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Kuwait National Programme for Healthy Living: First 5-Year Plan (2013–2017)

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Key Words
Kuwait · Healthy living · Lifestyle · Social factors · Population · School · Obesity · Diabetes

Abstract
The Kuwait National Programme for Healthy Living is an initiative to promote the health and well-being for individuals residing in the country. The plan has been created based on current data and available information pertaining to the various lifestyles of the populations living in Kuwait and their impact on health in general and chronic diseases in particular. Leading a healthy lifestyle is important because it means living in an environment, such as the Kuwaiti society, where chronic conditions such as obesity, diabetes, hypertension and coronary heart diseases are significantly reduced. Several factors regarding lifestyles among the various ethnic groups residing in Kuwait have been identified, including inactivity resulting from the lack of need for physical exertion in daily-life activities and social rituals involving the serving of food amongst the various ethnic groups residing in Kuwait. For Kuwaitis and other ethnicities as well, traditional social gatherings include serving food as an integral element of the social ritual. The environments of school and work also contribute to an individual's lifestyle. The goal of the programme is to address the contribution of lifestyle choices and the social environment to health with the goal of creating a healthy environment that will sustain good health and social well-being. This can be accomplished by involving the various stakeholders in promoting the aim of the programme. Finally, addressing the research needs for healthy lifestyle issues can have a huge impact on the outcome of the programmes designed and would aid in creating a healthy living environment.

Introduction

The Kuwait National Programme for Healthy Living: First 5-Year Plan (2013–2017) was developed on the basis of present knowledge and available information regarding the various lifestyles of the different ethnic groups living in Kuwait and their impact on health in general and chronic diseases in particular [1, 2]. The preparation of this plan began in 2010 with extensive consultations with several governing bodies (see list of potential stakeholders, fig. 1) to promote a healthy lifestyle as a preventative measure for chronic diseases by emulating the work done in several countries, especially in Singapore by its Health Promotion Board [3]. The plan was modified to focus more specifically on obesity in general and diabetes in

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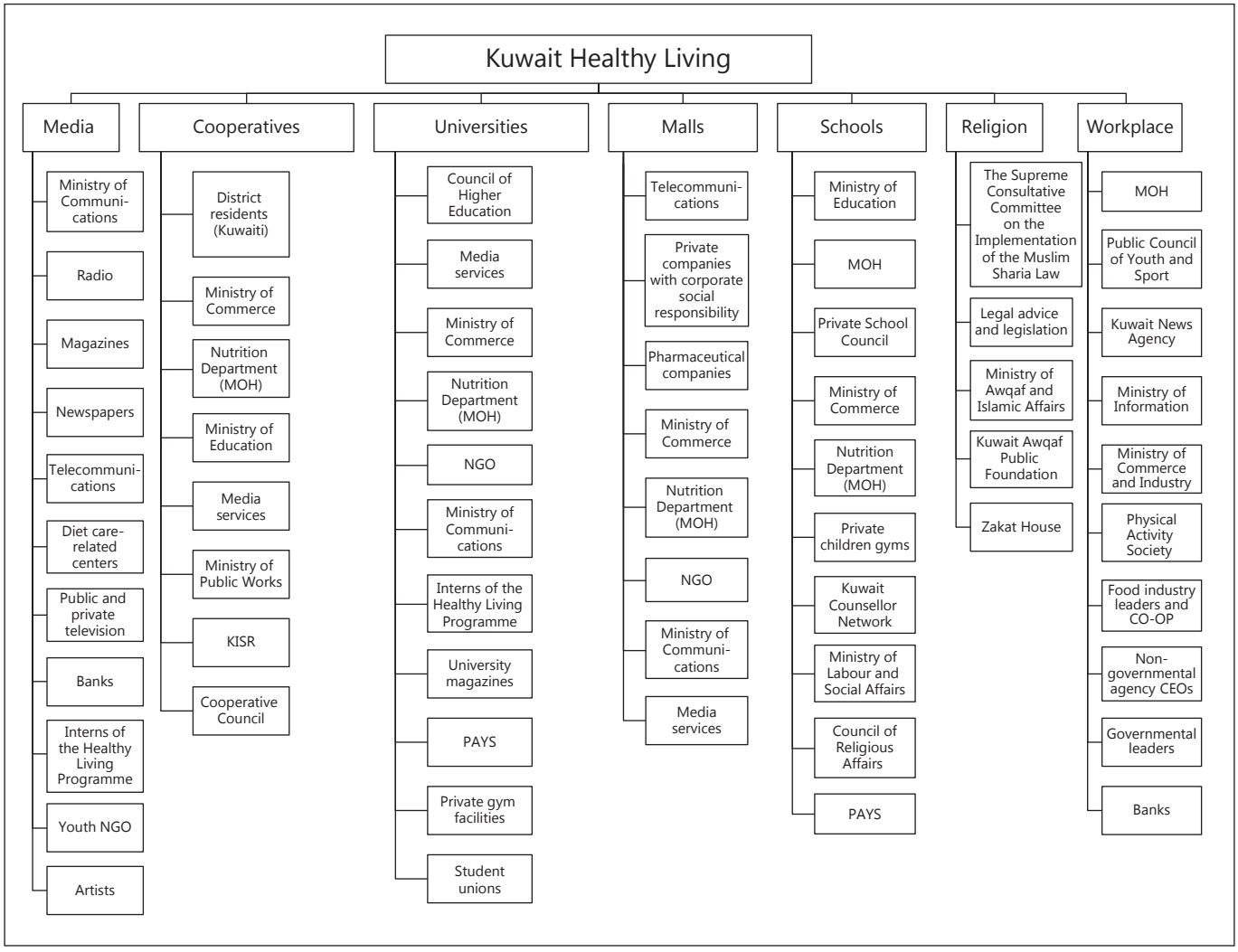

