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Quality of Life in Relation to the Level of Physical Activity among Healthy Young Adults at Saudi Arabia

Amal A Kokandi[1]*, Jafar Salman Alkhalaf[2] and Asmaa Mohammedsaleh[3]

[1]Department of Dermatology, Faculty of Medicine, King Abdulaziz University, Saudi Arabia.
[2]Faculty of Medicine in Rabigh, King abdulaziz University (student), Saudi Arabia.
[3]Faculty of Medicine, King abdulaziz University (student), Saudi Arabia.
Corresponding author E-mail: akokandi@kau.edu.sa

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Physical activity is known to have benefits on health and well-being. The aim of this study was to assess the quality of life domains (using WHOQOL-Bref) in relation to the level of physical activity in young healthy adults at Saudi Arabia. An online questionnaire (WHOQOL-BREF and IPAQ) was sent to adults without special needs in Saudi Arabia aged 18 years and more. In total 1026 completed the questionnaire. Females were 767 and males were 250 (9 were missing).Results of this study showed that IPAQ total score was significantly correlated with WHOQOL-BREF physical, psychological and social relationships health scores. Additionally, the high PA group had a significantly higher WHOQOL-BREF for all domains (physical, psychological, social relationships and environmental health scores) compared to the low PA group. Male subjects had a significantly higher physical health score than female subjects, however, female subjects had a significantly higher social relationships score. In conclusion, high physical activity is linked with high better quality of life in all domains.

Keywords: Physical activity, quality of life.

The benefits of physical activity on health and mental wellbeing is well known. A number of studies have found that exercise helps depression. There are many views as to how exercise helps people with depression. Evidence suggests that even some physical activity might be protective against depression[1].

WHO defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" and defines Quality of Life as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment"[2].

A systematic review showed that there is a positive correlation between physical activity and quality of life that varied according to the analyzed domains. Of note that no studies from Saudi were included in the final step to be analyzed[3]. Even in disease states in adults, several studies have shown an effect of level of physical activity and health related quality of life like type 2 diabetes[4], cancer survivals[5], head and neck cancer[6] and others.

The WHO recommendation on physical activity for adults (aged 18-64 years) in order to improve cardiopulmonary and muscular fitness, bone health, reduce the risk of depression they should: "Adults aged 18–64 should do at least 150 minutes of moderate-intensity aerobic physical

activity throughout the week or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity"[7].

The aim of this study was to assess the quality of life domains (using WHOQOL-BREF) in relation to the level of physical activity in young healthy adults at Saudi Arabia.

METHODS

A link to a questionnaire was sent through the Deanship of Graduate studies to King Abdulaziz University students. The link was was sent by social media (WhatsApp application) as well. The letter stated that the questionnaire is directed to adults without special needs in Saudi Arabia aged 18 years and more. The questionnaire was filled through a Surveymonkey program.

The questionnaire was anonymous and contained demographic data including gender, age, marital state, occupation and educational level (with choices for each question). This was followed by questions of the Arabic IPAQ and questions of WHOQOL-BREF.

The purpose of the International Physical Activity Questionnaires (IPAQ) is to provide a set of well-developed instruments that can be used internationally to obtain comparable estimates of physical activity. The questionnaire is considered a feasible instrument for measuring physical activity in large groups[8]. The official Arabic short version of the international Physical Activity Questionnaire was used in this study[9]. The Arabic version has been validated and used in Saudi Arabia adult population studies[9-10]. The short form of IPAQ used in the present study has 7 items providing information on time spent walking, in vigorous- and moderate-intensity physical activities and in sedentary activity during the previous 7 days. IPAQ defines moderate physical activities as those that produce a moderate increase in respiration rate, heart rate and sweating for at least 10 min duration. Vigorous physical activities are defined as those producing vigorous increases in respiration rate, heart rate and sweating for at least 10 min duration. They were asked to think about all the vigorous and moderate activities that they had done in the previous 7 days during work, transport, household, yard/garden and leisure/sports.

