

The impact of COVID-19 quarantine on physical activities in Basra, Iraq: A cross-sectional study

Ahmed. M. Al Saeedi¹, Sara. M. Al Saeedi², Janaen. Y. Mahmoud³

¹ Al-Mutamaizeen Secondary School for Boys, Basra, Iraq

² Al-Elaf Distinguish Secondary School for Girls, Basra, Iraq

³ University of Basra, Basra, Iraq

SUMMARY

The COVID-19 epidemic spread to almost all countries of the world in 2020 and 2021. The physical behavior of many people was affected during this period. Sedentary behavior and low levels of physical activity during the COVID-19 epidemic had negative effects on people's health, well-being, and quality of life. This study aimed to determine the level of physical activity of the residents of Basra (the second-largest province in Iraq) during the COVID-19 quarantine according to sex, age, educational level, marital status, occupational/educational status, and health status. We hypothesized that the quarantine negatively affected the physical activities in terms of the number of days of physical activity and the type of physical activity practiced. A cross-sectional survey was conducted with 150 participants from the province of Basra. We used an online questionnaire to get information about the quantity and types of physical activity that participants did before and during the quarantine. In general, the results showed a decrease in the number of days of physical activity for participants during the quarantine among those who engaged in physical activity for four days or more per week. Additionally, the results indicated that a high percentage of participants practiced home exercises and walking/jogging during the quarantine, with decreases in the other activities (swimming and those done inside sports clubs). The study indicated that there is an urgent need to develop a complete strategy to encourage people to engage in physical activities during any quarantine that may occur in the future.

INTRODUCTION

The COVID-19 epidemic, which rapidly became a new global public health crisis, first broke out in Wuhan, China in early December 2019, with confirmed cases in the whole of China and almost every country across the world (1). Many countries have taken drastic measures in an attempt to curb it, including isolation, social distancing, and quarantine. Numerous studies have concluded that quarantine can play an important role in controlling the spread of COVID-19 and protecting the population from infection (2, 3). However, this policy is not without negative consequences. Some studies described a relationship between changes in diet and reduced

activity during the epidemic (4, 5, 6). In fact, physical inactivity is a global phenomenon and one of the leading causes of cardiovascular disease, diabetes, obesity and premature mortality in the world (7, 8, 9). According to a pooled analysis of 358 population-based surveys with 1.9 million participants between 2001-2016, more than a quarter of the world's population was still physically inactive during that period (8).

Many researchers have studied the impact of COVID-19 quarantine on people's physical activity. For example, research conducted in Canada evaluated the impact of COVID-19 quarantine on physical activities and the well-being of Canadians (10). Results indicated that 22% of active individuals and about twice that proportion of inactive individuals became less active. The study also demonstrated that physical activities are closely related to the well-being of inactive individuals. Another study, using a questionnaire, pointed to changes in walking time, physical activity intensity, and sitting time that occurred during the COVID-19 quarantine (11). The results of the survey that was done between March and April in Spain showed a large decrease in practicing physical activity during this period. Vigorous physical activities and walking time decreased about 17% and 58%, respectively, whereas sedentary time increased by 23.8%. Other researchers investigated the factors that could influence the level of the burden caused by COVID-19. The findings obtained through online surveys of nearly 2,000 participants from four countries (Germany, Italy, Russia, and Spain) showed that the burden of COVID-19 was negatively associated with physical activity (12). Another study explained that although confinement to the home during the COVID-19 epidemic was a necessary measure to protect public health, it changed physical activities and eating behaviors in a health-threatening direction (13). As a result, all levels of physical activity intensity were negatively affected. Daily sitting time increased by 60% (from 5 to 8 hours per day) and food consumption and meal patterns were more harmful (increase in unhealthy eating patterns). Finally, a study conducted in Saudi Arabia showed that men exercised more than women during the quarantine, especially among students and divorced individuals (14). In Iraq, a comprehensive quarantine policy was implemented by the government for a period exceeding ten months in order to slow the spread of COVID-19 [15]. The measures taken included working from home and closing all non-essential shops, schools, and restaurants (with takeaway services allowed), and any service or work that was

not essential. Moreover, restrictions on physical activity were imposed; team sports were prohibited, Iraqi soccer, basketball and volleyball leagues were suspended, swimming pools and gyms were closed [16]. Therefore, indoor and outdoor exercises such as walking sports/jogging were some of the successful solutions that many people adopted to reduce the negative effects of quarantine. Our objective in this study was to investigate the impact of COVID-19 quarantine on the practice of physical activities in the province of Basra/ Iraq. Specifically, we sought to determine to what extent some demographic variables such as sex, age, educational status, marital status, occupational/educational status, and health status affect the nature of the physical activity of the people. Additionally, we wanted to determine what change in physical activity occurred in Iraqi society during the COVID-19 quarantine between March and December 2020.

