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ORIGINAL ARTICLE

The Effects of Lockdowns and Restrictions During the COVID-19 Pandemic: Perspectives and Experiences From Ankylosing Spondylitis Patients.

COVID-19 Pandemisinde Kapanma ve Kısıtlamaların Etkileri: Ankilozan Spondilit Hastalarının Bakış Açıları ve Deneyimleri.

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ABSTRACT

Objective: The COVID-19 pandemic has been affecting our world and all people for 2 years and It has been the subject of many studies that have been published in the literature. Common result of these studies is that the pandemic has increased people's stress levels and also many research studies report the negative impacts of the pandemic on private patient populations, such as those with chronic diseases. However, there are no clinical studies in Turkey that have revealed the effects of pandemic restrictions on patients with rheumatic diseases yet. Our study aims to evaluate the effects of quarantine and restrictions imposed during the COVID-19 pandemic on patients with Ankylosing Spondylitis.
Method: This study was carried out in the USAK province of Turkey with patients with ankylosing spondylitis aged 18-65 years. After a detailed literature review, a 35-question questionnaire was prepared. This survey was aimed at determining the treatment routines and habits of patients during the COVID-19 restriction period, such as exercise and nutritional status. At the same time, the effects of the closure and restriction period on the mental health of patients were investigated. During this period, the availability of doctors and medicines of patients was questioned.
Results: All participants reported an impact of lockdown. 43.7% reported lesser exercising levels than before the lockdown. These patients mainly consumed more vitamin C (65.7), as media advice for the public. However, despite specialist advice, some patients consumed more alcohol (21.4%). 78% of the patients reported sleep-wake rhythms markedly changed under restriction and the majority of patients could not go to a rheumatologist for follow-up.
Conclusion: The majority of the AS did not consult specialists or physicians during the lockdown period but most of them continued their medications to control the disease activity.

Keywords: Exercise, Rheumatic Diseases, Depression, Nutrition

ÖZ

Amaç: COVID-19 pandemisi 2 yıldır dünyamızı ve tüm insanları etkiliyor ve literatürde yayınlanmış birçok çalışmaya konu olmuştur. Bu çalışmaların ortak sonucu, pandeminin insanların stres düzeylerini arttırdığı ve ayrıca birçok makalenin pandeminin kronik hastalıkları olanlar gibi özel hasta popülasyonları üzerindeki olumsuz etkisini bildirmesidir ancak Türkiye'de pandemik kısıtlamaların romatizmal hastalığı olan hastalar üzerindeki etkilerini ortaya koyan hiçbir klinik çalışma bulunmamaktadır. Çalışmamız, karantinanın ve COVID-19 pandemisi sırasında uygulanan kısıtlamaların Ankilozan Spondilit hastaları üzerindeki etkilerini değerlendirmeyi amaçlamaktadır.
Gereç ve Yöntem: Bu çalışma 18-65 yaş arası Ankilozan Spondilit hastaları ile Türkiye'nin UŞAK ilinde gerçekleştirildi. Ayrıntılı bir literatür taramasından sonra 35 soruluk bir anket hazırlandı. Bu anket, egzersiz ve beslenme durumu gibi COVID-19 kısıtlama döneminde hastaların tedavi rutinlerini ve alışkanlıklarını belirlemeyi amaçladı. Aynı zamanda, kapanma ve kısıtlama süresinin hastaların ruh sağlığı üzerindeki etkileri araştırıldı. Bu dönemde doktorların ve hastaların ilaçlarının mevcudiyeti sorgulandı.
Bulgular: Tüm katılımcılar kapanmanın bir etkisi olduğunu bildirdi. Hastaların %43.7'si karantina öncesine göre daha az egzersiz seviyesi bildirdi. Bu hastalar, medya tavsiyesi esas olarak daha fazla C vitamini (65.7) tüketti. Ancak uzman tavsiyesine rağmen bazı hastalar daha fazla alkol tükettiği gözlendi (%21,4). Hastaların %78'i kısıtlama altında uyku-uyanıklık ritimlerinin belirgin şekilde değiştiğini ve hastaların çoğunluğu takip için bir uzman doktora gidemediğini bildirdi.
Sonuç: Ankilozan Spondilit hastalarının çoğunluğu kapanma döneminde uzmanlara veya doktorlara ulaşamadığını, ancak çoğu hastalık aktivitesini kontrol etmek için ilaçlarına devam ettiğini belirtti.

