

# Use of social marketing in diabetes control in the UAE context

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## Abstract

**Objective:** This study aims to provide information on the perceptions of and practices used for diabetes in the UAE with the view to generate evidence-based strategic guidelines for future programs.

**Method:** A multi-method approach was used. It included a survey to collect data on the current level of awareness, attitudes, and behaviors among diabetic and non-diabetic samples in Al Ain, UAE. We reviewed the literature on the social marketing framework and its suitability to diabetes control and prevention programs.

**Results:** Knowledge about the disease was generally low. The level of awareness among members of the diabetic group, however, was found to be slightly better than that of their non-diabetic counterparts. Practices related to diabetic care were mixed. Social marketing is a recognized intervention method for influencing behavior and has been used effectively in various health programs worldwide.

**Conclusions:** Low awareness of diabetes would further increase the number of diabetes and diabetes-related complications in future years, putting an enormous burden on the healthcare system. A social marketing intervention focusing on behavioral change can offer an effective solution.

## Introduction

Diabetes is a chronic disease with tremendous cost to individuals, families, and societies. Every year, 4.6 million people die as a result of diabetes worldwide, and many more become disabled due to its complications. Diabetes is a condition in which the body cannot make enough insulin or utilize insulin for the metabolism of glucose, resulting in high levels of glucose in the blood. Untreated diabetes can cause serious health complications, including heart disease, blindness, kidney failure, and the need for lower extremity amputations.

Diabetes is classified into type 1 and type 2 diabetes. Type 1 is usually found in children and young adults, where the body cannot produce insulin, whereas type 2, which is the more common form of diabetes affecting the adult population, is caused by inadequate utilization of insulin by the body. What causes type 1 diabetes is not clearly known, but type 2 diabetes has been attributed to age, lifestyle, ethnicity, and family history of diabetes. While type 1 diabetes cannot be prevented, studies in the United States, Finland, and China suggest that type 2 diabetes is preventable by regular exercise and management of body weight [1]. Despite the fact that in most cases, the disease can be prevented, incidence of diabetes is increasing in almost every country. Based on current trends, the number of people with diabetes is projected to increase from 371 million in 2012 to 552 million by 2030. The Middle East and North Africa is one of the highest prevalence regions, where one in nine adults suffers from diabetes. The situation is even more alarming in the UAE, where the comparative prevalence is almost 19%, suggesting that one in five adults has diabetes [2].

The UAE government recognizes the seriousness and magnitude of the problem and has taken a series of initiatives to improve the situation. The Ministry of Health's National Strategy for Control of Diabetes program launched in 2003 targeted type 2 diabetes and involved the research, monitoring, evaluation, and promotion of quality of care [3]. The program focused on both primary and secondary resources for the prevention of type 2 diabetes among the general public and children. *Diabetes Knowledge Action* is another program by the Imperial College London Diabetes Center [4] and focuses on awareness among school children, teachers, and the general public. The program was launched in 2007 by HH Sheikha Fatima Bin Mubarak and continued until 2013. The Imperial College London Diabetes Center established health services centers in Abu Dhabi and Al Ain for the treatment of diabetes, which are among the largest diabetes treatment centers in the UAE. *Join the Movement* is a campaign run by the Ministry of Health and Emirates Diabetic Society with the purpose of increasing awareness among the general public through participation in outdoor activities. It also provides free measurement of body mass index and blood sugar tests to the participants.

Despite these initiatives, there are few signs of improvement. The prevalence of diabetes has now reached epidemic proportions, resulting in a sharp increase in the cost of treatment and associated complications. According to an estimate, the cost for direct treatment of diabetes in the UAE in 2011 was \$6.6 billion (1.8% of GDP) and is expected to increase to \$8.52 billion by 2020 [3]. The increase in cost will put further strain on the already stretched healthcare system.

