Original Article

Outcomes of Shared Decision-making for Elective Colorectal Cancer Surgery during the COVID-19 Pandemic in Taiwan: Experiences from a Single Medical Center

Yan-Jiun Huang[1,2,3]
Li-Jen Kuo[1,2]
Wei-Lin Wang[2]
Po-Li Wei[1,2,3,4,5,6]
[1]*Department of Surgery, School of Medicine, College of Medicine, Taipei Medical University,*
[2]*Division of Colorectal Surgery, Department of Surgery, Taipei Medical University Hospital, Taipei Medical University,*
[3]*Division of Gastrointestinal Surgery, Department of Surgery, Taipei Medical University Hospital,*
[4]*Cancer Research Center, Taipei Medical University Hospital, Taipei Medical University,*
[5]*Translational Laboratory, Department of Medical Research, Taipei Medical University Hospital, Taipei Medical University,*
[6]*Graduate Institute of Cancer Biology and Drug Discovery, Taipei Medical University, Taipei, Taiwan*

Key Words
Shared decision-making;
Colorectal cancer;
COVID-19 pandemic

Background. Shared decision-making (SDM) is "a process in which doctors and patients work together to make decisions on treatment plans based on the current clinical evidence." Amid the ongoing pandemic, patients and clinicians alike are concerned about contracting COVID-19 in hospitals, where extensive face-to-face discussions take place before surgery. Therefore, we performed a retrospective study to evaluate the benefits and outcomes of SDM during the COVID-19 pandemic.
Methods. This retrospective study included patients receiving colorectal cancer treatment between February 1 and July 15, 2021. Clinical data were acquired from online databases of Taipei Medical University Hospital. Decision aids (a pamphlet and video clips) was accessible through the Internet. An online questionnaire assessing patients' degree of autonomy, economic considerations, postoperative ease of care, postoperative comfort, survival time, complete tumor resection, surgical complications, and changes in physical appearance was analyzed.
Results. 21 patients were enrolled during the COVID-19 pandemic in Taiwan, with approximately 95% of whom stated that the online aids greatly enhanced their understanding of the differences among available surgical modalities. Overall, 74% (15/21) of the patients could make an immediate decision. For approximately 90% to 95% of the patients, concerns regarding survival time, complete tumor resection, surgical complications, and postoperative ease of care were essential factors in decision-making.
Conclusions. Our findings demonstrate the effectiveness of online SDM aids in immediate decision-making during the COVID-19 pandemic. SDM fulfils social distancing regulations without compromising patients' understanding of the decision-making process. The involvement of family members in SDM is appropriate for indecisive patients.
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Shared decision-making (SDM) in surgery is a dynamic process through which physicians and patients work together to select the optimal approach on the basis of patient preferences.[1] Patients diagnosed as having colorectal cancer typically face extremely difficult surgical decisions, such as whether to undergo robotic versus laparoscopic surgery or minimally invasive versus conventional surgery. These decisions

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Correspondence to: Dr. Po-Li Wei, Division of Colorectal Surgery, Department of Surgery, Taipei Medical University Hospital, No. 252, Wuxing Street, Xinyi District, Taipei 11031, Taiwan. E-mail: poliwei@tmu.edu.tw

remain challenging despite advances in surgical techniques and improvements in oncological outcomes. Shared surgical decision-making was introduced into clinical practice in 1980. It marked a shift away from the traditionally paternalistic approach of clinical care in the West and toward a new era of patient-centered care.[2,3] On March 11, 2020, the World Health Organization declared the COVID-19 outbreak a pandemic. Since the beginning of 2020, Taiwan had stayed a step ahead in pandemic preparation, having enforced social distancing regulations and imposed various restrictions, including limits on gatherings in Taipei, the capital city. The virus was confirmed to have spread to Taiwan on January 21, 2020; the first case involved a woman, aged 50 years, who had been teaching in Wuhan, China.[4] Beginning on May 15, 2021, when the Level 3 epidemic alert was raised for Taipei and New Taipei and an unprecedented 77 cases of local infection were reported, case numbers rose sharply before subsequently coming under control around early July. During this severe outbreak period, beds in Taipei became fully occupied.[5] Hospitals have been forced to change their practices regarding elective surgeries during this state of emergency, which is similar to what Western countries experienced in 2020.[6] The absence of traditional meetings and extensive face-to-face discussions between physicians and patients hindered—and continues to hinder—shared surgical decision-making. Even if both medical personnel and patients wear masks, the threat of COVID-19 infection remains, raising intriguing questions concerning changes in SDM amid the pandemic. Little is known about the benefits of using web-based SDM aids during such a period as this pandemic. The present findings provide insights into the implementation outcomes of SDM involving online aids for patients with colorectal cancer undergoing surgery at a single medical center in Taiwan. The use of web-based aids during the ongoing pandemic is further explored.

