



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.JournalofSurgicalResearch.com

Experiences of Acute Surgical Care During the Coronavirus Disease 2019 Pandemic Among Patients and Their Next of Kin

Eva Torbjörnsson, RN, PhD,^{a,b,*} Ann-Mari Fagerdahl, RN, PhD,^{a,c}
and Andreas Älgå, MD, PhD^{a,b}

^aDepartment of Clinical Science and Education, Södersjukhuset, Karolinska Institutet, Stockholm, Sweden

^bDepartment of Surgery, Södersjukhuset, Stockholm, Sweden

^cWound Centre, Södersjukhuset, Stockholm, Sweden

ARTICLE INFO

Article history:

Received 21 December 2021

Received in revised form

10 February 2022

Accepted 5 April 2022

Available online 13 April 2022

Keywords:

COVID-19

Surgery

Ban on visitors

Patient experiences

Next of kin

ABSTRACT

Introduction: Since March 2020, the coronavirus disease 2019 pandemic has affected healthcare systems worldwide. It is largely unknown how acutely ill surgical patients and their next of kin have perceived the hospital care during the ongoing pandemic. Therefore, we aimed to explore their experiences.

Material and methods: We performed 12 interviews with patients who had undergone acute abdominal surgery in a public acute care hospital in Sweden during March to June 2020. In addition, we interviewed 10 of the patients' next of kin. We analyzed the interviews using content analysis.

Results: Our analysis resulted in two themes: "Worries about seeking acute care" and "The surgical care worked adequately, even though the system was overloaded." The participants experienced that the hospital maintained its functionality during the ongoing pandemic. Both the patients and their next of kin experienced insufficient information by the hospital, especially during the initial acute phase and at discharge, which led to a perceived loss of control. The implemented ban on visitors was found to have had both positive and negative effects for the patients, whereas the next of kin's experiences focused on the difficulties with not being able to visit.

Conclusions: Our findings indicate that the challenges of communication with patients and their next of kin are exacerbated during a crisis such as a pandemic. In addition, a ban on visitors might have both positive and negative aspects. Therefore, we propose individualized routines for visits to acute surgical patients when possible.

© 2022 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has affected healthcare systems worldwide, including patients

and healthcare providers in the acute surgical care.¹ The effects on surgical care can be divided into direct, that is related to the COVID-19 infection, and indirect, not directly associated with the infection itself. Direct effects include prolonged time

* Corresponding author. Department of Clinical Science and Education, Södersjukhuset, Karolinska Institutet, Södersjukhuset, Sjukhusbacken 10, 118 83 Stockholm, Sweden. Tel.: +46 733 544 335; fax: +46 8 616 2460.

E-mail address: eva.torbjornsson@ki.se (E. Torbjörnsson).

0022-4804/\$ – see front matter © 2022 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

<https://doi.org/10.1016/j.jss.2022.04.014>

from hospital admission to surgery² and a high mortality among patients with perioperative COVID-19 infection.^{3,4} Indirect effects of the pandemic include crowding-out effects and altered healthcare seeking behaviours which have led to a delay of care.⁵⁻⁷ Fear of contracting COVID-19 has been shown to alter patient behaviour early during the pandemic.⁸

Worldwide, countries have handled the COVID-19 pandemic with various levels of restrictions and lockdowns. The World Health Organization (WHO) has recommended a global ban on visitors within healthcare systems as a way to reduce the spread of the coronavirus.⁹ The few available studies have highlighted the potentially negative effects of visiting bans during the COVID-19 pandemic.¹⁰ A recent questionnaire study that compared patients who underwent general surgery before and after the pandemic found that those who had undergone surgery during the pandemic were more likely to be dissatisfied with their total experience of the hospital.¹¹

Previous research on experiences among surgical patients during the pandemic has mainly focused on the access to elective general and orthopaedic surgery.^{8,12,13} Qualitative studies on the experiences among patients undergoing emergency surgery are scarce. In addition, there is a dearth of literature on the experiences among surgical patients' next of kin. Therefore, we aimed to explore the experiences of acute surgical care during the COVID-19 pandemic among patients and their next of kin.

