

The effect of Walking Exercise on Depressive Symptoms: A Cross Sectional Study

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ABSTRACT

Background: Depression is a common mental disorder. It is managed by anti-depressant drugs, psychotherapy sessions or both. Physical activity may improve depressive symptoms.

Objectives: We aim in this study to know the effect of walking on depression and depressive symptoms and the relationship between walking and depression among Arabic population.

Materials and method: an online cross sectional survey, written in Arabic language targeting both males and females' living in Saudi Arabia from age 18 and above, we used the Major depressive disorder criteria according to Diagnostic and Statistical Manual of Mental Disorders (DSM-5) to assess depression with other questions about physical activity (30 minutes or more per session in last twelve months).

Result: 870 participants, 51.7% female and 48.3% male. Of the total participants 43.2% are not walking regularly and 56.8% are walking on regular basis. Of total 63.8% are not depressed, while 11.6% are suffering from depressive symptoms and 24.6% are suffering from Major depressive disorder. In the group who are not depressed 22.5% are not walking and 77.5% are walking regularly. Among those who walks, 18.8% are walking once per week, 18.1% are walking twice per week, and 63% are walking three times or more per week. In the group who are having depressive symptoms 77.2% are not walking regularly while 22.8% are walking regularly 3 times or more per week, In the group who are suffering from major depressive disorder 80.8% are not walking and 19.2% are walking regularly. Among those who walks, 61% are walking once per week, 36.6% are walking twice per week, and 2.4% are walking three times or more per week.

Conclusion: These findings underscore the need for increasing awareness of impact of physical activity in psychological well-being. Further controlled study may focus on possibility of Brain changes secondary to physical activity.

Keywords: Exercise, Walking, Depression.

INTRODUCTION

Depression is a common mental disorder. People who are depressed may suffer of sadness and they may lose enjoyment of life ⁽¹⁾. Feeling guilty is one of the Major Depressive Disorder criteria as well as low self-esteem and feeling worthlessness. World health organization estimated that there are 350 million people suffer from depression. The impact of the illness to functionality made it a leading cause of disability worldwide ⁽²⁾.

The world health survey conducted by WHO on 245404 participants shows the impact of depression in wellbeing is much worse than the chronic conditions like diabetes, asthma and arthritis, ⁽³⁾ and it is associated with increased risk of coronary heart disease ⁽⁴⁾ and with increased risk of developing dementia ⁽⁵⁾. A prospective observational study found that depression seem to increase danger of death in non-cardiovascular disease and as risk factor for all-cause mortality ⁽⁶⁾. Depressed people have higher risk of becoming overweight ⁽⁷⁾. A population-based cohort study of risk of depressive disorder among contacts of tuberculosis patients in a TB-endemic Area found that the people contact with tuberculosis have higher risk of developing depression disease ⁽⁸⁾. Depression is

usually managed by anti-depressant drugs, psychotherapy sessions and sometimes it needs both modalities ⁽²⁾. Walking is simple, free and ideal for people of all ages and fitness levels ⁽⁹⁾. It is a safe and beneficial for weight maintenance ⁽¹⁰⁾. Physical activity such as walking 30 min for at least 3 times per week has a positive effect on mental health ^(11, 12) and on overall health as it is associated with decreased incidences of high blood pressure, type 2 diabetes, asthma and heart diseases ⁽¹³⁾.

A systematic review of benefits of outdoor walking groups found that walking has a positive effect on measures of health such as blood pressure, heart rate, total cholesterol and depression ⁽¹⁴⁾. A prospective study done on 18344 elderly women found that there is a strong relationship between walking and both physical and mental wellbeing in older women ⁽¹⁵⁾.

A preliminary study found that walking in nature and outdoor walking have positive impact on depression and lower depressive symptoms and mental health ^(16, 17). Another 2 studies found that walking has positive effect on depression in postmenopausal women ^(18, 19). A cross sectional study of walking, body mass index, and self-rated health in a representative sample of Spanish adults found

that the regular walking in adults correlated with better health⁽²⁰⁾.

The National Comorbidity Survey conducted a study, in the United States on 8098 participants from the age 15 years old to 54 years old, which showed that physical activity may improve depressive and anxiety symptoms⁽²¹⁾.