Fig. 1. List of all stakeholders – Kuwait National Programme for Healthy Living. KISR = Kuwait Institute for Scientific Research; NGO = non-governmental organisations; PAYS = Public Authority for Youth and Sports.

particular due to the historically high prevalence of these conditions in Kuwait [1]. Thus, in a collaborative effort, gathering information from government, private and non-profit organisational sectors was required to address this issue. These sectors would approve the plan and overhaul the system in place in order to achieve the objectives of the plan, including legislation to promote healthy living.

The plan recognizes that chronic conditions, such as hypertension, diabetes, coronary heart disease and cancer, affecting people living in Kuwait are directly or indirectly related to their lifestyle choices. Crucial factors that can influence the development of chronic conditions are smoking, lack of exercise, poor diet, excessive alcohol use and psychosocial risk factors, such as impaired cognitive capacity and hostility and depression. Societal risk factors include low education, dissatisfaction with the job status, being a member of an ethnic or racial minority, and/or being subjected to chronic occupational social stressors [4]. The plan addresses the risk factors and elements that impact health in an objective manner and proposes strategies to ameliorate the situation over the coming years and generations.

Today, more than 40% of Kuwaiti nationals are under the age of 15 years [2]. It is anticipated that the Kuwaiti population over 60 years of age will increase to 8% by

2030 and 25% by 2050 [5]. The prevalence of chronic diseases will therefore increase in the coming years and will place a heavy burden on the country as a whole and families in particular [1, 5]. The heavy burden that chronic diseases impose on a large scale of the population has received far less attention. A recent study has attempted to provide an explicit picture of the prevalence of major diseases in the older Kuwaiti population. The study has shown that doctor-diagnosed prevalence of hypertension, diabetes and heart disease in two governorates was reported to be 53.4, 50.6 and 17.5%, respectively, in Kuwaiti nationals aged 50 years and over, and the conclusion was that an increase in high disease levels is likely among older Kuwaitis, highlighting the need for focused intervention programmes in order to reduce morbidity and increase healthy life years [6].

According to the WHO, Eastern Mediterranean Region, currently, 47% of the regional disease burden is due to non-communicable diseases, and it is expected that this percentage will rise to 60% by the year 2020 [7]. Kuwait has spent around 16% of its health expenditure on diabetes alone in 2010, and it is estimated that this number might increase by 150% in 2030 [1]. Unfortunately, studies have shown the prevalence of type 2 diabetes is spreading to children and adolescents in the country, making it an emergency public health problem [8].

One study has examined the prevalence of impaired glucose regulation in a small population of asymptomatic Kuwaiti young adults. It revealed that 32% had impaired glucose and 4% were newly diagnosed diabetics. The study also revealed that 10% of the participants had hypertension, 50% were classified as overweight/obese and 42% had an elevated waist circumference [9].

The aging population, rapid urbanisation rates and significant changes in lifestyle augment the probability of chronic disease problems that might occur in the near future. In addition, medical technologies for the diagnosis and treatment of chronic diseases continue to advance in sophistication and cost, intensifying the difficult financial burden that the country will bear in coming decades to provide treatment for individuals.

Lifestyle Health Problems

The swiftness of oil wealth has brought lifestyle-induced problems that ultimately have contributed to obesogenic urbanisation, which is a rapidly changing environment that promotes weight gain within the home or workplace [9]. The availability of automotive transportation, cheap high-calorie food, freely accessible water and air conditioning has resulted in the reduction in nearly all physical activities that in the past optimised the fitness of the population. Moreover, the changes have occurred in an extremely short time frame of 2–3 generations epigenetically, i.e. a reversible modification in gene function without a change in the sequence of the DNA [10].

