



IMPACT OF COVID-19 ON POST-OPERATIVE FOLLOW UP IN ORTHOPAEDIC SURGERIES

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ABSTRACT **Objectives-** This study aims to evaluate the factors associated with loss to follow-up of patients in Orthopaedics clinic in the postoperative period after major orthopaedic surgery in a tertiary care hospital in India during the post Covid-19 pandemic situation.

Patients and Methods- A cross-sectional observational study was conducted on recently operated patients aged >18 years, who underwent major orthopaedic procedure in the hospital before the announcement of the lockdown and were supposed to follow-up postoperatively during the lockdown period. Data was collected in the form of answers to questions from pre-set questionnaires through telephonic interviews.

Results: A total of 61 patients were included in the study with a mean age of 37.52 ± 15.76 years. Eleven patients were afraid of contacting COVID-19 infection and transportation issues were faced by 51 patients. 17 patients belonged to the containment zone specified by the administration due to which they were unable to visit the hospital. No statistically significant difference was observed between age, sex of the patient, and patient satisfaction index (p -value > 0.05). No correlation was seen between age, sex of the patient, and transportation issues faced during lockdown (p -value > 0.05).

Conclusion: Several factors associated with non-compliance included lack of awareness of patients to telemedicine consultations and the unavailability of transport facilities to hospital. The use of telemedicine facilities must be emphasized to these patients for better outcomes and prepare for such a situation in the future.

KEYWORDS : Follow up; post-operative; orthopaedics surgery; lockdown; Covid-19 pandemic; India

INTRODUCTION

Covid-19 pandemic has affected the health care services worldwide and orthopaedic surgery is not an exemption (1,2). To prevent the surge in the cases 'national lockdown' was imposed in the country on March 25, 2020. There was a sudden cessation of all the activities including interstate movement of the people. The anticipation of contacting this contagious virus made a deep impact on people's mind to the extent that the due importance of the primary ailment faded away (3). The scenario in the hospitals were also not different. Many healthcare institutes were converted into Covid-19 treatment centres (4). There was a significant diminution of the number of patients coming for follow up postoperatively after discharge. Since inadequate compliance to medical care postoperatively may lead to poor long-term functional outcome, follow-up of these operated cases hold significance for better outcome (5). In the regular times, factors affecting postoperative follow-up compliance are race/ethnicity, distance from the medical centre, insurance status, Etc. (6) During the times of the COVID pandemic, which is unlike anything this generation has witnessed before, it can be predicted that newer factors have come into play. Foremost of which appears to be fear of the infection, unavailability of transportation, lack of awareness about teleconsultation option, lack of awareness about the screening OPD in the hospital, and monetary issues (7). As the Covid-19 cases are on an increasing trend in our country, the complete understanding of all the factors which may lead to non-compliance of patients to follow up after orthopaedic surgery is important. Once known, the study of these factors, along with information on the demography of our population, could help to draft solutions to improve the patient outcome and

optimize utilization of health care resources.

This study aims to evaluate the factors associated with loss of follow-up of patients in Orthopaedics clinic in the postoperative period after major orthopaedic surgery in a tertiary care hospital in India during the lockdown period of Covid-19 pandemic.

METHODS

After obtaining approval from the institute ethics committee, a cross-sectional observational study was conducted. All the patients aged 18 years or older, who underwent major orthopaedic surgery in the pre lockdown period and were supposed to visit the hospital for first postoperative follow up during the lockdown period but did not visit either physically or on telemedicine were included in the study. Patients younger than 18 years of age, all patients who were able to follow up either in OPD or via Telemedicine and those with incomplete information essential to study analysis were excluded.

Demographic data were collected for each patient included age, sex, diagnosis, procedure performed by reviewing the medical records. Patient satisfaction was calculated using the Patient Satisfaction Index (PSI), where 1 point is given if the surgery met the expectations of the patient and 4 is the worst outcome. (8) The questionnaire was prepared including all the possible reasons for non-compliance to follow-up during the Covid-19 pandemic (Table 1). After obtaining informed consent, the eligible participants were recruited. The questionnaire was filled up via response obtained through telephonic interviews and the responses were compiled by the doctors.

Table 1 – Questionnaire

	Question	Response by number of patients (%)	
		Yes	No
1.	Whether the surgical procedure which the patient underwent before lockdown was the final surgery or part of the treatment planned?	61 (100)	0 (0)
2.	Whether you were satisfied by the surgery? (the visit was deferred due to dissatisfaction)	59 (97)	2 (3)
3.	If no then if you didn't come due to dissatisfaction due to treatment planned	2 (100)	0 (0)
4.	If yes then you didn't come due to phobia of contacting Covid-19 infection on hospital visit?	11 (18)	50 (82)
5.	Whether patient or members of his home are high risk group with co morbidities?	7 (11)	54 (89)
6.	Whether there was transportation issue during Lockdown?	51 (83)	10 (17)
7.	Whether you were quarantined in view of Covid-19 symptoms?	7 (11)	54 (89)
8.	Whether unable to follow up due to financial burden?	22 (36)	39 (64)
9.	Whether you had physical dependency on others for follow up?	30 (49)	31 (51)
10.	Are you aware about Telemedicine facility?	14 (23)	47 (77)
11.	Did you have any local doctor consultation for post-operative follow up?	15 (24)	46 (76)
12.	Whether facing problems to attend hospital in view of Containment zone?	17 (28)	44 (72)
13.	Any other issues of noncompliance to follow up? If yes, specify	0 (0)	61 (100%)

