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■ GENERAL ORTHOPAEDICS

Are orthopaedic providers willing to work overtime to address COVID-19-related patient backlogs and financial deficits?

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Aims

COVID-19-related patient care delays have resulted in an unprecedented patient care backlog in the field of orthopaedics. The objective of this study is to examine orthopaedic provider preferences regarding the patient care backlog and financial recovery initiatives in response to the COVID-19 pandemic.

Methods

An orthopaedic research consortium at a multi-hospital tertiary care academic medical system developed a three-part survey examining provider perspectives on strategies to expand orthopaedic patient care and financial recovery. Section 1 asked for preferences regarding extending clinic hours, section 2 assessed surgeon opinions on expanding surgical opportunities, and section 3 questioned preferred strategies for departmental financial recovery. The survey was sent to the institution's surgical and nonoperative orthopaedic providers.

Results

In all, 73 of 75 operative ($n = 55$) and nonoperative ($n = 18$) providers responded to the survey. A total of 92% of orthopaedic providers ($n = 67$) were willing to extend clinic hours. Most providers preferred extending clinic schedule until 6pm on weekdays. When asked about extending surgical block hours, 96% of the surgeons ($n = 53$) were willing to extend operating room (OR) block times. Most surgeons preferred block times to be extended until 7pm (63.6%, $n = 35$). A majority of surgeons (53%, $n = 29$) believe that over 50% of their surgical cases could be performed at an ambulatory surgery centre (ASC). Of the strategies to address departmental financial deficits, 85% of providers ($n = 72$) were willing to work extra hours without a pay cut.

Conclusion

Most orthopaedic providers are willing to help with patient care backlogs and revenue recovery by working extended hours instead of having their pay reduced. These findings provide insights that can be incorporated into COVID-19 recovery strategies.

Level of Evidence: III

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Keywords: Financial recovery, OR cancellations, Patient backlog, Deficit strategy, Covid-19 pandemic, Orthopaedic service line

Introduction

In mid-March 2020, the American College of Surgeons and US Centers for Medicare & Medicaid Services provided recommendations to defer elective surgeries due to the COVID-19 pandemic.^{1,2} For approximately 12 weeks, previously scheduled elective orthopaedic surgeries nationwide were

put on hold, which resulted in an unprecedented backlog of patient care in the field of orthopaedics.³ Backlogs for inpatient elective orthopaedic surgical cases have been projected to range from 380,000 to over 1 million cases over the next two years.⁴ Such delays in care can result in increased patient symptoms, worse outcomes, and

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decreased patient satisfaction.⁵ Due to reduction in surgical volume, orthopaedic departments and health-care systems project significant revenue losses. Many healthcare networks announced projected losses of nearly \$1 billion due to the pandemic, citing lower surgical operation capacity as a significant contributing factor.⁶ Elective surgical procedures potentially account for more than half of all hospital revenue, and orthopaedic procedures make up a significant portion of these elective surgeries by accounting for 17% of operating room (OR) time.⁷ In response, many hospitals and orthopaedic provider groups have lowered the salaries of providers and furloughed healthcare workers.^{8,9}

Given the clinical and financial circumstances related to the pandemic, it is imperative that we implement strategies which address orthopaedic patient treatment delays and develop methods for ensuring the financial integrity of orthopaedic departments.¹⁰ Leaders within orthopaedics have provided insight into a variety of optimal reopening and recovery strategies such as greater use of telemedicine, increased orthopaedic block time, and shifts in care to ambulatory surgery centres (ASCs).^{4,8,11,12}

In order for all of these strategies to result in clinical and financial recovery, not only do health systems need to provide these resources, but it is especially important that providers are willing to use these recommended recovery strategies. However, no studies have assessed the willingness of providers and their preferences for initiatives pertaining to clinical and financial recovery.

The objective of this study is to examine orthopaedic provider preferences about the patient care backlog and financial recovery initiatives in response to the COVID-19 pandemic.