### **Social marketing**

Considering the preventable nature of type 2 diabetes and the role of healthy diet and regular exercise in long-term prevention of diabetes, an intervention targeting behavior change can be of great value in promoting a healthy lifestyle and subsequently controlling the disease. Social marketing is an established method for behavior change. The Centers for Disease Control and Prevention [5] describes social marketing as 'the use of marketing principles to influence human behavior in order to improve health or benefit society'. Social marketing is derived from the commercial marketing notional framework, and like commercial marketing, it is based on the exchange theory and combines research, segmentation, and the use of a marketing mix to influence behavior. While social marketing is a recognized intervention method in public health, its use in diabetes prevention is relatively new. In a recent study, George et al. [6] concluded that a social marketing campaign to control obesity and diabetes is an effective and efficient method for creating awareness and encouraging healthy behavior. Other studies in the US, Australia, and Europe have also supported the role of social marketing campaigns in inducing positive behavior [7–9]. Some researchers, however, reported no significant change in behavior [10,11]. A mixed conclusion was drawn by Croker et al. [12] after the review of the national social marketing campaign known as *Change4Life*, to address the obesity problem in England. According to them, *Change4Life* created a high level of awareness but had no impact on the attitudes and behaviors of the target population. Researchers, however, agree that the less than optimal results of certain programs can be attributed to weaknesses in application rather than any deficiency in the social marketing framework.

There are some inherent and unresolved issues with social marketing. For example, most social marketing concepts are derived from commercial marketing and fit well in social marketing practice. There are, however, a few problems in understanding social products in terms of behavior and understanding exchange theory, particularly in the absence of any immediate and tangible product benefits in return [13]. Social marketing is also sometimes confused with mass media campaigns, which do not focus on behavior change. To differentiate social marketing interventions from such campaigns, Andreasen [14] presented the 6-point benchmark criteria to define social marketing interventions (see Fig. 1).

Despite the challenges involved in campaigns for healthy eating and physical activity, researchers agree that behavioral treatment is an effective method and can help in achieving a healthier weight and lifestyle [15–17]. Program planners and managers also find social marketing frameworks to be a useful tool for the design and implementation of health campaigns that are driven by the target population and aim to make behavior change an attractive option by highlighting the benefits of change and reducing the associated costs.

Information pertaining to current practices and habits is a prerequisite for social marketing program design and subsequent implementation. While there is no shortage of prevalence studies at state and even city levels in the UAE, not much information is available on current level of awareness, attitudes, and habits relating to diabetes among the target population, with the exception of a KAP survey [18] carried out in 2006–2007 in Al Ain only for diabetic patients. The study showed poor knowledge of diabetes with negative attitudes toward diabetes in a significant number of patients. An earlier study [19], also based in Al Ain, showed that knowledge about diabetes was directly related to the patient's level of general education. Since then, there has been a considerable increase in media coverage of diabetes and other methods of accessing information, including social media. The expectation is that knowledge about diabetes would have improved in both diabetics and nondiabetics. However, one should remember that comparison of different studies may be difficult due to the differences in instruments and samples used.

The aim of this study is twofold: (i) to determine current knowledge, attitudes, and practices regarding diabetes among diabetic and non-diabetic populations, and to identify the needs of target populations as well as the factors that influence their behavior, and (ii) to develop a target-specific strategic guideline focusing on behavior change to inform future program managers and national governments involved in diabetes control programs.

## Methodology

A cross-sectional study was conducted between November 2013 and August 2014 to collect quantitative data on the current level of awareness, attitudes, and practices regarding diabetes. We used a non-probability convenience sample of 160 individuals (88 diabetic; 72 non-diabetic) by initial questioning. Both groups included adults aged between 18 and 75 years living in Al Ain, UAE with the ability to understand the questionnaire. Assessment of individuals' cognitive functions was based on the information they had given. No attempts were made to identify the barriers to behavior change due to the absence of any past or current social marketing campaigns.

A pre-tested questionnaire was used for face-to-face interviews. It included an informed consent and was translated into Arabic for the non-English speaking population. The questionnaire included a section on demographic factors, followed by specific sections on knowledge, attitudes, and practices regarding diabetes. Data entries were made on an MS Excel sheet, and categorical values between two groups were compared using Chi square to calculate *P* values (significance).