Materials and Methods

Study setting

The study was conducted at a public acute care hospital in Stockholm, Sweden. The hospital serves a population of half a million inhabitants with both elective and acute abdominal surgery. During the study period, only acute and imperative (e.g., life or limb threatening) surgery was performed at the hospital due to the COVID-19 pandemic. In early 2020, the hospital was organized with dedicated wards for COVID-19 positive patients. A total ban on all visitors was imposed in accordance with the WHO recommendations. Throughout the course of the pandemic, the Swedish people received continuous updates on the situation at the hospital through television and newspaper reports.

Participants

Patients were selected from the hospital's operation list using a purposeful sampling¹⁴ and were invited to participate if they were ≥ 18 y old, had undergone acute abdominal surgery during March to June 2020, were able to verbally express their experience, and were Swedish-speaking.

Maximum variation in age, sex, diagnosis, and type of surgery was taken into consideration.¹⁵ Fourteen patients were invited to participate and 12 consented to do so. Participants were asked if they had a next of kin who had been involved in their care who would consider participation. In total, 10 of the patients had a next of kin that was eligible for inclusion, and all agreed to participate. Demographic data and type of surgery are provided in [Table 1](#).

Data collection

Semistructured individual interviews were performed during September to November 2020 using an interview guide created by the research group ([Appendix 1](#)). Owing to the ongoing pandemic, the participants were given the opportunity to choose where the interview would take place. Three of the interviews were conducted face-to-face (with adequate distance and protective gear), and the remaining 19 were conducted by telephone. The interviews were conducted by E.T. (operating room–nurse) or A.Ä. (general surgeon), who had not been involved in the care of the patients. All interviews were recorded digitally and started with an open-ended question: 'Please tell me about the experiences of having had acute surgery during the COVID-19 pandemic' (patients) or 'Please tell me about the experiences of being a next of kin to a patient who needed acute care during the COVID-19 pandemic' (next of kin). Additional questions were asked for clarification, along with probing questions.¹⁴ Pilot interviews with one patient and one next of kin were performed to test the interview guide. The research group concluded that the interview guide did not need to be revised, and the pilot interviews were included in the analysis. The interview duration ranged from 7 to 44 min (patients) and from 8 to 20 min (next of kin).

Analysis

The interviews were transcribed verbatim and analyzed with qualitative content analysis as per Graneheim and

Table 1 – Demographic data.

Patients (n = 12)		
Sex, male	9	(75%)
Age, median (IQR)	56	(35-71)
Number of days in hospital, median (IQR)	7	(4-9)
Type of habitation		
Living together	4	(33%)
Single household	7	(58%)
Adult living at home	1	(8%)
Type of surgical procedure		
Exploratory laparotomy	8	(66%)
Appendectomy	2	(17%)
Cholecystectomy	2	(17%)
COVID-19 positive	1	(8%)
Next of kin (n = 10)		
Sex, male	5	(50%)
Age, median (IQR)	47	(31-55)
Relationship		
Married/partner	3	(30%)
Child	3	(30%)
Other (friend, parent)	4	(40%)

IQR, interquartile range.

All data are presented as n (%) if not otherwise is written.

Lundman.¹⁶ As a first step, each transcribed interview was read and re-read several times to gain a sense of the entirety. The second step was to find meaning units corresponding to the aim of the study while still preserving the core meaning and to label the content with a code. The approach was influenced by the description of coding data as per Gibbs.¹⁷ During the third step, the codes were compared and sorted as per differences and similarities. The last step was to discuss the findings within the research group, while focusing on the underlying latent meaning of the text. In this final step, two themes with four subthemes were identified (Table 2). The analysis was performed by E.T. and the proceedings were continuously discussed within the research group. Chosen quotes were translated from Swedish to English, and each quotation was identified with a participant number. Initially, 10 interviews were performed with patients and then analyzed. After performing and analyzing two additional interviews, no additional information was obtained and the research group judged that saturation of the material was reached.¹⁴ As the last step, the interviews with the next of kin were analyzed. The interviews with the patients and the next of kin were first analyzed separately, whereupon the results from both analyses were merged.

Rigor

The analysis was discussed within the research group as a way of enhancing the credibility of the findings.¹⁸ To optimize the trustworthiness of our findings we chose participants with various experiences of surgical care to obtain maximum variation.¹⁴

To decrease the effect of the interviewer the two interviewers discussed the interview guide during data collection, aiming at dependability of the findings. To increase the transferability of the results to other groups the selection of participants and the study setting have been thoroughly described.¹⁶

Ethical considerations

The study conforms to the principles outlined in the Declaration of Helsinki¹⁵ and was approved by the Swedish Ethical Review Authority (Dnr 2020-01,572). A written informed

consent was obtained from all participants before the interviews were performed, and the participants were informed that they could withdraw from the study at any time.

