

Call for Action Statement from the Joint Meeting of the 3rd World Congress on Prevention of Diabetes and Its Complications and 4th Hong Kong Diabetes and Cardiovascular Risk Factor – East Meets West Symposium (29/9/02-1/10/02 Hong Kong Convention and Exhibition Centre)

Primary Prevention of Type 2 Diabetes – Setting up the International and National Action Plans

Rationale

Five alarming findings related to type 2 diabetes call for serious attention. There is no option but to take immediate action:

- 1) Type 2 diabetes is becoming more prevalent throughout the world.
- 2) Conditions that precede type 2 diabetes have also increased substantially.
- 3) The disease is increasingly appearing in young people.
- 4) The treatment of diabetes and its complications is very costly.
- 5) The longer diabetes exists the more likely are its complications.

Once established, diabetes is difficult to treat. Thus, the most efficient way to prevent serious complications of diabetes, particularly cardiovascular disease, is to prevent diabetes from developing.

Evidence and Facts

Recent controlled trials have provided firm and unequivocal evidence that the process leading to type 2 diabetes can be delayed substantially in some and halted in others through lifestyle changes or pharmacologic interventions. Those interventions are effective in all ethnic groups and in all societies. It is now known that relatively modest changes in lifestyle, as simple as regular exercise and healthy eating habits, can result in a preventive effect that is very significant and rapid.

There is urgent need to implement the main findings of this medical research into the everyday life, not restricted to the health sector, but importantly also involve the entire community.

Mission

The purpose of this Statement is to initiate global action to assist people at risk of type 2 diabetes to live their lives free of diabetes and its complications as long as possible. This global action will be implemented through national diabetes prevention programs.

This Statement builds on the achievements of prior Declarations on diabetes such as those made in Europe, the Americas and the Western Pacific Region.

It recognises that:

- 1) A large proportion, probably more than half of the population, are at risk of developing diabetes or its antecedents (impaired glucose tolerance or impaired fasting glycaemia).
- 2) Individuals who are at high risk for type 2 diabetes can be identified relatively easily at the stage where prevention is still possible.
- 3) Interventions needed for the prevention of type 2 diabetes do not require sophisticated equipment or technology, but a supportive environment, informed self-reliance and empowerment.
- 4) Type 2 diabetes is not a problem of the individual alone, it is a problem for society. Its prevention requires attention and efforts from the entire community extending far beyond the scope of health care providers.
- 5) Prevention of type 2 diabetes needs to be accessible for all who are at risk, including ethnic minorities, lower socio-economic groups and all ages.
- 6) National and community-wide programs for the prevention of type 2 diabetes can be developed and implemented in harmony with other non-communicable disease prevention efforts and starting from childhood.

- 7) The importance and synergy while implementing the "population approach" and the "high-risk approach" in non-communicable disease prevention is commonly acknowledged.

Need for Demonstration Projects

New actions in public health are best developed through setting up demonstration projects. They may be national programs or include only certain parts of the country. The demonstration projects will provide necessary experience of success and difficulties. They should be used to develop tools for quality assurance for preventive measures and tools for common approach to evaluate the outcome. They also form a visible element helping to understand the importance of the efforts for diabetes prevention. In addition, some of the demonstration projects may be built on public health research principles and will thereby provide new scientific data on type 2 diabetes.

It is important that demonstration projects will be set up in different types of communities. Since they must be based on local cultural, economic and social settings, certain issues require very different solutions in different countries or communities.

Leadership

While the actual work required for the prevention of type 2 diabetes must be carried out through the existing health care and community environments, there is a need to ensure that there is leadership at national, regional and global levels. In order to complement and build upon the existing progress made in this direction, it is proposed that:

- 1) An international Task Force on Primary Prevention of type 2 diabetes is set up.
- 2) The development and progress in the proposed actions globally will be monitored by the Task Force and reported at the World Congress on Prevention of Diabetes and Its Complications and related meetings.