Our hypothesis is that surgeons and nonoperative orthopaedic providers who are willing would prefer to increase clinical hours and surgical block times to address the patient backlog. Moreover, surgeons would be willing to operate at ASCs, instead of acute care hospitals, and orthopaedic providers will favour departmental financial recovery measures that increase clinic/surgical hours rather than decrease provider compensation.

Methods

An eight-member orthopaedic research consortium, consisting of orthopaedic providers from various subspecialties at a Midwestern multi-hospital tertiary care academic medical system, was established in order to examine orthopaedic patient care and financial strategies during the pandemic. The consortium developed a survey examining provider perspectives on initiatives to expand orthopaedic patient care services in order to address the patient care backlog and departmental revenue deficits. Subsequently, the research consortium critically examined all of the questions within our survey to mitigate against assessment bias.

Survey description. The developed survey comprised three sections. Section 1 identified whether surgical and nonoperative providers were willing to extend clinic and surgical hours. And, if so, the options included: offering extended hours until 6pm; offering afternoon clinic times from 3pm to 8pm; and opening up clinic scheduling on weekends (Saturday and Sunday). Section 2 focused on surgeon-specific topics. These topics included views on both the feasibility and potential of using in-system and outside ASCs for orthopaedic procedures. ASC scheduling options were explored because ASCs were assumed to have more capacity for elective surgeries compared with inpatient facilities. Following elective procedure closures, the researching institution anticipated that inpatient facilities would only be open at 50% capacity for elective procedures. The decreased capacity would be due to the significant number of COVID-19-positive patients within the hospitals. Therefore, inpatient facilities would have COVID-19 safety guidelines to ensure social distancing, proper cleaning procedures, and adequate OR equipment/staffing which would limit the number of elective surgical cases. The ASC locations were anticipated to resume at 100% capacity for elective surgery. Therefore, ASCs were assumed to have more capacity in the immediate resumption of elective surgical cases.

The third section contained general demographic questions about orthopaedic specialty practice, approximation of years in practice, and whether the provider is a surgical or non-surgical orthopaedic provider. The final question of this section addressed departmental financial recovery. Within this study's healthcare system, provider compensation is a base salary with a bonus when reaching a certain relative value unit (RVU) of productivity. The providers' base salaries are determined by the RVU generated by the provider in the previous year. The RVU is a value based on the resources and expertise needed to perform a clinical or surgical procedure.¹³ The researching institution uses RVUs as a measure of clinical and surgical volume. To avoid a decrease in provider compensation, providers would have to work extended hours to make up for the 12 weeks of clinical and elective surgical cancellation and meet volumes from the year 2019. So, providers were given the following options: decreased compensation level; working extended days and/or clinical hours to meet 2019 historical productivity levels; foregoing some days of annual leave; or various combinations of the three aforementioned strategies.

Survey administration. This study received institutional review board approval. Questionnaire invites were sent to all surgeons and nonoperative orthopaedic providers ($n = 75$) in the dedicated orthopaedic service. The initial survey was sent from the orthopaedic department chair, and three subsequent weekly reminders were sent from the orthopaedic department executive vice chair. Once a provider responded to the survey, no further contact