Results

We identified two main themes describing the participants' experiences: "Worries about seeking acute care" and "The surgical care worked adequately, even though the system was overloaded" (Table 3). The themes describe the experiences by both patients and their next of kin.

Worries about seeking acute care

This theme describes the participants' experiences of seeking acute surgical care and of the care provided at the emergency department. Most patients had decided of their own accord to visit the emergency department, whereas some had been redirected from a walk-in clinic.

Thoughts on the decision to seek hospital care

The patients and their next of kin described how worries regarding their acute medical condition overshadowed their concerns with the ongoing pandemic.

"I don't think we thought all that much about the pandemic, eh, none of us, neither my wife nor my two kids, eh, but rather worried about what I was in hospital for" (Patient 9).

Some of the patients had worried about needing acute care during the pandemic and had refrained from seeking care due to a fear of contracting COVID-19. On the other hand, one patient expressed no worries at all, pointing to a greater risk of getting infected in the supermarket or at work than at the hospital.

Some of the patients had been worried about their medical condition contributing to overloading the healthcare system and expressed that they felt reluctant to take up the healthcare providers' time.

Table 2 – Illustration of the analysis process.

Illustration of the analysis process

Condensed unit	Code	Subtheme	Theme
"I suspect that the doctor and the nurse in that tent were not so eager to get close to the patients. It was not the situation in the tent that caused the delay but perhaps the distance we kept. They were about 4-5 meters away. I only answered questions that was probably the reason why they missed the inflammation [the appendicitis]."	Risk for delayed care	A feeling that there was a risk of an insecure emergency care	Worries about seeking acute care
"He told me about the protective gear. They were very careful and changed their equipment depending on the room they went into. Everything worked really, really well. So, I was not worried at all during the whole time."	Protective gear	Having control over the situation	The surgical care worked adequately, although the system was overloaded

Table 3 – Overview of the results.

Overview of the results	
Subthemes	Themes
Thoughts on the decision to seek hospital care	Worries about seeking acute care
A feeling that there was a risk of an insecure emergency care	
Interaction with the healthcare personnel	The surgical care worked acceptable despite an overloaded system
Having control over the situation	

A feeling that there was a risk of an insecure emergency care

The patients expressed that the acute care management worked well, but some had experienced delays at the emergency department. The next of kin described difficulties getting admitted for acute care and therefore thought that the care was at a risk of being delayed.

During the study period, the primary triage was performed outside the hospital, due to the restrictions. Some of the patients and their next of kin explained that the healthcare personnel had only asked the patient questions, refraining from any physical examination. After this primary triage, some patients were sent back home from the hospital without any further investigation. One of the next of kin expressed that the patient's diagnosis (appendicitis) was missed because of the physical distance between the healthcare personnel and the patient. Patients described feeling that the personnel were afraid of being infected themselves with the virus and therefore refrained from a physical examination. Others expressed that the reason why they were sent home might have been that the healthcare personnel were afraid of overloading the healthcare system with patients not in need of immediate care. One of the patients thought that the health providers' only focus was on COVID-19 and expressed a feeling that they had forgotten about the 'normal patients'.

"Well, I do think that if there hadn't been a pandemic, they would have brought me in for examination... checked me and I believe they would have swiftly discovered that I had an appendicitis" (Patient 7).

Others, both patients and their next of kin, expressed that the acute care functioned without any delay. Some were surprised by this experience, as they had not expected this high level of functioning.

"I thought it would be pretty chaotic, but it was just me there, so I walked in through the doors to the emergency department, and I was there all by myself, no waiting line or anything. It was very quiet, hardly any people there at all, patients that is" (Patient 9).

Owing to the ban on visitors, the next of kin were not able to accompany the patients into the emergency department. Although accepting that, the next of kin described how hard it was to leave their loved one by the door, or in the ambulance,

and wait at home alone without knowing what was happening.

"I wasn't allowed to enter any further than the entrance, and 'NN' was taken care of after that. So, I was like, 'hey, wait, can I come along, oh, wait!' and you don't know what is going to happen, and so many questions popped up inside my head" (Next of kin 6).