Anahtar Kelimeler: Egzersiz, Romatizmal Hastalık, Depresyon, Beslenme

Introduction

In these past two years, World has been dealing with the Covid-19 pandemic and it has affected almost every people in many ways. The outbreak of Covid-19, its rapid global spread, and the restrictions imposed by the subsequent countries inevitably led to public fears and panic (1). The psychological effect of the pandemic and restrictions is an attractive topic in recent literature. Lots of research has been conducted in this field and these researches referred to the almost same conclusion and that conclusion was depression and stress and psychological reactions during the Covid-19 pandemic, but in this situation, management might be more decisive than anticipated (1-4). The results in similar studies show us that dealing with psychological impacts of a pandemic might be meaningful while dealing pandemic itself (2-6). Also, this pandemic has led to many changes in everyday life and routines, implementation of new rules such as

social distancing and lockdowns in some areas, and reduced access to healthcare due to reservations for emergency use (2-6). Because of the serious burden on the health care system, many recent papers report the negative impact of the pandemic on special patient populations like those with chronic illnesses. This group of patients is unable to access healthcare services for their routine care and access to medicines (4-11).

Pogany et al. from Czechia assessed the lockdown period from the psychiatric patients' perspective in their study (2). According to the results of this trial, the uncertainty of pandemic-related information and news caused distress in participants treated for anxiety and psychotic disorders (2). Also, according to their results participants, suffering from affective disorders perceived more pronounced feelings of vulnerability when compared to participants who were treated for psychotic disorders (2). Wolf et al. aimed to determine COVID-19 related behaviors, knowledge, and awareness, among United States adults with chronic diseases (3). According to the results of their cross-sectional survey, many patients with comorbid conditions lacked critical knowledge about COVID-19 and, despite concern, did not change routines or plans (3). Also, they concluded that exceeding public health efforts might be needed to assist the most vulnerable communities such as chronic diseases (3).

The early results of the "COVID-19 in rheumatic patients: a prospective cohort study" were used to analyze to what extent participants with rheumatic disease adhere to isolation measures compared with the healthy group (7). Different kinds of rheumatological diseases such as rheumatoid arthritis, ankylosing spondylitis, or psoriatic arthritis from the Netherlands are included in this study (7). Early results of this trial suggest that the presence of a rheumatic disease and the use of immunosuppressive medications are not associated with a higher incidence of COVID-19 (7). Also, according to the results in patients with rheumatic disease, those receiving biological agents took stricter isolation measures than the patients not receiving biological agents (7). The authors suggested that the assessment of the risk of COVID-19 in vulnerable patients such as rheumatological diseases should include an evaluation of isolation measures they have taken (7). According to the current knowledge, there are no clinical studies from Turkey, that disclose the effects of the pandemic restrictions on patients with rheumatic diseases. So, this study aimed to evaluate the effects of lockdowns and restrictions during the COVID-19 pandemic on Ankylosing Spondylitis patients.

Materials and methods

Participants and Study Design

This descriptive cross-sectional study was performed at the Usak province of Turkey. Data were collected from June through October 2021. Patients who had a routine follow-up in the rheumatology clinic of Usak University enrolled in the study. The Usak University Institutional Review Board approved study (No: 192-192-03) procedures, and all patients included in this face-to-face survey had provided prior consent for future research opportunities.

Clinical inclusion criteria were as follows: Patients who had been diagnosed with ankylosing spondylitis according to New York criteria. Patients using medications and having routine controls longer than two years. Patients aged 18 to 65.

Clinical exclusion criteria were as follows: Patients with difficulty answering the questionnaire because of the cognitive disorders or language barrier. Patients with multiple chronic conditions (two or more chronic conditions except for ankylosing spondylitis). Patients who do not have social insurance. Patients who do not keep their regular health care appointments (before COVID-19) restrictions.

Data collection and extraction

The questionnaire was created by authors after a detailed literature search in June 2020 and administered in July-December 2020.

Questionnaires with a participant information sheet on the nature of the study were distributed to the patients. Participants answered the questions by themselves but always one of the authors was on hand to help when needed. Participant information sheet aimed to collect the demographic data. It included the questions related to the participants' age, gender, job, smoking, and alcohol use habits and comorbidities are questioned. The questionnaire contained 35 questions. The response format of the questions was dichotomous (yes or no) or Likert scale (5 intervals). Questions were aimed to identify patients' treatment routines and habits such as exercise and nutritional status during the COVID-19 restriction period. The authors did not set up cut-off points for the questionnaire scores.