Methods

This retrospective study, passed under IRB (No: N202107100), enrolled 21 Taipei Medical University Hospital (TMUH) patients diagnosed as having operable stage II or III colorectal adenocarcinoma. From an online TMUH database, data were collected on patients receiving cancer treatment between February 1 and July 15, 2021. Before admission, patients were subjected to nasopharyngeal swabbing, followed by molecular testing in the form of a real-time reverse transcription polymerase chain (RT-PCR) reaction for COVID-19 detection.

We performed a two-part study. In the first part, the patients were instructed to read an online pamphlet on SDM for colorectal cancer surgery (https://www.tmuh.org.tw/UploadFile/files/醫務部/醫病共享決策/醫病共享決策 SDM-大腸直腸癌手術方式的選擇.pdf) and watch video clips of colorectal cancer surgery (accessed by scanning the QR code provided in the pamphlet) to enhance patients' understanding of the surgical procedures and the differences between them. The pamphlet presented verbal and graphical comparisons between open and laparoscopic surgery and between laparoscopic and robotic surgery. This was followed by the administration of an online questionnaire (https://www.surveycake.com/s/w4w9l), which was developed by the research team (comprising surgeons and nursing personnel). The objectives were to understand patient concerns as well as the effect of SDM aids on patients' understanding of surgical modalities and on their ability to make immediate decisions. The questionnaire was designed to explore and identify factors related to SDM from the patient perspective. The items addressed patients' degree of concern regarding their autonomy in the decision-making process, economic considerations, postoperative ease of care, postoperative comfort, survival time, complete tumor resection, surgical complications, and changes in physical appearance. The ability to make immediate surgical decisions was assessed as an end point of the first part of the study.

The second part of the study involved face-to-face physician-patient interactions, and the degree of patient participation in such interactions was then evaluated as the end point. The factors identified in part 1 were considered. During this part of the study, surgeons and nursing personnel entered the surgical wards to answer questions posed by patients and their fami-

lies and discuss their issues or concerns as well as those raised by their families. Essential surgery-related documents were given to the patients at this time. All data are presented in bar charts, with the number of cases shown.

Results

A total of 21 patients, all of whom had been diagnosed as having colorectal cancer, completed the online questionnaire. Just over half of the patients (52%, 11/21) were classified as having stage 3 cancer. The male-to-female ratio was 11:10. The patients were aged 42 to 83 years, with the mean age being 63 years. All the patients were Taipei residents. Overall, 52% of the patients (11/21) completed the questionnaire independently (with regard to the entry of basic information and responding to every question). Family members of the remaining 48% of patients (10/21) completed the questionnaire on their behalf. Patient hospitalization duration ranged from 1 to 15 days, with an average of approximately 9.6 days.

As presented in Figs. 1-8, eight key topics were identified from the questionnaire analysis. The questionnaire responses were regrouped into the following five areas and are discussed as follows.

Factor 1: Patients' autonomy in decision-making (Fig. 1)

The vast majority of the respondents (18/21) commented that they were highly concerned about their contribution to the decision-making process because they wished to have "control over [their] own fate." Approximately 43% of the patients indicated that they were extremely concerned regarding their ability to engage in active discussion with the surgeon in charge. Approximately 14% of the patients were indifferent in this regard. Only one patient noted that they were very indifferent regarding having an active role in decision-making.

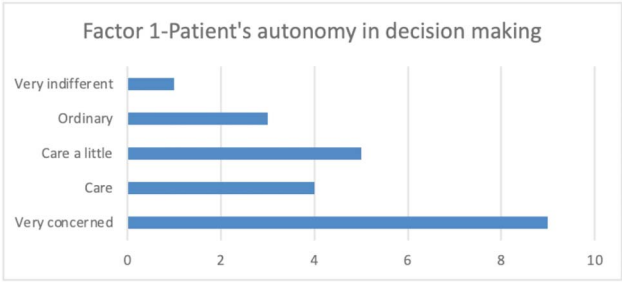

Fig. 1. Patients' degree of concern regarding their autonomy in the shared decision-making process.