The surgical care worked adequately, although the system was overloaded

This theme covers the participants' experiences of the care provided in the surgical ward. Overall, the patients were surprised by the maintained hospital functionality, despite the high number of COVID-19 patients admitted to the hospital.

Interaction with the healthcare personnel

The patients were overwhelmed by how well the surgical inpatient care functioned, despite the overloaded healthcare system. They described how the healthcare personnel took their time to inform and to calm them during their hospital stay, despite the obvious stress among the personnel.

"I thought that everybody, well, acted very professionally and I saw that it was, that they had a lot to do, but they were polite and helped out" (Patient 7).

Some of the patients explained that they did what they could to minimize the workload of the healthcare personnel. For example, they waited a bit longer before asking for analgesia, or tried to solve their problems themselves, to reduce the workload at the ward. In addition, one patient expressed that the hospital's ban on visitors granted the healthcare providers more time to focus on the patients, as they did not have to make time for the next of kin.

"Then, the personnel could spend more time on the patients rather than the kind of caring for a lot of worried next of kin who just... Well yes, I understand that they are worried, I get that, but you often have to spend even more time with them than with the patients" (Patient 9).

The next of kin were to a large extent informed by the patients and not by the healthcare personnel. As per the participants, this worked well most of the time. However, the next of kin of patients who was elderly, or had undergone more advanced surgery, expressed that they would have preferred receiving information directly from the personnel. These next of kin experienced that the patient had a hard time understanding all the information given and described how it was challenging for them to provide support without any direct contact with the treating physician or not being present at the time of hospital discharge.

Some of the next of kin called and talked with the nurses, whereas others did not wish to disturb the personnel. The ones who had called the hospital described that they had received good and detailed information.

“Information is, I think, really important, from the personnel to the next of kin. That you get some information on what has happened at the hospital, what has been done, what things to think about in the future, rehab and so on. I think they (the patients, authors’ comment) have trouble understanding and knowing exactly what to do, so there you can be supportive and help with rehab and so on” (Next of kin 4).

The next of kin found the shortage of information especially challenging during the time until their loved ones had recovered enough postoperatively to be able to make a phone call.

“I know that my family found it very troublesome that they didn’t know what was happening. It wasn’t until after my second surgery, maybe three days later, that they contacted (the hospital, authors’ comment) because I wasn’t well enough to tell them myself” (Patient 7).

The next of kin of patients who arrived at the hospital by ambulance found the ban particularly troublesome. As they had not been able to accompany the patient to the hospital, they often did not know how to locate the patient. These participants described how their only option was to wait until their loved one was healthy enough to contact them, which in some cases took several days.

“Well, I was kind of awake there the whole night, because I couldn’t get hold of anyone and she was undergoing surgery for many hours, as far as I understood. So, it wasn’t until the next morning that I could get hold of someone who knew where she was. But she was in a really bad condition when she was admitted to the hospital, so I thought that the worst thing possible might have happened. But I also thought that as long as they don’t call me, it might not have happened” (Next of kin 1).

Most patients and their next of kin experienced receiving insufficient information at the time of hospital discharge. They lacked guidelines to follow, including information on what to be aware of following surgery, or the information was delayed. For example, one patient received a written document by a mail several weeks after discharge.

“I didn’t receive any, any help or information on, like, what to eat or what would come afterwards and so, because I was really ill for a long time afterwards” (Patient 9).

Having control over the situation

Both the patients and their next of kin experienced that the restrictions during the pandemic affected their ability to control the situation. The factor with the greatest impact on their experience was the ban on visitors. The patients felt that it was difficult to get the support they wanted when their next of kin were not allowed to visit them. The next of kin expressed that the ban made it difficult to obtain sufficient information, which caused an experience of not having control over the situation. In general, both the patients and their next of kin explained that the ban was a burden but they believed it was a necessary measure to lower the risk of spreading the coronavirus.

Some of the patients explained that it was emotionally challenging not being able to see their next of kin. One patient, who was experiencing severe pain, described that the personnel did not have time for comforting. Consequently, the patient longed for the psychological support that the next of kin could have provided if there had not been a ban on visitors. Some patients were so negatively affected by the ban that the healthcare personnel made an exception and allowed for visits by the patients’ next of kin.