Assessment of disease activity was evaluated with Bath Ankylosing Spondylitis Disease Activity Index (BASDAI). The BASDAI has six numerical rating scales of 0–10 to measure the severity of localized tenderness, fatigue, spinal and peripheral joint pain, and morning stiffness in patients with AS. The final BASDAI score has a range of 0 to 10 and BASDAI values greater than 4 indicate the presence of active disease. The Turkish validation of the BASDAI was reported (12).

The calculation of the sample size was made on the basis of sampling the disease seen in the population in a single study group. The main endpoint of the study (primary endpoint) was determined as "dichotomous" (binary option (Yes/No)). (Main end point of this study: Yes: Patients with AS were negatively affected by the COVID 19 process / No: Patients with AS were not negatively affected by the COVID 19 process). According to the studies conducted, the frequency of

AS in the community was shown as 1%. The number of samples was calculated by estimating that 5% of AS patients living in Uşak province could be reached. In the study, the required number of samples was 70 in the calculation made with the expectation that the margin of error of type 1 (alpha error) is 0.05 and the working power (power) is 80% (https://clincalc.com/stats/samplesize.aspx).

Analysis of data

The data of the included cases were calculated as percentage and mean values. Groupings were made according to being stricken with Covid, drugs used and by age and then kikare test was used to compare categorical (nominal) data between groups. Yatest arrangement was used when necessary. In the evaluation of parametric data, it was planned to use the "Significance of the Difference Between Two Means" or the "Mann Whitney U Test", depending on the characteristics of the data. It was planned to use the "Pearson Correlation Test" in the correlation evaluations. It was planned to do the analyzes with the help of the Statistical Package for Social Science (SPSS) 11 program.

Results

Patient characteristics

Seventy AS patients (median age: 34 years, range: 20–61 years; females/males (n): 33/37) completed the study. The median disease duration of patients was 86 months (24– 210 months). The percentage of smoking history and alcohol use was 61% and 14 %, respectively. Of the 70 patients, 62.8% (n=44) were being treated with sulfasalazine and non-steroidal anti-inflammatory drugs and 37.1% (n=26) were being treated with a biologic agent treatment with or without sulfasalazine at the time of the questionnaire. The participants were divided into two groups according to treatment regimens (group 1: patients on non-biological treatment, group 2: patients on biological treatments). The demographic data, duration of disease, and BASDAI in each group are presented in Table 1. The groups were similar in terms of demographic and clinical data ($p > 0.05$).

A total of 5 patients had been infected with COVID-19 in our study. Only one patient with AS (32, year-old man) was affected by COVID-19 while receiving Anti-TNF therapy (Adalimumab). None of our patients were hospitalized due to COVID-19 infection and all had at-home antiviral treatment for COVID-19.

More than 85% (n=60) of our study population did follow Turkish government recommendations about the COVID-19 such as strict facial masking, social distancing, and proper hand hygiene. Most of our participants believed that vaccines are safe, effective, and all of them had at least one dose of the COVID-19 vaccine at a medical center. None of our patients report serious vaccine-related illnesses and problems.

Exercising habits in times of lockdown

The questionnaire consisted of several questions measuring whether AS patients were exercising less, as much, or more during the restriction period. Also, the characteristics of participants' exercise levels and patterns before and after the restriction period and the experienced obstacles were questioned. According to exercise habits, participants split into two groups. The categorization was composed of active patients (those who exercised regularly/at least once a week before COVID-19) and sedentary patients (those who exercised less than once a week, or non-regularly before COVID-19) groups. Among the active patients, 43.7% reported less exercising levels than before the lockdown, 43.7% reported exercising as much as before, and only 12.5% reported exercising more. The major exercise obstacles experienced by this subsample related to fear of COVID-19 and also, closed sports infrastructure (43.7%) (see Table 2). Among those that were classified as sedentary participants before the COVID-19 lockdown, only 9.2% were exercising more, 46.2% as much, and 44.4% less during the lockdown than in the period before the lockdown. A total of 9.2% of the sedentary patients found more time to exercise than before the lockdown (see Table 2).

