

Original Article

Sharing Singapore's experience in dietetic practice and school nutrition programmes

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Dietetic practice in Singapore is mainly applied at the clinical settings, such as hospitals. The main scope of practice is in providing medical nutrition therapy to patients in a multidisciplinary team approach at both inpatient and outpatient clinics. This is delivered in the form of nutrition counseling and nutrition support. Dietitians are also involved in other areas such as conducting nutrition workshops and talks and provide consultation to the hospital's food service department. They set dietary guidelines for inpatient meal services and equip the food service personnel with the knowledge to plan and prepare healthier menus and therapeutic diets. In the schools, all the students are taught the basic principles of nutrition in the school curriculum. Healthy eating messages are reinforced through various interesting activities in schools. Nutrition guidelines on creating healthy and nutritious menus in the school tuckshops are available for schools to implement the Model School Tuckshop Programme. This programme is aimed at cultivating healthy eating habits among school children. For overweight students, they are referred to the students health centre for medical screening, assessment and for regular nutrition counseling at the Nutrition Clinic.

Key Words: nutrition therapy, food service, hospital, school, nutrition guidelines

INTRODUCTION

Diabetes, hypertension, obesity and dyslipidaemia are important risk factors for coronary heart and cerebrovascular diseases (i.e. stroke),¹ which are two of the major causes of death among Singaporeans.²

In the 2004 National Health Survey, based on a random sample of 4,168 Singaporeans aged 18-74 years, the prevalence of diabetes, hypertension, obesity and dyslipidaemia were reviewed as they are of prime concern in the planning of health policies and programmes in Singapore.

The prevalence of these risk factors are shown in Table 1. They are generally higher among those aged 60-69 years. Existing health and nutrition policies aim to reduce the prevalence of these risk factors among adult Singaporeans. With the contributions from Dietitians and Nutritionists, various programmes and strategies have been implemented to improve the health and nutrition status of Singaporeans.

Dietetic practice in Singapore and school nutrition programmes are guided by the principles of disease prevention and management. In this article, experience in dietetic practice and school nutrition programmes in Singapore will be presented.

DIETETIC PRACTICE IN SINGAPORE

With the current health trends and prevalence of chronic diseases such as diabetes, hypertension, dyslipidaemia and obesity in Singapore, dietetic practice is predominantly focused on the prevention and management of these chronic diseases. Dietetic services are available in both clinical and community settings. The scope of practice is dependant on each individual centers and institutions.

Settings

Dietetic practice is most common at the clinical settings, such as acute hospitals, community rehabilitation hospitals, nursing homes, polyclinics (primary healthcare centres) specialist outpatient clinics and nutrition clinics, in both public and private settings. Health promoting and nutrition activities are also conducted at the community level.

Scope of Practice

The main scope of practice in clinical setting is to provide medical nutrition therapy to patients in a multidisciplinary team approach at both inpatient and outpatient clinics.

Table 1. Prevalence of diabetes, obesity, hypertension and high blood cholesterol among Singaporeans in 2004.³

Age Group (years)	18-74	60-69
Diabetes mellitus (%)	8.2	28.7
Obesity (%)	6.9	7.6
Hypertension (%)	24.9	56.1
High blood cholesterol (%)	18.7	26.7

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As a member of the multidisciplinary team, dietitians participate in the team ward rounds and meetings for better management and coordination of patient care. Dietitians also conduct regular trainings and continuing education programmes to the team and other healthcare professionals e.g. doctors and nurses.

Apart from clinical dietetics, dietitians may be involved in community dietetics activities, such as conducting:

- group sessions e.g. antenatal classes, lipid-lowering
- nutrition workshops e.g. food label reading, cooking demonstrations
- nutrition talks and seminars e.g. healthy eating
- supermarket tours
- healthier food trails
- health fairs
- wellness programmes

Some dietitians actively participate in the design and conduct of clinical research to demonstrate evidence-based dietetic practices. Otherwise, they provide support to other clinical research which requires their nutrition expertise.

Medical Nutrition Therapy

The primary responsibility of clinical dietitians in Singapore is to provide medical nutrition therapy to patients with nutrition-related health problems.⁴ This is mainly delivered in the form of nutrition counseling and nutrition support.

In the hospital inpatient and outpatient services, patients are referred by the doctors to the dietitians for medical nutrition therapy, which includes nutritional assessment, intervention and consultation. The doctors are required to fill up the dietitian's referral form in which the dietitian will write the report to be filed together with the patient's case notes.

Nutrition counseling. Nutrition counseling is one of the key services provided by clinical dietitians. Dietary assessment and advice are provided to patients with nutrition-related problems requiring therapeutic diets. A list of these common conditions requiring dietetic intervention is shown in Table 2.

As part of the multidisciplinary and holistic approach, the management of some conditions is coordinated in specific programmes. Examples include diabetes management programme, weight management programme and cardiac rehabilitation programme. In such programmes, patients are either scheduled individually or as a group to attend a certain number of consultation sessions with the dietitians, doctors, physiotherapists, nurses and other relevant healthcare professionals. Specific activities are planned to meet the objectives in these programmes.

