

Did We Do It Right? The Effect of Postponing Elective Orthopedic Surgeries Due to the Pandemic on the Quality of Life

Batuhan Gencer¹ , Ahmet Çulcu² , Orhan Mert¹ , Özgür Doğan¹ 

¹Ankara City Hospital, Orthopaedics and Traumatology Department, Ankara, Turkey

²Yüksekova Public Hospital, Orthopaedics and Traumatology Clinic, Hakkari, Turkey

Batuhan GENCER

Ahmet ÇULCU

Orhan MERT

Özgür DOĞAN

Correspondence: Batuhan Gencer
Ankara City Hospital, Orthopaedics and Traumatology Department, Ankara, Turkey
Phone: +905053107244
E-mail: gencer.batuhan@gmail.com

Received: 02 February 2022

Accepted: 25 February 2022

ABSTRACT

Objective: To investigate the effect of the postponement of elective surgeries on the quality of life of the patients and to examine the post-operative COVID-19 rates of patients who underwent elective surgery and investigate the associated risk factors.

Methods: In this retrospective study, 187 patients who underwent elective surgery between June and July 2020 and between January and May 2021 were examined. Age, gender, occupation, comorbidity, time of surgical delay, type of surgery, hospitalization, and follow-up periods were recorded. Surgeries were categorized under four headings; knee arthroscopy, arthroplasty, rotator cuff repair/impingement, and minor surgery. To examine the quality of life of all operated patients, a validated Turkish version of EQ-5D-3L was used. All patients were questioned on phone to identify the risk factors for transmission. Statistical analyzes were performed using SPSS 26.0 version.

Results: Among the 187 patients evaluated in the study, 40 patients (21.4%) were diagnosed nCoV-19 during the postoperative period. Regardless of the type of surgery performed, mobility, pain/discomfort, and anxiety/depression scores were increased significantly postoperatively ($p < 0.05$ for each). A significant relationship was found between younger age, surgery type, shorter hospitalization period, a greater number of visits to the outpatient clinic, longer follow-up period, history of nCoV-19 preoperatively, diagnosis of nCoV-19 among relatives and the diagnosis of nCoV-19 after surgery ($p < 0.05$ for each).

Conclusion: By taking all possible precautions and avoiding identifiable risk factors, thus eliminating the risk of COVID-19 transmission as much as possible, and then performing elective surgeries will significantly increase the quality of life of the patients.

Keywords: COVID-19, nCoV-19, elective surgery, EQ-5D-3L, Quality of life, worse than death

Doğru Mu Yaptık? Pandemi Nedeniyle Elektif Ortopedik Ameliyatların Ertelenmesinin Yaşam Kalitesine Etkisi

ÖZET

Amaç: Elektif ameliyatların ertelenmesinin hastaların yaşam kalitesine etkisini araştırmak ve elektif cerrahi uygulanan hastaların ameliyat sonrası COVID-19 oranlarını ve ilişkili risk faktörlerini incelemek.

Yöntemler: Bu retrospektif çalışmada, Haziran-Temmuz 2020 ve Ocak-Mayıs 2021 tarihleri arasında elektif cerrahi uygulanan 187 hasta incelendi. Yaş, cinsiyet, meslek, komorbidite, cerrahi gecikme zamanı, cerrahinin türü, hastanede kalma ve takip süreleri kaydedildi. Ameliyatlar dört başlık altında toplandı; diz artroskopisi, artroplasti, rotator manşet tamiri/impingment ve minor cerrahiler. Ameliyat edilen hastaların yaşam kalitesini incelemek için, EQ-5D-3L'nin valide edilmiş Türkçe versiyonu kullanıldı. Tüm hastalar, bulaş için risk faktörlerini belirlemek amacıyla telefonla arandı. İstatistiksel analizler SPSS 26.0 versiyonu kullanılarak yapıldı.

