

Non-Adherence to Lifestyle Modification Recommendations amongst Type 2 Diabetes Mellitus Patients in Almadinah Almonawarah

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ABSTRACT:

Background: Non-adherence to lifestyle recommendations by type 2 diabetic patients increases the risk of serious complications such as stroke, heart disease and increased the incidence of retinopathy, peripheral nerve damage and renal problems compared to the general population.

Objectives: To determine frequency and reasons of non-adherence to diet and exercise recommendations amongst type 2 diabetes mellitus patients in Almadinah Almonawarah.

Methods: This is a web based survey. The sample comprised 385 participants diagnosed with type 2 diabetes mellitus aged ≥ 30 years. The self-administered questionnaire included sociodemographic characteristics, compliance to dietary and exercise recommendation and reasons for non-adhering to life style modifications.

Results: 51.2% were female. Estimated rates of non-adherence to diet and exercise were 28.1% and 49.1 % respectively. Reasons for non-adherence to dietary recommendations were poor self-control (40%), 29.6% returned their non-adherence to dietary to situations at home (they mean eat non-healthy diets when alone), 21.2% mentioned inappropriate dietary habits; while the main perceived reasons for non-adherence to exercise were; too busy to exercise (31.5%), lack of exercise partner (28%), unfavorable weather conditions (21%).

Conclusion: Non-adherence to diet and exercise recommendations amongst type 2 diabetes patients is far more prevalent and no particular single reason could be attributed to poor adherence to either diet or exercise recommendations.

Keywords: Non-adherence, lifestyle modification recommendations, diet, exercise or and type 2 diabetes mellitus patients.

I. INTRODUCTION

Several studies have been conducted on the benefit of healthy dietary habits and regular exercise in the prevention and management of type 2 diabetes mellitus^{1,2,3,4}. Adherence to lifestyle recommendations show improving and maintaining glycemic levels of people with type 2 diabetes mellitus. The majority of persons with Type 2 diabetes are overweight or obese, which further increases their risk of macrovascular and microvascular complications through worsening of hyperglycaemia, hyperlipidaemia and hypertension.⁵ Therefore strict adherence to healthy lifestyle habits must be advice from health care provider to control diabetes mellitus as there is strong evidence that type 2 diabetes can be prevented or delayed in persons at high risk by repeated counselling on weight loss and increasing physical activity.⁶

Adherence to self-care has been described as an active, responsible and flexible process of self-management, in which the patient strives to achieve good health by working in close collaboration with health care staff, instead of simply following rigidly prescribed rules.⁷ Studies have been conducted worldwide to establish factors associated with non-adherence to treatment amongst patients with type 2 diabetes mellitus.^{8,9,10}

Non-adherence to lifestyle recommendations amongst type 2 diabetes mellitus patients has been found to be associated with increasing urbanization, nutrition transition, reduced physical activity, and genetic predisposition especially in developing countries.¹¹ In these patients, rates of non-adherence to diet and exercise recommendations were estimated to range from 35% – 75% and 35% – 81% respectively.^{12,13} Non-adherence to diet and exercise recommendations in people with type 2 diabetes mellitus leads to frequent hospitalizations which has increased health care costs.¹⁴

Some patients explain their non-adherence to dietary recommendations on the basis of criticism by others, lack of information, unwillingness, and lack of support from spouse and/ or family, negative health beliefs and perceptions, previous experience with chronic disease and financial problems.^{8,10,15,16} While other justify their non-adherence to exercise were lack of will-power, poor health, associated comorbidities, lack of an exercise partner, poor weather (hot and cold conditions) and a busy schedule.^{4,8}

Objectives to determine the frequency and reasons for non-adherence to lifestyle recommendations namely diet and exercise in patients with type 2 diabetes mellitus and their understanding of the lifestyle modification recommendations in the management of their condition.

Significance Of The Study To our knowledge, no studies were conducted to investigate non-adherence to lifestyle modification recommendations (diet and exercise) amongst type 2 diabetes mellitus patients in Almadinah Almonawarah, Saudi Arabia in particular. It is hoped that the study will establish the reasons given by the patients for non-adherence to diet and exercise recommendations.

II. SUBJECTS AND METHODS

Study design, setting and study period

This web based survey was conducted during the period from 5 May 2016 to the 1st of June 2016 in Almadinah Almonawarah.

Sampling

Individuals 30 years or older diagnosed with type 2 diabetes mellitus were eligible to be included in the study. Adults with type 2 DM aged 30 years or older were included because DM is most prevalent in this age group.¹⁷ Exclusion criteria were type 1 DM, those aged less than 30 years .