This consensus statement was prepared after a 1-day workshop held during the 3rd World Congress on Prevention of Diabetes and its Complications held in Hong Kong between 29th September 2002 and 1st October 2002. The workshop was attended by representatives from the World Health Organisation, International Diabetes Federation, Centre for Disease Control, National Institute of Health, government official delegates, members of national diabetes associations and other non-government organisations as well as health care professionals. The meeting was attended by more than 700 delegates from 40 countries and the statement was unanimously endorsed by all attendees.

Qualigenics Diabetes Centre

A Health Awareness Program Supported by the Chinese University of Hong Kong

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Qualigenics is a multi-specialty Diabetes Centre which provides high quality, convenient and affordable diagnostic, assessment and educational services to complement the care provided by family doctors and other medical specialists to patients with diabetes and endocrine disorders in the community

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 Address: _____
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- Please send me more information about the Centre
- Please send me referral forms for various services

Management of Type 2 Diabetes Mellitus: Challenges and Opportunities

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Background

In spite of a wealth of evidence confirming the beneficial effects of lifestyle modification and pharmacological treatment on reducing cardiovascular¹ and renal events in diabetic patients² and preventing onset of diabetes in high risk subjects,³ the prevalence of diabetes and its complications continue to increase, worldwide. National and international audits also reveal suboptimal control of metabolic parameters and risk factors in the majority of diabetic patients. For example, in most national surveys, average HbA_{1c} was 8-9% and only 30-50% of patients attained the minimal standards of diabetes care, namely, annual measurement of HbA_{1c}, eye and feet examination as well as self blood glucose monitoring.⁴ Tables 1 and 2 summarize the risk factors and diagnosis for glucose intolerance, physical and laboratory assessments as well as treatment goals in the management of type 2 diabetes as recommended by the professional body for diabetes and endocrinology in Hong Kong.⁵ Figure 1 summarizes a treatment algorithm for type 2 diabetes based on clinical presentation and natural history of illness. It is important to note that there are now increasing data confirming the critical role of beta cell dysfunction in the pathogenesis of type 2 diabetes and the effect of glucotoxicity and

lipotoxicity on beta cell function. In patients with long disease duration (e.g. 10 years or more), more than 50% of them will eventually require insulin therapy to optimize metabolic control to reduce complication rates. On the other hand, in patients with short duration of disease, optimal control is particularly important to preserve beta cell function and thence, reduce the need for progressive increase in therapy including insulin.

Cost-effectiveness of Optimal Diabetes Care

In the Steno Type 2 Diabetes Study,¹ patients treated to target by a multidisciplinary team had 50-70% risk reduction in the development of micro and macrovascular complications. After the completion of the Diabetes Control and Complication Trial (DCCT), there was progressive increase in HbA_{1c} in Type 1 diabetic patients previously treated intensively, highlighting the importance of continuous surveillance and reinforcement in patients with chronic diseases.⁶ In a 7-year case-control prospective study, type 2 diabetic patients managed in clinical trials had longer survival (Figure 2) and reduced incidence of cardiovascular and renal outcomes compared to those receiving usual care.⁷

Table 1. Risk factors for and diagnosis of glucose intolerance

Risk factors for diabetes

When any of the following risk factors are present, doctors should have increased vigilance and should consider screening patients for glucose intolerance and other cardiovascular risk factors :

1. Family history (first-degree relatives) of diabetes
2. Overweight (body mass index ≥ 23 kg/m²)
3. Dyslipidaemia (especially with a high level of triglycerides)
4. Hypertension
5. A history of gestational diabetes
6. Age of ≥ 45 years

Definitions of glucose intolerance

	Fasting plasma glucose	2-hour post 75 gram OGTT plasma glucose	Special remarks
Diabetes mellitus (DM)	≥ 7 mmol/L	≥ 11.1 mmol/l	two values in two separate settings for asymptomatic individuals
Impaired glucose tolerance (IGT)	< 6 mmol/l	7.8-11.1 mmol/l	Performed after at least 8 hours of fasting
Impaired fasting glycemia (IFG)	6-7 mmol/l	Not applicable	After excluding DM or IGT from the results of a 75-g OGTT

Individuals with IGT or IFG have increased cardiovascular risks and a tendency to develop diabetes mellitus at an average annual rate of 4-10%.

