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ORIGINAL ARTICLE

Prevalence of low back pain among patients who tested positive for COVID-19 by the end of the quarantine period

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ABSTRACT

Background: The prevalence of low back pain (LBP) according to the Global Burden of Disease was 9.4%. The etiology of pain is focused on complex dynamic interactions between biological, psychological, and social factors that operate through a variety of life pathways. Therefore, this study aimed to measure the prevalence and determine the severity of LBP among patients who were tested positive for Coronavirus disease 2019 (COVID-19) by the end of the quarantine period.

Methodology: A quantitative cross-sectional study was carried out in the Kingdom of Saudi Arabia from July 2020 to October 2020. Approximately 281 patients who were tested positive for COVID-19 and had finished their quarantine period were included. A validated Roland-Morris low back pain and disability questionnaire was used by online method.

Results: Almost 79% of the COVID-19 cases had LBP. It was mild among 31.3% of the cases, moderate among 25.3%, and severe among 12.5%. Cases had a score that ranged from 0 to 24, with a mean score of 7 ± 7 points (out of 24 maximum score).

Conclusion: The study reported an association between the quarantine period during COVID-19 infection and LBP. It was recommended to adopt preventing strategies and programs for LBP during the quarantine period to avoid the huge burden of LBP and its corresponding disabilities.

Keywords: Back pain, COVID-19, quarantine period, prevalence.

Introduction

Back pain is a condition that affects various structures such as bones, joints, muscles, and nerves [1]. Back pain is one of the most common problems worldwide that contributes to disability and affects quality of life. The prevalence of low back pain (LBP) according to the Global Burden of Disease was estimated as 9.4% [2], and leads to 30 million clinic visits of adults annually [3].

The analysis of the prevalence of back pain in Saudi Arabia in Al-Qasim region over a period of 18 months revealed that 1,085 participants among 5,900 participants had back pain during the period of study [4]. It is commonly associated with absenteeism and decreased quality of work in many areas of the world [5,6]. In the United States of America, the total cost of back pain exceeds $100 billion annually and most of these costs are indirect cost [7]. This accounts for a large number of healthcare visits and treatments, putting a large burden on the health budget in many countries [8]. Not only costs and the economic side but also the medical treatment had a limited effect on improvement [5,6].

The etiology of pain is focused on complex dynamic interactions between biological, psychological, and social factors that operate through a variety of life pathways [9]. There are a lot of risk factors for back pain such as age, female gender, white ethnicity, and psychological factors [10]. Also, recent research on sedentary behavior and physical inactivity has shown

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an increase in musculoskeletal pain that has become increasingly widespread in the last 40 years [11].

Coronavirus disease 2019 (COVID-19) was first reported and spread in Wuhan, China, in late December 2019 [12]. COVID-19 spread rapidly to more than 210 countries with more than 25 million positive cases and about 843,000 human deaths due to the virus (as of August 30, 2020) [13,14]. By the time the situation became worse, the World Health Organization (WHO) declared the outbreak as the public health emergency of international concern [15]. Symptoms usually appear between 4 and 5 days from exposure and the incubation period could last up to 14 days. [16,17]. The most commonly reported symptoms are shortness of breath and cough and about 50% of the patient had fever at the time of admission [18]. The second most common reported symptom was cough and some patients reported gastrointestinal symptoms, such as nausea and diarrhea [17]. COVID-19 affects many systems including the renal [19] and cardiovascular systems by increased risk of cardiac injury in cardiovascular disease patients associated with adverse outcomes and increased mortality [20]. The WHO advised to educate and isolate infected persons to control the transmission of COVID-19, and this is considered as one of the most effective steps in controlling the spread of the contagious diseases, such as COVID-19, [21] and the first theory of infectious disease prevention is known to be quarantine. Quarantine is specifically intended to avoid the spread of an infectious agent from those who are possibly incubating the disease [22]. Therefore, this study aimed to measure the prevalence and determine the severity of LBP in patients who were tested positive for COVID-19 by the end of the quarantine period.

Subjects and Methods

A quantitative cross-sectional study was carried out in the Kingdom of Saudi Arabia from July 2020 to October 2020. Approximately 281 patients who were tested positive for COVID-19 and had finished their quarantine period were included. A validated Roland-Morris low back pain and disability questionnaire (RMQ) was distributed via an online method through the social media platform in the form of an e-questionnaire.

