School Health Programme

Section 2: Combating Non-communicable Disease

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Management of chronic conditions for students: Overweight and Obesity and Prevention of Under-nutrition

Principles of Chronic Care

The school health professionals will adopt the chronic care model in primary care to provide case management for students with chronic conditions in collaboration of other professionals such as dieticians/nutritionists, clinical/educational psychologists, social workers, physiotherapists, occupational therapists, speech therapists etc., if needed. The chronic conditions would include asthma, epilepsy, diabetes, obesity and overweight, under-weight, growth and pubertal problems, under-nutrition, students with physical disabilities including vision and hearing, mental and behavioural problems (anxiety, depression, ADHD), eating disorders.

In this section, the guiding principles of management of over-weight and obesity, under nutrition, mental health problems, asthma and pubertal problems are provided to facilitate school health professionals in management of those conditions in school setting and also serves as reference for general approach in management of chronic conditions for students in school setting.

Overweight and obesity

There is limited evidence of pharmacological treatment of young age group for overweight problems (Yanovski, 2001). Pharmacological treatment might be useful for those with genetic and metabolic disorders. The principal strategies for treatment are dietary modification, reduction in sedentary activity and increased physical activities (NHMRC, 2007; Daniels et al, 2005; Davis et al, 2007). Therefore school health professionals would play a significant role in helping students for weight control.

Principles of managing overweight and obese children in school setting

For young age group, diet management needs to provide appropriate calorie intake and nutrition for optimal growth. The reduction of intake should be gradual to avoid extreme hungry feeling. Low fat and low glycaemic carbohydrates should be eaten and avoidance of sugary drink, choosing take away food carefully and reading nutrition labels carefully particularly for pre-packed food. Australia guide to healthy eating provides useful guidance of age related requirement (NHMRC, 2007) and the Healthy Eating Guidelines for Pre-school Children by Centre for Health Education and Health Promotion of Chinese University of Hong Kong (CHEP) is also useful for cultivating healthy eating habit early on in life (CHEP, 2006a). Young people should go for two fruit and five servings of vegetables daily and try to find out vegetables and fruits that they like. They should eat breakfast daily.

The Australian Government recommendation of physical activity for children and young people are (Australian Government, 2007):

- young people should participate at least 60 minutes of moderate and vigorous intensity physical activity daily
- young people should not spend more than 2 hours per day using electronic media for entertainment especially during daytime
- young people should be encouraged to walk to and from the school, helping with household activities and encourage activity with friends rather than internet contact.

Other practical tips are preparing more meals at home and eating with family most of the time. Try to get the children and adolescents to self-regulate their meals and avoid over restrictive feeding behaviours.

ACTION

School health professionals would take reference from the guideline for physical activities for pre-school children by CHEP is also useful for nurturing habit of regular physical activity early on in life (CHEP, 2006b). Young people should develop interest in certain types of exercise that they enjoy early on in life. Parents should also be involved and being supportive. However the evolving independence of adolescents should be noted in management.

The growth spurt for adolescents needs to be taken into account for realistic goal of weight reduction. The growth spurt is early pubertal event for female and late for male. A consistent weight loss of 1-2 kg/month is reasonable good target for adolescents (Steinbeck, 2007).

The expert committee proposed systematic approach using staged treatment integrating aspects of treatment that have good evidence base (Barlow and Expert Committee, 2007). It promotes brief, office-based intervention for the greatest number of overweight and obese children and then a systematic intensification

of efforts, tailored to the capacity of the clinical office.

Appendix 1 provides a more detail practical tips to help school health professionals in weight management for students. The basic techniques to motivate behaviour change will be discussed under the section 9 **"Health Counselling"**. Figure 1 outlines how the model of Health Promoting School would facilitate management and prevention of Obesity.

Prevention of under-nutrition

Principles

Diets deficient in essential vitamins and minerals have enormous impact (WHO, 1998). School health professionals need to be aware that the followings are important conditions of malnutrition and their effects:

- Under-nutrition with inadequate total food energy and nutrients → Low body weight, muscle wasting
- Protein energy malnutrition → Failure to thrive, poor resistance and increase susceptibility to infections
- Iron deficiency anaemia → ↑ tiredness, poor concentration, ↓ intellectual working capacity, ↓ resistance to infections
- Vitamin A deficiency → night blindness
- Vitamin D deficiency → ricket/osteomalacia
- Iodine deficiency → iodine is essential for cell differentiation and synthesis of thyroid hormones so deficiency affects neurological development and would result in mental retardation.