OGTT=oral glucose tolerance test

Table 2. Objectives, recommended assessments and treatment targets in the management of patients with type 2 diabetes.**Treatment objectives**

1. To treat hyperglycaemic symptoms.
2. To prevent or halt progression of chronic diabetic complications.
3. To achieve these objectives, it is important not only to treat hyperglycaemia but also the other components of the insulin resistance syndrome, including hypertension, dyslipidaemia, obesity and albuminuria.

Recommended procedures

1. All diabetic patients should be educated about the nature of the disease and its complications and available treatments as well as the importance of self care. All diabetic patients should be taught how to monitor their blood glucose at home and interpret results. Diet and exercise remain the cornerstone in diabetes management and all patients should be taught about these principles.
2. At least two visits should be made each year, or more frequently, according to each patient's needs and treatment goals.
3. At each visit, ask for symptoms of hypoglycaemia, hyperglycaemia, side-effects of medications, change in vision, angina, intermittent claudication, history of stroke or myocardial infarction.
4. Blood pressure (BP) and body weight (BW) should be measured.
5. Self-monitoring, life-style modification and weight-control programmes should be reviewed and reinforced; and treatment goals discussed.
6. An annual complication screening including foot and eye examination should be performed. Foot examination should include checking pulses, sensation, skin changes, and deformities; a visual acuity test and fundal examination, preferably through dilated pupils, or retinal photography should also be performed.

Laboratory assessments

1. Glycated haemoglobin (HbA_{1c}) levels should be measured at least twice a year; a value of more than 130% of the upper limit of the normal range (e.g. 8% for a normal upper-limit value of <6%) calls for intensified treatment.
2. Urine measurements should be made annually to detect microalbuminuria using either spot urine or timed collection; serum creatinine level (and creatinine clearance if available) should also be checked annually.
3. An assessment of the lipid profile should be performed annually; tests should include the measurement of the total cholesterol level and levels of high-density lipoprotein-cholesterol and triglycerides; the level of low-density lipoprotein-cholesterol should also be calculated.
4. Electrocardiography or chest radiography should be performed when appropriate.

Target values

	Ideal control	Unsatisfactory control
Fasting plasma glucose (mmol/L)	4-6	≥8
HbA _{1c} (x upper limit of normal, %)	<7 (<110)	≥8 (≥130)
Body mass index (kg/m ²)	<23	≥27
Waist circumference (male)	<75 cm (<30 inches)	≥90 cm (≥36 inches)
Waist circumference (female)	<70 cm (<28 inches)	≥80 cm (≥32 inches)
Systolic blood pressure (mm Hg)	<130	≥160
Diastolic blood pressure (mm Hg)	<80	≥95
Total cholesterol (mmol/L)	<4.5	≥6.2
HDL – cholesterol (mmol/L)	>1.1	<0.9
LDL – cholesterol (mmol/L)	<2.6	≥4.2
Triglyceride (mmol/L)	<1.5	≥2.8

Translating Evidence to Clinical Practice

There are many barriers in the delivery of quality diabetes care, the solution of which lie far beyond the clinical competency and good intention of doctors. To turn these clinical trial results into daily clinical practice, locally relevant and feasible clinical protocols should be developed with particular emphasis on early diagnosis, risk stratification, treatment to target and patient empowerment. Health care reforms with appropriate financing and better definitions of roles and responsibilities of different health care providers are required to ensure the most cost-effective use of finite resources and at the same time, without compromising

quality of care. To achieve these multiple goals, there should be frequent dialogues and debates amongst stakeholders including policy makers, health care providers (private and public), payers (such as corporates and insurance companies), non-government organizations and industry to identify issues and reach consensus. On the other hand, due to the silent nature of diabetes and its complications, health care providers should learn to understand their patients' values and perceived barriers in changing lifestyles and adhering to long term therapy. More importantly, high quality data are needed to convince the policy makers, health care payers and patients themselves regarding the long term benefits of investing in preventive care.