Bulgular: Çalışmada değerlendirilen 187 hastanın 40'ına (%21,4) ameliyat sonrası dönemde nCoV-19 tanısı konuldu. Yapılan ameliyatın türünden bağımsız olarak, hareketlilik, ağrı/rahatsızlık ve anksiyete/depresyon puanlarının ameliyat sonrası anlamlı olarak arttığı görüldü (her biri için $p < 0.05$). Ameliyat sonrası nCoV-19 tanısı ile genç yaş, ameliyat tipi, kısa hastanede yatış süresi, fazla poliklinik ziyareti, uzun takip süresi, ameliyat öncesi nCoV-19 öyküsü ve akrabalarda nCoV-19 tanısı arasında anlamlı ilişki saptandı (her biri için $p < 0.05$).

Sonuç: Olası tüm önlemleri alarak ve tanımlanabilir risk faktörlerinden kaçınarak, böylece COVID-19 bulaş riskini mümkün olduğunca azaltarak, elektif ameliyatların yapılması hastaların yaşam kalitesini önemli ölçüde artıracaktır.

Anahtar Kelimeler: COVID-19, nCoV-19, elektif cerrahi, EQ-5D-3L, Yaşam kalitesi, ölümden daha kötü

The coronavirus infection (nCOV-19), in which the first cases began to be seen towards the end of 2019, was declared as a pandemic on 11 March 2020 (1,2). This date is also the date when the first case was seen in our country (3). Especially in the early stages of the disease, preventive social measures have become very important due to the lack of definitive treatment and protective vaccines (4,5). In our country, in addition to many measures restricting social life, such as the prohibition of city entrances and curfews, serious restrictions have also been introduced in the hospitals.

One of the most important restrictions conducted in the hospitals was the suspension of all elective procedures between March and June 2020 (2). Moreover, even after the suspension has been removed, elective surgeries have been periodically stopped in our hospital between August 2020 and December 2020, so that all medical personnel and all available hospital beds could be allocated to the pandemics (6). On the other hand, many patients during this period applied to our hospital due to elective pathologies such as meniscal or anterior cruciate ligament (ACL) injuries, gonarthrosis, coxarthrosis, rotator cuff ruptures, ingrown nails, and carpal tunnel syndrome; and surgical treatment was suggested. However, in the light of current regulations, these surgeries had to be postponed to increase the number of medical staff and beds allocated to the pandemics and to protect the patients from the effects of the pandemic. On the other hand, it is an inevitable fact that these postponed surgeries reduce the quality of life of patients. Indeed, there are several studies in the literature stating that postponed surgeries reduce the quality of life and patients want to have elective surgery despite the risk of COVID-19 transmission (6-9).

Our primary objective in the study was to investigate the effect of the postponement of elective surgeries on the quality of life of the patients operated on in our clinic. Our secondary objective was to determine the postoperative nCOV-19 rates of patients who underwent elective surgery and to investigate the associated risk factors.

METHODS

Following the ethical board approval, all patients who were recommended surgical treatment during the period when elective surgeries were suspended (March-June 2020 and August-December 2020) and who underwent elective surgery after the suspension was lifted (June-July 2020 and January-May 2021) were examined retrospectively. Patients who underwent emergency and/or trauma

surgeries, patients who were not recommended for surgery at the time of the restrictions, patients who had surgery in different hospitals, patients who are healthcare workers, and patients who did not agree to participate in the study or whose follow-up information could not be reached were excluded from the study. Considering all the inclusion and exclusion criteria, 187 patients were evaluated.

Age, gender, occupation, comorbidity, time of surgical delay, type of surgery, hospitalization, and follow-up periods of all patients were recorded from the patient files. Occupations were grouped under three headings according to the need for movement; not working/retired, less active occupation (civil servant, accountant), or highly active occupation (security guard, furniture maker). In terms of comorbidity, only systemic diseases requiring drug use were accepted as comorbidities (such as hypertension or diabetes mellitus). Surgeries were categorized under four headings; Knee Arthroscopy (diagnostic knee arthroscopy, meniscal injury repair, ACL reconstruction), Arthroplasty (total knee arthroplasty, total hip arthroplasty, revision knee arthroplasty), Rotator Cuff Repair/Impingement (open repair, acromioplasty), and Minor Surgery (implant removals and all kinds of procedures performed under local anesthesia such as nail bed revision, nervus medianus decompression, and trigger finger surgery).