We hypothesized that the COVID-19 epidemic quarantine has had a negative impact on the physical activity of people and clear differences would appear between the number of days of physical activity before and during the quarantine. In addition, the complete closure of physical sports facilities in Iraq led us to hypothesize that people focused on some activities that can be practiced in or around the home.

Our research will enhance knowledge of the negative effects of quarantine in order to develop a complete strategy to encourage people to engage in physical activities during any quarantine that may occur in the future. In addition, the research highlights the importance of maintaining a healthy lifestyle during lockdowns, the development of programs to support healthy behavior, the maintenance of normal levels of physical activity, and the identification of populations that are likely to respond negatively to lockdowns.

RESULTS

The demographic characteristics of 150 individuals (half of whom were women) who voluntarily answered the physical activity questionnaire have grouped according to self-reported sex, age, educational level, marital status, occupation and health (**Table 1**). It is important to mention that these variables are the independent and approved variables to analyze all data in this study. There was a decrease in men's activity of 4 or more days a week during quarantine to 42 persons (56%) compared to 52 persons (67.3%) before the epidemic (**Figures 1, 2**). Similarly, the combined percentage of women decreased by about 10% during the quarantine to reach 61.4% in the same period.

Across all age groups, most participants engaged in physical activities 4-5 days per week before and during quarantine (**Table 2**). As we expected, the number of people who selected 0-1 day per week was the lowest. At both educational levels, the number of participants who were physically active 0-3 days before quarantine increased during quarantine. A notable decrease was observed in the 6-7 day period during the quarantine, especially for the "university education level or above" group. We observed the

Variables	Number of Men	Number of Women
Age (years)		
18-35	31	28
36-50	29	28
>50	15	19
Educational level		
University education level or above	28	34
Secondary education level or below	47	41
Marital status		
Single	22	29
Married	53	46
Occupational/educational status		
Worker	52	38
Student	9	7
Others (unemployed and retired)	14	30
Health status		
Good health	66	67
Chronic disease	9	8

Table 1: The demographic characteristics of the participants.

The number of participants (men and women) in different ages (18-35, 36-50, and >50 years), different educational level (university education level or above and secondary education level or below), different marital status (single, married), occupational/educational status (workers, students, others) and health status (good health and chronic disease).

same pattern in the marital category for both groups; single and married. For "occupational or educational status", there was an increase in workers' activity of 0-1 day and 2-3 day periods from 7 persons (4.7%) and 19 persons (12.7%) before quarantine to 10 persons (6.7%) and 30 persons (20%) during the quarantine, respectively. Similarly, the percentage of students increased from 0.7% and 1.3% before quarantine to 1.3% and 4.7% respectively during the quarantine. For "others" group, the increase in the number of unemployed and retired participants occurred only in the 0-1 and 4-5 periods, the highest percentage was 14.7% in the 4-5 days range as a result of sharing 22 people in the physical activities during this period. According to the "health status" category, the number of participants who were physically active 0-5 days per week increased during quarantine. The notable decrease took place just in a 6-7 days period decreasing the percentage of participants from 26.7% to 17.3%. Finally, we observed a slight difference (less than 2%) in the percentage of participants in physical activities with chronic diseases between the two periods (before and during the quarantine).

We used *p*-values to determine whether the amount of physical activity was largely different before and during quarantine. There was no effect in the 0-1 day period between the total number of participants before quarantine (9 persons) and the total number of participants during quarantine (17 persons) because the *p*-value was only 0.236. The *p*-values for the other variables (2-3, 4-5 and 6-7 days) were less than 0.05 (0.003, 0.033, 0.043 respectively) indicating large differences between the two periods.