Factor 2: Economic considerations (Fig. 2)

When asked about the portion of medical fees not covered by general insurance, 48% (10/21) of patients responded that money was not a major issue and that they were not especially concerned. Approximately 19% (4/21) of the patients indicated that they were not concerned about medical fees at all, and approximately 33% (7/21) of the patients noted that they took medical fees into consideration from the very beginning of their admission.

Factors 3 and 4: Postoperative ease of care and postoperative comfort (Figs. 3 and 4)

Approximately 62% of the respondents asserted that ease of postoperative care, with regard to caring for themselves, was an essential factor. Only approximately 9% indicated they were neutral on this issue. Approximately 90% (19/21) of the participants noted that postoperative comfort was a critical factor to consider in selecting a type of surgical modality.

Factors 5 and 6: Survival time and complete tumor resection (Figs. 5 and 6)

Approximately 95% of the patients (20/21) as-

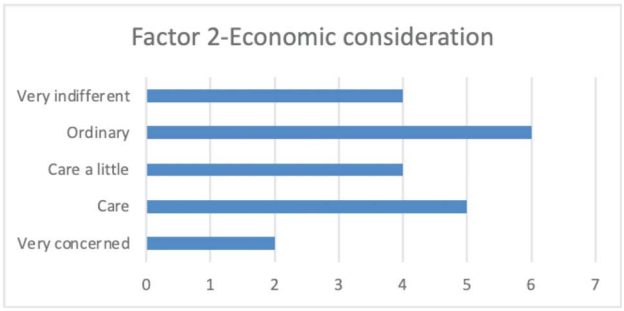

Fig. 2. Patients' degree of concern regarding economic considerations.

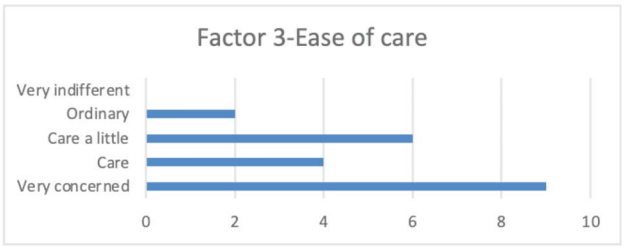

Fig. 3. Patients' degree of concern regarding ease of care.

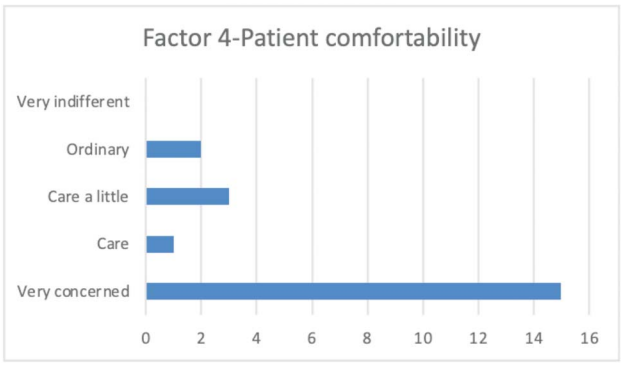

Fig. 4. Patients' degree of concern regarding comfort.

serted that survival time was a crucial factor to consider, and approximately 86% (18/21) regarded it as an extremely critical factor. Approximately 95% of the patients (20/21) believed that complete tumor resection was the most pivotal factor to consider.

Factors 7 and 8: Surgical complications and changes in physical appearance (Figs. 7 and 8)

Approximately 90% of the patients (19/21) indicated that they were concerned about surgical complications. Approximately 24%, 29%, and 14% of the patients noted that they were extremely concerned, concerned, and slightly concerned about postoperative changes in physical appearance, respectively.

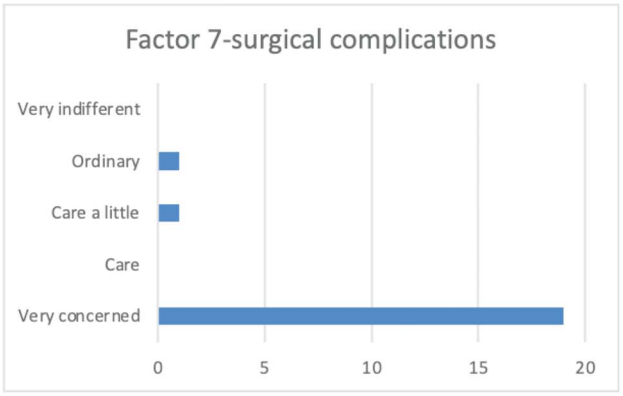

Fig. 7. Patients' degree of concern regarding surgical complications.