All patients were called in November 2021 from the phone numbers recorded in their files to question whether they were diagnosed with nCOV-19 after the surgery, the risk factors for transmission, and the quality of life before and after the surgery. While the delay time of the surgery was determined as the number of days between the date of the first outpatient clinic control when the surgery was recommended to the patient and the date of the surgery; postoperative follow-up period was determined as the number of days between the day of the surgery and the date the patient was called in November 2021.

To examine the quality of life of all operated patients, a validated Turkish version of EQ-5D-3L (registration number: 40403) was acquired from the EuroQol website (10,11). In this official survey, patients' quality of life was questioned under 6 headings; mobility, self-care, usual activities, pain/discomfort, anxiety/depression, and visual pain scale (VPS). The first three headings (mobility, self-care, and usual activities) were evaluated with 3 answers (no problem was categorized under "1"; little discomfort was categorized under "2" and unable to do was categorized under "3") whereas fourth and fifth headings (pain/discomfort and anxiety/depression) were again evaluated

with 3 answers (no problem was categorized under "1"; moderate pain or anxiety were categorized under "2" and extreme pain or anxiety were categorized under "3"). In the last heading (VPS), the patients were asked to give a score of 0-100 for their pain, with 0 being unbearable resting pain and 100 being a pain-free normal life. All patients were asked to fill out the survey twice, taking into account their pre-operative situation in one and their current situation in the other, thus by evaluating the effect of the surgery on the quality of life of the patients, it can be interpreted whether the delay of the surgery reduced the quality of life.

To examine the post-operative nCOV-19 rates of patients who underwent elective surgeries and to determine the associated risk factors; when the patients were called, the number of visits to the outpatient clinics related to surgery, whether they had a history of nCOV-19 before or after surgery, whether they had relatives diagnosed with nCOV-19, whether they traveled between cities, and whether they were staying in the same house with any healthcare worker was questioned and the answers were recorded. Patients were divided into two subgroups according to whether they were diagnosed with nCOV-19 between the date of surgery and November 2021, and all responses were analyzed accordingly; Group 1 consisted of patients who were not diagnosed with nCOV-19, and Group 2 consisted of patients diagnosed with nCOV-19 (Table 1).

Statistical analyzes were performed using SPSS 26.0 version. Mean (minimum-maximum) values and frequency (percentile) were used as descriptive statistics. The compliance of the variables to normal distribution was examined by visual (histogram and probability graphs) and analytical (Kolmogorov-Smirnov/Shapiro-Wilk tests) methods. Student T-Test was used for normally distributed variables whereas Mann Whitney U and Wilcoxon Signed Ranks Tests were used for non-normally distributed variables. Comparison of categorical data has been conducted with the Chi-Square Test, and for data that does not meet the Chi-Square conditions, Fischer's exact test was used. The cases where the p-value was less than 0.05 were considered statistically significant.

RESULTS

Among the 187 patients evaluated in the study, 40 patients (21.4%) were diagnosed nCOV-19 during the postoperative period. While 82 patients (43.8%) had undergone knee arthroscopy surgeries, 51 patients (27.3%) had joint replacements, 14 patients (7.5%) had rotator cuff tear repairs and/or acromioplasty and 40 patients (21.4%) had minor surgeries. A significant relationship was found between younger age, surgery type, shorter hospitalization

period, a greater number of visits to the outpatient clinic, longer follow-up period, history of nCOV-19 preoperatively, diagnosis of nCOV-19 among relatives, and the diagnosis of nCOV-19 after surgery ($p < 0.05$ for each). Detailed demographic profile of the patients, COVID-19 transmission rate, and all related factors can be seen in Table 1.