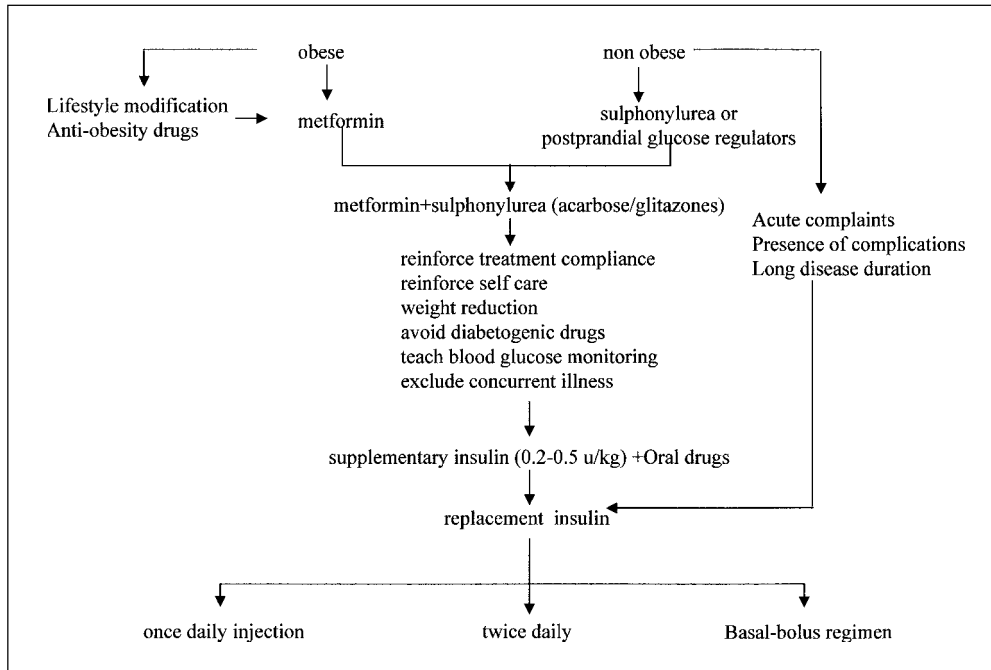


Figure 1.

