

# Cultural factors and patients' adherence to lifestyle measures

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## ABSTRACT

### Background

Non-adherence to preventive and therapeutic lifestyle recommendations among patients at high risk of cardiovascular disease is more prevalent and varied than previously thought. The problem needs to be addressed by those who are involved in the care of these patients.

### Aim

To measure adherence and barriers of complying with lifestyle recommendations among patients with high cardiovascular risk factors.

### Design of study

Prospective study.

### Setting

Six family-practice health centres in Kuwait.

### Method

Data are from 334 Kuwaiti adult males and females with hypertension, type 2 diabetes, or both, who completed a routine clinic visit in one of six family practice centres. Trained staff used a structured questionnaire to obtain a detailed medical history regarding exercise habits and barriers to compliance with diet and exercise programmes. Clinical criteria assessed were height, weight, and the control of blood pressure and blood sugar.

### Results

From the study sample, 63.5% of patients reported that they were not adhering to any diet regimen, 64.4% were not participating in regular exercise, and 90.4% were overweight and obese. The main barriers to adherence to diet were unwillingness (48.6%), difficulty adhering to a diet different from that of the rest of the family (30.2%), and social gatherings (13.7%). The main barriers to adherence to exercise were lack of time (39.0%), coexisting diseases (35.6%), and adverse weather conditions (27.8%). Factors interfering with adherence to lifestyle measures among the total sample were traditional Kuwaiti food, which is high in fat and calories (79.9%), stress (70.7%), a high consumption of fast food (54.5%), high frequency of social gatherings (59.6%), abundance of maids (54.1%), and excessive use of cars (83.8%).

### Conclusion

The majority of individuals in the sample were overweight, did not engage in recommended levels of physical activity, and did not follow dietary recommendations. Additional cultural and demographic variables need to be considered to improve adherence to lifestyle measures.

### Keywords

hypertension; lifestyle measures; patient adherence; type 2 diabetes.

## INTRODUCTION

Adherence to therapeutic lifestyle measures reduces the risk of cardiovascular problems. Non-compliance can worsen the quality of life and add to the cost of medical care.<sup>1-3</sup>

Compliance with medical recommendations and the extent to which recommendations are followed present difficult and complex challenges as patients can find lifestyle behaviours (for example, diet and physical activity) hard to change and maintain for long periods. Understanding the barriers to adherence to lifestyle changes can help physicians to plan and implement more intensive interventions to assist patients facing the long-term task of achieving beneficial lifestyle changes.

Many specific additional factors can interfere with diet adherence among Kuwaiti patients. For instance, frequent gatherings with extended families and friends are a regular affair. During these times, patients are consuming more fat, meat, sugar, rice, and wheat flour than before.<sup>4,5</sup> In addition, Kuwait's climate is like that of a dry desert — intensely hot summers and short, cool winters — which may discourage patients from indulging in regular exercise.

Kuwait's rapid growth and socioeconomic developments have a negative impact on cardiovascular disease risk factors among the Kuwaiti population.<sup>6,7</sup> Prior to the discovery of oil, there were natural checks and balances, such as hard manual labour like sailing, fishing and pearl-diving, that protected against cardiovascular problems. At present, this is not the case.

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## How this fits in

Doctors, nurses, and dietitians assume that they can motivate their patients to adhere to evidence-based healthy lifestyle measures. This study shows that most patients are not successful in doing so. In addition to individual characteristics and preferences, other cultural and demographic factors hinder the adherence to these measures. These barriers have to be clarified, considered, and addressed when counselling about these measures with patients.

This study was carried out to measure adherence and barriers to lifestyle recommendations in patients at high risk of developing cardiovascular problems. There is little information published and no available data about this subject regarding the Gulf region.

### METHOD

This study was conducted as prospective research.

#### Selection of patients

Kuwaiti patients with hypertension and/or type 2 diabetes, diagnosed for at least 1 year and attending one of six family practice healthcare centres from 1 September to 31 December 2005 were included in the study. A consecutive series of eligible patients according to the inclusion and exclusion criteria mentioned above were recruited until the sample size was achieved.

### Instrument

All patients were interviewed by six trained family doctors using a standard questionnaire. The questionnaire was based on literature and the experiences of the researchers, taking into account the cultural factors of the region. The interview was administered in 20–25 minutes and included 24 questions, 10 of which assessed sociodemographic data, such as sex, age, education, marital status, occupation, smoking status, perceived stress, presence of maids, and frequency of social gatherings.