The average delay time of elective surgeries performed in our clinic was 78.48 days (Range: 3 – 540 days). Regardless of the type of surgery performed, mobility, pain/discomfort, anxiety/depression, and VPS scores of all patients were increased significantly postoperatively ($p < 0.05$ for each). Furthermore, self-care scores of Knee Arthroscopy and Rotator Cuff Repair/Impingement groups were increased significantly ($p = 0.046$ and $p = 0.001$, respectively) On the other hand, only in the Minor Surgery group, a significant decrease was observed in the usual activities score ($p = 0.014$). The change in the quality of life of the patients postoperatively based on the type of surgery performed can be seen in Table 2.

DISCUSSION

During the pandemic of our age, elective surgeries have been ceased in most countries to reduce hospital admissions and to direct facilities to pandemic patients (6,8,9,12-14). In orthopedics, especially patients who are waiting for knee and hip arthroplasties are affected by this situation, and they are forced to live with a very low quality of life, which is described as "worse than death" situation in the literature (7,8). On the other hand, knee and hip arthroplasties are not the only elective surgeries in orthopedics, and also knee and hip arthritis are not the only pathologies that reduce the quality of life. As far as we know, this is one of the first studies investigating the effects of postponing all orthopedic elective surgeries on quality of life on such a large scale. This constitutes the main strength of our study. The most important finding of our study is the significant increase in the postoperative quality of life of patients whose surgery was postponed, regardless of the surgery type. To be specific; mobility, pain/discomfort, anxiety/depression, and VPS scores of all surgery types were increased significantly ($p < 0.05$ for each). The negative impact of postponing elective surgeries due to COVID-19 on quality of life, which is our main hypothesis, emerges at this point; Surgeries postponed due to the pandemic mean that this increase in quality of life is delayed and the patient continues to live with a low quality of life during the postponement period. Furthermore, in terms of postoperative nCOV-19 rates, several associated risk factors such as younger age, shorter hospitalization period, a greater number of visits to the outpatient clinics, history of nCOV-19 preoperatively, and diagnosis of nCOV-19 among relatives have been identified ($p < 0.05$ for each).

Table 1: Subgroup analysis regarding the associated risk factors in the development of nCOVID-19 after elective surgeries

		Group 1 (N=147)	Group 2 (N=40)	Total (N=187)	p
Age (years)		51.35 (17 – 81)	40.8 (23 – 60)	49.09 (17 – 81)	<0.001
Gender	Male	58 (39.5%)	20 (50%)	78 (41.7%)	0.230
	Female	89 (60.5%)	20 (50%)	109 (58.3%)	
Occupation	Not working	13 (8.8%)	8 (20%)	21 (11.2%)	0.058
	Less active	100 (68%)	20 (50%)	120 (64.2%)	
	Highly active	34 (23.2%)	12 (30%)	46 (24.6%)	
Comorbidity	No	92 (62.6%)	28 (70%)	120 (64.2%)	0.386
	Yes	55 (37.4%)	12 (30%)	67 (35.8%)	
Surgery Type	Arthroscopy	58 (39.5%)	24 (60%)	82 (43.8%)	0.003
	Arthroplasty	47 (32%)	4 (10%)	51 (27.3%)	
	RCR/I	14 (9.5%)	0	14 (7.5%)	
	Minor Surg	28 (19%)	12 (30%)	40 (21.4%)	
Hospitalization Period (days)		3.51 (0 – 11)	2.15 (0 – 10)	3.22 (0 – 11)	0.001
Number of Visits to the Outpatient Clinic		1.99 (0 – 10)	2.35 (0 – 6)	1.64 (0 – 10)	0.030
Follow-up after Surgery (days)		283.45 (214 – 523)	335.55 (205 – 523)	294.59 (205 – 523)	<0.001
History of nCOVID-19 Preoperatively	No	137 (93.2%)	30 (75%)	167 (89.3%)	0.003
	Yes	10 (6.8%)	10 (25%)	20 (10.7%)	
Diagnosis of nCOVID-19 among Relatives	No	73 (49.7%)	10 (25%)	83 (44.4%)	0.005
	Yes	74 (50.3%)	30 (75%)	104 (55.6%)	
Travel History After Surgery	No	63 (42.9%)	22 (55%)	85 (45.5%)	0.171
	Yes	84 (57.1%)	18 (45%)	102 (54.5%)	
Healthcare Worker Relative	No	86 (58.5%)	22 (55%)	108 (57.8%)	0.691
	Yes	61 (41.5%)	18 (45%)	79 (42.2%)	