A prospective cohort study conducted in Taiwan from 1996 to 2008 showed that 90 minutes of physical activity per week may result in reduced overall mortality and increase life span⁽²²⁾. Decrease physical activity could be a risk factor for symptoms of depression⁽²³⁾ and associated with negative outcomes on mental health⁽¹²⁾. A systematic review of the effect of exercise in clinically depressed adults found that there was a short-term positive effect of exercise on depression⁽²⁴⁾. Another systematic review of prospective studies done by Mammen and Faulkner showed that encouraging physical activity may serve as a significant mental well-being encouragement strategy in decreasing development of depression⁽²⁵⁾. Also, another systematic review of clinical effects of exercise and physical activity on mental disorders showed a moderate effect of exercise on depressive symptoms⁽²⁶⁾. Different reviews found that programmed aerobic exercise for 30-40 minutes per session is beneficial for treatment of depression⁽²⁷⁾.

We aim in this study to know the effect of walking on depression and depressive symptoms and the relationship between walking and depression among Arabic population.

METHODS

On May 2017 we conducted an online cross sectional survey, we used social networks containing a link to an electronic survey. It was written in Arabic language targeting both males and females' who live in Saudi Arabia from age 18 and above. There were no exclusion criteria. In the first section of the survey gender and age were the only personal information obtained. Answers about age were classified to 4 categories, the first was 18-25, the second was 26-40, the third was 41-55, the fourth was 56 and above. In the second section, there were two questions about walking: the first

one is asking the participants if they walk in weekly basis in last twelve month with yes or no answers. The second question was about how many per week does the participant walk? with responses of once, twice or three times or more weekly.

The third section of the survey we used an Arabic translation questions of Major Depressive Disorders criteria according to Diagnostic and Statistical Manual of Mental Disorders (DSM-5). The Major depressive disorder must be five symptoms or more including either

- (1) depressed mood or
- (2) loss of interest or pleasure. Depressive symptoms four symptoms or more but not include either (1) depressed mood or (2) loss of interest or pleasure, no depression are three symptoms or less.

The study was done after approval of ethical board of King Abdulaziz university.

RESULT

870 participants completed the questionnaire, 450 (51.7%) females and 420 (48.3%) males. Participants aged 18-25 years old were 213 (24.5%), 26-40 were 371 (42.6%), 41-55 were 232 (26.7%) and older than 56 were 54 (6.2%) (Table 1) (fig 1). Except for gender and age, no personal details were collected.

Of the total participants, 376 (43.2%) did not walk regularly in the last twelve months while 494 (56.8%) did walk on regular basis. 106 (21.5%) walking participants walked one time per week regularly in the last twelve month, 93 (18.8%) walked two times per week and 295 (59.7%) walked three times or more per week in the last twelve months.

Of the total 870 participants, 555 (63.8%) were not depressed, while 101 (11.6%) were suffering from depressive symptoms and 214 (24.6%) were suffering from Major depressive disorder (MDD) (figure 3) .

Of the total participant 818 (94%) sought that walking has good impact on depressive symptoms while 52 (6%) sought that it has an opposite impact.

Table (1): Demographic characteristics (N=870)

	Characteristics	Number	Percentage
Gender	Female	450	51.7
	Male	420	48.3
Age	18-25	213	24.5
	26-40	371	42.6
	41-55	232	26.7
	>56	54	6.2
Walking	No	376	43.2
	Yes	494	56.8
Depression	No depression	555	63.8
	Depressive symptoms	101	11.6
	Major depressive disorder	214	24.6
They think walking has good impact on depressive symptoms			
	No	52	6
	Yes	818	94

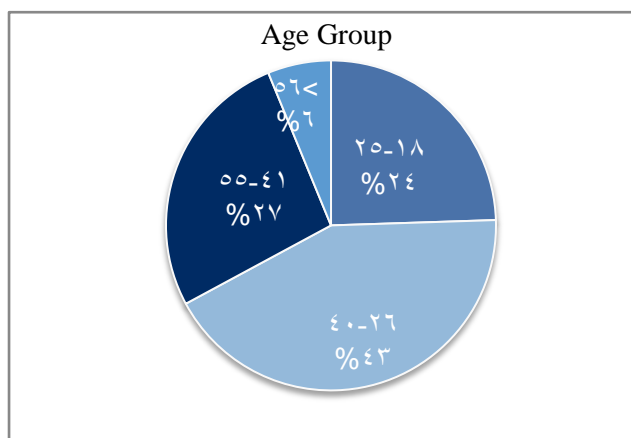


Figure 1: Age group

Table 2 : Breakup of participants who used to walk (N=494)

Characteristics	Number	Percentage
1 time/ week	106	21.5
2 time / week	93	18.8
3 or more/ week	295	59.7

In the group who were not depressed, 125 (22.5%) did not walk regularly in last twelve months while 430 (77.5%) walked regularly (P value = <0.001). Among those who were walking regularly 81(18.8%) walked once per week, 78 (18.1%) walked twice per week, and 271 (63%) walked three times or more per week in the last twelve months (Table 2).