Data Collection:

The sample size was calculated using the statistical website “OpenEpi”¹⁸ for sample size calculation for a proportion of infinite population using the following inputs: assuming 50% frequency of non-adherence to lifestyle recommendations and absolute precision of 5% and at a level of 95% confidence interval. This yielded a sample size of 385 participants. Data were collected using a self-administered questionnaire distributed via the

following social media (whatsapp, twitter and facebook. It is unlimited access, simple, flexible, global reach and operates for 24 hours per day.

A literature search was conducted for the formulation of the questions relevant for the study.^{9,10,19,20} The questionnaire consisted of four main parts: first sociodemographic characteristics of the participants (sex, age, marital status, educational level and employment status). Second; questions about compliance to dietary recommendation. Third part contains questions about adhering and non-adherence to lifestyle modification recommendations (diet and exercise). Fourth part contains questions about reasons for non-adhering to life style modification (diet and exercise).

A respondent was regarded adherent to exercise if she or he reported exercising for a duration of ≥ 30 minutes per session, most of the week.²¹ We defined non-adherence to exercise as a self-reported abstinence from exercise for more than three days per week.²² Dietary recommendations by a health care professional that were investigate consisted of a Dietary Approach to Stop Hypertension (DASH) diet comprising of whole grains and fibre (more than 5 portions), fruits and vegetables (at least 2 servings of each), lean meats, poultry and fish (at most 3 servings), low-fat milk and dairy products (at most 3 servings) and small amounts of fats, oils, refined sugars and salt.^{23,24,25} We defined non-adherence to dietary recommendations as self-reported adherence of less than three days a week (seldom).

Statistical Analysis

Data on Microsoft excel were transferred to SPSS version 22 to be analyzed. Descriptive statistics were performed and categorical data were presented as frequencies and percentages.

III. RESULTS

Baseline characteristics of participants

Table (1) shows that 51.2% of the participants are females. Nearly 40.5% of them are between (30- 39) years old, while 25.5% of them are between (40- 49) years old, 20.5% of them are between (50- 59) years old, and 13.5% of them are between (60- 69) years old. Almost 78.7% of them are married, 11.4% are single, 3.6% are divorced and 6.2% are widows. Fifty seven percent have are university graduates or higher, while 10.1% of them are illiterate and only 52.2% of them are employed.

Table 1: Personal data for the Participants (n = 385)

<i>Variable</i>		<i>N=385</i>	<i>%</i>
Gender	Male	188	48.8
	Female	197	51.2
Age (years)	30 39 years	156	40.5
	40 49 years	98	25.5
	50 59 years	79	20.5
	60 69 years	52	13.5
Marital status	Single	44	11.4
	Married	303	78.7

	Divorced	14	3.6
	Widowed	24	6.2
Educational Level	Illiterate	39	10.1
	Less than University	126	32.7
	University and higher	220	57.1
Employment status	Unemployed	184	47.8
	Employed	201	52.2

Table 2 demonstrates that 80% of the participants describe the recommended lifestyle for diabetic II patients to have both gentle aerobic exercise and healthy dietary habits, while 11.7% of them only exercise gentle aerobic, and 6.8% of them only have healthy dietary habits.

Table 2: Patients' understanding of content of physion recommendations

<i>Participants knowledge about diet and exercise recommendations</i>	<i>N</i>	<i>%</i>
Gentle aerobic exercise only	45	11.7
Healthy dietary habits only	26	6.8
Both gentle aerobic exercise & Healthy dietary habits	308	80.0
Other	6	1.6
Total	385	100.0

Patient's understanding and perceptions of diet and exercise recommendations

Table 3 shows that 91.4% and 93.5% of participants believe that walking for half an hour daily and healthy dietary habit helps to control and (maintain glucose sugar) level, respectively.

Table 3 : Patient's understanding and perceptions of diet and exercise recommendations

The question	Yes		No	
	#	%	#	%
Do you think that gentle aerobic exercise helps to control and maintain glucose (sugar) level?	352	91.4	3	.8
Do you think that healthy dietary habit helps to control and maintain glucose (sugar) level?	360	93.5	6	1.6

Reasons for non-adherence to lifestyle modifications

Table 4 shows that (71.9 %) and (49.1 %) of the participants were not adhering to diet and exercise recommendations respectively. Reasons for non-adherence to dietary modifications were poor self-control (40%), dietary to situations at home (e.g. they eat non-healthy diets when alone) (29.6%), inappropriate dietary habits (e.g.

eating snacks in-between meals) (21.2%) and 7.4% returned the reason for financial constraints (to procure idea healthy diets).