The World Health Organization Quality of Life (WHOQOL) assesses the individual's perceptions in the context of their culture and value systems, and their personal goals, standards and concerns. The WHOQOL instruments were developed collaboratively in a number of centersworldwide and have been widely field-tested.The WHOQOL instrument comprises 26 items, which measure the following broad domains: physical health, psychological health, social relationships, and environment. The WHOQOL-BREF is a shorter version of the original instrument that may be more convenient for use in large research studies[11]. This is especially important because another set of questions needed to be answered (IPAQ).

This study protocol was approved by the unit of biomedical ethics research committee at King Abdulaziz university Hospital (Reference No 425-17).

Statistical analysis

Data were analyzed using SPSS software (version 21). A one-way ANOVA was performed to test the difference in WHOQOL-BREF domain scores between subjects with low, moderate and high physical activity. The association between IPAQ total score and WHOQOL-BREF domain scores was determined by Pearson correlation. A Two sided*P* values of 0.05 or less were considered statistically significant. Data were represented as mean ± SE. All missing data were classed as missing at random and only available data were analyzed.

RESULTS

In total 1026 completed the questionnaire. Females were 767 and males were 250 (9 were missing). Demographic data for study subjects are reported in 1**.** Most of the study population were in the age group of 18-20 years (61%), followed by the age group of 21-30 years (31.2%). More than 84% were single and 87.9% were students. Undergraduate and postgraduate students were 78.7% of the total population.Demographic data for study subjects are reported in table 1.

Physical activity (PA) is study subjects

Nearly half of the study population (49.5%) of the subjects in this study had a high PA,

31% of the subjects had a moderate PA and 19.5% had a low PA (Table 2).

Physical activity differences between age and gender groups

Young adults aging 18-20 years had the highest IPAQ score compared to other age groups; however, the differences in IPAQ score between age groups were not statistically significant (Table 3).

There were no differences in the frequency of subjects who have low, moderate and high PA between male and female subjects (Table 4).

The relationship between physical activity and quality of life

The high PA group had a significantly higher WHOQOL-BREF physical, psychological, social relationships and environmental health scores compared to the low PA group ($p < 0.001$, $p < 0.001$, $p < 0.001$, $p < 0.02$ respectively; Table 5, Figure 1). The psychological score significantly differed between all groups as it was significantly higher in high PA group than moderate PA group and significantly higher in moderate PA group than low PA group ($p < 0.001$ and $p < 0.05$ respectively; Table 5, Figure 1).

Male subjects had a significantly higher physical health score than female subjects ($p < 0.001$, Table 6). However, female subjects had a significantly higher social relationships score ($p < 0.01$, Table 6).

IPAQ total score was significantly correlated with WHOQOL-BREF physical, psychological and social relationships health scores ($r=0.073$, $p <0.02$), ($r= 0.098$, $p <0.01$) and ($r= 0.068$, $p <0.05$) respectively.

DISCUSSION

Results of this study showed that IPAQ total score was significantly correlated with WHOQOL-BREF physical, psychological and social relationships health scores. Additionally,the high PA group had a significantly higher WHOQOL-BREF for all domains (physical, psychological, social relationships and environmental health scores) compared to the low PA group. Male subjects had a significantly higher physical health score than female subjects, however, female subjects had a significantly higher social relationships score.

Table 1. Subjects descriptive statistics. n=1026

	n	N %
Gender		
Male	250	24.4%
Female	767	74.8%
Missing	9	0.9%
Age		
18-20	626	61.0%
21-30	320	31.2%
31-40	60	5.8%
41+	18	1.8%
Missing	2	0.2%
Marital status		
Single	869	84.7%
Married	141	13.7%
Divorced or widow	14	1.4%
Missing	2	0.2%
Occupation		
Student	902	87.9%
Government employee	55	5.4%
Private sector employee	34	3.3%
Other	32	3.1%
Missing	3	0.3%
Educational level		
Lower than primary	0	0.0%
Primary	0	0.0%
Intermediate	2	0.2%
Secondary	217	21.2%
Undergraduate or postgraduate	807	78.7%

Table 3. IPAQ score in age groups. n= 1026. Data are mean ± SE

Age	IPAQ score Mean ± SE
18-20	5128.85 ± 347.56
21-30	3919.53 ± 318.91
31-40	2665.83 ± 358.36
41+	3021.19 ± 832.47

Table 2. The frequency of IPAQ categories in study subjects.