Inactivity

The inactive lifestyle currently apparent in Kuwait is brought about by an array of social, behavioural and environmental factors [10]. The excessive daily use of private cars most definitely hinders daily exercise activity [11]. Among the social attitudes contributing to low activity is the social stigma for people to be seen walking outdoors. Social attitudes are partly influenced by the desert climate and the urban environment, where inadequately designed pedestrian walkways and inappropriate safety measures for pedestrians and bikers discourage individuals from making short walking or cycling journeys as part of their daily routine. The prevalent high socioeconomic status of the Kuwaiti society has led to the wide introduction and availability of labour-saving devices and services [12]. Daily Kuwaiti life is dependent upon service workers, who assist all needs in the home, commercial establishments and recreational facilities.

A recent prospective study [12] was carried out to determine the cultural factors associated with Kuwaiti patients' adherence to lifestyle choices. More than 60% of the patients in this study were not adhering to diet or exercise recommendations, and among the reasons for not adhering to regular exercise was the perceived lack of time, a significant factor in hypertensive patients, which could contribute to a stressful lifestyle. With regard to dietary recommendations, patients found it difficult to comply due to their unwillingness, the difficulty to socially comply with a certain lifestyle diet regimen when there was no encouragement from the home and due to the high frequency of social gatherings [12]. Moreover, parents are less involved in monitoring their children's adherence to their medical regimen, and it is likely that they are more detached about monitoring their children's adherence to healthy lifestyle choices [13].

Social Gatherings

Typical Kuwaiti social behaviour revolves around maintaining family relationships by paying formalities to extended family members. It is seen as socially unacceptable to ignore this integral part of the Kuwaiti culture characterized by large family circles with extended social

networks and the numerous formalities that collectively take up a substantial amount of time. Most social gatherings in Kuwait are inactive and associated with food consumption [12].

Religion and Conservatism

Kuwaiti nationals, especially elderly women, have a fatalistic approach and do not associate the adoption of healthy lifestyle changes as a prevention of chronic diseases and complications such as diabetes and cardiovascular events. Diabetic patients often accept their illness and believe God will reward them for their patience and suffering [13].

Work Environment

Work in the public sector starts early, between 7 and 8 o'clock in the morning. Office jobs are naturally sedentary, since most employees sit for an average of 6 h with slight movement. The average public sector employee consumes many more calories than he or she is able to burn at work.

School Environment

The school environment is not the only environmental contribution to child obesity and a child's awareness of what constitutes a healthy lifestyle. The family environment strongly influences child health. Also important is the extent to which food advertising and marketing contributes to the problem [11, 14].

Physical education in Kuwait is regarded as an optional class. Teachers, parents and students alike do not consider it to be in the same calibre as mathematics, science or Arabic. The athletic students are the ones who enjoy and participate in physical education classes. The others make up an excuse or bring in a note from their parents. Some schools do not have specialized physical education teachers.

Definition of 'Healthy' and the Current Situation

The definition of health in the Constitution of the World Health Organization (1948) is 'A state of complete physical, mental and social well-being not merely the absence of disease or infirmity' [15]. For the purposes of this national programme, 'healthy living' is defined as the steps, actions, choices and responsibilities an individual takes to achieve (to the best of their ability) optimum health for themselves or for others. In this context, 'optimum health' is defined as an individualistic standard of health which is all-inclusive and takes into account the multidimensional meaning of health in terms of physical, mental and social well-being. Optimum health also means the absence of illness, and the active prevention of illness and promotion of well-being for themselves and others.

Healthy living is a product of both an individual's behaviour and choices, and the all-encompassing environment in which the individual exists, including the physical, cultural, social, economical and political circumstances and conditions. The characteristics of both the individual and the environment are the limiting factors of ideal health. For healthy living to be achieved successfully, the characteristics of both the individual and the environment should facilitate, support, maintain and sustain health.

Stratification

Stratification is a process to reduce, simplify and better understand a complex problem by facilitating the formulation of solutions and the implementation of remedial measures. The same degree of reduction in a problem cannot be achieved simultaneously throughout a national territory due to a variety of reasons, some of which may not be readily apparent. These may include administrative, operational, technical, demographic, ecological, social and politico-administrative factors and possible financial constraints, and may also be due to the heterogeneity of the problem and the population from area to area. For the purpose of implementing the national programme, the country can be broadly divided into the six governorates of Kuwait, Hawalli, Mubarak al-Kabeer, Jahra, Farwaniya and Ahmadi. Thus, the achievements of the programme objectives will be measured for the population of each governorate. It may demonstrate a difference between what can be achieved in the different governorates and may help analyse some of the factors leading to success or failure.

A number of elements that impact on the health of the population in Kuwait have been analysed. This approach has revealed the interdependency of lifestyle habits affecting the health of the population, and these include physical activity, dietary habits, family and household practices, sleeping habits, individual lifestyle choices, sociocultural perceptions, health education, food regulations and legislation [12].

