

Physical activity and sedentary behavior among diabetic from the provincial referral center of diabetes, kenitra, Morocco

Abstract

Introduction: A regular physical activity is associated with health outcomes and can reduce rates of a number of non-communicable diseases

Objectives: describe the level of physical activity and sedentary behavior according to age and gender among diabetic's adults using the (General physical activity questionnaire (GPAQ), in the province of Kenitra, Morocco.

Material and methods: This study was carried out from January 2015 to April 2016, the target population was diabetics. The sample was consisted by 329 diabetics aged 18–86years (28,6% of men and 70,5% of women) living in Kenitra, Morocco. 12,7% were aged 18-39years, 65,5% were aged 40-64years and 20,8% were aged 65-86years. The Assessment of physical activity (PA) and sedentary behavior was performed by the Arabic version of the General physical activity questionnaire (GPAQ).

Results: In general, 58,4% of adults showed a low level of PA, 23,2% fell within the moderate level of PA and 17,5% of people showed a high level of PA. Both men and women aged 40 – 64years, have a high level of sedentary behavior: the higher percentages of a low and moderate physical activity correspond to diabetics aged 40–64, are respectively 16,84%, 31,58% (For male); and 16,24%, 41,03% (for women). There is no link between gender and the practice or not of physical activity ($\chi^2 = 0,428$ $p = 0,482 > 0$ and V Cramer = 0,044).

Conclusion: Those diabetics present a low level of physical activity and a high level of sedentary behavior, which may lead to a lot of long-term complications. So to make sure of this hypothesis another research is necessary to study the impact of this lack of PA on the glycemic control of those diabetics.

Keywords: physical activity, sedentary behavior, diabetes, complications

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Abbreviations: GPAQ, general physical activity questionnaire; MET, metabolic equivalents; PA, physical activity; RCD, referral center of diabetes; WHO, world health organization

Introduction

In general, physical activity is associated with health outcomes and can reduce rates of all-cause mortality and a number of non-communicable diseases such as coronary heart disease, high blood pressure, type 2 diabetes and other.¹ Diabetes is a major public health problem and can promote a lot of severe complications.² Physical activity can be an essential part to avoid those long-term complications; therefore the benefits of physical activity for individuals with diabetes are undisputed, a regular physical activity enhances insulin sensitivity, increases cardiorespiratory fitness, improves glycemic control, reduces the risk of cardiovascular mortality, and enhances psychosocial well-being.³ Physical inactivity called also sedentary behavior has a lot of health inconveniences. It is now identified as the fourth-leading risk factor for global mortality,⁴ their levels are rising in many countries with major implications for increases in the prevalence of non-communicable diseases and the general health of the population worldwide⁴. Thus, the promotion of

physical activity (PA) has become a key factor in preventing many chronic diseases in public health strategies. Fighting weight gain and obesity should be a primary element of the strategy.⁵ Morocco is also undergoing an important epidemiological and nutritional transition.⁶ Diabetes affects 6.6% of the population.⁷ However, there are not many studies that aimed to evaluate the level of physical activity of adults in general, and especially diabetics. Therefore, the aim of the study was to describe the level of physical activity and sedentary behavior according to age and gender among diabetic's adults using the (General physical activity questionnaire (GPAQ), in the province of kenitra, Morocco.

Methods

Participants and data collection

This study was carried out from January 2015 to April 2016, the target population was diabetics presenting different types of diabetes (type 1, type 2 and gestational diabetes). The research sample consisted of 329 diabetics aged 18–86years (28,6% of men and 70,5% of women) living in Kenitra, Morocco. 12,7% were aged 18-39years, 65,5% were aged 40-64years and 20,8% were aged 65-86years.

The response rate was 75%. The most frequent reason for non-response was the lack of time (40% of respondents). Participation in the study was voluntary. The study was carried out in the only provincial reference center of diabetes (RCD) located in the Urban Health Center -Moulay El Hassan in the Kenitra city, Morocco. Data was collected by the Global physical activity questionnaire (GPAQ). All participants reported having already attended a nutritional education and education sessions to physical activity, organized by the health center dietician.

Assessment of physical activity (PA) and sedentary behavior

The level of physical activity was determined using the version of GPAQ translated to Arabic.

