians in line with the ICDA model. Other steps might include developing undergraduate programs with supervised community and clinical nutrition training. To buttress this effort, job descriptions and positions for dietetic professionals must be created. A process should be in place for certifying the competence of both the didactic and practical knowledge of dietitians to ensure that they meet minimal levels of competency. It would also be helpful for government authorities to promote nutrition related legislation that is the basis for promulgating regulations governing practice standards. Also needed are systems and fee schedules for billing for clinical nutrition services that are not now covered by hospital budgets. Job prospects for Chinese graduates in dietetics from programs elsewhere in the world are uncertain at present, making it difficult for them to return to their country for fear of being unable to find work. Without substantial monetary incentives and job security, it is unlikely that such fully trained and competent individuals will be attracted back to work in China.

Small steps

Considering the current lack of clear directives and progress in implementing earlier plans on the part of the national government in China, the likelihood of establishing dietetics in China as a separate profession is uncertain, at least over the short term. A more realistic vision of the future might be to assume that a long transition period will be necessary to create a viable dietetics profession and in the meantime other efforts and alternative solutions will be necessary to deal with these issues. However, small changes can begin at a city, province, or large urban area immediately.

Currently available human resources and agencies that are related to food, nutrition and dietetics functions need to be given clear directives and coordinated to achieve greater efficiency, effectiveness, and coverage. In the current Chinese economic and political situation, such integration must emanate from the national and provincial authorities in the health and education sectors if it is to come about at all.

Non-governmental or quasi-governmental organizations such as professional organizations can also help fill gaps that currently exist if they have the political will and are incentivized to do so. Such organizations as the Chinese Nutrition Society, the Chinese Medical Association, the Chinese Society for Parenteral and Enteral Nutrition (subunits of the Chinese Medical Association), and the Chinese Clinical Nutrition Manufacture, Education, and Research Association can encourage their members to engage in continuing food and nutrition related education. They can support more sharing of experience and com-

munications between disciplines on food and nutrition related topics. They can provide more dietetics related training and education opportunities for current practitioners. For example, the Chinese Medical Doctor Association plans to launch the "Chinese Clinical Dietitian Training and Certification Project" in conjunction with the Ministry of Health (the certifying agency) to train individual with a license in medicine (eg general medicine, public health, Chinese traditional medicine physician, and surgeon). This 630 hour programs (200 hours on online courses, 70 hours full-time in person courses, and 360 hours full-time clinical practice training) may improve clinical nutrition services. However, the program will only be a model program if it comes to fruition; only 30 individual will be trained in 2013 and it is unclear if the program will be repeated.³⁶

Finally, it is useful to learn from the experience of other countries, particularly other Asian countries. It may be possible to train Chinese dietitians in those venues over the near term to speed the development of a cadre of dietetic professionals if such a profession is considered desirable for China by higher authorities. It would be helpful to recognize professionals who have dietetic credentials from other countries that adhere to the ICDA recommendations and similar high standards of dietetic practice and admit them to practice in China, as is done in Singapore and Hong Kong.

CONCLUSIONS

China has made strides in the past few decades with the health and the nutritional status of the population. Now, instead of famine and the diseases of poverty, it is faced with growing problems of non-communicable and food-borne diseases related to food, nutrition, and lifestyle, an aging population, and many other diet-related health problems. From our review, it is apparent that very few dietetic practitioners who have the functions and responsibilities specified by the ICDA exist in China today. Is there a role for dietetics in China today or in the near future? This is a question only Chinese health professionals, educators, government officials and those in other sectors can answer. Clearly service gaps exist and these are gaps that in some other countries, dietetic professionals have helped to fill. We recognize many of the suggestions we have made may have practical difficulties in the short term because of imbalances in development in China. Whether China chooses to continue the status quo and the problems that exist or to fill these food and nutrition service gaps that still exist by developing a viable dietetics profession, or if it fills the gaps in some other ways depends on priorities, resources, and overcoming many barriers. This will require the political will of appropriate national agencies, the audacious of provincial and local authorities, the agreement of public health and medical professionals, academics, non-government organizations, and current dietetics related professionals, and money.

AUTHOR DISCLOSURES

The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

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Review Article

Dietetics in China at the crossroads

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处在十字路口的中国膳食营养学

背景：符合国际标准的膳食营养职业存在于许多国家，但在中国并没有。膳食营养这一职业是否会对中国带来益处呢？目的：本文旨在回顾中国膳食营养领域的现状，总结营养保健的需求与中国目前的现状之间的差距，并提出改善建议。结果：中国膳食营养领域的现状与，为了满足中国的营养保健需求更优化而需要的系统之间，存在着差距和阻碍。结合国际饮食营养联盟建议的模型，本文总结了在短期内可采取的有助于膳食营养领域更全面发展的行动之相关建议，并讨论了在未来十年内人员部署策略的替代方案。结论：膳食营养职业是否能在当今中国或在不久的将来有所作为，取决于中国政府、卫生专业人员、教育工作者和消费者的态度和政治意愿。

关键词：膳食营养学、营养师、中国、差距、营养