IPAQ category	n	N %
Low	200	19.50%
Moderate	318	31.00%
High	508	49.50%

A positive correlation between different domains of quality of life and physical activity were reported in different areas of the world[3,12]. Different methods of assessments were used.

A small study (55 subjects) which included 55 older age group (60-90 years) in Saudi showed that activities of daily living was significantly correlated with anxiety, memory problems and sleep disturbances[13].

Health behaviors in the form of daily activity are associated with health beliefs particularly self-efficacy (beliefs about one's ability to cope with stressors and health locus of control (beliefs about what controls one's health)[14].

Results of recent survey in another University involving health college students showed different results to ours [15]. They studied similar study population and showed that using IPAQ tool that only 12.9% performed high level of physical activity, 29.1% performed moderate level and 58% performed low level of physical activity. Although we had wider range of ages in our study but 90% of our study population were students. They were of different colleges unlike Awadalla study were the students were only from health colleges which could explain their results. They attributed the barriers to physical activity to time limitation, lack of suitable sports places, other important priorities, lack of friends to encourage, lack of support and encouragement from others, lack of safe sporting places, lack of motivation, high cost, not being interested in sports, lack of sport skills, feeling tired on physical activity and lastly ignorance about the benefits of sports.

A school-based study for secondary schools aged 14-19 years involving 2908 students showed high prevalence of physical inactivity. Nearly half of the male students and quarter of female students did at least 1 hour of daily of moderate-intensity physical activity[16]. Females were reported to be significantly less active than

Table 4. Physical activity categories in gender groups

PA category	Male		Female	
	n	N%	n	N%
Low	51	20.4%	145	18.9%
Moderate	78	31.2%	239	31.2%
High	121	48.4%	383	49.9%

Table 5. The difference in WHOQOF-BREF domain scores between subjects with low, moderate and high physical activity. n= 1026. Data are mean ± SE. a denotes significantly different than b. b denotes significantly different than c using One-way ANOVA with Benferroni correction

WHOQOF-BREF domains	IPAQ score category Low (n= 200) Mean ± SE	Moderate (n= 318) Mean ± SE	High (n= 508) Mean ± SE
Physical health score	14.06 ± 0.19 [a]	14.95 ± 0.14[a,b]	15.37 ± 0.11 [b]
Psychological score	12.62 ± 0.21 [a]	13.61 ± 0.15 [b]	14.16 ± 0.12 [c]
Social relationships score	13.47 ± 0.25 [a]	13.96 ± 0.19 [a]	14.56 ± 0.15 [b]
Environment score	12.74 ± 0.19 [a]	13.29 ± 0.15[a,b]	13.44 ± 0.12 [b]

Table 6. WHOQOF-BREF domain scores in gender groups. Data are mean ± SE. * denotes significantly different than female at the $p < 0.05$ level (student's t-test). *** denotes significantly different than female at the $p < 0.001$ level (student's t-test)

	Male (n= 250) Mean ± SE	Female (n=767) Mean ± SE
Physical health score	15.48 ± 0.16***	14.82 ± 0.09
Psychological score	13.8 ± 0.18	13.65 ± 0.1
Social relationships score	13.8 ± 0.22*	14.29 ± 0.12
Environment score	13.43 ± 0.16	13.21 ± 0.1

males[17]. The same authors compared the Saudi secondary school students to those of Britain and showed that British adolescents demonstrated higher total physical activity energy expenditure than Saudi adolescents[18].