An analysis of the situation has allowed the clear portrayal of the idiosyncratic complexities comprising the unique situation that Kuwait is in today. Clearly explaining each issue, ranging from climate to cultural taboos, allows one to appreciate the depth and breadth of the con-

tributing problems in Kuwait, which in isolation may be harmless but collectively have created the dire situation that the country is facing today with respect to diabetes in particular and chronic diseases, such as cancer, hypertension, and renal and coronary heart diseases, in general. A significant finding of this analysis has highlighted how sociocultural changes, behaviour and attitudes are contributing to health problems by reinforcing the presence of risk factors within the fabric of the Kuwaiti society.

The words 'health', 'healthy' and 'diet' are used very freely in Kuwait. Being overweight is the accepted norm, with 74% in this group [16]. Childhood obesity is not taken seriously by most, as it is seen as baby fat. There are no societal restrictions with regard to obesity and other chronic illnesses such as diabetes [13].

The Goal

The goal of the National Programme for Healthy Living is to overcome barriers and empower the population of Kuwait to make healthy choices and adopt a healthy lifestyle that will sustain good health and social well-being and enable individuals to lead a productive and satisfying life.

The Objectives

By the end of the first 5 years of the National Programme, in December 2017, compared to the situation in 2013, the objectives are to increase the prevalence of sustained physical activity among the population by 20% and reduce:

- The mean body mass index significantly by 2% among overweight and obese children, youths and adults
- The mean waist-hip ratio significantly by 5% among overweight and obese children, youths and adults
- The prevalence of overweight adults in the population by 10%
- The prevalence of overweight children and youths aged 6–18 years in the population by 15%
- The prevalence of overweight babies aged 0–2 years by 20%
- The mean energy intake among the population by 10%.

Health Promotion Strategies

The aim of health promotion strategies is to be able to diffuse information to the community successfully and to have the potential to influence the factors that have a bearing on the health status of the population. The promotion of interventions proposed in the plan should encourage individual behaviours to produce positive health effects and discourage behaviour that produces negative health effects. This will take the form of public information and awareness campaigns to ensure community involvement. Each approach will target different groups, children, adults and elderly, at different sites identified after wide consultation with the stakeholders.

Healthy Living for the Elderly

The strategy has been devised to provide daily/monthly information to the elderly by media, taking into account some age-related limitations such as vision deterioration and hearing impairment, which could have some effect. An emphasis will be put on the education of elderly health care providers (family, caregivers, support groups and health care professionals) on how to care for the elderly. Other information will include physical activity (with minimal risk of injury), mental activity programmes and information and support regarding healthy foods and supplementation to prevent malnutrition and diet-related deficiencies. The programme will also encourage the elderly to participate in social activities and encourage families to support them in this regard.

Changing beliefs and established ideas in the elderly is a daunting task globally, not just in Kuwait, and thus one of the ideas is to engage them in activities with younger generations in order to exchange experience and overcome the barriers of conservatism. However, several problems are involved with targeting the elderly population, which presumably might demonstrate a need for age-specific services. These include a decreased capacity for mental and emotional reform, which makes delivering the content of lifestyle modification challenging, and lack of hope for the future, which decreases motivation. The impact of the plan on the elderly population will be measured by evaluating the services offered by the community and the response from the elderly to the interventions.

On the community level, there will be monitoring of programmes on TV and radio, messages published in the daily newspapers and magazines, workshops and conferences conducted regarding healthy living for the elderly. Equally important, the impact on the elderly population will be measured by the level of their engagement in physical activities and the social events which they attend and in which they participate. A situation analysis of the elderly population in Kuwait needs to be conducted. The main aim of this project is to have a reliable estimate of the elderly population and its distribution in Kuwait, giv-

ing demographic information such as age, gender, prevalence of chronic diseases, instances of malnutrition and diet-related deficiencies, for example.

Healthy Living in the Workplace

The strategy for healthy living in the workplace is to support initiatives of governmental and non-governmental organisations in the workplace, namely, healthy eating, opportunities and facilities for physical activity, and information about stress management. It will provide organisations with policy advice and guidelines aimed at overweight and obese people. Moreover, individuals with chronic conditions such as diabetes shall be targeted to ensure they have access to accurate, up-to-date information to help them understand their disease and make informed decisions about their health by incorporating information about healthy workplace services into communications. Creating a healthy workplace will be accomplished through the use of a variety of strategic tools that include raising employees' awareness, education and skill building, environmental and cultural support and development of workplace health policy. Thus, creating and maintaining a healthier workplace will be an ongoing process, which in turn will enhance the health of the employees and, accordingly, the health of the organisation's production.

The influence of the plan on the workplace will be evaluated by the number of organisations taking part in workshops, conferences and events regarding healthy workplace living and the level of health awareness among the employees.

Promoting a Healthy Lifestyle through Religion

The aim is to develop awareness of the relationship between religion and health by promoting the religious values and principles linked to a healthy lifestyle. The aim is also to increase the awareness of religious leaders and associations about healthy living and make healthy living a dogma of social and religious behaviour for all classes of society in a way that living healthy becomes a part of worshipping.