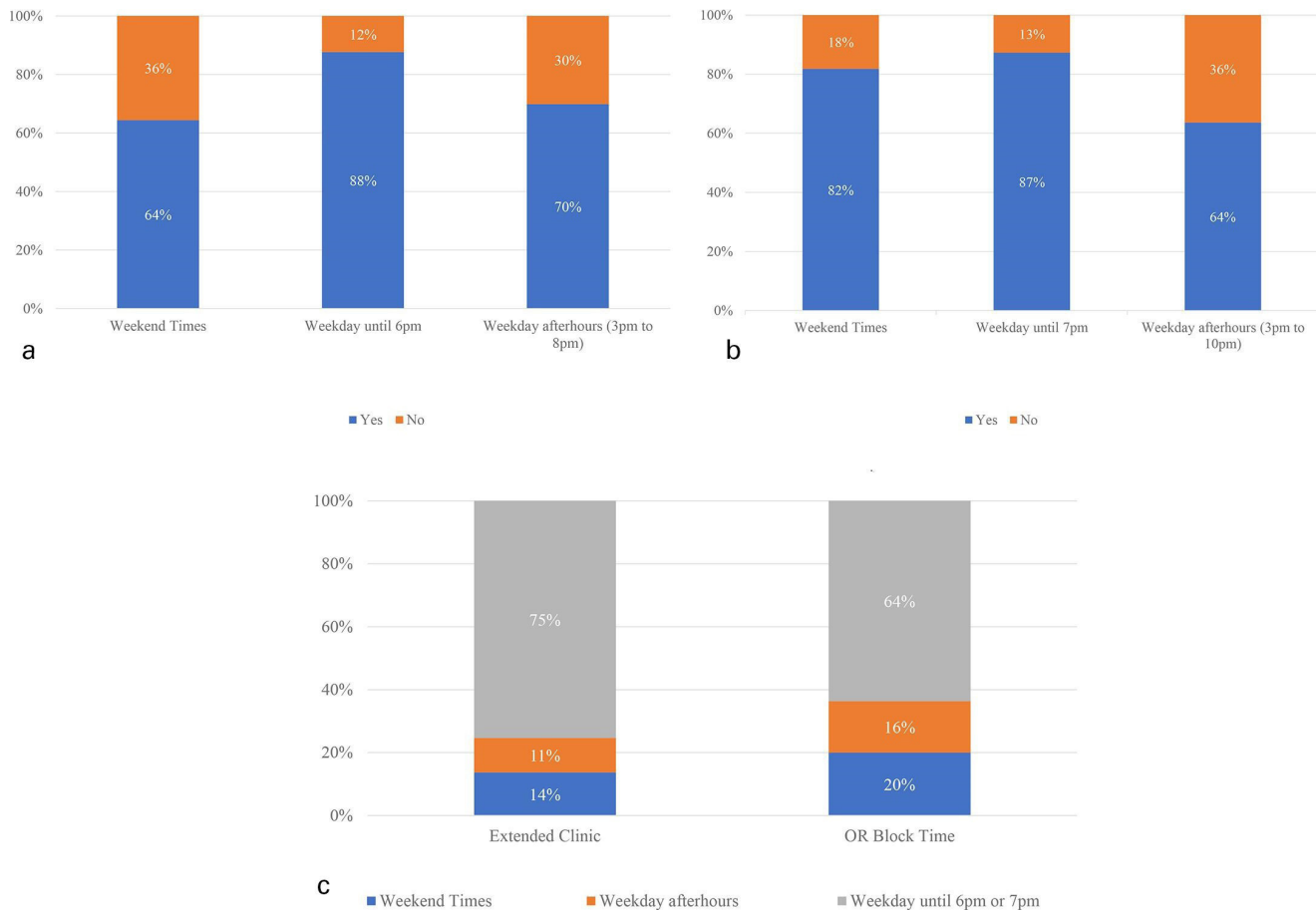


Fig. 1

Physician willingness and preference for clinic hour extension: a) orthopaedic provider (n = 73) willingness to expand orthopaedic clinic times; b) orthopaedic surgeon (n = 55) willingness to expand orthopaedic surgical block times; and c) percentage of provider preference on clinic hour extensions and operating room (OR) block extensions. Surgical and nonoperative clinic included all providers surveyed (n = 73). The OR block time is surgeon-specific (n = 55). All data shown are statistically significant (p < 0.05).

was pursued. Data collection took place during the first two weeks of May 2020. If a provider submitted multiple survey responses, the most recent survey response was included in the final results.