Mean (Minimum – Maximum) values were used for numerical data whereas frequency (percentile) was used for categorical data; N: number of patients; P: statistical significance value; RCR/I: shoulder impingement and/or rotator cuff tear related operations; Minor Surg: all operations conducted under local anesthesia and implant removals

One of the most important reasons for the postponement of elective surgeries is the desire to reduce the patient load in hospitals (6,15). After all, a patient comes to the outpatient clinics for follow-ups more than once after elective surgery. Indeed, a significant relationship was found between a greater number of visits to the outpatient clinics and postoperative nCOVID-19 rates in our study (p=0.030). On the other hand, a significant relationship was found between younger age, shorter hospitalization period, and nCOVID-19 rates in our study (p<0.001 and p=0.001, respectively). A significant relationship was also found between surgery type and nCOVID-19 rates (p=0.003); nCOVID-19 rates were found to be higher in patients who underwent knee arthroscopy and minor surgeries. These findings differ from the literature. Clement et al. have reported a postoperative nCOVID-19 rate of 1%, with the only significant risk factor being longer hospitalization period (12). Yapp et al.

have stated that a longer hospitalization period is associated with positive COVID-19 status (16). On the other hand, in our study, the postoperative nCOVID-19 rate was found to be 21.4% and a shorter hospitalization period was found to be an important risk factor (p<0.001). The patient population undergoing knee arthroscopy and minor surgery generally consists of younger patients, and the hospitalization period of these patients is shorter while older patients usually undergo arthroplasty surgeries that may require longer hospitalization. Considering the dangerous course of nCOVID-19 in the elderly, older patients are much more cautious, especially in terms of post-operative transmission; On the other hand, the more careless behavior of younger patients may explain the higher nCOVID-19 rates in patients who underwent arthroscopy and minor surgeries and had a shorter hospital stay.

Table 2: Variation of patients' pre- and post-operative quality of life						
		Arthroscopy (N=82)	Arthroplasty (N=51)	RCR/I (N=14)	Minor Surg (N=40)	
Follow-up After Surgery (days)		287.77 (205 – 523)	306.08 (214 – 523)	309.36 (228 – 499)	288.77 (206 – 492)	
Time of Surgical Delay (days)		103.32 (10 – 540)	47.35 (3 – 240)	62 (4 – 180)	73 (5 – 210)	
Mobility	Pre	1	6 (7.3%)	0	6 (42.9%)	26 (65%)
		2	74 (90.2%)	51 (100%)	6 (42.9%)	14 (35%)
		3	2 (2.4%)	0	2 (14.3%)	0
	Post	1	38 (46.3%)	35 (68.6%)	10 (71.4%)	30 (75%)
		2	42 (51.2%)	16 (31.4%)	4 (28.6%)	10 (25%)
		3	2 (2.4%)	0	0	0
	p		<0.001	<0.001	0.014	0.046
Self-Care	Pre	1	74 (90.2%)	33 (64.7%)	0	40 (100%)
		2	8 (9.8%)	18 (35.3%)	14 (100%)	0
		3	0	0	0	0
	Post	1	78 (95.1)	35 (68.6%)	12 (85.7%)	38 (95%)
		2	4 (4.9%)	10 (19.6%)	2 (14.3%)	2 (5%)
		3	0	6 (11.8%)	0	0
	p		0.046	0.157	0.001	0.157
Usual Activities	Pre	1	70 (85.4%)	33 (64.7%)	10 (71.4%)	36 (90%)
		2	12 (14.6%)	18 (35.3%)	4 (28.6%)	4 (10%)
		3	0	0	0	0
	Post	1	70 (85.4%)	37 (72.5%)	12 (85.7%)	30 (75%)
		2	12 (14.6%)	12 (23.5%)	2 (14.3%)	10 (25%)
		3	0	2 (3.9%)	0	0
	p		1.000	0.414	0.157	0.014
Pain Discomfort	Pre	1	8 (9.8%)	2 (3.9%)	0	8 (20%)
		2	52 (63.4%)	22 (43.1%)	12 (85.7%)	28 (70%)
		3	22 (26.8%)	27 (52.9%)	2 (14.3%)	4 (10%)
	Post	1	30 (36.6%)	20 (39.2%)	6 (42.9%)	22 (55%)
		2	42 (51.2%)	24 (47.1%)	8 (57.1%)	12 (30%)
		3	10 (12.2%)	7 (13.7%)	0	6 (15%)
	p		<0.001	<0.001	0.005	0.003
Anxiety Depression	Pre	1	20 (24.4%)	12 (23.5%)	4 (28.6%)	10 (25%)
		2	22 (26.8%)	29 (56.9%)	4 (28.6%)	20 (50%)
		3	40 (48.8%)	10 (19.6%)	6 (42.9%)	10 (25%)
	Post	1	34 (41.5)	34 (66.7%)	8 (57.1%)	24 (60%)
		2	20 (24.4%)	9 (17.6%)	2 (14.3%)	8 (20%)
		3	28 (34.1%)	8 (15.7%)	4 (28.6%)	8 (20%)
	p		<0.001	<0.001	0.014	<0.001
VPS	Pre	51.46 (10 – 90)	48.04 (30 – 70)	44.29 (30 – 50)	60.5 (10 – 80)	
	Post	73.17 (10 – 90)	75.49 (40 – 100)	80 (50 – 100)	73 (10 – 100)	
	p	<0.001	<0.001	<0.001	<0.001	