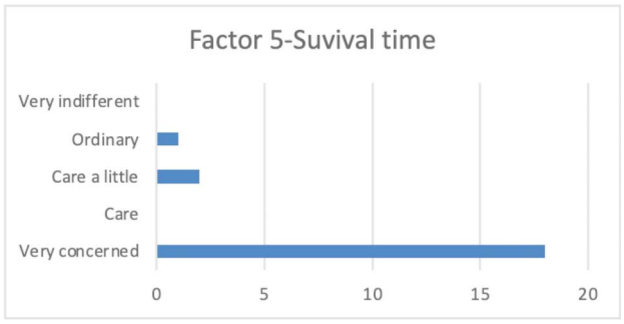

Fig. 5. Patients' degree of concern regarding survival time.

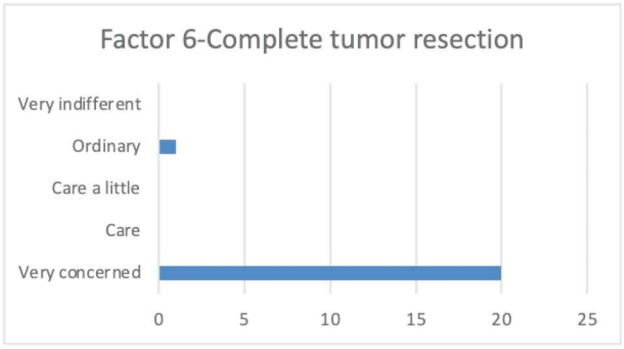

Fig. 6. Patients' degree of concern regarding complete tumor resection.

Through the use of the online pamphlet and video clips, the effects of SDM aids in enhancing patients' understanding of the differences between surgical modalities and their ability to make immediate decisions accordingly were analyzed. The results are presented in Figs. 9 and 10 as evaluation end points for part 1 of the study.

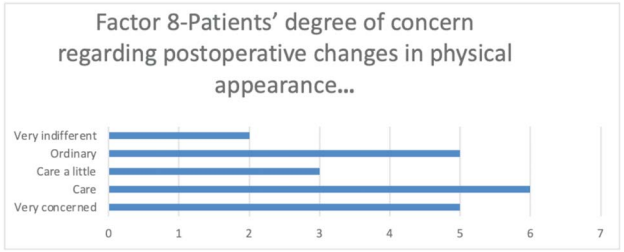

Fig. 8. Patients' degree of concern regarding postoperative changes in physical appearance.

Factors 9 and 10: Improved understanding of the treatment options and the patients' choices of surgical modality (Figs. 9 and 10)

The vast majority of the respondents (95%) stated that the provided pamphlet and video clips greatly enhanced their understanding of the differences among the available surgical modalities as well as of foreseeable surgical scenarios and the surgical procedures involved in the operations. Furthermore, approximately 52% of the patients indicated that they strongly supported the use of decision-making aids to improve their understanding of surgical modalities. Approximately 71% (15/21) of the patients noted that they had made their surgical decision after having read the pamphlet and viewed the video clips. Overall, approximately 38% (8/21) and 29% (6/21) of the patients selected the laparoscopic and robotic approaches, respectively. Only one patient (approximately 5%) selected traditional open surgery, and approximately 29% (6/21) of the patients remained indecisive.

As mentioned, part 2 of the study involved face-to-face interactions between physicians and patients. For this, the end point was the degree of patient participation.

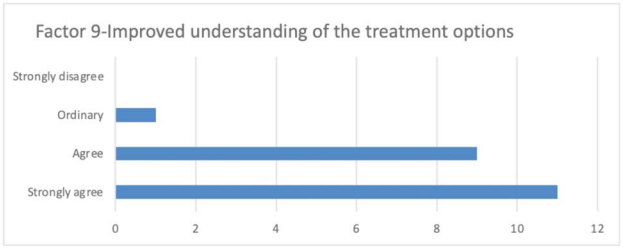

Fig. 9. Improved understanding of the treatment options.