Other patients described the ban on visitors as something positive as it gave them more time to focus on themselves—they appreciated the peace and tranquility. Some patients expressed feelings of relief not having to expose their next of kin to their deranged condition. The ban was also perceived by some patients as a chance to maintain their integrity, describing how it would have been difficult to meet their next of kin in their bad shape.

The patients expressed that they believed that the ban on visitors was worst for their next of kin, as the ban made it difficult for them to create an accurate image of the situation at the hospital.

“It was much worse for my daughter, she thought it was terrible as she didn’t know how I was doing or anything. But I did explain and she spoke to the doctors but, but of course she was worried” (Patient 2).

The next of kin found it challenging not being able to visit the hospital. They expressed that the pandemic had made their situation more worrisome than it would otherwise have been, and they experienced a feeling of a lack of control due to the insufficient information. However, the next of kin all expressed an understanding for the ban on visitors. Interestingly, some described the ban as an excuse for not having to visit the hospital, experiencing the ban as a sort of relief. One next of kin pointed to negative experiences from a previous hospital visit and another next of kin had such a fear of contracting COVID-19 that a visit to the hospital would not have been an option even without the ban.

The use of video calls was described as a good surrogate for physical visits by both patients and their next of kin. This technique gave them an opportunity to see each other, which made it possible for the next of kin to form their own picture of how their loved ones were doing. The patients experienced that the technique made it easier for their next of kin to support them and that this made them feel less lonely. Some patients were aware of the ban on visitors before seeking hospital care and had consequently brought devices for making video calls. Others who had not, suggested that such devices might be something that the hospital could offer for rent.

The patients felt assured that the personnel followed the existing guidelines to prevent the spread of the coronavirus and did not worry about their own risk of contracting the virus. The next of kin described that, at first, they were worried about their loved ones developing COVID-19 at the hospital. However, receiving information from the patient regarding the hospital guidelines had a calming effect.

“He told me that this particular thing with the protective gear, you had to change gear depending on what room you

entered, etc. All of this seemed to work out really, really great, so I wasn't at any time worried the slightest that he would be infected" (Next of kin 6).

Discussion

Our findings indicate that both the interviewed patients and their next of kin experienced maintained in-hospital functionality for patients undergoing acute surgical care during the COVID-19 pandemic. During this time, the hospital had imposed a ban on visitors as a way to reduce the risk of spreading the coronavirus. The ban was perceived as both positive and negative by the patients, whereas their next of kin generally found it challenging not to be able to visit. Furthermore, we have identified areas in need of improvement, particularly regarding the communication between the healthcare personnel and the patients and their next of kin.

Some of the participants had experienced delays, especially at the emergency department. The perceived reason included a lack of resources at the hospital and a feeling that the healthcare providers' main focus was on COVID-19. Recent studies from the COVID-19 pandemic have identified a delay in healthcare seeking behaviours and a decreased number of hospitalizations due to acute surgical conditions such as appendicitis and biliary tract pathology.^{6,7,19-21} Reasons for such altered healthcare seeking behaviour could include a reluctance to overload the healthcare system and a fear of exposure to COVID-19 at the hospital.^{5,22} Surprisingly, a fear of developing COVID-19 was not expressed by the patients in our study. Instead, our participants described how their worries regarding their own symptoms overshadowed the concerns of the ongoing pandemic. These results are in line with a study of patients undergoing elective surgery during the pandemic, in which the patients' fear was primarily associated with anxiety in relation to their primary pathology, or the waiting time until surgery, rather than that of developing COVID-19.²³

The participants in our study expressed divided views on the hospital's ban on visitors. Some of the patients felt that the ban was positive as it gave them more time to focus on themselves. In addition, they thought that it generated more time for the healthcare personnel to focus on the patients. Others felt that it was hard not being able to see their next of kin. Previous studies of patients undergoing elective surgery during the COVID-19 pandemic found that a ban on visitors affected the patients' postoperative experience negatively, especially by generating feelings of isolation and loneliness.^{11,24} Our results offer a more diverse picture.