In the analysis and evaluation, we compared the results of this survey with earlier studies where available. All survey results used in the analysis are country-specific (UAE) and were used to generalize the same population that made up the sampling universe for this study. No attempts have been made in this paper to apply the results of the surveys to populations not included in these surveys.

The study examined the theoretical framework that guides social marketing interventions. It reviewed various social marketing campaigns for obesity and diabetes, and analyzed the results.

## Results

The demographic characteristics of the population surveyed are presented in Table 1. There were no significant differences between the diabetic and non-diabetic groups in terms of age, gender, nationality, and level of education.

The level of awareness about diabetes is shown in Table 2. There is a significant difference in the number of family members with diabetes among the diabetics (95%) compared to the non-diabetics (67%). The diabetics also had better knowledge (82% against 61%) about which age group is affected by the disease. More non-diabetics believed it is only a disease affecting the middle-aged and elderly. Family members were the most important source of information among both groups. TV, radio, and friends were other important sources of information among non-diabetics.

The diabetics had better knowledge about the causes, symptoms, and complications of diabetes. Many non-diabetics (56%) believed that diabetes is caused by eating large amounts of sugar, as compared to the diabetics (14%). The non-diabetics also had significantly less knowledge about complications of diabetes. Only 17% knew about heart, kidney, and stroke complications, and 28% did not know about any complications.

Knowledge regarding the significance of healthy diet and exercise was similar in both groups, except for the role of weight control, of which the non-diabetics had less knowledge, about 67% compared to 86% among diabetics. Both groups had similar knowledge about treatment of diabetes in terms of diet control, exercise, and weight control.

The diabetics had more knowledge about insulin (86% vs. 61%). Knowledge about diabetes care was significantly deficient in the non-diabetics. The majority of diabetics (95%) knew that blood glucose monitoring is part of diabetes care, compared to only 67% of non-diabetics. However, a relatively small number of diabetics knew about the significance of blood pressure monitoring (32%), foot examination (59%), and eye examination (41%) in reducing diabetes-related complications. These figures were further reduced in the non-diabetics, at 28, 17, and 0%, respectively.

Attitudes toward diabetes were not so different between the two groups, except regarding the questions relating to the ability to lead a normal life through control of blood sugar. Of the diabetics, 95% responded positively, compared to 78% of non-diabetics (Table 3). The other significant difference was noted on the question relating to use of insulin as a last resort. A high number of diabetics (64%) agreed compared to non-diabetics (28%).

Diabetes care-related questions were posed to all diabetic participants. The results are summarized in Table 4.

Practice among diabetics was found to be generally good in the majority of cases. However, 33% of respondents do not take medications regularly, and 56% do not participate in any kind of exercise. A high percentage of diabetics underwent yearly eye (88%) and urine (95%) examinations. Practices related to foot care were found to be relatively poor. Only 61% had yearly foot examinations, and only 33% always wore covered shoes when outdoors.

## **Discussion**

The overall findings of this study support earlier findings that the awareness about the disease among both groups, diabetics and non-diabetics, is less than satisfactory. However, there is more knowledge and positive attitudes toward the disease among diabetics as compared to their nondiabetic counterparts. This finding is in line with similar studies in Malaysia and India, which also found higher scores of knowledge among diabetics but lack of significant differences in the mean score of knowledge about the basics and pathophysiology between diabetics and non-diabetics [20,21]. This could be attributed to diabetics being already exposed to the disease with regular encounters with medical personnel, as well as the fear that lack of knowledge about the disease may worsen their condition. This may also reflect the fact that there is more emphasis on education of diabetics to prevent further complications.