Statistical analysis. Collected provider responses were evaluated in overall percentages to determine provider attitudes about orthopaedic service-line financial recovery strategies in response to the pandemic. All data are categorical and are presented using counts and column percentages. Chi-squared goodness-of-fit tests were used to determine the distributions of all variables from equal probabilities. Statistical significance is set at p < 0.05. All analyses were performed using SAS v. 9.4 (SAS Institute, USA).

Results

In all, 73 of 75 queried orthopaedic providers responded to the survey (97%). A total of 18 nonoperative providers and 55 surgeons were included in the results. The cohort included providers from five hospitals and 17 clinic sites. Nonoperative providers included 14 sports medicine,

two foot and ankle, one generalist, and one spine practitioner. The surgical cohort included four foot and ankle, six orthopaedic generalists, eight hand and upper limb, eight arthroplasty, one oncology, one paediatric, nine podiatrist, one shoulder and upper limb, five spinal, eight sports medicine, and four trauma specialists. The average time in practice for all physicians within the cohort was 14.8 years.

Providers were first questioned on their willingness to participate in various strategies to increase clinic scheduling opportunities. When presented with three options to extend clinic hours, 92% of orthopaedic providers (n = 67; p < 0.001) were willing to extend clinic hours in at least one of the suggested strategies. With regard to the three strategies, 64% of providers (n = 47; p = 0.014) were willing to work on weekends, 88% (n = 64; p < 0.001) were willing to extend clinic schedule until 6 pm on weekdays, and 70% (n = 51; p < 0.001) were willing to establish new after-hours clinic times (3 pm to 8 pm) (Figure 1a). Physicians were then asked to select their most preferred of the three

- Operating with a familiar surgical team
- Operating with your current assistants (First Assistant and/or Physician Assistant)
- Ability to have 2 rooms
- Operating with resident assistants
- Operating without resident assistants

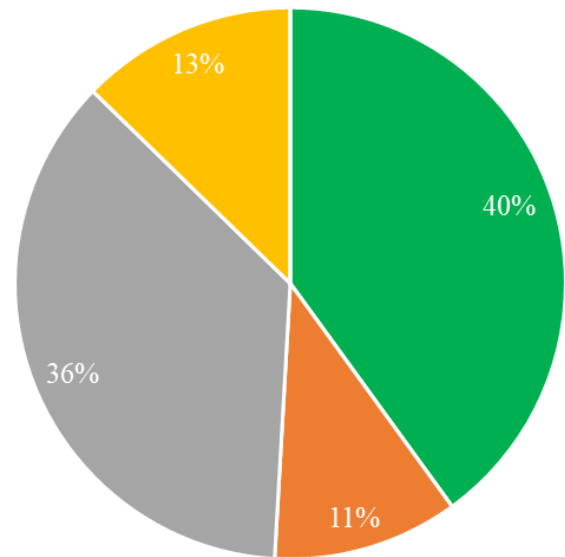


Fig. 2

Surgeons' most important factor if additional surgical block times are offered: No surgeon ($n = 55$) responded with "Operating without resident assistants" as the most important factor. All data shown are statistically significant ($p < 0.05$).

aforementioned strategies. The providers' preferences of strategy were as follows: 75% ($n = 55$; $p < 0.001$) chose increasing patient clinic hours by extending the clinic schedule until 6 pm on weekdays, 14% ($n = 10$; $p < 0.001$) chose establishing new after-hours clinic times (3 pm to 8 pm), and 11% ($n = 8$; $p < 0.001$) chose new weekend clinic hours (Figure 1c). Surgeons were then questioned about their willingness to extend surgical scheduling times by three suggested strategies. When questioned about extending surgical block hours, 96% of the surgeons ($n = 53$; $p < 0.001$) would be willing to extend OR block times in at least one of the strategies presented. Of the three strategies, 82% of surgeons ($n = 45$; $p < 0.001$) were willing to operate on weekends, 87% ($n = 48$; $p < 0.001$) were willing to operate until 7 pm on weekdays, and 64% ($n = 35$; $p = 0.043$) were willing to operate in evening surgical block times (3 pm to 10 pm) (Figure 1b). Surgeons were then asked to select their top choice of the three suggested strategies for extending operating block times. Most surgeons would prefer orthopaedic block time to be extended to 7 pm (64%, $n = 35$; $p < 0.001$) over after-hours (16%, $n = 9$; $p < 0.001$) or weekend (20%, $n = 11$; $p < 0.001$) (Figure 1c).