ACTION: How would school health professionals advise eating behaviours to minimize risk of malnutrition?

- Eating variety of cereals foods/rice or bread, vegetables and fruits

- Choosing wholegrain foods and fresh products
- Consumption of foods rich in important vitamins and minerals such as vitamin A, vitamin C, Iron, Iodine.
- Minimal use of salt, sugar and fat
- Encourage breast feeding of infants at least up to 4 months
- More home meals
- Regular meals and eating in moderation
- Balanced food intake with physical activities
- Using safe water and cooking food thoroughly with safe storage of food

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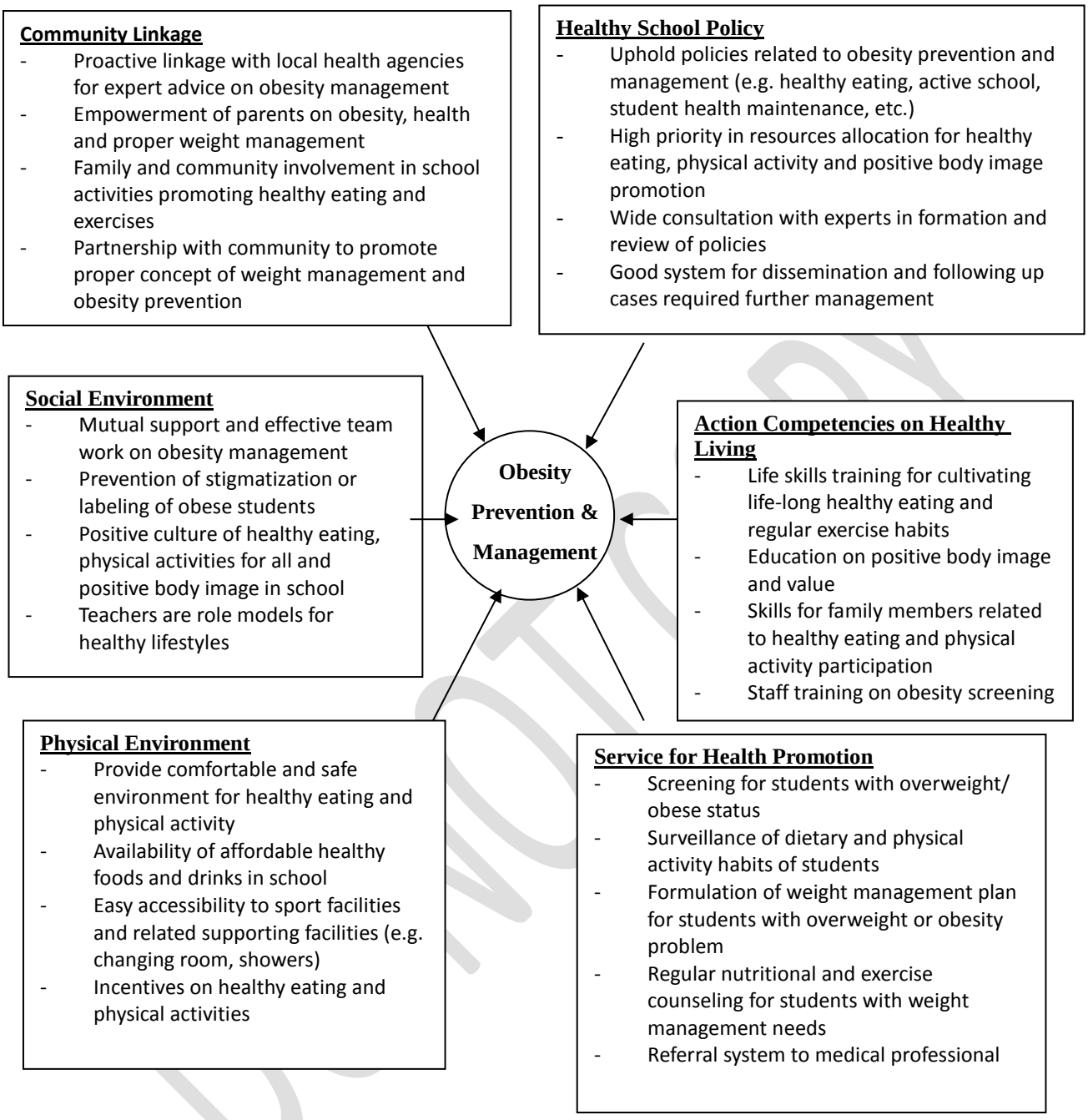