While the knowledge about the disease was generally low, the findings indicate marked improvement in knowledge about the disease among diabetics. For example, in our study, only 14% of the diabetic group cited high sugar consumption as the cause of diabetes, as compared to 60% in the previous KAP study by Al Maskari et al. [16] Even among non-diabetics, 56% indicated high sugar consumption as the cause of diabetes. The findings regarding the symptoms and complications are more or less comparable.

Family history is a known risk factor for the development of diabetes [22]. This study also supports this relationship. Of the diabetics, 90% had family members with diabetes as compared to only 67% of non-diabetics. Thus, for prevention, relatives of diabetics can be important targets to focus on in future interventions. Family members and friends were also the most important source of information about diabetes for the majority of respondents in the survey, thus strengthening the fact that focusing on family members may prove more effective in improving diabetes education. Level of education can be the single most modifiable factor that will affect a person's understanding of diabetes. Therefore, it was reassuring to note that more than three-fourths of the population surveyed had a secondary or higher level of education, which is expected to rise in the future with the current education program in the country.

Apart from targeting the vulnerable groups, the prevention program needs to address current unhealthy habits relating to physical activities and dietary and clinical practices. It should include different ways of achieving desired behavior in diabetics as well as non-diabetics by increasing their level of education about the disease, creating positive attitudes, and finally, making them practice a healthy lifestyle with changes in eating habits and exercise to achieve a healthy body weight. There are a large number of undiagnosed diabetics in the general population [2]. Early diagnosis by regular blood sugar checks of the high risk population can be instrumental in effective control. All of this can be achieved by a comprehensive behavior modification program, such as social marketing, which is a systematic and sequential process and focuses on behavior change. The social marketing program for diabetes prevention will benefit from formative research to identify barriers to behavior change and develop evidence-based strategies at various levels. At the general level, the program will educate the entire population in the country through multiple channels about preventable and modifiable risk factors, whereas at the clinical level, it will attempt to improve involvement of health care personnel, education of diabetic patients, and screening of the general population through improved contact points. This is more important because the survey found that only a small number of people get information about diabetes from reading.

## **Conclusion**

Diabetes campaigns in the UAE have made some contributions toward creating awareness about the disease. However, the knowledge about diabetes remains low, particularly among the non-diabetic group. Improved knowledge in the non-diabetic group is critical in any diabetes prevention strategy because changes in attitudes and behaviors among this group will ultimately contribute to a fall in new cases of diabetes. On the other hand, improved knowledge among the diabetic group will promote self-care and subsequently prevent diabetes-related complications.

A social marketing framework, derived from commercial marketing, is a systematic approach for addressing barriers to behavior change through the use of several interdependent activities. Notwithstanding some minor issues, it is a

recognized intervention method for behavior change and can be applied at various levels. The framework includes formative research, segmentation, and the use of a marketing mix, followed by monitoring and evaluation. Formative research helps in understanding barriers to behavior change and developing evidence-based marketing strategies. Program managers and practitioners, however, will have to improve their knowledge and skill levels in social marketing through special training [23].

### **Limitations**

The research used a questionnaire to collect standardized data. While there are many advantages to using a questionnaire, it has also been criticized for being inadequate to understand some forms of information, including behavior. Also, there is no way of knowing how truthful a responder is [24,25]. Another limitation of this research is the small sample size.

### **Research implications and future direction**

An attempt has been made in this research to provide valuable insights into attitudes and behaviors regarding diabetes in a selected city in the UAE. The results are significant, because they represent the first sets of data for both the diabetic and non-diabetic populations. This could be used by program managers, the national government, and healthcare professionals involved in future program design and implementation. Future research may consider similar studies in other cities with larger samples to consolidate the findings of this study and to arrive at a more meaningful conclusion.