Education resource materials such as food models, nutrition posters, charts, pamphlets and brochures specific to each nutrition-related condition are used to complement the nutrition education and counseling sessions. Meal plans are also provided for individuals with specific requirements e.g. diabetes. These educational materials are useful aids to increase the patients' nutrition knowledge

Table 2. Common nutrition-related conditions in Singapore requiring therapeutic diet counselling

• Diabetes mellitus/ Gestational diabetes mellitus
• Obesity
• Dyslipidaemia
• Hypertension
• Cardiovascular diseases e.g. stroke, coronary heart disease
• Renal diseases with/without renal replacement therapy
• Liver diseases
• Gout
• Inborn errors of metabolism
• Food intolerances
• Food allergies
• Eating disorders
• Anaemia
• Dysphagia
• Failure to thrive
• Organ transplants e.g. liver and kidney

and understanding of their specific conditions. They also serve to reinforce the nutrition information and advice following nutrition consultations.

Nutrition support. Besides nutrition counseling, dietitians also play an important and active role in the management of patients on enteral nutrition. They provide individualized nutrition assessment and nutrition support⁵ to patients who are malnourished or at risk of malnutrition, and to those with indications for non-oral feeding. These include patients with dysphagia, trauma, burns, in critical care, as well as those with oncology or surgical problems particularly relating to the gastrointestinal tract. Common non-oral feeding routes include nasogastric, nasojejunal, percutaneous enteroscopic gastrostomy (PEG) and jejunostomy tubes.

Home enteral nutrition is advised to patients requiring longer term tube feeding or nutrition supplements beyond their hospital admission. The appropriate nutrition formula and feeding regimen are explained and provided to the patients and families prior to discharge. Follow-up appointments are arranged where appropriate to monitor patients' compliance and progress.

Dietitians are part of the hospital nutrition support team, together with the doctors and pharmacist. As a team, they assess patients who are referred for total parenteral nutrition (TPN), prescribe TPN and monitor these patients regularly. Dietitians are responsible for following up with the patients' nutritional adequacy when TPN has been discontinued.

Nutrition Screening. With all the hospitals accredited with the Joint Commission International (JCI) in the recent years, nutrition screening⁶ has formed part of the patient admission assessment to identify those who are at nutritional risk.

Nutrition screening tools are developed and implemented by the dietitians. Trainings are provided for the nurses who need to complete the nutrition screen for each patient within 24 hours of admission. Patients who are screened positive are referred to the dietitians for further nutrition assessments and interventions.

Table 3. Examples of common therapeutic diets prepared in the hospital catering department:

- Diabetic
- Low fat
- Low salt
- Renal
- Low potassium
- Low phosphate
- High/low calorie
- High/low protein
- Low purine
- High/low fibre
- Modified consistency (blended/pureed, soft/minced)

Food Service Consultation

All hospitals in Singapore adopt the centralised food service system. All inpatient meals are cooked and served in the hospital kitchens.

Dietitians working in the hospitals provide consultation to the food service department. They set dietary guidelines for inpatient meal services and equip the food service personnel with the knowledge to plan and prepare healthier menus and therapeutic diets for patients in the hospital. Table 3 shows examples of common therapeutic diets prepared in the hospital catering department.

Long term care

In Singapore, it is mandatory for the long term institutionalised care i.e. nursing homes, to engage services from dietitians to review the residents' menus, provide dietary consultations to the residents and in-housing nutrition trainings to the nursing staff and food service providers.

SCHOOL NUTRITION PROGRAM

The Ministry of Education (MOE) and the Health Promotion Board (HPB) work closely together to improve the overall health of the school children in Singapore. Promoting good nutrition and healthy eating is one of their key objectives.

The Youth Health Division (YHD) in HPB plays a key role in inculcating healthy nutrition in the young children. Dietitians and Nutritionists are part of the team at the YHD. The YHD adopts a comprehensive mix of strategies to raise the nutrition knowledge among the young and to equip them with the skills to apply healthy dietary practices in school, as well as outside school.

Nutrition Education

In the schools, all students are taught the basic principles of nutrition when choosing and preparing food through the school curriculum. These basic nutrition principles are included in Health Education, Home Economics, and Food and Nutrition subjects from primary to secondary school education.

Healthy eating messages taught in the classrooms are reinforced through various interesting activities in schools. The YHD plays an active role in planning and organising various nutrition education programmes in pre-schools, primary and secondary schools. These include puppet shows, skits, school health fairs, healthy food trails and

competitions (i.e. sandwich making competition) which aim to educate the students about the key concepts of healthy nutrition such as the

- A. importance of a well balanced diet following the Healthy Diet Pyramid;
- B. recommended daily requirements of key food groups (e.g. fruits and vegetables).