The GPAQ was developed by the WHO for physical activity surveillance in developing countries. It collects information on physical activity participation in three settings; PA at work, travel to and from places and recreational activities as well as sedentary behavior. The questionnaire consists of 16 questions covering both vigorous and moderate intensity physical activity. The participants were, for example, asked how much time they spent doing vigorous-intensity activities at work on a typical day or week, on how many days they walk or cycle for at least 10minutes continuously to get to and from places. The level of physical activity was measured by the GPAQ Analysis Guide,⁸ and by MET-minutes per week according to age categories. The duration of vigorous PA was multiplied by an energy equivalent coefficient of MET-8, the duration of moderate PA was multiplied by a coefficient of MET-4.⁹ The level of PA was assessed according to the following criteria:⁸

a. High:

I. Vigorous-intensity activity for at least three days with a minimum of 1500 MET-minutes per week of any combination of walking.

II. Moderate- or vigorous-intensity activities achieving a minimum of 3000 MET-minutes per week.

b. Moderate: 1500 MET-minutes >moderate activities >600 MET-minutes per week of any combination of walking.

c. Low: A person not meeting any of the above-mentioned criteria falls in this category (MET<600).

d. Sedentary behavior: Classified according to minutes per day of sitting at a desk, sitting with friends, travelling by car, bus, train, reading, and playing cards or watching television, excluding the time spent for sleeping.

Statistical analysis

- The data was analyzed using SPSS V.18. Percentage and mean are described in Table 1 & Figure 1.
- The prevalence of PA and sedentary behavior in age (18-39years, 40-64years and 65years or above) and gender groups were described and the proportion of 'highly active', 'moderately active' and 'low active' adult females and males in different age categories were described.
- The relationship between gender and the practice of physical activity was determined by the chi-square test and the strength of this relationship was determined by the V Cramer.

Table 1 Relationship between gender and practice or not of physical activity by X² test and V Cramer

Items		Practice PA	Does not practice PA	Total
Gender	Man	68(20,6%)	27(8,2%)	95
	Woman	157(47,7%)	77(23,4%)	234
X2 Test				0,428
V Cramer				0,044

*X², chi-square test, *PA, physical activity

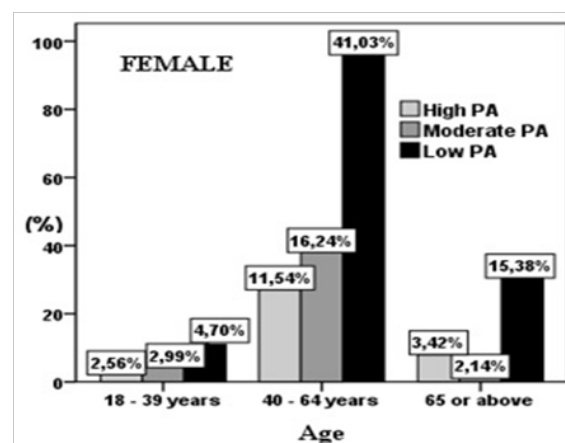


Figure 1 Distribution of the physical activity level among diabetic's male by age range.

*PA, physical activity

Results

- 87,5% of women and 21,5% of men are illiterate.
- 94,9% of women have no jobs,

Level of PA

- Irrespective of age and gender 58,4% of adults showed a low level of PA, 23,2% fell within the moderate level of PA and 17,5% of people showed a high level of PA (according to the GPAQ Analysis Guide)
- According to the Figure 1, for male, the higher percentages of a low and moderate physical activity correspond to diabetics aged 40 - 64 are respectively 16,84%, 31,58%. For the three groups of ages, the percentage of participants who practice a high physical activity remain low (3,16% for diabetics aged 18-39, 11,58% for diabetics aged 40 -64 and 3,16% for diabetics aged 65 and more).
- According to Figure 2, for the women, the higher percentages correspond to diabetics with a low and moderate physical activity, aged 40 -64years, are respectively 16,24%, 41,03%. And also for the three groups of ages, the percentage of participants who practice a high physical activity remain low (2,56% of diabetics aged 18-39, 11,45% of diabetics aged 40-64 and 3,42% of diabetics aged 65 and more).
- The prevalence of low PA was more important in women compared to men (61,1% vs. 53,7% respectively; p<0.001).