STATISTICAL ANALYSIS:

Qualitative data were expressed as counts and percentages and quantitative data were expressed by mean ± standard deviation (SD) or range. Statistical analysis was performed with SPSS version 23. Results were analysed using paired t-test, Chi-square test, as well as Wilcoxon's signed-rank, and McNemar's tests depending upon the nature of variables with the significance level set at 0.05.

RESULTS

A total of 150 patients who had to come to the hospital in the lockdown period for the first postoperative visit for the major orthopaedic surgery done on them in the last week of February 2020 and first three weeks of March 2020 were enlisted. Out of these 86 patients were unable to follow up. 25 patients were aged less than 18 years so were excluded. 61 patients left from the total were enrolled in the study. Of the 61 patients, 39 were males and the majority of the patients were of trauma and spine surgery (Table 2).

The majority of the patients [N=45 /73%] had a PSI score of 1 i.e. surgery met their expectation (Table 2). Nine patients had a patient satisfaction index of 2 i.e. surgery improved their condition enough so that they can go through it again for the same outcome. Five patients had a satisfactory index of 3 i.e. surgery helped them but they would not go through it again for the same outcome.

Table 4: Association between Age and Parameters

Parameters	Age							p value
	≤20 Years (n = 7)	21-30 Years (n = 15)	31-40 Years (n = 19)	41-50 Years (n = 11)	51-60 Years (n = 3)	61-70 Years (n = 4)	71-80 Years (n = 2)	
Patient Satisfaction Index								0.542 ¹
1	7 (100%)	10 (66.7%)	13 (68.4%)	9 (81.8%)	2 (66.7%)	3 (75.0%)	1 (50.0%)	
2	0 (0.0%)	2 (13.3%)	3 (15.8%)	2 (18.2%)	1 (33.3%)	0 (0.0%)	1 (50.0%)	
3	0 (0.0%)	3 (20.0%)	1 (5.3%)	0 (0.0%)	0 (0.0%)	1 (25.0%)	0 (0.0%)	
4	0 (0.0%)	0 (0.0%)	2 (10.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Transportation issues faced	6 (85.7%)	13 (86.6%)	16 (84.2%)	9 (81.1%)	2(66.7%)	3 (75%)	2(100%)	0.610 ¹

***Significant at p<0.05, 1: Fisher's Exact Test

Table 2- Demographic data of patients

Age Distribution	Number of patients
≤20 Years	7
21-30 Years	15
31-40 Years	19
41-50 Years	11
51-60 Years	3
61-70 Years	4
71-80 Years	2
Gender Distribution	
Male	39
Female	22
Surgery	
Upper limb trauma	5
Lower limb trauma	20
Hip Arthroplasty	9
Knee Arthroplasty	7
Spine	20

Two patients were dissatisfied with the surgery. Eleven patients were afraid of contacting COVID-19 infection. Seven patients belonged to the high-risk group so did not come to the hospital. Transportation issues were faced by 51 (83%) patients. 17 patients belonged to the containment zone specified by the administration due to which they were unable to visit the hospital. Seven patients had COVID-19 symptoms and were admitted elsewhere for the same. Loss of income due to orthopaedic problem was the reason for non-compliance in 22 patients. Ten patients lost their jobs during the pandemic. Six patients felt that they have adequately healed and do not require follow up. 15 patients consulted a local Orthopaedics surgeon for further management. 47 (77%) patients were not aware of the telemedicine facility started by our hospital and rest who were aware of the facility did not consult the doctor using this facility. 15 patients belonged to another state and were unable to follow-up due to restrictions imposed on interstate movement. 21 patients did not come as they perceived that they might be deferred from the hospital being a non-emergency condition.

No statistically significant difference was observed between patient satisfaction index and the age of the patients (p-value >0.05). No correlation was seen between the age and sex of the patient and the transportation issues faced during lockdown (P-value>0.05). (Table 3) No statistically significant difference in patient satisfaction index between both genders was seen. (P-value>0.05) (Table 4).