Mean (Minimum – Maximum) values were used for numerical data whereas frequency (percentile) was used for categorical data; N: number of patients; P: statistical significance value; RCR/I: shoulder impingement and/or rotator cuff tear related operations; Minor Surg: all operations conducted under local anesthesia and implant removals; Pre: Preoperatively; Post: Postoperatively.

Although nCOV-19 re-infections can occur, this is not very common due to the nature of the viral infection (17). Indeed, in our study, patients with no preoperative history of nCOV-19 had higher rates of postoperative disease ($p=0.003$). On the other hand, the significant relationship between nCOV-19 diagnosis among relatives and postoperative infection rates ($p=0.005$) can be explained by the “get well soon” visits, which are common despite the pandemic, due to the sociocultural structure of our society. It is important to keep in mind that, compared to the nCOV-19 rates after elective surgeries in the literature, our infection rate is much higher (21.4%). The reason for this is that the studies in the literature generally consider the diagnosis of infection in the early postoperative period (12,16,18) whereas, in our study, postoperative nCOV-19 rates were evaluated after an average of 294.59 days (range: 205-523 days) of follow-up. It is not possible to consider all high-risk actions of patients during this period and to determine all risk factors accordingly. The fact that the mean postoperative follow-up period of the patient group diagnosed with nCOV-19 postoperatively was longer ($p<0.001$) also supports this hypothesis. After all, the nCOV-19 rates increase as the patients’ follow-up period increases.

The primary purpose of elective surgeries, which are usually indicated following chronic processes, is almost always to increase the quality of life (19). Indeed, in our study, a significant increase was found in the quality of life of all our patients after elective surgery ($p<0.05$ for each). Postponed arthroplasty surgeries are a subject of particular interest in the literature. Clement et al. have stated that patients who have delayed knee or hip replacement surgery are defined as “worse than death” and over 80% of the patients have reduced quality of life due to postponement of elective surgeries (8). Madanipour et al. have reported that over 70% of the patients wished to proceed with surgery, regardless of the virus transmission risk (9). In our study, the patients’ mobility, pain/discomfort, anxiety/depression, and VPS scores increased significantly after arthroplasty operations performed following an average delay of 47.35 days (range: 3-240 days) ($p<0.001$ for each). An important detail to highlight here is that the longest delay period is 240 days. It should be kept in mind that patients who are in a “worse-than-death” state and all patients who do not want to wait until the postponement of elective surgeries are over had elective surgeries in centers other than our hospital and were not included in our study. Different results can be obtained with multicenter studies including these patients.