Variables	Number of participants in physical activities in a week							
	0-1 day before quarantine	0-1 day during quarantine	2-3 day before quarantine	2-3 day during quarantine	4-5 day before quarantine	4-5 day during quarantine	6-7 day before quarantine	6-7 day during quarantine
Age								
18-35	3	7	13	18	26	21	17	13
36-50	4	7	15	18	25	23	13	9
>50	2	3	7	9	14	16	11	6
Educational level								
University education level or above	3	7	20	26	25	22	14	7
Secondary education level or below	6	10	15	19	40	38	27	21
Marital status								
Single	5	6	11	13	23	26	12	6
Married	4	11	24	32	42	34	29	22
Occupational/educational status								
Workers	7	10	19	30	42	34	22	16
Students	1	2	2	7	7	4	6	3
Others (unemployment and retired)	1	5	14	8	16	22	13	9
Health status								
Good health	8	16	28	40	57	51	40	26
Chronic disease	1	1	7	5	8	9	1	2
p-value	0.236		0.003		0.033		0.043	

Table 2: Number of days of practicing physical activity before and during the quarantine. Differences in the number of participants in all categories who practiced physical activities before and during the quarantine. Statistical differences in the number physical activity days performed by participants before and during the quarantine explained by calculated the *p*-values between the total numbers of participants according to the total number of each group.

DISCUSSION

The proportion of men who engaged in physical activity for four days or more per week during the quarantine decreased, while women showed a slight increase at 4-5 days (Figures 1, 2). These results are consistent with results obtained by researchers in Brazil which showed that men became less active during the quarantine (17). An increase in the levels of depression and anxiety in men (more than women) during the quarantine may be one of the important reasons that led to lacking physical activities (18, 19). For the age variable, physical activity during quarantine increased among all groups who were active for 0-3 days per week before

quarantine and decreased in the 4-7 days. These results confirmed that the age of participants did not play a large role in changing peoples' activity patterns during the quarantine. These results appeared to be consistent with those obtained in another study where the researchers reported that there were no large differences among participants with different ages in total activity times before and during the quarantine (20). For the education level variable, although the changes in the percentage of participants did not exceed 5% before and during the quarantine for both groups, the general trend was toward a decrease in the number of people who engaged in physical activities for 4 days per week or more.

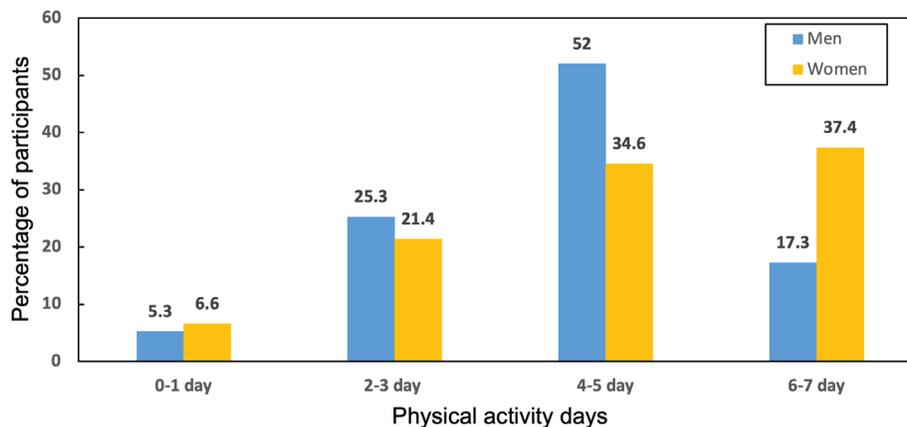


Figure 1: Percentage of physical activity days for participants before the quarantine. Comparisons between the percentages of men, women who practiced physical activities for different days in a week before the COVID-19 quarantine.

