Original Article

Assessing the Impact of Outdoor Activities on Mental Wellbeing; Focusing on the Walking Path in Urban Area

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Abstract

Background: Provided that COVID-19 pandemic has led to mental wellbeing disorders for city dwellers, and given that there is a significant association between outdoor activities and mental health, this paper investigated how the frequency of walking during the pandemic contributes to the immediate and subsequent 'mood'.

Methods: A longitudinal data collection method was adopted to verify the 'mood' of the participants before and after walking. The survey was conducted with 100 participants in a walking path in Shiraz, Iran, on Jan 2021. The quantitative analysis methods were performed in SPSS to examine the mental wellbeing outcomes of walking in the outdoor walking path when considering the psychological impacts of the pandemic and the quantity.

Results: The result affirms the positive contribution of walking in the improvement of mental-wellbeing-mood during the pandemic; though, such a mood boost is in a direct relationship with the quantity of the activity within a week. Moreover, other factors can play a significant role, including the 'mood before walking', and the age of the participants.

Conclusion: It is likely that encouraging people to consider walking as their routine activity can lead to several positive consequences on mental wellbeing since walking as a basic outdoor activity during the pandemic can contribute on the mood. .

Keywords: COVID-19; Mental wellbeing; Mood, Urban area; Outdoor activity; Walking path

Introduction

Social distancing has been one of the main strategies to control Coronavirus transmission, especially in urban areas. Such regulations resulted in several mental wellbeing disorders globally, specifically for city dwellers (1), for instance, high levels of stress, depression, and anxiety (2, 3). From other perspective, urbanization has led to several health issues in terms of the citizens men-

tal health problems. The negative impact of the lack of greenery and physical activities is well documented on the psychological aspects of urban citizens (4). Besides the problems of urbanization, it seems that the measures of social distancing and the current pandemic are more serious for city dwellers. Hence, since the pandemic started, several studies have tried to show how the lack of outdoor activities resulted to the negative mental wellbeing outcomes (5-7). The main question after the pandemic is how to find the best solution to address such a shortage for people, especially in an urban area with stricter social distancing. Walking in local walking paths is likely to be allowed and safe for most of people during the pandemic; therefore, this study focused on how walking can contribute to the 'mood' while there are strict social distancing regulations.

It has been documented that outdoor activities provide opportunities for people to reduce their stress and moderate their mood through engaging the activities (8). Moreover, it can associate with physical diseases such decreasing the risk of cardiovascular disease, overweight and obesity (9). Walking as a basic outdoor activity has become the primary strategy of public health to promote active lifestyles (10). There is evidence for positive correlations between walking and overall physical and psychological health at the state and city scale (8-12). However, the environment and designing of the walking paths matters in the case of the positive health outcomes (4). Even though, the positive impact of walking on physical health has been well documented, there is a lack of information on the psychological outcomes of walking and how it can contribute in the wellbeing.

Accordingly, this research aimed to investigate the mental wellbeing outcomes of walking as a basic outdoor activity that is safe during the pandemic. To be more specific, the focus was on how walking can play a role to forget the hectic urban life and the pressure of the social distancing

Materials and Methods

Study Area

This study was conducted in a walking path in Shiraz, located in the southwest of Iran. Shiraz is one of the most populated cities in Iran, and the capital of Fars Province. The study environment is located in northwest of the city. The location is famous for its pleasant sightseeing since it is located between the dry river and the gardens of the Qasrdasht, also the specific design and facilities made the area as a popular destination for walking. The walking path is designed on the east side of the area and its path is about 3 km (Fig.1).

Fig. 1: Urban walking path in Shiraz

Sample

The sample size consisted of 100 participants, and the selection of respondents was made randomly from people walking in the study area. All the participants were informed about the aim of the study in advance, and they were assured that their personal information will be kept confidential.

The participants were 18 to 80 years old (M =40.43, SD = 16.524), of whom 55 were men and 45 women. Among the participants, 58% had a university education with a minimum associate degree and maximum PhD, and about their marital status, 57% was married.

Experimental design

The study was carried out on the working days in the spring of 2021. The sample selection was conducted over two weeks through a 'longitudinal data collection'. The data collection started at 5 pm, after a normal working day for most of the citizens.