As regards exercise; 31.5% of the participants are too busy to exercise, 28% said that they don't exercise because they have no exercise partner, while 21% mentioned the unfavorable weather conditions, 13.7% said that sport clubs are far away from home. Also, lack of moral and emotional supports from family members and friends was mentioned by 40% of the participants as a reasons for not adhering to both diet and exercise.

Table 4: Non-adherence to lifestyle modifications and reasons given.

<i>Non-adherence</i>	<i>Reasons for non-adherence to life style recommendations</i>		<i>N</i>	<i>%</i>
Diet	Barriers to diet Recommendations	Inappropriate dietary habits(e.g. Eating snacks in-between meals)	112	21.2
		Financial constraints (to procure idea healthy diets)	39	7.4
		Poor self-control	212	40.0
		Situations at home (e.g. I eat non-healthy diets when alone)	156	29.6
		Other	10	1.9
Total			277	71.9
Exercise	Barriers to exercise Recommendations	Too busy schedule	168	31.5
		Weather (especially during winter)	112	21.0
		Lacking exercise partner/spouse	149	28.0
		Specific locations away from home (e.g. Cattle post, trips)	73	13.7
		Criticism (presence of others make you uncomfortable)	5	0.9
		Other	26	4.9
	Emotional support	Family members and Friends	154	40.0
Total			189	49.1

Figure 1. illustrates that 49.1% of diabetic II participants do not practice aerobic exercise. Also, 71.9% of them not adhere to healthy dietary habit recommendations.

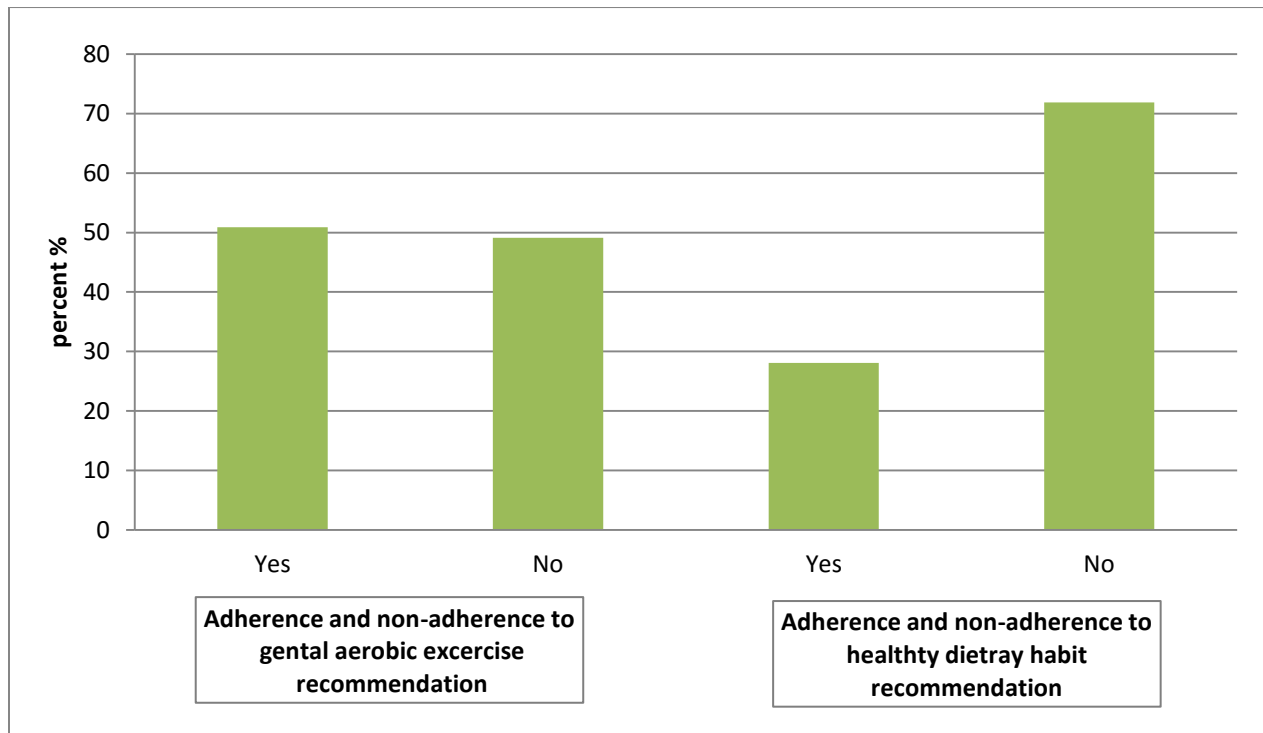


Figure 1: Percentage of adherence/ non adherence to lifestyle recommendations.