The RMQ is a self-administered disability measure in which greater levels of disability are reflected by higher numbers on a 24-point scale. The RMQ has shown to yield reliable measurements, which are valid for inferring the level of disability, and is sensitive to change over time for groups of patients with LBP.

After the data were extracted, revised, coded, and fed into statistical software IBM Statistical Package for the Social Sciences (SPSS) version 22 (SPSS, Inc. Chicago, IL). All statistical analyses were conducted using two-tailed tests. A p-value less than 0.05 was considered statistically significant. LBP severity was assessed by summing up discrete answers of the study cases for RMQ. The total score ranged from 0 to 24. Patients who had a score range of 1-7 were considered to have mild LBP, scores of 8-15 were considered to have moderate LBP, and scores of 16-24 were considered to have severe LBP. Descriptive analysis based on frequency and percent distribution was conducted for all variables including patient's demographic data, quarantine days, co-morbidities, hospital admission, and RMQ items. Cross-tabluation was used to assess distribution of patients LBP severity according to their personal and medical data. Relational significance was tested using Pearson's chi-square test.

Results

The study included 281 cases of COVID-19 infection whose ages ranged from 15 to 61 years with a mean age of 31.0 ± 9.7 years. The majority of the cases were female (63.7%; 179) and 201 (71.5%) patients were quarantined for 2 weeks. Exactly 13 (4.6%) cases were previously admitted to the hospital due to COVID-19 infection. As for chronic health problems reported by cases, 204 (72.6%) were free, while 17 (6%) had osteoporosis, 14 (5%) had sickle cell anemia, and 12 (4.3%) had asthma.

About 79% of the sampled COVID-19 cases had LBP. It was mild among 31.3% of the cases, moderate among 25.3%, and severe among 12.5% of the sampled cases. Cases had a score that ranged from 0 to 24 with a mean score of 7 ± 7 points (out of 24 maximum score).

The most reported complaint was changing the position frequently to try to get comfortable (56.9%), followed by lying down to rest more often due to back pain (45.9%), avoiding heavy jobs around the house because of back pain (43.4%), only standing up for short periods of time because of back pain (39.5%), finding it difficult to turn over in bed because of back pain (36.3%), back is painful almost all of the time (34.9%), can only walk short distances because of the back pain (32.4%), and staying at home most of the time because of back pain (28.1%). The least reported complaint was get dressed in the help of someone else due to back pain (3.9%) and must hold on to something to get out of an easy chair (12.5%) (Table 1).

Moderate to severe LBP was detected among 54.8% cases who were aged 45 years or more compared to 23.5% of young cases with a recorded statistical significance (p = 0.005). Also, 43.6% of the female patients had moderate to severe LBP in comparison to 27.5% of the male cases (p = 0.007). Nearly 54% of the cases who had chronic health problems had moderate to severe LBP compared to 32.1% of those with no co-morbidities (p = 0.004) (Table 2).

Discussion

In this study, it was aimed to measure the prevalence and determine the severity of LBP in patients who tested positive for COVID-19 by the end of the quarantine period. A total of 281 cases of COVID-19 were included in this study; the ages of participants ranged from 15 to 61 years with a mean age of 31.0 ± 9.7 years. The current

Table 1. *Distribution of LBP according to RMQ among COVID-19 cases at the end of quarantine period.*

RMQ items	No	%
I change positions frequently to try to get my back comfortable.	160	56.9
Because of my back, I lie down to rest more often	129	45.9
I avoid heavy jobs around the house because of my back	122	43.4
I only stand up for short periods of time because of my back.	111	39.5
I find it difficult to turn over in bed because of my back.	102	36.3
My back is painful almost all of the time.	98	34.9
I can only walk short distances because of my back pain.	91	32.4
Because of my back, I am not doing any jobs that I usually do around the house.	89	31.7
I stay at home most of the time because of my back.	79	28.1
Because of my back, I go upstairs more slowly than usual	79	28.1
Because of my back, I try not to bend or kneel down	77	27.4
I sit down for most of the day because of my back	76	27.0
I walk more slowly than usual because of my back.	71	25.3
I sleep less well because of my back	65	23.1
Because of back pain, I am more irritable and bad tempered with people than usual.	63	22.4
I stay in bed most of the time because of my back	63	22.4
I get dressed more slowly than usual because of my back	53	18.9
I find it difficult to get out of a chair because of my back	53	18.9
My appetite is not very good because of my back.	53	18.9
I have trouble putting on my socks (or stockings) because of the pain in my back	51	18.1
Because of my back, I try to get other people to do things for me	49	17.4
Because of my back, I use a handrail to get upstairs.	48	17.1
Because of my back, I must hold on to something to get out of an easy chair	35	12.5
Because of my back pain, I get dressed in the help of someone else	11	3.9