People who agreed to participate in this study were informed about the procedure by our research assistants. Participants were asked to complete the first questionnaire before starting their walking. The first questionnaire captured information on participants' socio-demographics and moods through 13 items, following the 'Mood and Feelings Questionnaire-Self Report (MFQSelf)' (13). The data collection assistant waited at the ending point of the walking path until the participants completed the route. Then, the same participants were asked to complete the second questionnaire immediately. The respondents were asked to estimate their 'present mood' through 40 items questionnaire, following to 'The Profile of Mood States (POMS)' (14, 15). The weather and other condition, on all experiments days, was almost the same.

Measures

Searching in the previous literature, several behavioural and health variables have been involved in evaluating the relationship between walking and mental health. This specific study focused on 'mood' since we found it relevant to the current mental-health-wellbeing of citizens in the city area due to the potential negative consequences of the Covid-19 pandemic.

The mood was measured before starting the walking in the walking path, using a shortened version of the 'Mood and Feelings Questionnaire-Self Report (MFQ)' for adults (13). This tool measures the participants' recent mood. While the participants' mood after walking was measured, adopting a shortened version of 'the profile of mood states (POMS)' (15).

For the MFQ questionnaire, the participants had three items to answer, "NOT TRUE", "SOMETIMES", and "TRUE". The scores on the MFQ-Self ranged from 0 to 26, with higher scores indicating greater depressive symptomatology (13). The POMS questionnaire response scale for participants was divided into five categories (15) from "not at all" to "Extremely". All the questions were categorized into six distinct dimensions of mood, include; "Tension", "Anger", "Fatigue", "Depression", "Confusion", and "Vigour", which all seems relevant to the current mental wellbeing situation in the result of the pandemic.

Analyses

The data from the questionnaire were analyzed with standard software SPSS, (version 21.0). The first part involved a basic descriptive analysis of the demographic variables. In the second part of the analysis, the following tests were conducted to address the research questions. The Kolmogorov–Smirnov was performed to measure the data's normal distribution, including the data medians, different variances, or different distributions. Moreover, univariate analysis of variance (ANOVA) was performed to test the differences between the means of the 'mood before walking' and 'mood after walking'. Further, the Tukey test was performed to determine a more detailed comparison (pairwise comparison) between the two sample tests in terms of the number of visits ranging from 1 time per week to 3 times and more.

Furthermore, the Pearson correlation coefficient was conducted to evaluate if there is any potential relationship between the 'mood' of the participants before walking and their immediate 'mood' status after walking. Besides, the confounding effect of education and age was evaluated through Spearman correlation to test whether the changes in the moods correlate with these two demographic factors.

Results

First, ANOVA was conducted to calculate a comparison between the means of "mood before walking" and "mood after walking", considering the quantity of walking per week. As presented in Table 1, the results of the multivariate analysis

for the mood before walking showed the highest mean for people with one time walking per week (7.80±4.16) and the lowest mean for people with three times walking per week (4.51±4.74). Based on the scoring scale in the MFQ questionnaire, the lower average mood for people means the better overall mood. Moreover, the ANOVA test showed significant effects ($P=0.024$) of the number of walking.

In addition, table 1 shows that the highest mean of the 'mood after walking' belongs to those with one time walking in the week (-5.53±15.67), while the lowest mean was for people with three times walking per week (-19.19±17.33). Therefore, the quantity of walking per week can significantly impact the 'mood after walking' ($P=0.003$).

Table 1: Comparison between the means of mood before and after walking based on the multivariate analysis of variance

	Number of walks in the week	N	Mean	Std. Deviation	f	p
Mood Before Walking	1	15	7.8000	4.16104	3.856	.024
	2	19	6.4737	4.11459		
	3 ≤	66	4.5152	4.74663		
Mood after walking	1	15	-5.5333	15.67922	6.186	.003
	2	19	-6.4737	20.35073		
	3 ≤	66	-19.1970	17.33402		

Tukey test was performed to provide a pairwise comparison of the number of walking per week and how it can contribute to the mood. Table 2 shows that walking frequency can make significant differences in mood as a mental health outcome of walking. For instance, for the variable of 'mood before walking' there is a significant difference between 'one time' and 'three times' walking per week ($P=0.035$). Likewise, a significant difference was found for the 'mood after walking' by increasing the number of walking per week ($P=0.022$).

Those participants who experienced walking three or more in a week scored better mood after walking (3.49, the differences between the mean of the mood before and after walking) compared

to those with one time walking per week (1.72 the differences between the mean of the mood before and after walking).