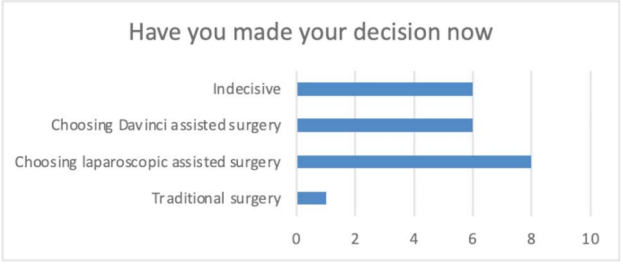

Fig. 10. Patients' choices of surgical modality at the end of part 1 of the study.

Factor 11: Patients' agreement with whether the SDM aids increased their participation in the decision-making process (Fig. 11)

Approximately 90% (19/21) of the patients indicated that with the help of the SDM aids, they had more confidence in their ability to contribute to the decision-making process and were able to ask pertinent questions and participate in this process overall. The six patients who remained indecisive at the end of part 1 of the study all came to decisions in part 2 after engaging in discussions with their family members and surgeons.

Discussion

This study extends the understanding of SDM during the ongoing COVID-19 pandemic, when social distancing is an essential measure. It also adds new dimensions to the discussion of SDM in this context. Furthermore, we explored the impacts and importance of online decision aids on patients' comprehension of differences among surgical modalities; the online decision aids were determined to assist the patients in actively engaging in the SDM process. In addition, the findings demonstrate that patients' family members are critically involved in this process in Taiwanese society.

The first case of what would become recognized as COVID-19 was identified in China in late 2019. This disease spreads rapidly between humans through exposure to respiratory fluids.[7-9] Rapid spread leads to

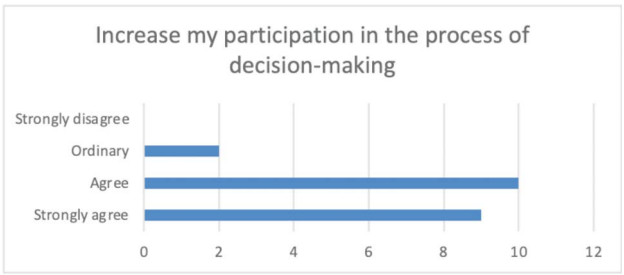

Fig. 11. Patients' agreement with whether the online aids increased their participation in the decision-making process.

overwhelmed health care systems, which in turn adversely affects the management of patients with cancer. This patient population has been reported to be at higher risk of contracting viral infections, leading to poor outcomes.[10,11] To prevent the spread of COVID-19, it was recommended that treatment for most patients with cancer should be delayed.[12] Since the Level 3 epidemic alert was announced in Taiwan in May 2021, public health authorities have made changes depending on extent of health care demand. For example, health care resources have been reallocated to prioritize the care of patients with COVID-19. Moreover, surgical practices have been reorganized; this has entailed modifications to the prioritization of surgical procedures, including those for colorectal cancer. Overall, 71% of our patients were diagnosed as having colon cancer, whereas the remaining 29% were diagnosed as having early-stage rectal cancer. All our patients required first-line treatment as soon as possible. To allow for these patients to undergo surgery at our hospital, we implemented two COVID-19 prevention measures. The first measure was that admission to our surgical ward and interactions between patients and medical personnel were only permitted if negative RT-PCR test results were obtained. This considerably reduced the risk of COVID-19 transmission. According to Guerlain et al., appropriate preoperative screening with RT-PCR helped to maintain a safe environment in which cancer surgery and care could be provided as scheduled in French hospitals during the COVID-19 pandemic.[13]

Regarding the second prevention measure, the SDM aids (i.e., the pamphlet and the video clips) substantially reduced the duration for which medical personnel were exposed to patients; for the most part, the aids obviated the need for long preoperative explanations. In short, the aids mitigated the risk of contact with asymptomatic virus carriers and the associated adverse impacts on the hospital. In the present example, the quality of and satisfaction with SDM were clearly not compromised by the government-imposed social distancing measures. In total, 90% of our patients expressed that with the help of the SDM aids, they had the sufficient background knowledge necessary to engage in discussion with their surgeons. Notably, no COVID-19 infections were detected among the medical personnel in the surgical ward during this period. In sum, the online SDM aids were deemed considerably effective.