The ban on visitors was challenging for the next of kin. Not being able to create their own image of the patient's situation generated a feeling of having a lack of control. Many of the next of kin felt that they had not received enough information by the healthcare personnel, especially during the initial acute phase and at discharge. In a study of terminal care during the pandemic, the patients' next of kin reported poor communication with the healthcare teams, and the authors concluded that innovative strategies are needed to improve the communication quality during

visitation restrictions.²⁵ Furthermore, a previous study on patients undergoing elective surgery during the COVID-19 pandemic showed that the participants experienced that their postoperative preferences were not adequately addressed upon discharge.¹¹ A factor contributing to this may be the ban on visitors. The fact that the next of kin could not attend at discharge from the hospital made it harder for them to be actively involved in the postoperative care. Loss of information has been shown to have a negative effect on spouses to patients with a chronic disease, as it makes it harder for them to maintain control over the situation.²⁶ Therefore, there might be a need for healthcare professionals to evaluate routines and to develop strategies for providing sufficient support and clear information in times of visitation restrictions.

Inpatient surgical care is an essential component of any functioning healthcare system. The need to provide care for patients with acute surgical conditions will remain, also during a pandemic and its associated challenges with reduced resources. Our study indicates that there is a need for improving the information given to the patients and their next of kin and to develop strategies to improve the communication quality during visitation restrictions, both in the acute phase and at hospital discharge. Furthermore, there might be a conflict between the patients' need of calm and privacy and the next of kin's need of being able to participate in the care. The potential advantages of limiting visits to patients in acute surgical care also in a nonpandemic situation could be investigated in future studies, with a focus on the need of individualized routines for visitors.

Strengths and limitations

To the best of our knowledge, this is the first COVID-19-related study exploring the experiences from acute surgical care among patients and their next of kin. The study has some limitations that need to be taken into consideration. The interviews were performed several months after hospital discharge, which may have led to the introduction of recall bias.²⁷ However, owing to the nature of the events and the extraordinary conditions during the pandemic, we judge this risk to be small. This study covers the surgical care of a selected group of patients admitted to one acute care hospital. Therefore, the transferability of our findings can be considered limited. To increase the readers' ability to interpret and transfer the result, we have aimed to give a clear description of the context and the participants together with appropriate quotations as per the recommendations of Graneheim and Lundman.¹⁶

Conclusions

We identified a need to improve the transfer of information from the personnel to the patients and their next of kin, especially in the period from hospital admission to the point where the patients are fit to communicate themselves and at the time of discharge from the hospital. Interestingly, the participants expressed both positive and negative aspects of the ban on visitors. Therefore, we propose individualized routines for visits to acute surgical patients when possible.

Supplementary Materials

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jss.2022.04.014>.

Author Contributions

Conception and design: E.T., A.F., and A.Å. Data collection: E.T. and A.Å. Analysis and interpretation: E.T. Writing the article: E.T., A.F., and A.Å. Critical revision of the article: E.T., A.F., and A.Å. Final approval of the article: E.T., A.F., and A.Å. Obtained funding: E.T. Overall responsibility: A.Å.

Acknowledgments

We thank Siri Hellberg for assistance with transcription.

Disclosure

None declared.

Funding

This work was supported by Stiftelsen Uppsala Sjuksköterskehem and by a donation from Kjell Gunnar Sten & Anne-Lie Ryd . The funding sources were not involved in the study.