Pearson correlation coefficients were performed between "Mood before walking" and "Mood after walking" to find their potential correlation. The result proved the significant and positive correlation between the two different tests of mood ($P=.029$). It confirms that a higher score in the mood before walking will lead to a higher score of the mood after walking with a Correlation coefficient of 0.219 .

Finally, age and education were considered as confounding variables, and their potential confounding factors impacts were tested. The result indicated that, while "mood after walking" and

age of the participants were significantly correlated (*P*<0.05), such correlations were insignificant

for education.

Table 2: Pairwise comparison of the number of walking based on the Tukey analysis

Dependent Variable	(I) Times	(J) Times	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Mood Before Walking	1	2	1.32632	1.57291	.677	-2.4176	5.0702
		3 ≤	3.28485*	1.30260	.035	.1844	6.3853
	2	1	-1.32632	1.57291	.677	-5.0702	2.4176
		3 ≤	1.95853	1.18563	.229	-.8635	4.7806
	3 ≤	1	-3.28485*	1.30260	.035	-6.3853	-.1844
		2	-1.95853	1.18563	.229	-4.7806	.8635
Mood after walking	1	2	.94035	6.11730	.987	-13.6202	15.5009
		3 ≤	13.66364*	5.06603	.022	1.6054	25.7219
	2	1	-.94035	6.11730	.987	-15.5009	13.6202
		3 ≤	12.72329*	4.61109	.19	1.7479	23.6987
	3 ≤	1	-13.66364*	5.06603	.022	-25.7219	-1.6054
		2	-12.72329*	4.61109	.19	-23.6987	-1.7479

Discussion

This paper studied the potential of walking paths as a mood booster of the citizens in urban areas and how it can contribute in public mental health during the COVID-19 pandemic. The focus was on the frequency of walking in the designed walking path in the city area and its potential benefits on people's mood during the pandemic. The result empirically proved the positive contribution of walking in the improvement of metal-health-mood; though such a mood boost is in a direct relationship with the quantity of the activity within a week, and with a significant correlation with the 'mood before walking'. The results are consistent with similar studies of physical activities in a walking path in the urban area (10, 11), and outdoor or physical activities in urban green spaces (12, 16, 17), and the significant role of walking on people's mood (8, 11).

As shown in the result, walking paths and exposure to the urban green area can contribute to the mental wellbeing of the urban residents. It has been claimed that both the quality and quantity of green space exposure contribute in mental health outcomes (the number of times people

visit and the duration of their park visits) (18, 19). Likewise, our study adds to this fact that the frequency of walking (three times or more per week) can lead to significant changes in mood. For instance, access, quantity, and types of green areas were mentioned as contributing factors to mental health benefits (18). Therefore, it is likely that the frequency of outdoor physical activity is a significant determinant, especially during the current pandemic. Such implication is more relevant with the countries with the most restricted social distancing regulation.

Even though, several studies have proved the mental health outcome of outdoor green activities (all reported in a Scoping Review on Green Space and its Associated Mental Health Benefits) (20), our study adds to this growing body of knowledge by insisting on the quantity of exposure or activity. In fact, given that the COVID-19 outbreak has led to several mental-wellbeing disorders, and people are suffering from the psychological effects of long social distancing regulations (5, 21, 22), it seems that increasing the number of walking time per week would contribute to a better mood in comparison to only one time walking per week.

However, the background mood (mood before walking in this study) is a significant determinant for the outcome mood. The significant relationship between the mood before and the mood after walking implies that the better the mood is before walking, the better mood can be expected as the final outcome. Hence, walking as an activity is unlikely to be the only determinant for the enhanced mental wellbeing, but there are several other factors. The impact of demographic characteristics in the perception is undeniable (12, 23). Personal perception has always been considered a confounding criteria in the mental health outcomes of green space exposure and activities (20). Likewise, in this study, the factor of age was found as a significant determinant in the perception of the positive outcomes of walking, specifically the outcome mood. However, several other factors might contribute to such a mood change after walking; for instance, the environmental factors and the design parameters for walking in the cities (11), or even the weather of the walking day, and the level of the perceived hygiene safety in that area during the social distancing regulation.

Conclusion

Walking, as the most basic and available activity for everyone, can contribute to the general mental wellbeing of society through enhancing the mood of people, especially when they are under the pressure of the social distancing regulation during the pandemic.

Ethical considerations

The authors have entirely observed ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.)

Acknowledgements

Conflicts of interest

The authors declare that there is no conflict of interest.

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