Specific variables recorded included: body mass index (BMI) and blood pressure for patients with hypertension. Blood pressure was considered to be controlled if it measured <140/90 mmHg (<130/80 mmHg for patients with diabetes).<sup>4</sup>

Glycosylated haemoglobin (HbA1c) tests performed within the previous 6 months or blood-sugar level in the previous three visits was used to assess glycaemic control for patients with diabetes. Blood sugar was considered to be controlled if HbA1c was <7.0%, preprandial capillary plasma glucose was <7.2 mmol/l, or postprandial capillary plasma glucose was <10.0 mmol/l.<sup>8</sup> Additional high-risk factor variables were also included, such as smoking status and hyperlipidaemia. Presence of target organ damage was noted, for example, heart failure, ischaemic heart disease, cerebrovascular accidents, nephropathy, retinopathy, or neuropathy. Any other chronic diseases that affect physical activity were also incorporated. Three-point scales (yes, no, sometimes) were used to assess patient adherence to lifestyle measures (diet and exercise). Patients were considered compliant if they had adhered to a recommended appropriate dietary programme in the previous month (excluding 1 day per week). Physical activity was assessed using the short version of the International Physical Activity Questionnaire (IPAQ),<sup>9</sup> modified for patients with target organ damage and for those with chronic obstructive airway diseases and orthopaedic problems. Patients were considered as adhering to recommended physical exercise if they were in category two or three according to the IPAQ scoring protocol which includes inactive (category 1), minimally active (category 2), and active (category 3).

Factors that interfere with adherence to lifestyle measures were assessed using five structured questions and their answers were scored on three-point scales (yes, no, and not sure).

Data about whether patients had received previous counselling about diet and exercise, the number of reasons for non-adherence, whether participants felt that diet and exercise could positively affect their condition, and whether or not stress could have a negative impact on their condition were also collected.

**Table 1. Characteristics of the study sample.**

	D n (%) <sup>a</sup>	H n (%) <sup>b</sup>	D + H n (%) <sup>c</sup>	Total n (%) <sup>d</sup>	P-value
Sex					0.005
Male	48 (49.0)	45 (37.8)	32 (27.4)	125 (37.4)	
Female	50 (51.0)	74 (62.2)	85 (72.6)	209 (62.6)	
Educational status					0.002
Illiterate	14 (14.3)	10 (8.4)	27 (23.1)	28 (23.9)	
<12 years' schooling	45 (45.9)	56 (47.1)	62 (53.0)	163 (48.8)	
≥12 years' schooling	39 (39.8)	53 (44.5)	28 (23.9)	120 (35.9)	
Employment					0.001
Employed	53 (54.1)	49 (41.2)	25 (21.4)	127 (38.0)	
Unemployed	45 (45.9)	70 (58.8)	92 (78.6)	207 (62.0)	
Body mass index (BMI) [kg/m <sup>2</sup> ]					0.102
<25	11 (11.2)	12 (10.1)	9 (7.7)	32 (9.6)	
25–30	42 (42.9)	34 (28.6)	35 (29.9)	111 (33.2)	
>30	45 (45.9)	73 (61.3)	73 (62.4)	191 (57.2)	
Social gatherings					0.001
>once weekly	68 (69.4)	105 (88.2)	102 (87.2)	274 (82.0)	
<once weekly	30 (30.6)	14 (11.8)	15 (12.8)	60 (18.0)	
Employment of maids					0.005
Yes	76 (77.6)	105 (88.2)	108 (92.3)	289 (86.5)	
No	22 (22.4)	14 (11.8)	9 (7.7)	45 (13.5)	
Consuming fast food					0.449
>once weekly	55 (56.1)	64 (53.8)	56 (47.9)	175 (52.4)	
<once weekly	43 (27.0)	55 (46.2)	61 (52.1)	159 (47.6)	

D = type 2 diabetes. H = hypertension. <sup>a</sup>n = 98. <sup>b</sup>n = 119. <sup>c</sup>n = 117. <sup>d</sup>n = 334.

### Statistical analysis

Various descriptive statistics (mean and standard deviation [SD]) were used to describe the quantitative variables. A  $\chi^2$  test was used to find the association between variables. The level of significance was set at  $P < 0.05$ . The Statistical Package for Social Sciences (SPSS version 13) was used for data processing.

### RESULTS

Table 1 outlines the demographic and lifestyle characteristics of the 334 patients. Mean age of the population was 53.52 years (SD = 10.36, range = 27–74 years). Females accounted for 62.6% of the sample. Of the patients, 10.5% were current smokers — markedly less than the international average of 25.0% of adults.<sup>10</sup> About 62.0% of the sample was unemployed. More than half of patients had a BMI  $> 30$  kg/m<sup>2</sup> ( $P > 0.05$ ). The majority (82.0%) had more than one weekly social gathering with their extended families. Furthermore, a large number (86.5%) employed maids in their homes. About half of responders (52.4%) consumed fast-food more than once a week.