REFERENCES

- Fagerdahl AM, Torbj rnsson E, Gustavsson M,  lg  A. Moral distress among operating room personnel during the COVID-19 pandemic: a qualitative study. *J Surg Res*. 2021;273:110–118.
- Fisher ND, Bi AS, Aggarwal V, Leucht P, Tejwani NC, McLaurin TM. A Level 1 Trauma Center's response to the COVID-19 pandemic in New York City: a qualitative and quantitative story. *Eur J Orthop Surg Traumatol*. 2021;31:1451–1456.
- Brown WA, Moore EM, Watters DA. Mortality of patients with COVID-19 who undergo an elective or emergency surgical procedure: a systematic review and meta-analysis. *ANZ J Surg*. 2021;91:33–41.
- Collaborative C. Mortality and pulmonary complications in patients undergoing surgery with perioperative SARS-CoV-2 infection: an international cohort study. *Lancet*. 2020;396:27–38.
- Cano-Valderrama O, Morales X, Ferrigni CJ, et al. Acute care surgery during the COVID-19 pandemic in Spain: changes in volume, causes and complications. A multicentre retrospective cohort study. *Int J Surg*. 2020;80:157–161.
- Scheijmans JCG, Borgstein ABJ, Puylaert CAJ, et al. Impact of the COVID-19 pandemic on incidence and severity of acute appendicitis: a comparison between 2019 and 2020. *BMC Emerg Med*. 2021;21:61.
- Lidin M, Lyng  P, Kinch-Westerdahl A, Nymark C. Patient delay prior to care-seeking in acute myocardial infarction during the outbreak of the coronavirus SARS-CoV2 pandemic. *Eur J Cardiovasc Nurs*. 2021;20:752–759.
- Johnson CL, Schwartz H, Greenberg A, et al. Patient perceptions on barriers and facilitators to accessing low-acuity surgery during COVID-19 pandemic. *J Surg Res*. 2021;264:30–36.
- WHO. *Maintaining Essential Health Services: Operational Guidance for the COVID-19 Context*; 2020:10. Available at: https://www.who.int/publications/i/item/WHO-2019-nCoV-essential_health_services-2020.2.
- Hugelius K, Harada N, Marutani M. Consequences of visiting restrictions during the COVID-19 pandemic: an integrative review. *Int J Nurs Stud*. 2021;121:104000.
- Zeh RD, Santry HP, Monsour C, et al. Impact of visitor restriction rules on the postoperative experience of COVID-19 negative patients undergoing surgery. *Surgery*. 2020;168:770–776.
- Pietrzak JRT, Maharaj Z, Erasmus M, Sikhauli N, Cakic JN, Mokete L. Pain and function deteriorate in patients awaiting total joint arthroplasty that has been postponed due to the COVID-19 pandemic. *World J Orthop*. 2021;12:152–168.
- Rivard SJ, Vitous CA, Cocroft S, et al. Colorectal surgery patient perspectives on healthcare during the CoVID-19 pandemic. *Am J Surg*. 2021;222:759–765.
- Patton MQ. *Qualitative Research & Evaluation Methods*. London: SAGE; 2002.
- World Medical Association. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA*. 2013;310:2191–2194.
- Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today*. 2004;24:105–112.
- Gibbs G. Thematic coding and categorizing. In: *Analyzing Qualitative Data*. 2nd ed.; 2018 London: SAGE Publications Ltd; 2018. Available at: <https://methods.sagepub.com/book/analyzing-qualitative-data-2e>. Accessed February 5, 2022.
- Graneheim UH, Lindgren B-M, Lundman B. Methodological challenges in qualitative content analysis: a discussion paper. *Nurse Educ Today*. 2017;56:29–34.
- Hessheimer AJ, Morales X, Ginest  C, et al. Where have all the appendicitis gone? Patterns of urgent surgical admissions during the COVID19 pandemic. *Br J Surg*. 2020;107:e545–e546.
- Gao Z, Li M, Zhou H, et al. Complicated appendicitis are common during the epidemic period of 2019 novel coronavirus (2019-nCoV). *Asian J Surg*. 2020;43:1002–1005.
- Orthopoulos G, Santone E, Izzo F, et al. Increasing incidence of complicated appendicitis during COVID-19 pandemic. *Am J Surg*. 2021;221:1056–1060.
- Lee G, Clough OT, Walker JA, Anakwe RE. The perception of patient safety in an alternate site of care for elective surgery during the first wave of the novel coronavirus pandemic in the United Kingdom: a survey of 158 patients. *Patient Saf Surg*. 2021;15:11.
- Doglietto F, Vezzoli M, Biroli A, et al. Anxiety in neurosurgical patients undergoing nonurgent surgery during the COVID-19 pandemic. *Neurosurg Focus*. 2020;49:E19.
- Shannon AB, Roberson JL, Clapp JT, et al. What is the patient experience of surgical care during the coronavirus disease 2019 (COVID-19) pandemic? A mixed-methods study at a single institution. *Surgery*. 2020;170:550–557.
- Feder S, Smith D, Griffin H, et al. "Why Couldn't I Go in To See Him?" Bereaved families' perceptions of end-of-life

- communication during COVID-19. *J Am Geriatr Soc.* 2021;69:587–592.
26. Ericsson A, Carlson E, Ching SS-Y, Molassiotis A, Kumlien C. Partners' experiences of living with men who have screening-detected abdominal aortic aneurysms: a qualitative descriptive study. *J Clin Nurs.* 2020;29:3711–3720.
27. Althubaiti A. Information bias in health research: definition, pitfalls, and adjustment methods. *J Multidiscip Healthc.* 2016;9:211–217.