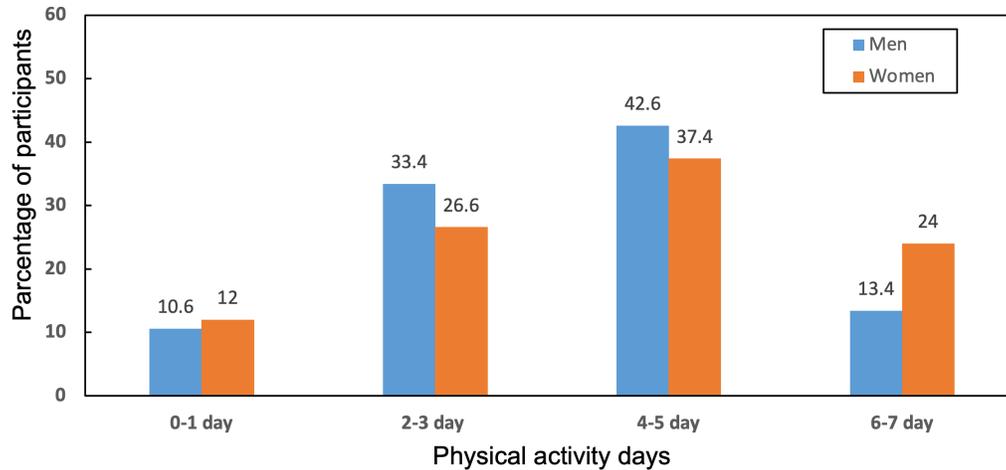


Figure 2: Percentage of physical activity days for participants during quarantine. Comparisons between the percentages of men, women who practiced physical activities for different days in a week during COVID-19 quarantine.

These results are not consistent with another study that indicated that leisure-time physical activity among people with higher education levels was 40% higher than those with lower education levels during the COVID-19 epidemic (21). This may indicate that the practice of physical activity is related to the extent to which a person enjoys practicing this activity, regardless of his educational level. As for the marital status variable, our results indicated that there were no large differences in physical activity days of the single group before and during the quarantine, as the change did not exceed 5% for all periods. This percentage consider low compared to the married group which became less active during the quarantine, as the percentage of married people who practiced physical activity for 4-5 days decreased from 28% to 21.3%, and from 19.3 to 14.7 for those who practiced physical activity for 6-7 days. This may attribute to the spousal and family responsibilities for the married people that were given priority and thus become barriers to regular physical activities (22). On the contrary, a study conducted in Saudi Arabia showed the opposite results, as it was reported that the number of days of physical activity decreased more among the single group compared to the married group during the quarantine (14). In our study, workers and students were found to be less active during the quarantine. These results are consistent with results from studies based in the United States, which indicated a decrease in the total daily physical activities of workers and students after the closure of universities, fitness, and recreational centres (23). The change in the routine for those who used to work and forced to stay at home led to a change in their lifestyle, which affected the conditions for doing physical activities, especially for those who started performing their work from their homes (24). As for the students, their interest in other activities such as electronic games, social networking sites, watching television programs, and home entertainment in addition to the shift to distance learning may have contributed to changing their habits. For

health status, differences in physical activities before and during the quarantine for individuals with a chronic disease did not exceed 0.7%. This is because the physical activities of this group are already limited due to the diseases they suffer from. Therefore, the quarantine did not lead to a large change in their activities. In general, our results agree with previous studies showing that quarantine during an epidemic can adversely influence lifestyle activities worldwide, as well as participation in sports and physical activity (25, 26).

The most popular physical activities among participants before quarantine were walking/jogging (39.3%), home exercises (25.5%), sports clubs (20.7%), and swimming (14.5%). During the quarantine, likely as a result of the closure of physical activity centers in Iraq, the participants focused their physical activities on two activities; walking/jogging and home exercises, as the walking/jogging accounted for 53.8% of the total survey participants and the home exercises accounted for 43.4% in this study. These results differ from results obtained by a study conducted in Saudi Arabia in which the researchers observed that the percentage of participants who practiced daily walking and home exercises for four days or more per week decreased during home quarantine compared to what it was before that (27). This may be explained by the attempt of people in Iraq to replace physical activities such as swimming or those that are performed in sports centers with alternative activities such as easy Swedish exercises. The results showed that some individuals practiced swimming during the quarantine, and this may have happened in rivers near their homes due to the closure of all swimming pools during that period. It is very clear that women in this study did not often practice certain types of activities such as swimming or those that are practiced within sports clubs, and their focus was largely on activities that could be practiced inside the home or in the residential neighborhood (**Table 3**). This pattern continued and strengthened during the quarantine period. Concerning

Variables	Before quarantine				During quarantine			
	Walking / jogging	Home exercises	Swimming	Sport clubs	Walking / jogging	Home exercises	Swimming	Sports clubs
Sex								
Men	23	15	14	21	39	30	4	0
Women	34	22	7	9	39	33	0	0