Table 2 shows patients' adherence to lifestyle and the main barriers to compliance. More than half of patients (63.5%) stated that they were not adhering to any diet regimen. Another 64.4% of patients stated that they were not taking regular exercise. Two hundred and fourteen patients (64.1%) were considered inactive and there was no significant difference between those with type 2 diabetes, those with hypertension, and those with both conditions.

Most patients (69.1%) stated that they had strong beliefs that adherence to a diet regimen and regular exercise could have a positive effect on their condition. The main barriers to adherence to diet were:

- unwillingness (48.6%);
- difficulty in following a diet regimen different from that of the rest of the family (30.2%); and
- high frequency of social gatherings (13.7%).

The main barriers to adherence to regular exercise were:

- intensely hot summer weather (27.8%);
- always being busy (39.0%) — significant in patients with hypertension ( $P < 0.01$ ); and
- coexisting disease, mainly osteoarthritis, other musculoskeletal diseases, and asthma (35.6%).

This last barrier was found to be highly significant in patients with both type 2 diabetes and hypertension ( $P < 0.001$ ).

The majority of patients agreed that traditional Kuwaiti food interfered with the diet regimen that

**Table 2. Adherence to lifestyle measures and barriers for compliance with diet and exercise recommendations.**

	D n (%) <sup>a</sup>	H n (%) <sup>b</sup>	D + H n (%) <sup>c</sup>	Total n (%) <sup>d</sup>
Patients not on diet regimen	68 (69.4)	74 (62.2)	69 (59.0)	212 (63.5)
Barriers to diet				
Unwilling	33 (48.5)	35 (47.3)	35 (50.0)	103 (48.6)
Difficulty adhering to a diet different from that of rest of family	18 (26.7)	25 (33.8)	21 (30.0)	64 (30.2)
Social gathering	10 (14.7)	10 (13.5)	9 (12.9)	29 (13.7)
No advice	4 (5.9)	3 (4.1)	2 (2.9)	9 (4.2)
Workload	3 (4.4)	2 (2.7)	2 (2.9)	7 (3.3)
Other causes	4 (5.9)	3 (4.1)	8 (10.8)	15 (6.9)
Patients on no exercise programme	63 (64.3)	76 (63.9)	77 (65.8)	216 (64.7)
Barriers to exercise				
Lack of time	26 (41.3)	42 (53.9)	18 (23.4)	85 (39.0) <sup>e</sup>
Other diseases	16 (25.4)	20 (26.3)	41 (53.2)	77 (35.6) <sup>e</sup>
Weather	21 (33.3)	20 (26.3)	19 (24.7)	60 (27.8)
No exercise partner	3 (4.8)	3 (3.9)	2 (2.6)	8 (3.7)
Cultural difficulties for women	1 (1.6)	3 (3.9)	4 (5.2)	8 (3.7)
Other causes	2 (3.2)	1 (1.3)	3 (3.9)	6 (2.8)

D = type 2 diabetes. H = hypertension. <sup>a</sup>n = 98. <sup>b</sup>n = 119. <sup>c</sup>n = 117. <sup>d</sup>n = 334. <sup>e</sup>P < 0.05.

doctors or dieticians had advised them to follow (79.9%). Stress was perceived by most of them (70.7%) as a main factor that interfered with their following of a diet regimen. More than half of the patients agreed that the high frequency of consuming fast food (59.6%) and the large number of social gatherings with extended families (54.5%) interfered with their adherence to diet regimens. Also, the majority (83.8%) agreed that excess daily use of their private cars interfered with their daily activities. About half of the total sample (54.1%) indicated that the employment of maids rendered them less active.

Table 3 shows that 43.1% of patients who were on a diet and who had hypertension, whether they have type 2 diabetes or not, had controlled blood pressure, versus 32.3% of those who did not have to follow a diet regimen. Controlled blood pressure in patients with hypertension who had to adhere to an exercise programme (64.6%) was relatively higher than that of patients who did not (55.6%). There was significant blood-sugar control in patients with diabetes (whether or not they had hypertension) who were on a diet ( $P < 0.001$ ) and who were undertaking regular exercise ( $P < 0.01$ ).

In total, 288 patients (86.2%) recognised that they had received counselling or advice about diet and exercise from their doctors, nurses, or dieticians.