An attempt will be made to involve as many people as possible in the plan to promote a healthy lifestyle. The impact will be monitored through the number of religious leaders trained, the number of religious events where healthy lifestyle is promoted/discussed, the number of places where this issue was presented and the number of people who changed their habits/behaviour due to awareness raised by the programme.

Healthy Living for Schools

Participation in physical activity and an awareness of sound nutrition are essential for creating and maintaining good health and well-being, which enhance academic achievements in school as well as positively affect the self-esteem of students and staff. An environment for healthy living at the school should be provided where students, teachers, parents and community members join together to participate in a healthy lifestyle movement. Providing a variety of facilities for the use of students and teachers to promote their health and physical fitness creates a healthy school environment.

The plan will introduce knowledge on the pathophysiology of obesity into the school curriculum, and the harmful effects of physical inactivity in conjunction with excessive caloric intake. Training the school staff (i.e. teachers) regarding obesity, diabetes and other chronic conditions is crucial in order to ensure the delivery of correct content. This will be done in collaboration with potential stakeholders at the Ministry of Education and Ministry of Health (MOH). Also, schools will liaise with food-regulating bodies, i.e. the Kuwait Institute for Scientific Research and the Nutrition Department of the MOH to determine the nutritional value of the food currently being provided in schools. The data will be used for advocating in favour of governmental support and interventions to provide healthy food options in schools for reducing obesity. The impact of these strategies will be evaluated by monitoring and recording height, weight and waist circumference by school nurses at regular intervals during the school year to understand whether any interventions have had a significant effect on reducing obesity in schools.

For the schools, the focus will be more on monitoring and recording of body mass index of youth ages 5–18 years by school nurses at regular intervals during the school year to understand whether any interventions have had a significant effect on reducing obesity in schools.

Moreover, to determine the factors that contribute to childhood obesity, surveys will be sent out to parents to find out factors like socioeconomic status, physical activities, eating habits and sleeping patterns. Also, an attempt will be made to determine the percentage of children who were breast-fed, as it has been linked with the reduced prevalence of childhood obesity, which has been shown to have a significant impact [17].

The Kuwait healthy life study is an example of a project that assesses factors contributing to obesity and diabetes in school-aged children. The study is conducted in collaboration with several renowned institutions, such as the

Dasman Diabetes Institute, Faculty of Dentistry, Health Sciences Centre, Kuwait University and Forsyth Institute. The aim is to evaluate factors in a subset of school-age children that would potentially lead to type 2 diabetes mellitus, assessing 10,000 children in a study that focuses primarily on controlling obesity.

The study is carried out using the Kuwait-Forsyth School oral health as a recruitment source. Saliva and plaque as well as physical measurements of height, weight, blood pressure, heart rate and temperature are taken, and nutrition and fitness status are assessed. These measurements will be repeated after 2 years to look at the differences in measurement to determine which factors place Kuwaiti children at risk of developing diabetes.

Healthy Living in Malls

There are several malls across Kuwait which are now the preferred destination for leisure activity for most people. The strategy to be implemented in malls is to increase physical activity and include point-of-decision prompts strategically located to promote people to walk and use the stairs rather than the lift. Utilising the indoor space of malls for walking will be encouraged. The strategy also includes making healthy lifestyle information accessible by using the mall as a medium to deliver health education to the general public.

Progress will be monitored by comparing the use of stairs to elevators, by assessing the frequency of mall walking and by tracking users and visitors to health booths and exhibitions. Focus group studies will be conducted to identify the most effective prompters of physical activity in mall areas by comparing billboards, posters, pedometer and indoor mall track use, and the most effective approach for raising healthy living awareness in malls by providing healthy living booths and exhibitions.

Healthy Living in Universities

The aim is to promote the features of a healthy lifestyle for university students and staff on campus to achieve an environment where health awareness will encourage individuals to seek the healthy option and where the healthy choice is thereby encouraged. Alterations in the current environment are to take place through three parallel initiatives: an increase in physical activity, an enhancement in the variety of food options available on campus and the growth of a health-conscious society by raising the status of health awareness on campus.

Students will be encouraged to take part in the overall organisation and implementation of the plan to achieve a healthy lifestyle. Firstly, changes in physical activity habits will be encouraged by forming positive habits such as using the stairs instead of the elevator, working out at the gymnasium, participating in athletic activities and joining sports leagues. Secondly, eating patterns will be monitored to evaluate the impact of the plan, such as purchasing from healthy food outlets on campus.

Healthy Living in Cooperatives (Food Market)

Each district (neighbourhood) has a cooperative, government-sponsored grocery store with ancillary shops providing for all the needs of its residents. It is frequented regularly by all age groups, therefore making it an ideal site to target the whole population. Cooperatives are accountable to shareholders, voluntary participating residents of that district; therefore, as well as using the cooperatives to change peoples' behaviour, shareholders can influence and change how the cooperative operates. Strategies include using the cooperatives as a venue to promote awareness about healthy living and advocate healthy food alternatives. Other strategies involve improving the facilities the cooperatives are responsible for, such as the district walkway and cooperative premises.