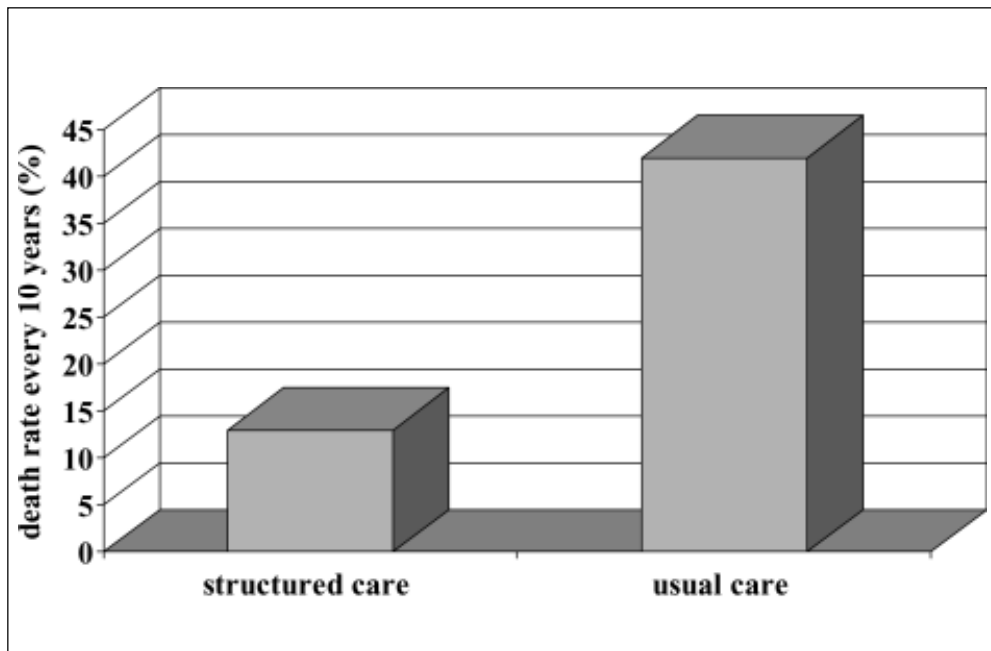


Figure 2. Diabetes management using a structured protocol delivered by a team of diabetes specialist and nurse with particular emphasis on annual assessment, periodic monitoring of risk factors and metabolic parameters, treatment to target and patient empowerment was associated with improved survival compared with usual clinic-based care with uncertain adherence to treatment protocol by doctors or patients.

On a health promotion front, there should be coordinated publicity programs to raise societal awareness of both communicable (e.g. infections) and non-communicable diseases (such as obesity, smoking), the prevention of which depend very much on self disciplines to follow a healthy lifestyle as well as civil-mindedness to ensure both personal and environmental hygiene. To this end, health education has to be commenced from childhood with active involvements from parents and schools further supported by a surveillance system such as targeted screening for high risk individuals and recall of defaulters with established diseases, in the case of non-communicable diseases.

Diabetes Centre – Present Roles and Future Directions

In Hong Kong, there are more than 10 Diabetes Centres in public hospitals, led by endocrinologists and diabetes educators. Patients attending these Centres usually undergo comprehensive assessments followed by structured educational programs by nurses and dietitians. Some of these centers have also established dialogues with primary care physicians and other medical specialists who would refer patients to the Centre for periodic reassessments and review of treatment. Such a team approach helps motivate and empower patients to self manage their illnesses and provide quality assurance to the treatment protocol. The friendly environment of a Diabetes Centre led by nurses also provides the much needed psychological support to help patients adopt a more positive attitude in their attempts to change behavior and overcome their emotions in coping with the burden of chronic diseases. However, with 10% of people in Hong Kong, 20-30% of patients admitted to medical wards and 10-15% of patients attending medical clinics in HA hospitals having diabetes, the services provided in the public sector are rapidly overwhelmed.

In an attempt to provide an alternative infrastructure to provide the unmet health care needs of patients with chronic diseases, there are now self-funded Diabetes Centres which combine the expertise of health care professionals, academics and service-orientated business managers to make chronic disease management more affordable, sustainable and accessible. Compared to centers which are solely funded

by private sectors, these forms of academic-industrial collaborations may provide a more desirable situation which aims to safeguard the quality and ethics of provision of health care services as well as to promote ongoing research and education programs. Establishment of these self-funded Diabetes Centre may also provide a solution to the present impasses and open up new opportunities to promote sharing of best practices and networking amongst interested health care professionals in both private and public sectors. In light of its multidisciplinary nature, these Centres can provide job opportunities to young doctors and health care workers who can practice in a conducive environment for continuing professional development. Given the high standard of medical training and practice in Hong Kong and the growing population of patients with diabetes and related diseases in China, Hong Kong has every opportunity to become the hub of Centres of Excellence for management of chronic diseases such as diabetes, obesity and cardiovascular diseases.