Table 3: Association between Gender and Parameters

Parameters	Gender		p value
	Male (n = 39)	Female (n = 22)	
Patient Satisfaction Index			0.686 ¹
1	28 (71.8%)	17 (77.3%)	
2	5 (12.8%)	4 (18.2%)	
3	4 (10.3%)	1 (4.5%)	
4	2 (5.1%)	0 (0.0%)	
Transportation issues faced	33 (84.6%)	18(81.8%)	0.283 ²

***Significant at p<0.05, 1: Fisher's Exact Test, 2: Chi-Squared Test

DISCUSSION

Various factors associated with non-compliance to follow-up of orthopaedic patients in the pre-pandemic era has been studied by Stone et al. (6) He reported follow-up non-compliance as high as 69 %. Factors associated with non-compliance to follow-up in their study were patients older than 35 years, race, mode of trauma, and duration of hospital stay. Follow-up compliance was associated with the uninsured, penetrating mechanism, short length of stay, discharge to home, and weekend discharge. In another study by Aaland et al.,(5) reported the follow-up rate as high as 79.3 %. They reported that the demographic profile of the patient had no effect on follow-up and concluded that noncompliance to follow-up was not a patient issue but a system issue. However, this pandemic is unlike anything this generation has witnessed before. The various new factors associated with the non-compliance to follow up have emerged.

Slosar PJ et al.,(8) assessed patient satisfaction index after circumferential lumbar fusion. We included Patient satisfaction index in our study to make sure that majority of our patient are not in the dissatisfied group due to reasons pertaining to surgeon, staff and the hospital. Only two patients in our study were dissatisfied by the treatment. No statistically significant difference was observed in PSI between different age groups and genders.

In our study non-compliance to follow-up in our study was 57 %. Lack of transportation facility to the hospital was one of the main issues faced by the patients. Transportation by ambulance is less cost-effective and less approachable for patients not seeking emergency care. Surgeries of the lower limb or pelvis and spine were associated with a significantly lower rate of follow-up compared to all patients. In the study by Pasco et al.,(9) determined that type of surgery performed play a role in influencing compliance to follow-up visits. He reported poor six months follow-up compliance in patients of hip surgery.

This is one of the few studies determining predictive factors for non-compliance to follow up of Orthopaedics patients during the Covid-19 pandemic. The limitation of this study is no control group and small sample size. Since the patients were contacted telephonically the exact cause of non-compliance to follow-up may vary according to the understanding of the patient. Other issues that play important role in the regular times for compliance were not investigated in this study. Studies have shown that Orthopaedics trauma patients have a poor perception of the costs involved in the care that they receive and this may negatively affect their compliance with their post-operative visits. Lack of clear communication between providers and patients before discharge about the need for follow-up visits and patient's perceived purpose of follow-up visits in the postoperative setting are the two factors that may potentially play a role in affecting compliance rates (6). This pandemic should be regarded as a waking alarm for the future where role of teleconsultations will play a major role for achieving better surgical outcome.

Conflicting interest: none

Ethics approval: Approval Number- AIIMS/IEC/19/587. ID: ECR/736/INST/UK/2015/RR-18

Informed consent- Consent was obtained from all subjects before the study.

REFERENCES

- Haleem A, Javaid M, Vaishya R, Vaish A. Effects of COVID-19 pandemic in the field of orthopaedics. *J Clin Orthop Trauma*. 2020;11(3):498–9.
- Lal H, Sharma DK, Patralekh MK, Jain VK, Maimi L. Out Patient Department practices in orthopaedics amidst COVID-19: The evolving model. *J Clin Orthop Trauma [Internet]*. 2020;(xxxx):1–13. Available from: <https://doi.org/10.1016/j.jcot.2020.05.009>
- Koushik NS. A population mental health perspective on the impact of COVID-19. *Psychol Trauma [Internet]*. 2020 Jun 18 [cited 2020 Jul 7]; Available from: <http://www.ncbi.nlm.nih.gov/pubmed/32551767>
- Directorate General of Health Services Ministry of Health and Family Welfare Government of India Guidelines for Setting up Isolation Facility/Ward COVID-19 Outbreak.
- Aaland MO, Marose K, Zhu TH. The lost to trauma patient follow-up: A system or patient problem. *J Trauma Acute Care Surg*. 2012;73(6):1507–11.
- Stone ME, Marsh J, Cucuzzo J, Reddy SH, Teperman S, Kaban JM. Factors associated with trauma clinic follow-up compliance after discharge: Experience at an urban Level I trauma center. *J Trauma Acute Care Surg*. 2014;76(1):185–90.
- Bambra C, Riordan R, Ford J, Matthews F. The COVID-19 pandemic and health inequalities. *J Epidemiol Community Health*. 2020;jech-2020-214401.
- Slosar PJ, Reynolds JB, Schofferman J, Goldthwaite N, White AH, Keaney D. Patient satisfaction after circumferential lumbar fusion. *Spine (Phila Pa 1976) [Internet]*. 2000 Mar 15 [cited 2020 Jul 7];25(6):722–6. Available from: <https://pubmed.ncbi.nlm.nih.gov/10752105/>

- Pasco JA, Sanders KM, Hoekstra FM, Henry MJ, Nicholson GC, Kotowicz MA. The human cost of fracture. *Osteoporos Int [Internet]*. 2005 Dec [cited 2020 Jul 7];16(12):2046–52. Available from: <https://pubmed.ncbi.nlm.nih.gov/16228106/>