Table 1. Patient characteristics and demographical variables

	Current treatments		
	NSAIDs and/ or sulfasalazine (n=44)	Biologic agents (with or without sulfasalazine) (n=26)	p
Age, years (mean ± SD)	35.1 ± 16.8	34.1 ± 17.7	0.073
Male gender, n (%)	23 (%52.3)	14 (%53.8)	0.126
BMI (kg/m2) (mean ± SD)	28.6 ± 5.6	27.9 ± 6.1	0.087
Disease duration, months (mean ± SD)	88.5 ± 35.8	84.5 ± 33.7	0.098
Education status, n (%)			0.064
Primary school	6 (13.6)	4 (15.3)	
Junior high school	10 (22.7)	4 (15.3)	
High school	18 (41.0)	12 (46.1)	
University	10 (22.7)	6 (25.0)	
Marital status (%)			0.114
Married	34 (77.1)	20 (76.9)	
Single	7 (16.0)	3 (11.5)	
Divorced/widowed	3 (6.8)	3 (11.5)	
Income status level			0.076
Low-income	10 (22.7)	6 (25.0)	
Median-income	24 (54.5)	16 (61.5)	
High-income	10 (22.7)	4 (15.3)	
Degree of urbanization, n (%)			0.137
Urban	4 (9.0)	2 (7.69)	
Suburban	30 (68.1)	17 (65.3)	
Rural	10 (22.7)	7 (26.9)	
Smoking	27 (61.3)	14 (53.8)	0.060
Alcohol use	7 (15.9)	3 (11.5)	0.085

Table 2. *Exercising habits in times of lockdown*

	Active patients (n=16)	Sedentary patients (n=54)	p
Time to exercise n (%)			0.210
Getting less	7 (43.7%)	24 (44.4%)	
As much	7 (43.7%)	25 (46.2%)	
Getting more	2 (12.5%)	5 (9.2%)	
Sedentary behavior n (%)			0.098
Getting less	2 (12.5%)	5 (9.2%)	
As much	7 (43.7%)	25 (46.2%)	
Getting more	7 (43.7%)	24 (44.4%)	
Reported exercise obstacles			0.063
Fear for COVID-19	7 (43.7%)	33 (61.1%)	
Closed infrastructure	7 (43.7%)	10 (18.5%)	
No friends	1 (6.25%)	5 (9.2%)	
No interest (any more)	1 (6.25%)	6 (11.1%)	

Table 3. *The impact of lockdown on dietary habits in AS patients*

	NSAIDs and/or sulfasalazine (n=44)	Biologic agents (with or without sulfasalazine) (n=26)	p
Meal number and frequency n (%)			0.789
Getting less	6 (13.6%)	4 (15.3%)	
As much	30 (68.1%)	15 (57.6%)	
Getting more	8 (18.1%)	7 (26.9%)	
Herbs n (%)			0.634
Getting less	--	2 (7.6%)	
As much	30 (68.1%)	19 (73.0%)	
Getting more	14 (31.8%)	5 (19.2%)	
Vitamin C n (%)			0.199
Getting less	--	--	
As much	17 (38.6%)	7 (26.9%)	
Getting more	27 (63.6%)	19 (73.0%)	
Vitamin D n (%)			0.208
Getting less	--	--	
As much	33 (75.0%)	20 (76.9%)	
Getting more	11 (25.0%)	6 (23.0%)	
Magnesium n (%)			
Getting less	--	--	0.215
As much	38 (86.3%)	20 (76.9%)	
Getting more	6 (13.6%)	6 (23.0%)	
Calcium n (%)			0.104
Getting less	--	--	
As much	38 (86.3%)	20 (76.9%)	
Getting more	6 (13.6%)	6 (23.0%)	
Vitamin B n (%)			0.220
Getting less	--	--	
As much	40 (90.9%)	20 (76.9%)	
Getting more	4 (9.1%)	6 (23.0%)	
Alcohol use n (%)			0.097
Getting less	--	1 (3.8%)	
As much	34 (77.2%)	20 (76.9%)	
Getting more	10 (22.7%)	5 (19.2%)	

Table 4. *Psychological impact of lockdown on mental health among AS patients:*

	NSAIDs and/ or sulfasalazine (n=44)	Biologic agents (with or without sulfasalazine) (n=26)	p
Feelings associated with anxiety			0.165
Feeling nervous	27 (63.6%)	16 (61.5%)	
Having a sense of impending danger	30 (68.1)	17 (65.3%)	
Unsubstantiated and growing worries, and restlessness	27 (63.6%)	17 (65.3%)	
Feelings associated with anxiety	33 (75.0%)	17 (65.3%)	
Psychological Wellbeing			0.079
Getting worse	22 (50.0%)	12 (46.1%)	
As much	18 (41.0%)	14 (53.8%)	
Getting better	4 (9.1%)	--	
Quality of Sleep			0.116
Getting worse	33 (75.0%)	17 (65.3)	
As much	3 (6.80%)	7 (26.9)	
Getting better	8 (18.1%)	2 (7.69)	
Event-Specific Distress			0.071
Mild	4 (9.1%)	---	
Moderate	33 (75.0%)	14 (53.8)	
Severe	7 (43.7%)	12 (46.1%)	