Figure 1. Using Health Promoting School framework to address childhood obesity

Appendix 1. Practical Tips on Management of students with overweight and obesity

School health professionals need to observe for any dysmorphic features with normal growth and development including normal intelligence, he is unlikely to have secondary cause for overweight and obesity (Steinbeck, 2007). BMI levels correlate with body fat and also correlate with concurrent health risks. BMI of $>85^{th}$ percentile for identifying the fat children is good assessment as this can be assessed routinely in comparison with more-precise measures of body fat (such as dual-energy x-ray absorptiometry). In Australia, the guidelines of National Health and Medical Research Council defines $>85^{th}$ percentile as overweight and >95 percentile as obese (NHMRC, 2007). Obesity in youths can be defined as BMI of 95^{th} percentile or BMI of $\geqq 30$ kg/ $m^{2,}$ whichever is lower.

Apart from physical measurement, family doctors should also assess dietary pattern of adolescents. Assessment of high sugar/calorie drinks, intake of fruit and vegetables and frequency of consumption of fast food or restaurant foods, having breakfast daily, and type of snack is also useful to predict the likelihood of developing obesity. Assessment of level of physical activities and sedentary lifestyles such as time spent television viewing and internet activities not related to schoolwork is also essential. The following actions have been shown with good evidence in helping children in weight control (Davis et al, 2007):

- Limiting consumption of sugar-sweetened beverages;
- Encouraging consumption of diets with recommended quantities of fruits and vegetables;
- Limiting television and other screen time
- Having breakfast daily;
- Limiting eating out at restaurant, particularly fast food restaurants
- encouraging family and home made meals
- limiting portion size (avoid big American portion)

The group also has the following suggestions:

- Diet rich in calcium
- Diet high in fibre
- Diet with balanced macronutrients (energy from fat, carbohydrates, and protein in proportions for age)
- Encouraging exclusive breastfeeding to 6 months of age
- Moderate to vigorous physical activity for at least 60 minutes each day
- Limiting consumption of energy-dense foods
- Motivating families to change behaviours when habits, culture, and environment promote less physical activity and more energy intake

Family also plays an important role as followings:

- Parents can serve as role models to mould their children's eating and activity habits.
- Encourage parents to make the home environment as healthy as possible. Family doctors can influence children's habits indirectly by teaching and motivating parents by their professionalism and
- Family doctors can discuss or provide information about encouraging free safe movement for infants, appropriate food portions for toddlers, limited stroller use for pre-school children, and easy breakfast alternatives for teenagers

The growth spurt for adolescents needs to be taken into account for realistic goal of weight reduction. The growth spurt is early pubertal event for female and late for male. A consistent weight loss of 1-2kg/month is reasonable good target for adolescents (Steinbeck, 2007).

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Stage 1: Prevention Plus

The outcome is improvement BMI status rather than maintained healthy BMI

Specific healthy eating and activity habits are as follows:

1. Consume ≧5 servings of fruits and vegetables every day. Families may subsequently increase to 9 servings per day. The USDA Web site (www.mypyramid.gov)
2. Minimize sugar-sweetened beverages,
3. Decrease television viewing to ≦2 hours per day. If the child is ＜2 year of age, then no television viewing should be the goal
4. Be physically active ≧1 hour each day. Unstructured play is most appropriate for young children. Older children should find physical activities that they enjoy
5. Prepare more meals at home
6. Eat at the table as a family at least 5 or 6 times per week
7. Consume a healthy breakfast every day
8. involve the whole family in lifestyle changes
9. Allow the child to self-regulate his or her meals and avoid overly restrictive feeding behaviours
10. Help families tailor behaviour recommendations to their cultural values

For implementation of Prevention Plus, the following points should be noted:

- Families and providers can work together to identify the behaviours that are appropriate to target. Considerations include current behaviours that most contribute to energy imbalance, the family's cultural values and preferences, the family's specific financial situation, neighbourhood, and schedule, and the motivation of the child and family to make particular changes. By using motivational interviewing techniques, the provider allows the child and family to determine the priority behaviours, which naturally integrates the family situation and values
- Obese children may need to begin with 15 minutes of physical activity per day and work up to 60 minutes, or a family may choose 3 goals at the beginning and expand the number of targeted behaviours over time.
- Follow-up visit frequency should be tailored to the individual family, and motivational interviewing techniques may be useful to set the frequency.
- Physicians, advanced practice nurses, physician assistants, and office nurses, with appropriate training, can provide this level of treatment

- After 3 to 6 months, if the child has not made appropriate improvement, the provider can offer the next level of obesity care, that is, structured weight management

Stage 2: Structured Weight Management

1. A planned diet or daily eating
2. Structured daily meals and planned snacks (breakfast, lunch, dinner, and 1 or 2 scheduled snacks, with no food or calorie-containing beverages at other times
3. Additional reduction of television and other screen time to $\leqq$1 hour per day
4. Planned, supervised, physical activity or active play for 60 minutes per day
5. Monitoring of these behaviours through use of logs
6. Planned reinforcement for achieving targeted behaviours

For implementation of structured weight management, the following points should be noted:

- The eating plan requires a dietician or a clinician who has received additional training in creating this kind of eating plan for children
- Office staff members who have some training in motivational interviewing and in teaching of monitoring and reinforcement techniques can establish initial goals with families and see them for follow-up care
- Some families need a counsellor for help with parenting skills, resolution of family conflict, or motivation
- Referral to a physical therapist or exercise therapist can help the child and family develop physical activity habits
- Monthly office visits
- Some practices may find group sessions to be effective and efficient

Stage 3: Comprehensive Multidisciplinary Intervention

For implementation of comprehensive multidisciplinary interview, the following points should be noted:

1. A structured program in behaviour modification should include, at a minimum, food monitoring, short-term diet and physical activity goal setting,

and contingency management

2. negative energy balance resulting from structured dietary and physical activity changes is planned
3. parental participation in behaviour modification techniques is needed for children ＜12 years of age
4. parents should be trained regarding improvement of the home environment
5. systematic evaluation of body measurements, diet, and physical activity should be performed at baseline and at specified intervals throughout the program (suggest)
6. a multidisciplinary team with experience in childhood obesity, including a behavioural counsellor (for example, social worker, psychologist, other mental health care provider, or trained nurse practitioner), registered dietician, exercise specialist (physical therapist or other team member with training or a community program prepared to assist obese children)
7. Weekly visits for a minimum of 8 to 12 weeks seem to be most efficacious. Subsequently, monthly visits can help maintain new behaviours
8. Group visits may be more cost-effective and have therapeutic benefit
9. Commercial weight management programs can be considered, but the primary care provider's office needs to screen the programs to ensure that the approach is healthy and appropriate for the age of the child. Information to guide this evaluation is included in the treatment report

Stage 4: Tertiary care Intervention (Not applicable to school health professionals so details not included)

Staged Approach for Individual Patients

1. First offer Prevention Plus
2. If Prevention Plus do not lead to expected improvement after 3 to 6 months, then the patient would move on to structured weight management
3. After 3 to 6 months in a structured weight management program, some patients who have not achieved goals would move on to a comprehensive multidisciplinary intervention

4. Avoidance of sugar-sweetened beverages and excessive juice intake and avoidance of excessive milk intake (＞16-24 oz of milk per day may add extra energy or displace other nutrients)
5. 3 meals per day eaten at the table with other family members, with the television off
6. Families should not restrict how much their children eat at meals and snacks but should be sure that all of the food available is healthy, with plenty of fruits and vegetables.
7. Supportive programs could offer a weekly outing that is physically active

For successful management of problems related to nutrition, it should be viewed as chronic condition with high risk of relapse requiring long term therapeutics intervention It is important that school health professionals need to equip with the skills in communication with adolescents and motivate them in drawing up a personal management plan. Skills in motivating young people in changing behaviours are needed. They should be the students' main contact point for medical care so family doctors must not slip the opportunity away of engagement of young people in health promotion and disease prevention.