NB: Yes - depicts participants adhering to diet/exercise
No - depicts participants not adhering to diet/exercise

IV. DISCUSSION

Developing and targeting lifestyle modifications amongst patients with type 2 diabetes mellitus is effective if the healthcare practitioner understands patients' reasons for adherence and non-adherence to lifestyle (diets and exercise) recommendations. Adherence to prescribed recombination are important for both prevention and control of patients with type 2 diabetes mellitus.^{3,26,27} The present study demonstrated the patients' reasons for non-adherence to recommendations on lifestyle modifications relating to diet and exercise.

Frequency of non-adherence to lifestyle recommendations

In this study (71.9%) and (49.1 %) of the participants were not adhering to diet and exercise recommendations respectively. Non-adhering to exercise programs is far more prevalent than diet non-adherence amongst participants. Despite that the high level of perceptions noted amongst participants that diet and exercise significantly helps to achieve and maintain good glycemic control. Other reasons that might be responsible for differential rates include-majority of the participants understood lifestyle measures to include dietary advice, more than half (31.5%) of non-adherers wrongly viewed exercise as they have too busy schedule and (40%) of the

participants' reasons had poor self-control. The rates of non-adherence to diet and exercise in this study are consistent with that reported in previous overseas studies undertaken by Ganiyu, 2012. Who found that 37.4 % and 52 % of the participants were not adhering to diet and exercise regimens respectively. Serour et al. 2007, documented that 63.5% and 64.4% of the participants were not adherent to dietary and exercise recommendations respectively. Nelson et al. 2002, (diet, 62%; exercise, 69%) and Cawood, 2006 who found a frequency of non-adherence of 40% -50% for both diet and exercise. However, non-adherence to diet and exercise from this study appeared to be lower in exercise but higher in diet than those reported in other countries where similar studies were conducted > 37.4% and > 52%, for non-adherence to diet and exercise, respectively)^{10,28,29, 30} .

Reasons for non-adherence to both diet and exercise recommendations

The majority reported a range of reasons for not adhering. The top reasons for non-adherence to exercise in the current study are lack of time or partner, which is in agreement with the study of Thomas et al. 2004, who investigated 406 diabetic patients of type 2 and found that 25% had no spare time.³¹ In agreement with the study of Adewale et al. 2012, who investigated 104 diabetic patients of type 2 and found that 63.4 % had poor self-control.¹⁰ These findings are consistent with the observations noted in previous studies on nutrition and adherence to an exercise regimen conducted in the first world (USA) as well as in developing countries.^{10,16,29, 30}

The overall reasons for not adhering to diet and exercise include lack of moral and emotional supports from family members and friends. Other studies found that good support from spouse, family members and friends were good predictors to adherence to diet and exercise recommendations^{19,25,30,31}. This makes adherence to a specific diet and exercise regimen extremely difficult, especially between and within family members.

Patients' understanding of lifestyle modification recommendations

This study established that 80% of the participants understand that both gentle aerobic exercise and healthy dietary habits would improve their diabetic control. A possible explanation might be that participants had relative insight into their disease condition, high uptake level of health care service, and a relatively high level of school education amongst participants sampled (i.e. 57.1 % had Tertiary education). Understanding cannot be equated to patient practice, however, a study in King Khalid University Hospital also found that the educational level had no impact on glycemic control, but the patients of high educational level had better awareness of the complications and a high rate of adherence to diet.³² This positive finding should be seen as an advantage by health care provider when planning diet and exercise regimens during diabetes education, since self-perception of lifestyle measures is highly associated with higher level of adherence.

Limitations of the study

This study investigated an important area in diabetes research in Almadinah Almonawarah. However, sample does have some limitations. In recruiting participants from the study setting. Findings of the study may not be generalizable for the whole population of type 2 diabetic patients, as part of the study population are not using social media at all .

V. CONCLUSION

The rates of non-adherence to diet and exercise recommendations are relatively high, but exercise non-adherence is far more prevalent amongst studied population. Patients' adherence to physician's instructions is tied to enabling or hindering factors such as poor self-control, inappropriate dietary habits (e.g. eating snacks in-between meals), and financial constraints. Being too busy to exercise or having no exercise partner or unfavorable weather conditions were constraints for exercising in addition to the poor emotional support from the family

members and friends. Monitoring of the patient's lifestyle by the treating physician in follow up visits is needed to address causes of non-adherence and ensure that patients with type 2 diabetes identify their own support structures to provide well-tailored health education messages that best fits to the patients' circumstances.

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