In the group who had depressive symptoms, 78 (77.2%) did not walk regularly while 23 (22.8%) walked regularly in the last twelve months (P value = <0.001). Among those who walked regularly in the last twelve months, 23 (100%) were walking 3 times or more per week (Table 2).

In the group who had major depressive disorder 173 (80.8%) did not walk regularly in last twelve months while 41 (19.2%) walked regularly (P value = <0.001). Among those who walked regularly 25(61%) walked once per week, 15 (36.6%) walked twice per week, and 1 (2.4%) walked three times or more per week in the last twelve months (Table 3) (fig 2-7).

Table (3): Comparative analysis of Major depressive disorder and Depression symptoms other variables

	Major depressive disorder	Depression symptoms	No Depression	P value
Walking				
Yes	41 (19.2)	23 (22.8)	430 (77.5)	<0.001
No	173 (80.8)	78 (77.2)	125 (22.5)	
Frequency of walking a week				
1 time/ week	25 (61)	0 (0)	81 (18.8)	<0.001
2 time / week	15 (36.6)	0 (0)	78 (18.1)	
3 or more/ week	1 (2.4)	23 (100)	271 (63)	
Gender				
Female	127 (59.3)	98 (97)	225 (40.5)	0.498
Male	87(40.7)	3 (3)	330 (59.5)	
Age				
18-25	64 (29.9)	26 (25.7)	123 (22.2)	0.045
26-40	90 (42.1)	33 (32.7)	248 (44.7)	
41-55	54 (25.2)	33 (32.7)	145 (26.1)	
>56	6 (2.8)	9 (8.9)	39 (7)	

All values are represented as n (%); P value <0.05 taken as significant

Fig 2: Frequency of walking

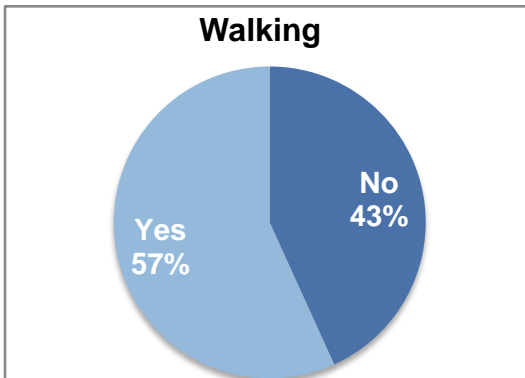
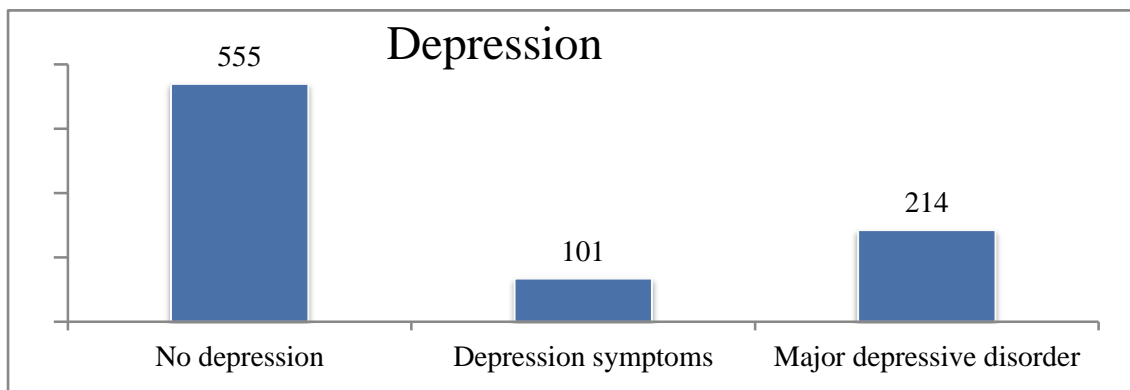