Table 5. *Availing health care and personal protection measures in times of lockdown:*

	NSAIDs and/ or sulfasalazine (n=44)	Biologic agents (with or without sulfasalazine) (n=26)	p
Seeing a rheumatologist for follow-up visits			
difficult to get appointment (yes/no)	42/2	25/1	0.234
Availability to the medicine			0.546
more difficult	3 (6.8)	--	
as much	7 (16.0)	4 (15.3)	
easier	34 (77.1)	20 (76.9)	
Provided health services			0.623
ideal	6 (13.6)	3 (11.5)	
satisfactory	24 (54.5)	12 (46.1)	
unsatisfactory	14 (31.8%)	11 (42.3%)	

The impact of lockdown on dietary habits in AS patients:

The participants in the study were questioned about the consumption of certain foods, supplements, or herbs as they thought it would help against COVID-19. These patients mainly consumed more vitamin C (65.7), as media advice for the public. There was increase in the intake of magnesium, calcium, and vitamin D supplements. However, despite specialist advice, some patients consumed more alcohol (21.4%) under the false assumption that alcohol would help fight against the virus (see table 3).

The psychological impact of lockdown on mental health among AS patients:

The findings of this study found revealed an increased risk of anxiety during the COVID-19 outbreak and lockdown conditions for the AS patients. More than two out of the three of our participants showed an increase in symptoms that may be associated with anxiety. Also, half of the patients reported decreased psychological wellbeing due to the lockdown. Specifically, 78% of the respondents reported sleep-wake rhythms changed markedly under restriction. Other changes in mental health status are given in table 4.

Availing health care and personal protection measures in times of lockdown:

Almost all patients reported obstacles to seeing a rheumatologist for follow-up visits and tests during the lockdown period. Only one-sixth (n=12) of the AS patients reached a rheumatologist for treatment during this period. Those patients (n=9) mainly visited a rheumatologist at a private clinic. The majority of the AS (n=58) patients in our study were obtained their medications from the pharmacy without prescription and none of them reported drug shortage (Table 5). Some of them (%14.2 (n=10)) had fears about immunosuppressive medications, and they reduced doses or stop the medications at early lockdown periods.

Discussion

The COVID-19 outbreak and lockdown period have globally affected and are still affecting the physical health of the patients with chronic physical conditions but also mental health and wellbeing (13-19). In this period patients with AS may have been at an increased risk of infections. But there is no evidence at this time that suggests that AS patients are at an increased risk of acquiring COVID-19 or having more severe symptoms if they do get sick (20-24). Recent research recommends that AS patients should continue their medication and get a COVID-19 vaccine (22-26). According to our current knowledge, this is the first study from the Turkish population which evaluated the effects of lockdowns and restrictions during the COVID-19 pandemic on AS patients and shows the regional and local impact of the COVID-19 crisis. This paper takes an in-depth look at the different dimensions of experiences of AS patients (Figure 1). According to the results of this study, the ongoing pandemic has a bidirectional effect on accessing health care and medications. While participants had obstacles for seeing a specialist for follow-up visits and tests during the lockdown period, they obtained easily their medications from the pharmacy without a prescription. It is important to understand that certain groups of patients with rheumatic or chronic disease may have obstacles and psychological impacts of lockdowns. Governments and devolved administrations should account for these concerns and present options for reforming the regulation of healthcare professionals to support individuals during the challenges caused by the ever-evolving global pandemic.