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Management of Obesity

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Obesity: The Global Epidemic

Obesity has reached epidemic proportions in developed countries and the prevalence is rapidly increasing in the developing world. Obesity increases the risk of several chronic diseases including coronary heart disease, Type 2 diabetes, hypertension, stroke, obstructive sleep apnoea, heart failure and some cancers (particularly colon cancer and postmenopausal breast cancer). The morbidity and mortality from these obesity-related co-morbidities pose a serious financial burden to public health care resources. In the light of this alarming global trend and its implications, the World Health Organisation (WHO) has declared obesity prevention and treatment as a top priority.

Lower BMI Cut-offs for Chinese and Asians

The practical definitions of obesity and overweight are based on body mass index (BMI) which is closely correlated with body fatness. A major limitation of using BMI as an index for obesity is that it does not take into account the degree of visceral fat, which is the key factor linked with insulin resistance (The metabolic syndrome) and cardiovascular disease. The cost and difficulties involved in the measurement of visceral fat (such as using magnetic resonance imaging) makes BMI as the widely used index. The BMI cut-off points for obesity are derived from either statistical data from reference populations or on the excess morbidity and mortality associated with increasing body fat content. The definition for obesity in Europids is a BMI of greater than 25 kg/m². This definition, however, does not necessarily apply to other populations or ethnic groups. Indeed, local data¹ from a study of more than 1500 Hong Kong Chinese clearly indicated that the risk of diabetes, hypertension, dyslipidaemia and albuminuria starts to increase at a BMI of 23 kg/m², which is lower than the WHO recommendation for BMI cut-off used to define an increase in morbidity among Europids. Another study from Singapore² further supported the use of a lower BMI cut-off point to define overweight and obesity in the Chinese Population (Table 1).

Weight Reduction: An Achievable Goal

Although weight gain is the direct result of a mismatch in energy balance (the difference between food intake and energy output), it is essential to appreciate the complex interplay between the environment, the biochemistry of

Table 1. Classification of weight by BMI in adult Asians

Classification	BMI (kg/m ²)	Risk of co-morbidities
Underweight	<18.5	Low (but increased risk of other clinical problems)
Normal range	18.5-22.9	Average
Overweight	≥23	
At risk	23-24.9	Increased
Obese I	25-29.9	Moderate
Obese II	≥30	Severe

individual and the behaviour pattern. Parents need to be educated in the face of rapidly increasing childhood obesity. School at all levels should also be actively involved in education of children. Local governments should promote health awareness in fast food stores. The environment needs to be changed so that people can make easy choices for healthy eating. Healthy food should also be made more affordable. Environmental friendliness, pleasant parks and footpaths would encourage citizens to walk rather than taking public transport. Medically, general practitioners should be aware of the potential endocrine disorders presenting with obesity (e.g. hypothyroidism, Cushing's syndrome, growth hormone deficiency) and investigate appropriately or refer to specialist centres for further evaluation in suspected individuals.

The majority of cases has simple obesity and requires a multidisciplinary approach involving dietitian, physician, physical trainer and counselor. Pharmacological treatment has a clear role in the management of obesity.³ Currently, the only drugs available which are approved by the Food and Drug Administration (FDA) department are orlistat (Xenical) and sibutramine (Reductil). These drugs help to kick start the weight reduction process and would be beneficial in selected individuals. Furthermore, they may also have a role in the management of obese type 2 diabetic patients. Clearly, strict adherence to diet, regular exercise and psychological support offer the best way to prevent relapse upon drug cessation. It is important for the individual to be aware that even a modest reduction in weight (5-10%) could lead to significant improvement in other cardiovascular risk factors. This awareness will help these individuals to maintain the effort to lose weight. Future research in neurotransmitters may open new horizon for more physiological, effective and safe treatment for obesity. While there are obvious hurdles, treatment of obesity is still largely achievable. However, what is much harder to achieve is prevention of the obesity

epidemic. This would require a coordinated approach between the government policy makers, primary care physicians and other health care professionals.