When asked about which factors were most important for extended surgical hours, surgeons had mixed preferences. The largest proportion of surgeons answered that the most important factor was operating with a familiar surgical team (40%, $n = 29$; $p < 0.001$), followed by the ability to operate in two ORs (36%, $n = 20$; $p < 0.001$) (Figure 2). Given the resource restrictions at larger acute care hospitals due to COVID-19, surgeons were questioned about their ability to perform

a higher percentage of their cases at an ASC as opposed to the traditional acute care hospital ORs. When questioned about how many of their cases could be taken to an ASC, 29% of surgeons ($n = 16$; $p = 0.020$) felt that 75% to 100% of their surgical cases can be taken to an ASC, 13% ($n = 7$; $p = 0.020$) felt that 50% to 75% of their surgical cases can be taken to an ASC, and 25% ($n = 14$; $p = 0.020$) felt that 25% to 50% of their cases can be taken to an ASC (Figure 3). When questioned further about willingness to use an ASC outside of the health system, 87% of the surgeons ($n = 48$; $p < 0.001$) were willing to do so. Only three surgeons (all spine surgeons) believed that none of their surgical cases could be performed at an ASC.

When given three strategies to recoup departmental financial deficits, 85% of providers ($n = 62$; $p < 0.001$) answered that they were willing to make up the deficit by working extra hours without some form of pay cut (Figure 4). The largest portion of both operative and nonoperative providers prefer a combination of extended work hours and decreased annual leave (48%, $n = 35$; $p < 0.001$). The second most popular option for both nonoperative and operative providers was to work extended hours to meet 2019 historical productivity levels (27%, $n = 20$; $p < 0.001$). Only 15% ($n = 11$; $p < 0.001$) of surgeons and of nonoperative providers preferred options with some form of pay cut.

Discussion

In order to address COVID-19-related orthopaedic patient care delays, the orthopaedic provider must be willing to engage in recovery strategies. Our study gauged the preferences of orthopaedic surgeons on clinical,

- None
- 0-25%
- 25-50%
- 50-75%
- 75-100%
- All cases could be done at an ASC
- Do not do cases at a hospital

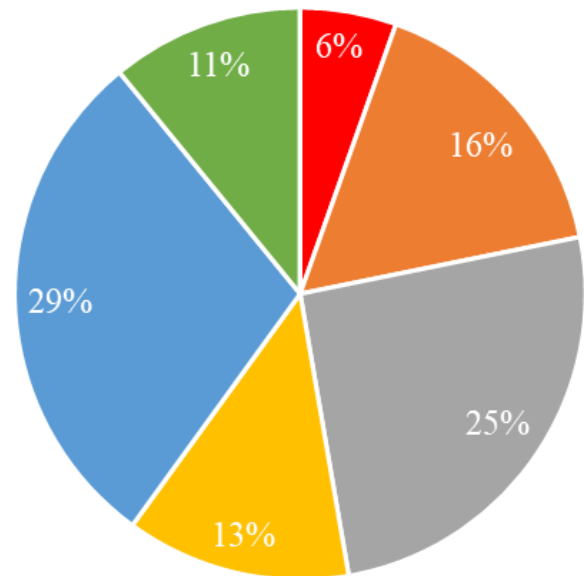


Fig. 3

Percentage of orthopaedic surgery cases that can be performed at an outside ambulatory surgery centre (ASC). Only orthopaedic surgeon data were collected (n = 55). No surgeon responded with "Do not do cases at a hospital". All data shown are statistically significant (p < 0.05).