Methods for the evaluation of the impact of the plan will include consumer behaviour research to study the impact of cooperative interventions, such as food labelling and healthy food advertisements on the purchase of healthy food in cooperatives, using surveys and questionnaires as an evaluation for reducing obesity. The outcome will be measured by the percentage increase in buying healthy food from the markets. The aim is to conduct consumer behaviour research to study the impact of interventions on cooperative society supermarkets such as food labelling and healthy food advertisements on the purchasing of healthy food in supermarkets, using surveys and questionnaires as an evaluation for reducing obesity. Another objective is to conduct a general review of what food is currently labelled in Kuwait for planning any further food labelling and healthy food awareness interventions in supermarkets. Finally, we aimed to establish a questionnaire on the quality of district walkways and determine the frequency of use before and during the enhancement and awareness campaign.

Healthy Living in the Media

The National Healthy Living Programme aims to channel awareness and alter behaviour nationwide such that a health-conscious society will be born and nurtured in Kuwait. The goal is to nurture health awareness in the public domain, thereby inducing regulation of advertising and airing of content on television, radio and internet,

and street advertising. The influence of media will be monitored by the frequency of visiting the Healthy Living National Programme social networking websites and surveying weekly numbers of viewers and listeners of healthy-living television and radio programmes. A marketing research plan will be established to evaluate the frequency of exposure of people to advertising campaigns of the food industry to better understand the impact on the Kuwait society and the needs for unhealthy food choices that such advertisement might create in individuals.

Potential Stakeholders

Stakeholders generally consist of experts, clinicians and practitioners, relevant community organisations and policy makers from various ministries and organisations. The aim is to give these stakeholders a greater involvement in both the design plan and implementation. There is a steering committee to give insights into the technical aspects of the plan and several task forces. The steering committee consists of high-position personnel to facilitate the decision-making process and are to meet on monthly basis.

The task force has an important role in achieving balance between the technical analysis and process. Technical expertise will be solicited regarding methods to be used and evidence of outcomes. On the process side, members ensure stakeholders' interests and views are articulated. Having formed groups with specific tasks to be completed by set dates, the experts shall first form a framework for their plans.

There are several potential stakeholders that will take part in the programme to aid healthy living. The MOH has a crucial role to play in the programme, which is mostly to provide the optimum medical care and education about a healthy living lifestyle. The Ministry of Communications has a fundamental part in promoting healthy living through TV shows, broadcasting live radio programmes and publishing a monthly magazine specifically for the elderly to provide necessary information regarding a healthy lifestyle for the elderly. Other potential stakeholders include the Ministry of Education, Ministry of Labour and Social Affairs, Ministry of Commerce and Industry, Ministry of Public Works, Pharmaceutical Companies, non-governmental organisations, Nutrition Department of the MOH, banks, media services and cooperative councils. The entities and organisations responsible for implementing and sustaining any healthy living strategy are shown in figure 1.

Operational Milestones

Operational milestones are important infrastructural elements that need to be put in place at critical points in the time frame of the 5-year plan. These milestones include, for example, items to be procured, professionals to be trained, new services to be established, regulations and legislation to be enacted, and other such items required for the successful implementation of the plan. These are some of the operational milestones that have been identified:

- Creating a functional and updated website of healthy living in Kuwait and establishing editorial boards for the dissemination of educational materials (e-newsletters)
- Increasing the number of the participants in the programme as stakeholders
- Training the staff of schools and universities regarding healthy lifestyles and risk factors, obesity, diabetes and other chronic conditions
- Revising the school curricula and incorporating the national healthy living programme activities in them
- Training health care providers (general and specified groups such as children and elderly)
- Implementing existing legislation and/or creating new legislation required to realize the national healthy living programme (food- and physical activity-related legislation)
- Appointing those who can contribute to the programme, for example doctors, nurses, media experts, occupational therapists, physiotherapists or teachers
- Planning training workshops for TV and radio programme producers as well as editorials of daily newspapers, newsletters and magazines for introducing the elderly healthy lifestyle needs and risk factors
- Initiating lawful regulation of food labelling monitoring in supermarkets, enforcement and sustainability.

There are attempts to engage health care professionals in training courses, workshops and conferences regarding chronic conditions. Targeting health care professional and improving their awareness about chronic conditions and their complications, such as diabetes, is vital for the detection of people at high risk of developing the condition and providing the optimum service. For instance, a recent study tested the knowledge of dental practitioners on the effects of diabetes on periodontal health. It showed the level of knowledge was generally low, and indicated dentists may underestimate the outcomes of periodontal diseases in diabetic patients [18]. Moreover, it is a known fact that periodontal disease in young patients

with type 1 diabetes is more evident than in those without diabetes. Thus, these patients need special care, and with appropriate training materials for health care professionals, changes in the outcome on patients could be immense [19]. Thus, it is crucial to address the level of knowledge of the health care professional to take into account the magnitude of chronic conditions and their complications.