### DISCUSSION

#### Summary of main findings

The main finding of the study was that more than 60% of patients were not adhering to diet or exercise programmes. Non-compliance with preventive and

**Table 3. Blood sugar and blood pressure control in association with adherence to lifestyle measures.**

	Controlled n (%)	Uncontrolled n (%)	P-value
<b>All patients with hypertension (including patients with hypertension only and patients with hypertension and type 2 diabetes) n = 233</b>			
Patients on diet (n = 137)	59 (43.1)	78 (56.9)	0.096
Patients on no diet (n = 96)	31 (32.3)	65 (67.7)	
Patients exercising (n = 82)	53 (64.6)	29 (35.4)	0.182
Patients not exercising (n = 151)	84 (55.6)	67 (44.4)	
<b>All patients with type 2 diabetes (including patients with type 2 diabetes only and patients with type 2 diabetes and hypertension) n = 215</b>			
Patients on diet (n = 75)	40 (53.3)	35 (46.7)	0.001
Patients on no diet (n = 140)	27 (19.3)	113 (80.7)	
Patient exercising (n = 67)	32 (47.8)	35 (52.2)	0.006
Patient not exercising (n = 148)	42 (28.4)	106 (71.6)	

therapeutic lifestyle recommendations is far more prevalent and varied than previously thought. Non-adherence to diet regimens in Kuwait appeared to be approximately double that of other countries, when comparing these study results with those of similar studies done elsewhere.<sup>11,12</sup>

Barriers to adherence include a high number of social gatherings and living with extended families in big houses, making adherence to a specific diet difficult. These barriers should be addressed when planning diet regimens for such patients. Kuwait's rapid socioeconomic development and an expanding number of fast-food restaurants, leading to increased consumption (more than half of the sample), may be another contributing factor. Although these are difficult barriers to overcome, they should be discussed when counselling patients about the diet regimen.

The percentage of inactive patients and non-adherence to regular exercise among this sample is disappointing and similar to the results of previous reports in other communities.<sup>13,14</sup> Lack of time, which was reported as a barrier by these patients, has also been reported in previous studies.<sup>15,16</sup>

Long, extensive, hot summers were another main barrier to exercise, such as walking, which was both suitable and recommended for the majority of patients in the current sample. Education about indoor exercise should be intensified for these patients. The

employment of maids and excessive use of private cars also contributed to the decrease in patients' daily activity. These are difficult barriers to overcome because patients' high socioeconomic status had led them to become used to these services, and relinquishing them would be difficult.

More than a third of patients had other chronic problems (osteoarthritis, other musculoskeletal problems, and bronchial asthma) which were reported as factors that interfered with recommended exercise. These barriers probably support the proven long-term advantages of tailoring exercise regimens to the individual.

#### **Strengths and limitations of the study**

This is the first study to be carried out addressing this issue in the Gulf region. It also adds important aspects to the few other similar studies that have been published around the world. The study was conducted in only six family practice health centres out of 74 general practice health centres in Kuwait. This study may highlight the need for greater attention to this issue. A nationwide study, or one covering all of the Gulf countries, which have the same culture, social, and demographic features is required. A nationwide study may not affect these results; however, it could highlight the problem and trigger the memory of those who are involved in the care of these patients.

#### **Comparison with existing literature**

More than half of the patients in this study had a BMI of  $\geq 30$  kg/m<sup>2</sup>, which is higher than in patients of other similar studies.<sup>17,18</sup> Obesity adds a major cardiovascular risk factor for these patients, which was demonstrated in the findings of other previous studies.<sup>19,20</sup>

Similar to the findings of other studies,<sup>21,22</sup> these results show that patients who adhere to diet and regular exercise have a better control of blood pressure than those who are non-compliant.

Consistent with other studies<sup>23</sup> was the finding that controlled blood sugar is significantly higher in those following a diet and taking regular exercise. These findings emphasise the importance of motivating this groups of patients to adhere to recommended lifestyle measures.

#### **Implications for future research and clinical practice**

There is a major problem in adherence to evidence-based therapeutic lifestyle measures among patients at high risk of developing cardiovascular problems related to many personal, cultural, and demographic factors. Cultural demographics and individual characteristics need to be seriously addressed to avoid many patients suffering unnecessary further morbidity and premature mortality.

Doctors, nurses, and dieticians need to find out more about the social and cultural habits of their patients and consider the expected barriers to adherence to lifestyle measures when giving them advice. In addition, there is a critical need for the increased development of diversified and culturally-appropriate health education programmes for groups at high risk of developing cardiovascular problems.

#### Funding body

Not applicable

#### Ethics committee

Ethical approval was granted by the Capital Health Region — Ministry of Public Health of Kuwait (August 2005)

#### Competing interests

The authors have stated that there are none

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