- Option A: Decreased Compensation Level
- Option B: Working extended days and/or clinical hours to meet 2019 productivity levels
- Option C: Give back some vacation time
- Combination of Option A and Option B
- Combination of Option A and Option C
- Combination of Option B and Option C
- Combination of Option A, Option B, and Option C

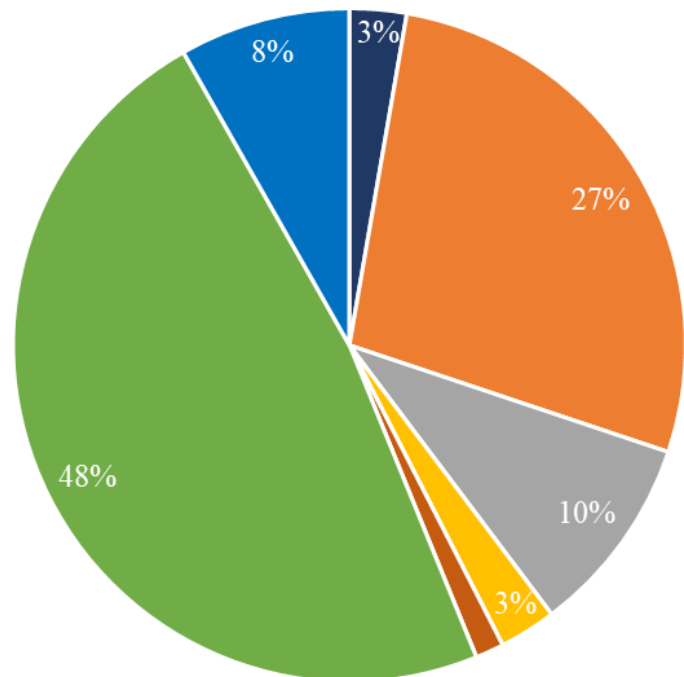


Fig. 4

Provider-preferred method of the department-wide financial recovery strategy for all surgical and nonoperative providers (n = 73). Only 1% of providers (n = 1) responded with "Combination of Option A and Option C". All data shown are statistically significant (p < 0.05).

surgical, and financial recovery efforts. In line with our hypothesis, 92% of orthopaedic providers (n = 67) and 96% of orthopaedic surgeons (n = 53) were willing to extend clinic times and increase surgical block hours. As important factors for extended operating scheduling times, surgeons showed preferences for operating with a familiar surgical staff and the ability to use two operating

rooms. A majority of surgeons believe that over 50% of their surgical cases could be performed at an ASC, and almost all surgeons expressed willingness to take some cases to an ASC. Regarding the financial recovery of the orthopaedic department, most providers preferred working extended hours over taking pay cuts as a means

to recover from pandemic patient care backlogs and financial deficits.

While our study looked into provider preferences on extending orthopaedic scheduling times, an orthopaedics trauma study at Emory University assessed the effects of extending operating times by adding dedicated weekend trauma teams.¹⁴ The study showed that dedicated Saturday trauma teams decreased the patient length of stay by 2.7 days and patient time spent waiting for surgery by 25.1 hours when admitted on a Friday. Furthermore, the dedicated weekend trauma team resulted in over \$1 million in annual cost savings due to decreases in patient length of stay. While 53% of the surgeons in our study answered that they could take a majority of their surgical cases to an ASC, it can be assumed that the remaining surgical cases would be done in an inpatient facility. Therefore, the extension of surgical hours in inpatient facilities could potentially see similar benefits as stated in the aforementioned study with respect to decreased surgical wait times, decreased patient length of stay, and the decreased cost associated with decreased length of stay. Moreover, the conclusion of the Emory study demonstrates that extending surgical scheduling times, in accordance with surgeon desires, can potentially be beneficial for patients overall.