Table 3: Type of physical activity practiced before and during the quarantine according to the sex variable. Number and percentage of men and women that practiced walking/jogging, home exercises, swimming, and some activities in sports clubs before and during the quarantine.

men, the greatest impact of the quarantine was on those who practice their activities inside sports clubs, as their percentage decreased from 28% to 0%. On the other hand, the activities of age groups distributed before the quarantine between all four categories (walking/jogging, home exercises, swimming, and sports clubs) (Table 4). During the quarantine, the participants' activities focused mainly on walking/jogging and home exercises, likely due to the closing of all sports clubs and swimming pools. This pattern is repeated across all other categories in this table. In general, our results confirmed the second hypothesis of this study, which is that the quarantine during the COVID-19 epidemic had an impact in determining the type of physical activity practiced by the population in

the Basra province. The results of this study showed that the COVID-19 quarantine affected the quantity and type of physical activity practiced during that period compared to before, especially for those who practiced regular physical activities for four days or more. Our results suggest that there are large differences at the level of some groups that were measured. Thus, our results confirmed the general hypothesis of this study, which is that the quarantine of the COVID-19 epidemic had an impact on people's sports activities in Basra. Future research could link the results of this study with the psychological variables related to the quarantine of the COVID-19 epidemic to clarify the relationship between them.

Variables	Number of participants in different types of physical activities in a week							
	Walking jogging before quarantine	Walking Jogging during quarantine	Home exercises before quarantine	Home exercises during quarantine	Swimming before quarantine	Swimming during quarantine	Sport clubs before quarantine	Sports clubs during quarantine
Age								
18-35	22	30	12	25	10	2	13	0
36-50	19	24	17	30	6	1	13	0
>50	16	24	8	8	5	1	4	0
Educational level								
University education level or above	26	33	17	26	8	1	9	0
Secondary education level or below	31	45	20	37	13	3	21	0
Marital status								
Single	20	28	13	19	7	2	9	0
Married	37	50	24	44	16	2	19	0
Occupational/educational status								
Workers	38	47	27	38	12	3	11	0
Student	5	9	4	6	3	0	3	0
Unemployed (non-student) and retired	14	22	6	19	8	1	14	0
Health status								
Good health	50	68	31	56	21	4	26	0
Chronic disease	7	10	6	7	2	0	2	0
p-value	0.067		0.087		0.236(for 21) 0.365(for 23)			

Table 4: Type of physical activity practiced before and during the quarantine according to different variables. Number of participants that practiced different activities according to their ages, educational level, marital status, occupational / educational status, and health status. Statistically differences in the type of physical activity performed by participants before and during the quarantine explained by calculated the p-values between the participants that practicing different activities according to the total number of each group.

MATERIALS AND METHODS

We conducted a cross-sectional survey with 150 participants (with the help of our friends and relatives) distributed into five categories: sex (men/women), age (18-35, 36-50, >50), educational level (university education level or above/secondary educational level or below), marital status (married/single), occupational or educational status (worker/student/unemployed and retired) and finally health status (good health/chronic disease). An online questionnaire was used to collect data on physical activities before and during the quarantine period (between 18 February and 19 September 2020) in Basra, Iraq. The survey was organized and shared using the digital platform Google Forms. The survey questions were designed to evaluate the impact of COVID-19 on physical activities, as well as the types of physical activities volunteers engaged in during the quarantine. The data collection tool was a questionnaire consisting of three parts. The first part collected demographic characteristics listed in an independent table (**Table 1**). The second part asked the number of days per week that participants practiced physical activities before and during the quarantine. The weekdays were divided into four options (0-1, 2-3, 4-5, or 6-7 days). People who did less than 30 minutes of physical activity per day were considered inactive that day. The third part asked about the types of physical activities that the volunteers practiced. The activities were divided into four options (walking/jogging, home exercises, swimming, and different activities inside sport clubs). The questionnaire included 10 questions. To determine which groups were most active before and during the quarantine, groups were compared based on how many people in that group are physically active for four days or more.

The *p*-value was used to determine the statistically large differences between groups in the number of days and types of physical activities practiced. IBM SPSS Statistics 24 was used to calculate the *t*-tests and *p*-values.

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