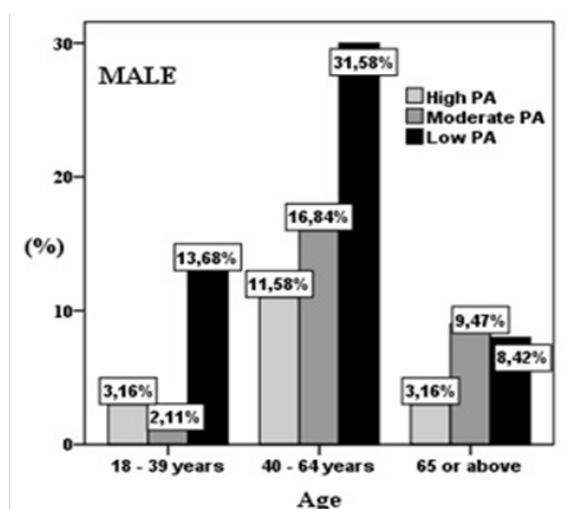


Figure 2 Distribution of the physical activity level among diabetic's male by age range.

*PA, physical activity

Time spent in PA and sedentary behavior

- As it shown in Figure 3, women have a very low physical activity level and a high level of sedentary behavior especially with participant aged 65 and more. (331.02min/day).
- According to Figure 4, men also present a very low level of physical activity for all age ranges and a high level of sedentary behavior which the highest value belong in this case to diabetics aged 18- 39 (296.67min/day).
- According To the KHI-square test ($p=0.482$), and V of Cramer ($V=0.044$) there is no relationship between gender and the practice or not of physical activity.

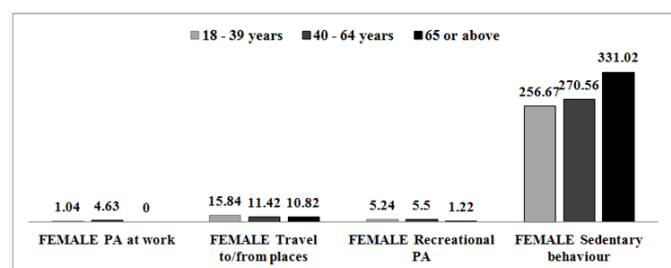


Figure 3 Mean value of PA by type and sedentary behavior by age range (minutes per day).



Figure 4 Mean value of PA by type, and sedentary behavior by age range (minutes per day).

Discussion

The aim of this study was to describe the prevalence of physical activity and sedentary behavior as well as age and gender differences of diabetics adults using the GPAQ. Irrespective of age and gender, more than the half of the population showed a 'low level' of physical activity (58,4%). 23.2% fell within the moderate level of PA and 17.5% showed a high level of physical activity. These results indicate that this population doesn't meet the recommendation of PA delivered by the world health organization.⁴ These results are different from those shown in some studies using the same test (GPAQ), such as the research conducted by ZDENEK HAMRIK and coll, in 2014,¹⁰ on Czech Adults, which found that the general population present a high PA (46,4%), and 32,3% for low PA, but for the moderate PA we found almost the same result 23.2% in our study for 21.3% in there study. 81,6% of our population have a low to moderate PA, this results are different from those found by a study analyzing PA in Moroccan adults using a short-self administrative version of IPAQ, where they indicate t that 83.5% of the adults have moderate to high levels of PA.¹¹ As shown in the Figure 1 and 2, for women as for men, the age range (40-64) represent the high prevalence of low PA, this result is also different from the one found by ZDENEK HAMRIK and coll,¹¹ the difference between these two results can be explain by the sampling mode, which the age range (40-64) in our sample represent 65,5% of the population. In relation to our objective, we described and compared the proportion of sedentary females and males. Significant associations of age and sedentary behavior has been shown in women, the older the age group, the more sedentary behavior was reported. In opposition in men, increased age has been shown to be inversely associated with PA in previous studies,^{12,13} the younger age range (18-39) present the most sedentary behavior with 296,67minute/day, This result is alarming, because that lack of physical activity at this age may induce a dangerous long-term complication related to diabetes. Lower PA within women was correlated to housewives status. In fact, most women participating in this study were housewives (74%). It can't be excluded that housewives consistently underestimated the effort during their homework, which actually still effort is demanding.¹⁴ The time spent for the three types of PA, (PA at work, travel from places and recreational PA) remain low for men as for women, and there is no significant difference between the age ranges. According to the KHI-square test ($p=0.482$), and V of Cramer ($V=0.044$) there is no relationship between gender and the practice or not of physical activity, therefore the difference between men and women in PA and sedentary behavior shown in our study, may be related to other factors besides gender, such as the economics status.¹⁴

Conclusion

Those diabetics present a low level of physical activity and a high level of sedentary behavior for men as for women, which may lead to a lot of long-term complications. So to make sure of this hypothesis another research is necessary to study the impact of this lack of PA on the anthropometric status and the glycemic control of those diabetics.

Acknowledgements

None.

Conflict of interest

The author declares that they have no conflicts of interest in relation to Article.

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