Postoperative mobility, self-care, pain/discomfort, anxiety/depression, and VPS scores increased significantly in patients who underwent knee arthroscopy, with a mean delay of 103.32 days (range: 10-540 days) ($p<0.001$, $p=0.046$, $p<0.001$, $p<0.001$, and $p<0.001$, respectively). Similarly, mobility, self-care, pain/discomfort, anxiety/depression, and VPS scores increased significantly in patients who underwent open surgery for rotator cuff repair and/or impingement, with an average waiting time of 62 days (range: 4-180 days) ($p=0.014$, $p=0.001$, $p=0.005$, $p<0.001$ and $p<0.001$, respectively). On the other hand, while the quality-of-life scales showed similar changes in the minor surgery group with an average delay time of 73 days (range: 5-210 days); the usual activities score decreased postoperatively ($p=0.014$). Although we could not be able to explain the decrease in the usual activities score while there was an increase in other quality of life scores, we believe that the fact that these surgeries had to be performed as quickly as possible under local anesthesia may have affected the results.

There are several limitations in our study. First and foremost, although our limited phone call evaluated several parameters; there are too many confounding factors regarding COVID-19 transmissions, such as using masks, social distancing, going to hospitals, or any other high-risk areas for any reason. Moreover, it was not questioned in our study whether the patients received post-operative physical therapy, and if they did, whether they received it at home or in a physical therapy center. Admitting it is very difficult, risk factors for postoperative transmission can be revealed more clearly with comprehensive studies in which all relevant parameters are evaluated. Secondly, although it is easy to use, practical, and supported by the literature, the EQ-5D-3L questionnaire is not the only scoring system that measures patients’ quality of life. Different results can be obtained with different and comprehensive scoring systems. Thirdly, as described in the methods section, patients were called in November 2021 and asked to fill out the questionnaire twice, one is for pre-operative and the other for post-operative assessments. Since patients are prone to forget the degree of pain they felt before surgery, they may give biased scores for historical pains and this is an important limitation. Finally, as mentioned before, we have only included patients that were operated on in our hospital. Thus, patients who could not wait, in other words, “worse than death” patients, were not included in the study. More clear results can be obtained with multicenter, comprehensive studies.

CONCLUSION

In conclusion, although elective surgeries have to be ceased from time to time to protect patients and cope with the increasing patient burden during the pandemic of our age, these postponements have dramatic effects on patients' quality of life. Taking all possible precautions, and avoiding identifiable risk factors, thus eliminating the risk of virus transmission as much as possible and then performing elective surgeries will significantly increase the quality of life of the patients.

DECLARATIONS

Acknowledgements

The authors declare no acknowledgements.

Conflicts of Interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

Funding

The authors did not receive support from any organization for the submitted work.

Ethical Approval

This study was approved by the Ministry of Health and the local ethics committee.

Consent to Participate

Informed consent was obtained from all individual participants included in the study.

Consent to Publish

All authors agreed with the content and all authors gave explicit consent to submit the study. Authors have obtained consent from Ministry of Health and Ankara City Hospital. Patients signed informed consent regarding publishing their data.

Availability of Data and Materials

All data have deposited in a repository.