Targeting health care professionals with disease-specific training programmes can aid in providing the optimum care to patients. Al-Adsani et al. [20] have evaluated the impact of the Kuwait Diabetes Care Programme on the quality of diabetes care. It showed that the programme was associated with improved processes in diabetes care. They concluded that with further support from health authorities, provision of manpower resources, a continuing monitoring and evaluation system, and structured education programmes may lead to further improvements in the quality of diabetes care.

In addition to educating and training health care providers regarding the impact of chronic conditions, there are several areas that need to be explored in order to aid in the progress of fostering a healthy living environment. First of all, a sleep survey needs to be conducted to determine what influences sleep patterns may have on healthy living, such as the amount of hours slept every night, how early people wake up, lunch time, afternoon naps, dinner time and what time people sleep. Second, conduct a survey, designed to foster understanding of attitudes and perceptions of healthy living for all age groups, which is distributed as a hard (print) copy and an online soft copy. Third, conduct a demographic study to categorize the Kuwaiti population into ethnic groups, ascertain the number of individuals enrolled in schools and universities, identify the public and private work sectors and the number of employees for each sector, as well as the retired and the elderly. Fourth, continuously update Kuwait's Healthy Living database. The database contains information about all aspects and factors that can contribute to and influence the well-being of residents of the nation. All the stakeholders have contributed information regarding their expertise that collectively can provide a reflection of the current health status. For example, the Ministry of Education has established a database of all schools in the country, the number of students, level of education, number of teachers and their qualifications, and the number of school clinics and their facilities. Also, the MOH provided a database of all health care centres and hospitals around the country and their capacities, services provided and prevalence of chronic diseases.

Updating the information regularly is essential by inventorying the information regarding, for example, the number of supermarkets, fast-food outlets, malls, university campuses, and schools within governorates and districts. A useful nutritional survey can determine the average daily caloric intake and physical activity of the Kuwaiti population before and during the implementation of healthy living strategies that would enable a follow-up of each segment of the population, taking gender, age group and ethnicity into account. The collection of data should be in collaboration with the Nutrition Department of the MOH and the Ministry of Education regarding universities and applied education institutes. Fifth, conduct research to determine how mental health affects healthy living for the various ethnicities residing in Kuwait using a specialized questionnaire designed in collaboration with the Kuwait Counsellors' Network, universities and the MOH. Sixth, measuring the direct costs for treating illnesses and their complications is essential and will be accomplished by conducting a cost-of-illness analysis, an essential economic evaluation to undertake, particularly with regard to the percentage of prescribed drugs, to determine the explicit medical and opportunity costs for the government. The analysis will capture the value of all the resources spent on an ailment in one monetary value. This approach provides information on costs versus benefits so that resources can potentially be saved and used elsewhere if certain conditions such as obesity were prevented or alleviated. The cost-of-illness study needs to be conducted to be able to perform a cost-effectiveness analysis to demonstrate that an intervention to prevent the health problem is more cost-effective than the current management of the health. This provides evidence to the decision-makers that the intervention being suggested is a sound investment and worth implementing.

Initially, the health care problem should be identified and all related diseases caused by this health problem or clinically known to be associated with this problem should be identified as well. In the case of obesity, related diseases would include diabetes, hypertension and cardiovascular disease. The next step would be to collect the data related to disease incidence, and prevalence of reported cases of obesity from the MOH to measure direct and indirect costs.

Several strategies will be utilised to tackle the burden of the health problems at different levels and target populations mentioned previously. One of the most crucial aspects is to anticipate potential and future barriers that may interfere with the implementation of policy inter-

ventions to prevent unhealthy lifestyle factors. This is done by carrying out a literature review of existing healthy living programmes elsewhere. Education about the condition and the importance of lifestyle modification, increasing physical activities and eating a healthy diet play a pivotal role. Other interventions such as medications and surgical procedures will also be evaluated.

A specific health information system is required to collect epidemiological information relative to the health conditions related to lifestyles and risk factors, and to provide the data required to measure and demonstrate the achievement of the objectives in each stratum. Ideally, the system would connect to the existing health care information technology infrastructure in primary care clinics and hospitals, and seamlessly import and monitor medical data and information. From a functionality design perspective, the system should be deployed through the web using secure connections allowing real-time data collection with built-in checks and balances to enhance the quality of information collected. The system would be essentially made up of three major functional components:

- A data collection module: this module will allow the design and deployment of independent surveys and data collection forms to serve the research projects undertaken as part of the programme
- A data analysis module: this module will provide statisticians and researchers access to de-identified data in order to create the reports needed to monitor and evaluate the success of the programme
- A data-viewing module: this module will enable the display of analysed data using advanced user-friendly graphical interfaces like a geographical information system and hence provide intuitive visualisation of the data.