Figure 3: Depression symptoms



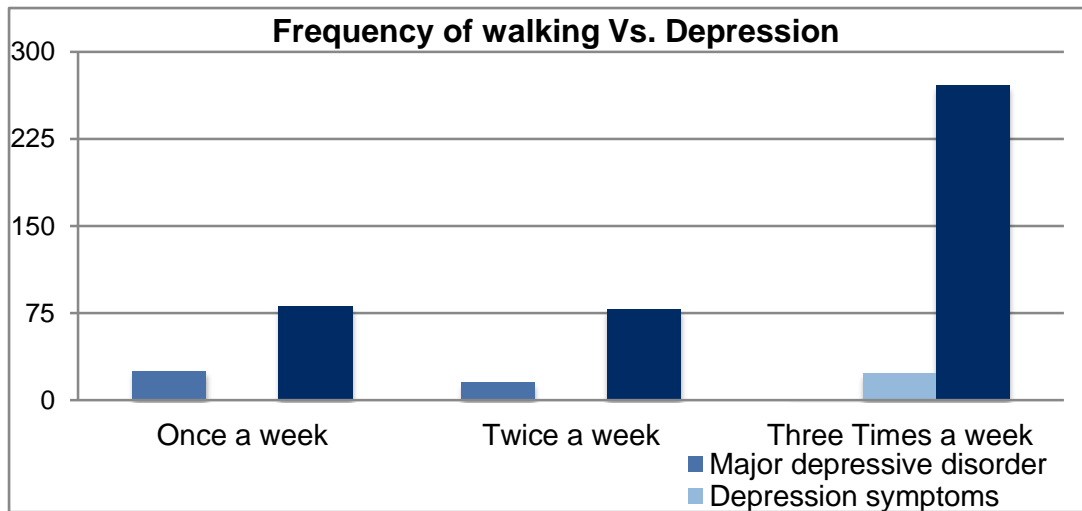


Figure 4 : Depression Vs. frequency of walking

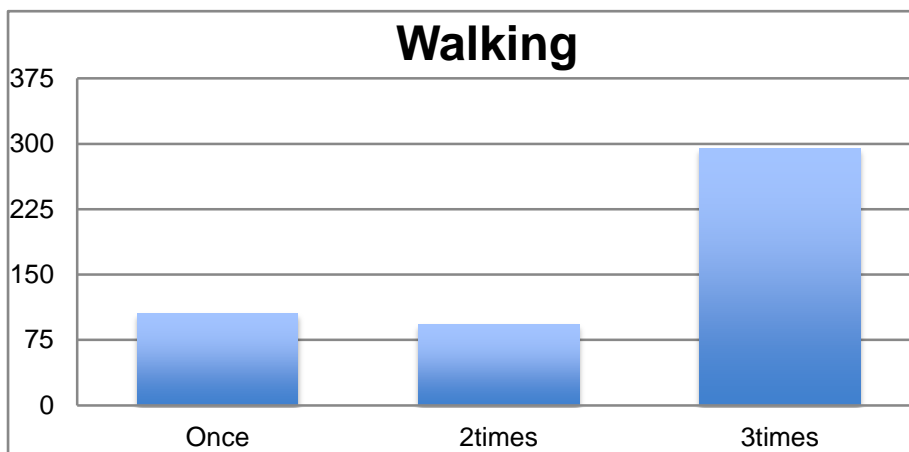


Figure 5: frequency of walking

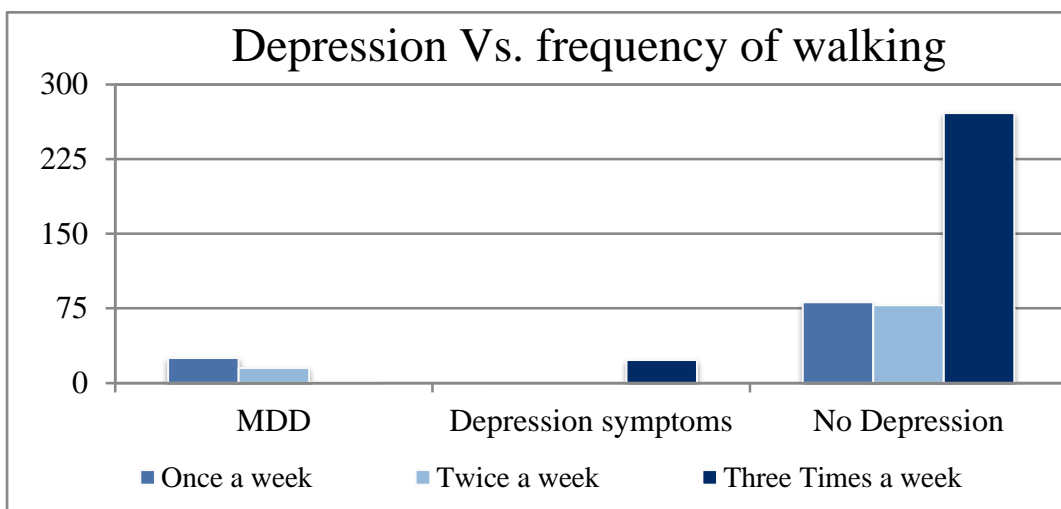


Fig 6 : Frequency of walking Vs. Depression

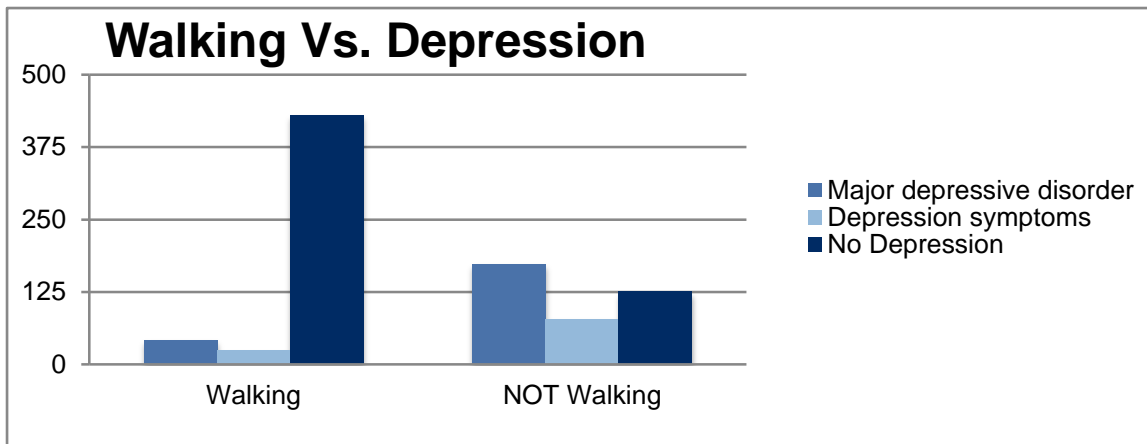


Fig 7: Walking Vs. Depression

DISCUSSION

To our knowledge, no previous studies has been conducted in Saudi Arabia about the effect of walking exercise on depressive symptoms. Our findings reveal that the amount of exercise weekly has a positive association with depressive symptoms in community-based population. Physical exercise can increase the efficacy of depression treatment^(28, 29). It is also suggested to be used as a mono therapy or adjunctive therapy to medication for the treatment of mild depression⁽³⁰⁾. It is also effective in patients being hospitalized for depressive disorders⁽³¹⁾.

Our results revealed that (87%) of the participants who walked regularly were not depressed while (46%) of participant who didn't walk regularly found to have major depressive disorder and 20.74% of participant who didn't walk regularly were having depressive symptoms.

One of our aims in this study to find the relation between the amount of exercise and depression. The majority of the active participants are walking 3 times or more per week. We found that the percentage deference between the depressed and non-depressed group increases when the amount of exercise is increased. Our result showed that participants who walked once per week represent 18.8% of non- depressed group and 61% of major depressive disorder group. The participant who walked twice weekly represent 18.1% of non- depressed group and 36.6% of major depressive disorder group. The participant who walked three times per week represent 63% of the non-depressed group while only 2.4% of the major depressive disorder group.

These findings emphasize the need for increasing awareness about the impact of physical activity in psychological wellbeing. A cross-sectional study done by Khanzada showed the importance of public

awareness of the effect of exercise in health wellbeing⁽³³⁾. There was significant association between exercise and positive brain changes such as increase in cerebral cortex activity, increase in hippocampal volume which improve memory and cognitive function^(34, 35). Physical activity has positive impact on children relational memory⁽³⁶⁾. Further controlled study may focus on possibility of other Brain changes secondary to physical activity. Finally, the limitations of our study fall into the following: first, we used electronic survey through social media, so our sample were obtaining from social media only, thus eliminating those who are not social media users. In conclusion we found that physical activity has positive impact on psychological wellbeing and in improving depression.

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