REFERENCES

- Gencer B, Doğan Ö. Consequences of the COVID-19 pandemic on fracture distribution: Epidemiological data from a tertiary trauma center in Turkey. *J Exp Clin Med* 2022; 39(1): 128-133.
- Yavuz İA, Kahve Y, Aydın T, Gencer B, Bingöl O, Yıldırım AÖ. Comparison of the first and second waves of the COVID-19 pandemic with a normal period in terms of orthopaedic trauma: Data from a level 1 trauma centre. *Acta Orthop Traumatol Turc* 2021; 55(5): 391-395.
- Turgut A, Arlı H, Altundağ Ü, Hancıoğlu S, Egeli E, Kalenderer Ö. Effect of COVID-19 pandemic on the fracture demographics: Data from a tertiary care hospital in Turkey. *Acta Orthop Traumatol Turc* 2020; 54(4): 355-363.
- Acar AC, Er AG, Burduloğlu HC, Sülkü SN, Son YA, Akin L, et al. Projecting the course of COVID-19 in Turkey: A probabilistic modeling approach. *Turk J Med Sci* 2021; 51(1): 16-27.
- Ojeda-Thies C, Cuarental-García J, García-Gómez E, Salazar-Zamorano CH, Alberti-Maróño J, Ramos-Pascua LR. Hip fracture care and mortality among patients treated in dedicated COVID-19 and non-COVID-19 circuits. *Eur Geriatr Med* 2021; 12(4): 749-757.
- Farrow L, Gardner WT, Tang CC, Low R, Forget P, Ashcroft GP. Impact of COVID-19 on opioid use in those awaiting hip and knee arthroplasty: a retrospective cohort study. *BMJ Qual Saf*. 2021 Sep 14doi:10.1136/bmjqs-2021-013450. [Epub ahead-of-print]
- Clement ND, Scott CEH, Murray JRD, Howie CR, Deehan DJ; IMPACT-Restart Collaboration. The number of patients "worse than death" while waiting for a hip or knee arthroplasty has nearly doubled during the COVID-19 pandemic. *Bone Joint J*. 2021; 103-B(4): 672-680.
- Scott CEH, MacDonald DJ, Howie CR. "Worse than death" and waiting for a Joint arthroplasty. *Bone Joint J* 2019; 101-B(8): 941-950.
- Madanipour S, Al-Obaedi O, Ayub A, Iranpour F, Subramanian P. Resuming elective hip and knee arthroplasty in the COVID-19 era: a unique insight into patient risk aversion and sentiment. *Ann R Coll Surg Engl* 2021; 103(2): 104-109.
- Rabin R, de Charro F. EQ-5D: a measure of health status from the EuroQol Group. *Ann Med*. 2001; 33(5): 337-343.
- Eser E, Dinç G, Cambaz S, Ozyurt B, Nesanır N, Şerifhan M. EURO-QoL (EQ-5D) Community standards and psychometric properties of the EQ-5D index: Sample of Manisa urban society. In: Eser E, Aydemir Ö, Pala T, editors. 2. Congress on Quality of Life in Health; 2007 April 5-7; Izmir, Türkiye; 2007. p 78.
- Clement ND, Hall AJ, Kader N, IMPACT Restart Collaboration, Ollivere B, Oussedik S, et al. The rate of COVID-19 and associated mortality after elective hip and knee arthroplasty prior to cessation of elective services in UK. *Bone Joint J* 2021; 103-B(4): 681-688.
- Wignadasan W, Mohamed A, Kayani B, Magan A, Plastow R, Haddad FS. Restarting elective orthopaedic surgery as COVID-19 lockdown restrictions are reduced: have patient perceptions towards surgery changed? *Bone Jt Open* 2021; 2(10): 865-870.
- Hampton M, Riley E, Garneti N, Anderson A, Wembridge K. The orthopaedic waiting list crisis: two sides of the story. *Bone Jt Open* 2021; 2(7): 530-534.
- Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med* 2020; 382: 727-733
- Yapp LZ, Clarke JV, Moran M, Simpson AHRW, Scott CEH. National operating volume for primary hip and knee arthroplasty in the COVID-19 era: a study utilizing the Scottish arthroplasty project dataset. *Bone Jt Open* 2021; 2(3): 203-210.
- West J, Everden S, Nikitas N. A case of COVID-19 reinfection in the UK. *Clin Med (Lond)*. 2021; 21(1): e52-e53.
- Chang JS, Wignadasan W, Pradhan R, Kontoghiorghe C, Kayani B, Haddad FS. Elective orthopaedic surgery with a designated COVID-19-free pathway results in low perioperative viral transmission rates. *Bone Jt Open* 2020; 1(9): 562-567.
- Amstutz HC, Le Duff MJ. Effects of physical activity on long-term survivorship after metal-on-metal hip resurfacing arthroplasty: Is it safe to return to sports? *Bone Joint J* 2019; 101-B(10): 1186-1191.