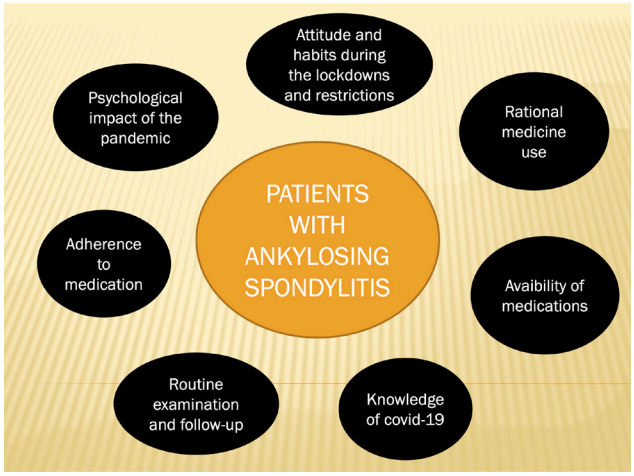

Figure 1. Different dimensions of experiences of AS patients

Physical exercise (PE) is an effective treatment for many chronic diseases and has effects on both the humoral and the cellular immune systems (27). Schweda S. et al. aimed to examine whether the restrictions and lockdowns influenced the physical activity level of people with multiple chronic conditions in the German population (28). According to the results in their study, 41% of the participants did not change their exercise habits during the lockdown and 22% of patients managed to increase their exercise habits (28). While 37% were not able to keep up the same amount of exercise habits, in total the training intensity was reduced by 40%. Reasons for activity limitation were often related to the lack of sports facilities, lack of motivation, and an increased organizational effort (28). According to our study, similar results were obtained for the AS patients. In our study population, 43.7% of AS patients did not change exercise habits in the lockdown period. But among the active patients, 43.7% less exercising levels were found and fear of COVID-19 and closed sports infrastructure were reported as the major exercise obstacles. Constandt B. et al. examined the adults' exercise levels and patterns during the COVID-19 lockdown in Belgium via an online survey (27). Responses from 15.737 people from the Belgium population indicate a general increase in exercise frequencies. According to the results of this survey among the high active participants, 23% reported exercising less, 41% reported exercising as much as before, and 36% reported higher exercising levels than before the lockdown (27). Also, among those that were classified as low active participants before the COVID-19 lockdown, 7% were exercising less, 5% as much, and 58% more during the lockdown than in the period before the lockdown (27). Missing the familiar way, having less time, and sitting more, were the major reasons for a self-reported exercise reduction. In Turkey, people were encouraged to exercise by the government during the lockdown to stimulate their mental and physical health via national media and social media. However, according to our

current knowledge, no study extensively investigated the physical activity level of the Turkish population in the lockdown period. So, the results of our study might nurture our understanding of how the physical activities of people with chronic diseases such as ankylosing spondylitis, were affected in the difficult times we have left behind.

According to Khan et al performing physical activity during the lockdowns was associated with a lower risk of developing anxiety, stress, and depression compared to a more sedentary life (29). A few reports published revealed that young people experienced more depression symptomatology during the COVID-19 outbreak (29-33). In addition, different studies reported that excessive exposure to COVID-19 news in media showed an association with depression (29-34). Our findings revealed an increased risk of anxiety during the COVID-19 outbreak and lockdown conditions for the AS patients. Khan et al. investigated the event-specific distress and they observed that 69.31% of participants had event-specific distress caused by the outbreak (29). Also, Cellini et al. observed a significant increase in the Pittsburgh Sleep Quality Index score under the restriction and, they reported specifically, sleep-wake rhythms markedly changed under restriction (35). Similarly, 78% of our respondents reported the same situation.

According to the results of the studies throughout Europe the effect of COVID-19 lockdown both negatively and positively impacted dietary practices (36-42). These studies showed us poor lifestyle outcomes including weight gain, mental health issues, and limited physical activity were associated with negative diet habits (36-42). A cross-sectional questionnaire-based survey from China found that 10.6% of participants increased their alcohol consumption intentionally (37). Similarly, 21.4% of our study population had increased their alcohol consumption. According to Zhao et al. 37.7% of their study population consumed Chinese herbs and supplements to strengthen their immune system (37). Bennett et al. summarized that vitamin C consumption increased in this period (36). Two studies from India showed an increase in snacking behavior and, two studies from Italy showed evidence for reduction of fresh products (43,44). Our results showed that 65.7% of AS patients had more vitamin C supplements during the lockdown period.

Limitations of the study

The main limitation of our study is the cross-sectional design. So, it was not possible to assess the longer-term effects of lockdown and it is worth reminding that this study is not a cause-effect research. Also, the sample size of this study was restricted as it included AS patients from a small province of Turkey. We accept the small sample size is a drawback of this study limiting the national validity of the findings. Another limitation was caused by the specific situation of the study population. We did not include a control group from a healthy population to compare to AS patients. And at last, as we prepared these questions of this survey hence, these are not valid and relaibel.

Conclusion

The majority of the AS did not consult specialists or physicians during the lockdown period but most of them continued their medications to control the disease activity. Results of this study suggest that a further action needs to be planned to improve awareness among rheumatological diseases such as AS regarding the availability of medical services and strengthening the provision of rheumatological care at primary care centers. Authorities should target the management appropriate control of chronic diseases, even during this pandemic.

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