A management information system is required to provide the necessary information to monitor and evaluate the actual activities and operations involved in implementing the programme. The task force teams will routinely collect health-related data, including personal, demographic, medical and financial data from individuals as a part of the programme. Adequate policies and procedures have been included to protect the confidentiality of the data that it has collected and to safeguard the interests of the individuals. The teams will generally seek an individual's consent for the collection, use and disclosure of the data. Data stored in the systems are protected from unauthorized access by appropriate security technologies. Only the authorized personnel will have access to data on a need-to-know basis. Data collected will be used in accordance with the purposes authorized by an individual.

Conclusion

The work of the healthy living programme is believed to have the power to alter the current health status in the country. It requires collaboration between various stakeholders in order to achieve the optimum goal of the programme. Providing a healthy living environment will benefit the country in various fields, especially in reducing the burden of treating chronic illnesses.

Disclosure Statement

The author declares that no financial or other conflict of interest exists in relation to the content of the article.

References

1 International Diabetes Federation: IDF Diabetes Atlas, ed 5. Brussels, International Diabetes Federation, 2011. http://www.idf.org/sites/default/files/5E_IDFAtlasPoster_2012_EN.pdf (2012 update).
2 The Public Authority for Civil Information. http://www.paci.gov.kw/.
3 Gupta N, Chin M, Yang J, et al: Obesity prevention in Singapore: collaborative efforts among government, health professionals and the community. Asian J Exerc Sports Sci 2010; 7. http://js.sagamorepub.com/ajess/article/view/2462.
4 Schneiderman N: Psychosocial, behavioral, and biological aspects of chronic diseases. Curr Dir Psychol Sci 2004;13:247–251.
5 WHO: Kuwait Health system Profile 2006. http://gis.emro.who.int/HealthSystemObservatory/PDF/Kuwait/Full%20Profile.pdf.
6 Shah M, Behbehani J, Shah M: Prevalence and correlates of major chronic illnesses among older Kuwaiti nationals in two governorates. Med Princ Pract 2010;19:105–112.
7 The World Health Report 2002: Reducing Risks, Promoting Healthy Life. Geneva, WHO, 2002, pp 57–61, 162.
8 Moussa M, Alsaeid M, Abdella N, et al: Prevalence of type 2 diabetes mellitus among Kuwaiti children and adolescents. Med Princ Pract 2008;17:270–275.
9 Alattar A, Al-Majed H, Almuaili T, et al: Prevalence of impaired glucose regulation in asymptomatic Kuwaiti young adults. Med Princ Pract 2012;21:51–55.
10 Swinburn B, Eggar G, Raza F: Dissecting obesogenic environments; the development and application of a framework for identifying and prioritizing environmental interventions for obesity. Prev Med 1999;29:563–570.

11 Guy GW, Nunn AVW, Thomas LE, et al: Obesity, diabetes and longevity in the Gulf: is there a Gulf metabolic syndrome? Int J Diabetes Mellit 2009;1:43–54.
12 El-Bayoumy I, Shady I, Lotfy H: Prevalence of obesity among adolescents (10 to 14 years) in Kuwait. Asia Pac J Public Health 2009;21:153–159.
13 Serour M, Alqhenaei H, Al-Saqabi S, et al: Cultural factors and patients' adherence to lifestyle measures. Br J Gen Pract 2007;57:291–295.
14 Moussa MAA, Alsaeid M, Abdella N, et al: Social and psychological characteristics of Kuwaiti children and adolescents with type 1 diabetes. Soc Sci Med 2005;60:1835–1844.
15 Honkala S, Honkala E, Al-Sahli N: Consumption of sugar products and associated life- and school-satisfaction and self-esteem factors among schoolchildren in Kuwait. Acta Odontol Scand 2006;64:79–88.
16 Preamble to the Constitution of the World Health Organization [adopted by the International Health Conference, New York, June 19–22, 1946; signed July 22, 1946, by the representatives of 61 States (Official Records of the World Health Organization, No 2, p 100); entered into force on April 7, 1948].
17 Armstrong J, Reilly JJ: Breastfeeding and lowering the risk of childhood obesity. Lancet 2002;359:2003–2004.
18 Al-Khabbaz A, Al-Shammari K: Diabetes mellitus and periodontal health: dentists' knowledge. Med Princ Pract 2011;20:538–544.
19 Al-Khabbaz A, Al-Shammari K, Hasan A, et al: Periodontal health of children with type 1 diabetes mellitus in Kuwait: a case-control study. Med Princ Pract 2013;22:144–149.
20 Al-Adsani A, Al-Faraj J, Al-Sultan F, et al: Evaluation of the impact of the Kuwait Diabetes Care Program on the quality of diabetes care. Med Princ Pract 2008;17:14–19.