Our study shows that 53% of surgeons ($n = 29$) would bring a majority of their cases to an ASC, including a number of arthroplasty surgeons. A systematic review published by William Beaumont Army Medical Center and Rush University Medical Center examined the safety of ASCs.¹⁵ The review shows that, of the 1,009 arthroplasty surgeries in ASC settings, patients had a same-day discharge rate of 94.7%, with only one major complication and no deaths. In our study, 95% of surgeons ($n = 52$) believed that some of their surgical caseload could be moved to an ASC and 87% of surgeons were willing to use an ASC outside their health system. When assessing the responses of arthroplasty surgeons specifically, seven of eight believed that at least 25% of their current surgeries could be taken to an ASC. This review provides evidence that ASCs are a safe option for increases in surgical scheduling in orthopaedic surgery, including arthroplasty patients.

Other publications have examined the financial strategies for recovery from COVID-19-related cancellations. In an editorial regarding orthopaedic provider group management during COVID-19, three orthopaedic groups based in the Midwest and East coast discussed financial strategies in response to COVID-19-related reduction in orthopaedic volume.⁹ These groups implemented COVID-19 financial plans that focused on cutting costs by laying off staff and decreasing provider compensation by up to 50%. These strategies then called for increasing clinical and surgical volume once the demand for elective orthopaedic surgeries has increased. Although all three

of these groups in the aforementioned study employed some form of physician salary reduction, only 15% of our surveyed cohort were open to accepting a salary cut. Physicians in our study favoured alternative strategies such as working extended hours and foregoing annual leave in order to maximize recovery. While published strategies for revenue recovery seem to suggest salary decreases for physicians, our study suggests that the majority of orthopaedic providers prefer alternative avenues for maximizing financial recovery, including extended clinic hours, extended OR block scheduling, and incorporating weekend work hours. By extending these clinic operation hours, we believe that financial recovery can be achieved without cutting physician salaries.

One limitation to this study was the potential for institutional bias since only physicians from a single institution were surveyed. Despite the fact that the providers in this study may not be representative of all geographical and institutional differences, our providers come from five different hospitals and 17 different clinic sites, ranging from community care centres to tertiary care medical centres. Therefore, they do represent a wide variety of orthopaedic providers in different care settings. Second, since the survey was created by the authors, the study can present questions that are more specific to our institution and with possible assessment bias. Regardless, the eight-member research consortium screened the questionnaire so that the questions asked in our survey would be relevant to a majority of hospital systems across the USA. Last, a major limitation to provider choices for recovery relies on the healthcare system providing the resources to accommodate strategies that they chose in this survey (extending hours in the OR). Nevertheless, we feel that the information gained from providers offers valuable insights into the provider demand for such resources.

Based on our findings, most orthopaedic providers are willing to increase work hours to help with patient care backlogs and departmental revenue recovery. To this end, providers responded that recovery strategies should focus on extending hours to avoid a reduction in compensation. Due to the mandated elective patient cancellations from the COVID-19 pandemic, establishing optimal patient care strategies to address the growing surgical backlog is of the utmost importance. Healthcare system leadership may play a significant role in the recovery process, but it is essential to understand provider perspectives about these goals since they are a vital part in the recovery strategies. Successful recovery strategies will depend on aligning provider preference with healthcare system support and resources.



Take home message

- There are widespread orthopaedic patient care delays due to the COVID-19 pandemic.
- Orthopaedic provider preferences in recovery strategies are vital to the implementation of recovery efforts.

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Author contributions:

- N. R. Yedulla: Collected the data, Performed the statistical analysis, Wrote the paper.
- Z. A. Montgomery: Led the project, Collected the data, Performed the statistical analysis, Wrote the paper.
- D. Koolmees: Collected the data, Performed the statistical analysis, Wrote the paper.
- E. Battista: Collected the data, Performed the statistical analysis, Wrote the paper.
- T. W. Parsons III: Designed the study, Wrote the paper.
- C. S. Day: Analyzed the data, Wrote the paper.

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Ethical review statement:

- Study was approved by the researching institution's IRB board (IRB No.: 13961).

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