A Proposed Healthcare Model for Obesity Management

At present, there is no established model to emulate. Any specific healthcare model will only be successful if it is specifically designed for the given community, taking into account the culture, behavioural patterns and healthcare provisions. These characteristics are to some extent unique in Hong Kong, which makes it very difficult to establish model for weight reduction. For instance, in Hong Kong, food plays a major part in certain festival celebrations (e.g. Chinese New Year, Mid-Autumn festival) and the hot climate makes outdoor activities/exercises less appealing. Furthermore, the lack of space and office-style working environment, and the excessive demand at work with long hours make it more difficult to find time for regular exercise.

Figure 1 illustrates the type of facilities required in the management of obesity. A specialist obesity management centre with a medical specialist supported by a team of dietitian and counselor and physical trainer could play a key role in conjunction with primary care colleagues in the management of obesity. Whilst key physical measurements can be performed at the specialist centre with multidisciplinary interventions using established protocols, other routine cardiovascular risk factor measurement can be monitored and co-morbidities treated by the primary care physicians. A membership scheme linked to other

facilities (such as health-promotion courses and regular social meetings) would further facilitate long-term weight maintenance.

Conclusions

The rising prevalence of obesity has reached epidemic proportions globally. A multi-level coordinated policy involving the local government officials, medical specialist and health care workers, should be adopted. A specialist obesity management centre using highly-trained medical staff and well-established treatment protocols with intimate coordination with primary care physicians may serve as a useful model to optimise the management of obesity. In the long-term, much greater financial resources should be allocated in this area for research into new dietary, physical activity, behavioural, environmental and pharmacological approaches for prevention and treatment of obesity.

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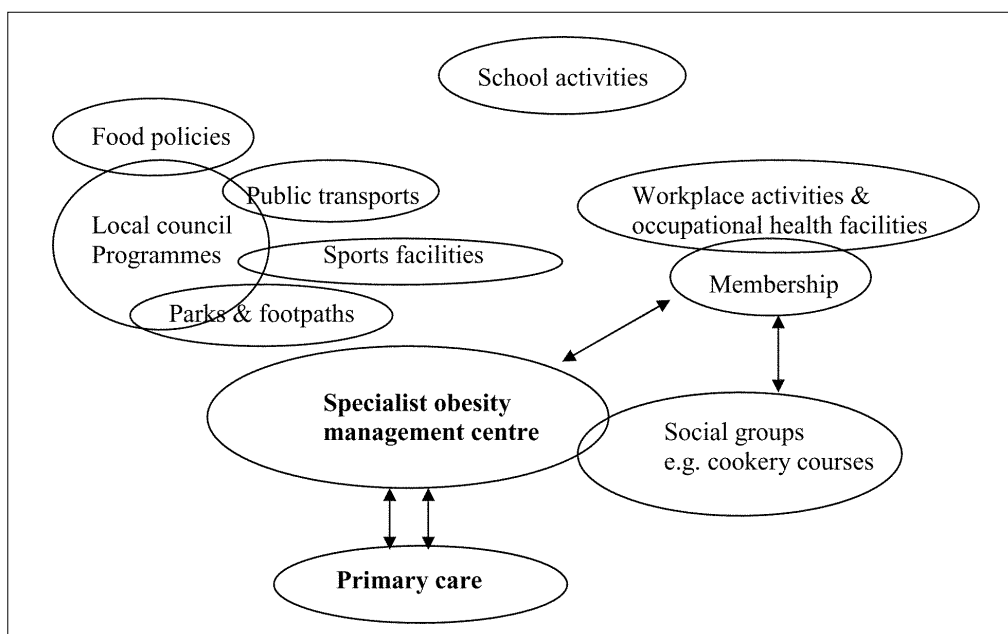


Figure 1. Facilities and stakeholders in the promotion of healthy life style and prevention of obesity.