Approximately 71% of our patients were able to make immediate decisions regarding a specific surgical modality on the basis of the SDM aids. After they had made their decisions, they did not raise any more questions related to the surgical modality in the second part of the study. This greatly reduced the duration of physician-patient consultations without compromising the basic principles of SDM in the COVID-19 era. The patients were highly concerned about survival time, complete tumor resection, surgical complications, and ease of postoperative care as factors critical to selecting a modality of colorectal cancer surgery. Medical fees (i.e., economic considerations) and postoperative changes in physical appearance were considered the least crucial factors. As mentioned, approximately 38% of the patients chose laparoscopic surgery, approximately 29% of the patients chose robotic surgery, and only 1 patient chose traditional open surgery. Furthermore, approximately 29% (6/21) of the patients remained undecided until their family members joined the SDM process. In Taiwan, filial piety is a social expectation that affects various areas of life, including interactions between patients and their family members.[14,15] From an ethical perspective, individuals feel obligated to care for family members with cancer. The family members of our indecisive patients tended to play substantial, active roles in communicating with medical personnel; they were also likely to make decisions on behalf of patients. Overall, decisions were reached quickly, with most family members agreeing with the choice of surgical modality at the end of the consultation. Perhaps the concept of family-centered care should be integrated into clinical practice in the context of shared surgical decision-making for indecisive patients; it acknowledges the importance of family involvement in decision-making.[16]

Our study has a few limitations. First, this study was conducted at a single community hospital. Secondly, This SDM was developed with the spirit of SDM-Q9 mixed with decisions and opinions from

both the surgeons and the staffs of department of quality and health control of TMUH. Futural validation with larger sample size is needed to see its generalizability.[17] Thirdly, the patients and their families may have already decided on a particular surgical modality upon admission. This might explain the short consultation sessions and quick decision-making process. Further studies conducted in other cities in Taiwan are warranted to verify our findings and increases their generalizability.

Conclusion

Our study provides new insights into patient preferences in SDM in the context of the COVID-19 pandemic. Online decision aids are useful tools for engaging patients in SDM without imposing additional risks or pressure on the health care system, especially given that medical personnel are already overburdened by the pandemic. Oncological outcomes and postoperative ease of care were the main concerns, followed by patients' autonomy in the consultation component of the SDM process. The involvement of family members in SDM was determined to be appropriate for indecisive patients.

Sources of Financial Support

None.

Conflicts of Interest

The authors have no conflicts of interest to declare.

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原　著

台灣 Covid -19 大流行期間針對常規大腸直腸癌手術使用共同決策方式的結果：單一中心經驗

黃彥鈞[1,2,3]　郭立人[1,2]　王偉林[2]　魏柏立[1,2,3]

[1]臺北醫學大學醫學院　醫學院　醫學系　外科學科

[2]臺北醫學大學附設醫院　大腸直腸外科

[3]臺北醫學大學附設醫院　一般外科　外科部

目的　共享決策 (SDM) 是「醫生和患者共同合作，根據當前臨床證據對治療計劃做出決定的過程」。在 Covid-19 大流行中，擔心在手術前進行長時間的近距離面對面討論而感染是一個大問題。因此，我們進行了一項回顧性研究，評估 Covid-19 大流行期間 SDM 實施的益處和結果。

方法　一項回顧性研究納入了在 2021 年 2 月 1 日至 2021 年 7 月 15 日期間接受治療的結直腸癌患者。從台北醫科大學醫院計算機數據庫獲得臨床數據。決策所需的信息可通過互聯網以及包括教育小冊子和視頻在內的決策輔助工具獲得。在線問卷包含與患者自主權、理解程度、經濟原因、護理便利性、美容和腫瘤完整性相關的因素。

結果　在 3 級流行病警報期間，21 名患者被納入研究。大多數受訪者 (95%) 表示，在線幫助極大地增強了他們對所有可用方法之間差異的理解。74% (15/21) 的患者可以立即做出關於手術入路類型的手術決定，只有 29% (6/21) 的患者仍然猶豫不決。90%-95% 的患者認為生存時間和腫瘤完全切除、手術並發症和護理的便利性是決策的重要因素。

結論　我們的研究結果表明，在全球大流行期間，在線 SDM 有助於立即做出決策。它主要滿足了保持社交距離的需要，同時又不影響患者對決策的理解。家庭成員參與 SDM 適合於對最終手術決定猶豫不決的患者。

關鍵詞　共同決策、結直腸癌、COVID-19 大流行。