Youths are also encouraged to assume a health advocacy role and implement creative initiatives to promote health among their peers through the Youth Advolution for Health (YAH) Programme developed by HPB. Professional guidance and financial support are provided by the YHD to develop and implement the proposed programmes designed by the youths. For example, a group of post secondary students had organised a healthy lifestyle fair for their peers in school where healthy nutrition was one of the key features of the fair. Others have also organised nutrition education skits for their younger peers in primary schools.

A range of educational resource materials such as pamphlets, brochures and posters, covering a range of nutrition-related issues are also available for distribution to complement the various nutrition programmes and activities organized in school. These materials are useful to raise the nutrition literacy of the students, parents and other stakeholders.

In addition, information on healthy nutrition for children is featured regularly in mass media channels such as newspapers and parents' magazines.

Providing a supportive environment

As all students eat at least one meal a day in school, the provision of healthy food and drinks is deemed crucial in cultivating healthy eating habits among them.

The YHD assists child care centres and schools in building supportive environments to facilitate healthy nutrition for the young through 2 key programmes:

- A. Healthy Eating in Child Care Centre Programme (HECCP)
- B. Model School Tuckshop Programme (MSTP)

Healthy Eating in Child Care Centre Programme (HECCP). The HECCP was implemented in 2005 to provide child care centres with nutrition guidelines to help them serve healthier meals for their pre-schoolers. Culinary training is also provided for the centre supervisors and chefs to help them prepare meals following these guidelines. Child care centres are also encouraged to incorporate nutrition education into the formal curriculum, field trips and parents' activities.

Those centres which adhere to the food service guidelines and provide comprehensive nutrition education are accorded the Healthy Eating in Child Care Centre Award. About a third of child care centres have participated in the programme since its introduction.

Model School Tuckshop Programme (MSTP). The MSTP was introduced by the HPB in 2003. Nutrition guidelines on creating healthy and nutritious menus in the school tuckshops are provided to ensure that the staff and students have access to healthier food choices in school.

Table 4. Food guidelines for school tuckshops in 7 key areas.

1) Do not sell sugar-sweetened drinks with more than 8g/100ml of sugar.
2) Sell deep-fried food and preserved meat on only one day of the week.
3) Use low-fat milk to replace part of the coconut milk in lemak dishes.
4) Use skinless poultry and lean meat when preparing food.
5) Provide the recommended amounts of vegetables in noodles and rice dishes.
6) Sell at least 2 types of fresh fruit every day.
7) Do not serve any gravy/sauce unless requested (applicable to stalls selling rice with food items)

The YHD conducts regular culinary training workshops for tuckshop vendors and nutrition education training for the teachers to support the schools in this programme.

The nutrition guidelines (Table 4) on food items for sale in school tuckshop provide nutrition information and advocates food preparation methods to help students cut down on their intake of sodium, saturated fat and sugar while increasing their intake of fibre.

An approved drinks list is also available to guide schools to provide suitable drinks for sale. Water coolers are also purposefully installed to encourage students to drink more plain water instead of sugared drinks.

Schools that comply with these nutrition guidelines will achieve the Model School Tuckshop Award. This will allow them to attain the Gold status of the CHERISH Award. The CHERISH Award provides national recognition to schools with comprehensive and outstanding health promotion initiatives for the staff and students. In the recent year, over 80% of schools have participated in the programme.

Engaging Parents

Parents play an important role in influencing and shaping the dietary practices of the young.⁷ Both YHD and MOE recognize this and have been actively involving parents in the various health and nutrition events in schools. Regular workshops and seminars are also conducted to equip the parents with the relevant knowledge and skills to provide good and healthier nutrition for their children.

Nutrition counseling for overweight students

Severely overweight ($\geq 140\%$ ideal body weight) students are referred from the schools to the students health centre at the HPB for medical screening, assessment and for regular nutrition counseling at the Nutrition Clinic. The students and their parents are equipped with the knowledge and skills to adopt healthier dietary practices through these nutrition counseling sessions.

Inter-agency coordination

An inter-agency committee for healthy and active children was formed by MOE to build a common vision for health promotion among school children. The committee comprise representatives from different ministries and agencies which are key stakeholders in the area of health. One of the objectives is to facilitate coordination among

various agencies to promote healthy diet and nutritional habits among school children.

A health conference is being planned by the committee to coordinate the provision of support from members of the committee to schools and to facilitate the development of the professional capacity of stakeholders to support their health promoting efforts.

SUMMARY

With the current health trends in Singapore, dietetic practice is predominantly applied in the prevention and management of chronic diseases especially diabetes, obesity, hypertension and dyslipidaemia. However, there are also other nutrition-related conditions where medical nutrition therapy plays an important role. In the school nutrition programmes aspect, multifaceted strategies are adopted to inculcate healthy dietary practices among school children. New strategies and programmes are also constantly being developed to achieve that.

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AUTHOR DISCLOSURES

Yen-Peng Lim, no conflicts of interest.

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