In another study of national survey of 4758 participants aged 15 years and older reported low, moderate and high levels of physical activityby 66.6%, 16.8% and 16.6% of the entire sample[19].

In a study involving 420 Saudi women working in office-based jobs in Riyadh city, more than 50% were overweight or obese and more than 50% of the sample were insufficiently physically active[20]. In a study of university female students, revealed higher physical activity levels among married students, those with high educated mothers and those who lived far from parks, and lower activitylevels among underweight students[21].

In a small study involving 100 participants (aged 18-70 years) found a positive relationship with health-related quality of life as measured by the short form Health Status survey (SF-36) in 4 domains including physical functioning, role limitations caused by physical health problems, vitality and general health[22]. A larger study using IPAQ and SF-36 enrolled 400 Saudi adults (aged 18-60 years), found that more than half of the study population had a low level of physical activity, while 13% had high grade and 30% had a moderate level of activity. Their health-related quality of life is significantly associated with their physical activity levels. The main domains associated with physical activity are physical functioning, role of limitations due to physical health and the general health[23].

Limitations of our study is related to the sampling technique as we used the online method. Some may made threads to others and the response rate could not be calculated. Some skipped important questions which did not allow for calculation for IPAQ so they were not considered

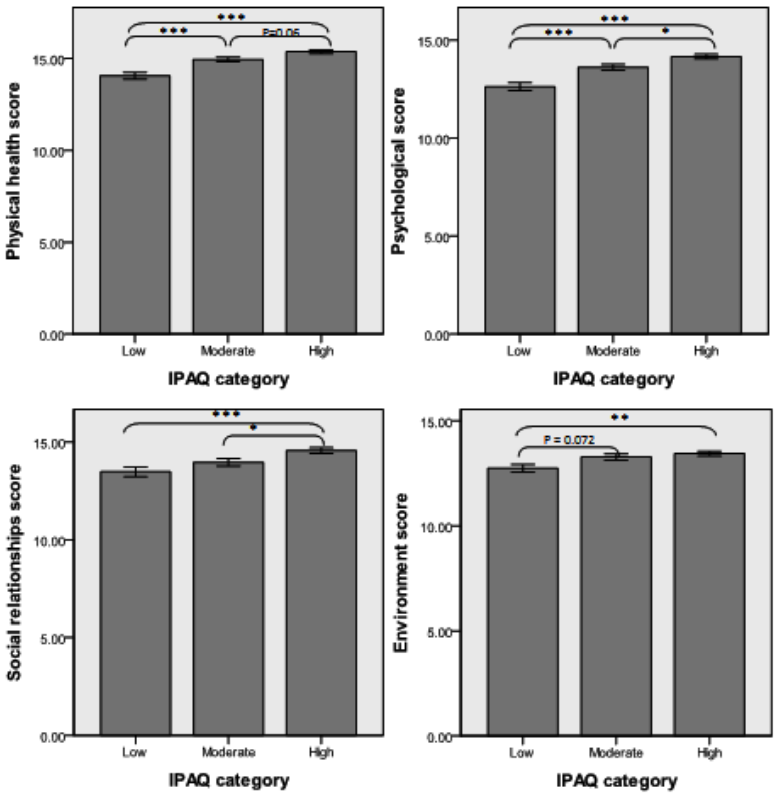

Fig. 1. WHOQOF-BREF domain scores between subjects with low, moderate and high physical activity. n= 1026 Data are mean ± SE. * denotes significantly different at the p< 0.05 level. ** denotes significantly different at the p< 0.01 level. *** denotes significantly different at the p< 0.001 level using One-way ANOVA with Benferroni correction

in the statistical analysis. But the main objective of this study was not to find the prevalence of levels of physical activity. Indeed, it was aimed at correlating the level of physical activity to the domains of quality of life.

CONCLUSION

High physical activity levels are linked with better quality of life in all domains in Saudi Arabia. This adds to the well-known physical activity benefits.

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