Table 2. *Distribution of LBP among COVID-19 cases by their personal characteristics and co-morbidities.*

Factors	LBP severity				*p*-value
	No/mild		Moderate/severe		
	No	%	No	%	
Age in years					
<25 years	65	76.5	20	23.5	0.005*
25-34	63	60.6	41	39.4	
35-44	33	54.1	28	45.9	
45+	14	45.2	17	54.8	
Gender					
Male	74	72.5	28	27.5	0.007*
Female	101	56.4	78	43.6	
Quarantine days					
< 15 days	132	65.7	69	34.3	0.063
> 15 days	43	53.8	37	46.3	
Hospital admission due to COVID-19 infection					
Yes	6	46.2	7	53.8	0.219
No	169	63.1	99	36.9	
Chronic health problems					
None	142	67.9	67	32.1	0.004*
Relevant co-morbidities	15	46.9	17	53.1	
Non relevant co-morbidities	18	45.0	22	55.0	

P = Pearson c^2 test.3

*$p < 0.05$ (significant).

study revealed that the prevalence rate of LBP among the sampled COVID-19 patients was 79%. The intensity of LBP was classified as mild, moderate, or severe. It was mild among 31.3%, moderate among 25.3%, and severe among 12.5% of the cases.

However, the results from this study demonstrated that the prevalence of LBP among COVID-19 patients after quarantine period was greater than that found in general populations. A study conducted by Al-Arfaj et al. [4] in Saudi Arabia in Al-Qasim city indicated that the prevalence of LBP among participants was 18.3%. Another study conducted in Canada showed that the prevalence of LBP was 28.7% among the Canadian population [23]. Hoy et al. [24] demonstrated a prevalence of 18% of LBP in the United Kingdom. A higher prevalence rate of LBP among COVID-19 patients emphasized the importance of developing prevention programs and strategies such as advice to stay active as well as maintain a healthy lifestyle during the quarantine period to avoid the huge burden of LBP and its corresponding disabilities as inactivity is considered a primary risk factor for LBP [25].

This study showed demographic differences in terms of age and gender, where 54.8% of the cases who were aged 45 years or older were found to have moderate to severe LBP in comparison to 23.5% of the young patients. The study also found that 43.6% of female cases had a moderate to severe LBP compared to 27.5% of the male cases. These findings are consistent with other studies that have found similar gender and age differences [24-28]. Yang et al. [29] found that the prevalence of LBP among the American population was 23.8% for young cases (18-40 years) and 27.7% for older cases (41-64 years), 24.5% for male, and 27.1% for female participants.

However, this study had some limitations. First, the sample size of the study was small in comparison to the huge number of COVID-19 cases worldwide and this might result in the under/overestimation of the prevalence of LBP. Second, it had a limited number of elderly participants as it is likely that the number of individuals with LBP would increase as the population ages. Finally, chronicity of LBP is not addressed in the current study, so it is unknown if the LBP after the quarantine period is a first-ever episode or a recurrence of previous episode of LBP.

Conclusion

Based on the results of this study, there is an association between quarantine period during COVID-19 infection and LBP. Further studies should emphasize identifying demographic, behavioral, psychosocial, health, and work-related factors associated with LBP, as well as presence of previous episodes of back pain as a history of back pain is considered to be a primary risk factor for a new LBP episode. Furthermore, future studies focus should be shifted toward the period after quarantine period to assess improvement, progress, or deterioration of LBP, as LBP is usually a recurrent condition that could present in different pathways rather than an acute, sub-acute, or chronic condition. It was recommended to adopt preventing strategies and programs for LBP during quarantine period as this period is characterized by stress and inactivity which might contribute to the evolution of LBP among infected persons.

List of Abbreviations

LBP Low back pain
RMQ Roland-Morris low back pain and disability questionnaire

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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None.

Consent to participate

Informed consent was obtained from all the participants.

Ethical approval

The study was approved from King Fahad Medical City with approval NO20-669E, dated October 14, 2020.

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