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1. **Behavior-change** is the benchmark used to design and evaluate interventions.
2. Projects consistently use **audience research** to (a) understand target audiences at the outset of interventions (i.e., formative research), (b) routinely pretest intervention elements before they are implemented, and (c) monitor interventions as they are rolled out.
3. There is careful **segmentation** of target audiences to ensure maximum efficiency and effectiveness in the use of scarce resources.
4. The central element of any influence strategy is creating attractive and motivational **exchanges** with target audiences.
5. The strategy attempts to use all four Ps of the traditional **marketing mix**; for example, it is not just advertising or communications. That is, it creates attractive benefit packages (products) while minimizing costs (price) wherever possible, making the exchange convenient and easy (place) and communicating powerful messages through media relevant to—and preferred by—target audiences (promotion).
6. Careful attention is paid to the **competition** faced by the desired behavior.

**Figure 1** Andreasen Social Marketing Benchmark Criteria. Source: Andreasen [14]

**Table 1** Demography

	<b>Diabetic (%)</b> <i>n</i> = 88	<b>Non-diabetic (%)</b> <i>n</i> = 72	<i>P</i> value
<b>Gender</b>			
Male	36	41	<i>ns</i>
Female	52	59	<i>ns</i>
<b>Age (years)</b>			
20-29	12	14	
30-39	18	20	
40-49	35	40	
>50	23	26	
<b>Education</b>			
Primary	24	27	
Secondary	28	32	
Graduate	24	27	
Postgraduate	12	14	
<b>Nationality</b>			
Emirati	40	45	
South Asian	22	25	
African	8	9	
Arabs	16	18	
European	2	2	

**Table 2** Results

	<b>Diabetic</b>	<b>Non-diabetic</b>	<i>P</i> value
<i>Awareness</i>			
Heard about diabetes	100	100	ns
<i>Information Source</i>			
- Family member with diabetes	95	67	< 0.05
- TV/radio	18	39	< 0.05
- Family member	64	56	ns
- Friends	14	33	< 0.05
<i>Cause(s)</i>			
Lack/defect of insulin	55	33	< 0.05
High consumption of sugar	14	56	< 0.05
Destiny	5	22	< 0.05
Contact with other diabetics	5	11	ns
Others	14	17	< 0.05
<i>Symptom(s)</i>			
Weight gain/loss	68	56	ns
Frequent urination	50	56	ns
Frequent thirst	45	33	ns
Frequent hunger	32	22	ns
Do not know	9	11	ns
<i>Complication(s)</i>			
Eye disease	77	28	< 0.05
Foot problems	73	44	< 0.05
Kidney disease	50	17	< 0.05
Heart disease	45	17	< 0.05
Stroke	23	17	ns
Do not know	5	28	< 0.05
<i>Prevention(s)</i>			
Healthy diet	91	78	ns
Weight control	86	67	ns
Regular exercise	82	83	ns
<i>Treatment(s)</i>			
Insulin	86	61	< 0.05
Healthy diet	77	72	ns
Regular exercise	73	72	ns
Drugs	68	56	ns
Weight control	59	56	ns
<i>Care</i>			
Blood sugar monitoring	95	67	< 0.05
Foot examination	41	0	< 0.05
Eye examination	59	17	< 0.05
Blood pressure monitoring	32	28	ns
Do not know	0	17	

**Table 3** Attitude toward diabetes prevention/diabetes care

Diabetic %	Non-diabetic %					P value
		Positive	Negative	Positive	Negative	
		95	5	94	–	ns
Regular exercise		95	5	94	–	ns
Weight control		100	–	100	–	ns
Dietary modification		95	–	89	–	ns
Monitor blood glucose at home		95	5	89	6	ns
Lead normal life with sugar controlled		95	–	78	17	<0.05
Continue eating restrictions		95	5	72	17	Ns
Insulin as last resort		64	27	28	28	<0.05

**Table 4** Practices

	Diabetic %
<i>Physical activity</i>	
2 times or more a week	44
Rarely/never	56
<i>Lab sugar testing</i>	
1-6 months	95
7-12 months	5
<i>Home sugar testing</i>	
Once a week or more	78
2-3 times/month	22
<i>Other practices</i>	
Follow diet plan	78
Take drugs regularly	67
Wear covered shoes (outdoor)	33
Yearly eye examination	88
Yearly foot examination	61
Yearly urine examination	95