Original Article

Change In The Surgical Plan During Covid-19 Pandemic: A Systematic Review And Meta – Analysis

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Abstract

1. Introduction

1.1. Introduction

The research introduces the change in surgical planning due to the significant impacts addressed in times of Covid-19. It is encountered that Covid-19 has had a major impact on the way of approaching surgical planning across hospitals across the globe. From this perspective, the study highlights a research report based on the critical understanding of a transition in surgical planning with a focus to deliver the betterment of patients. Moreover, the research intervenes in a literature review in consideration of the influence of surgical plans during Covid-19. Furthermore, a research methodology is also taken into account to evaluate the resaerch procedure concerned. However, recommendations are made based on the areas of improvement for surgical planning.

1.2 Background of the study

The background of the study is based on how surgical planning has changed as a result of the considerable effects discussed during the Covid-19 era. It has been observed that Covid-19 has significantly changed how surgical planning is conducted in hospitals all around the world. From this perspective, the review explains a research report based on a detailed comprehension of a change in surgical planning with a goal to supply the improvement of patients (Brody et al. 2020). Additionally, the study takes into account the impact of surgical plans during COVID-19 in a literature review. To assess the study technique in question, a research methodology is also taken into consideration.

1.3. Research aim

The research aims to evaluate different aspects of the surgical plan during Covid-19. This, in turn, explores the critical understanding of transitions encountered in surgical planning to overcome the issues faced by hospitals due to a sudden change in the process of hospital settings. The SARS-CoV-2 virus, which produces Covid-19 infection, has had a considerable influence on this surgical community. Recommendations regarding treating individuals who need surgery even during the COVID-19 outbreak have been established. This study aims to attempt how surgeons' practises having evolved during the epidemic with a focus on making changes in surgery.

1.4 Research objective

- RO1: To explore the impacts of Covid-19 on patients

- RO2: To investigate the effects of the pandemic in terms of surgery in hospital settings
- RO3: To evaluate the need for changes in surgical planning during Covid-19
- RO4: To understand the risks associated with adequate approaches to surgical planning

2. Materials and methods

2.1 Study design and the primary outcome

The study design revolves around **"Systematic Review"** and **"Network Meta-analysis".** This section covers the design of the study to confront the leading research outcome. The study design displays a suitable approach for carrying out the investigation while taking into account research needs. However, this section of the experiment highlights the necessity for numerical data to all is reviewed in response to this research's quantitative methodology. According to Weantet al. (2021), the quantitative strategy enables a researcher to emphasize numerical data from previous types of study. As a result, statistical analysis is required for the gathering and interpretation of numerical data in the quantitative method.

2.2 Search strategy

The systematic review of the research is reported in consideration of the **"Preferred Reporting Items for Systematic Reviews"** and **"Meta-analyses statement".** In this context, a **PRISMA flow diagram** is taken into account to gather supplementary information regarding the study. However, **Google Scholar, PubMed** and **ProQuest** databases have been searched to find out relevant articles published from 2018 to 2020. Moreover, the terms such as surgical triage, technological equipment, and Clinical trials have been used in the research (Eriksen and Frandsen, 2018). Furthermore, the authors separately screened titles and abstracts, in addition to performing "full-text reading" if applicable.

2.3 Selection criteria

The relevant studies related to the research are selected while considering several criteria associated with the fundamental aspects of the surgical plan during the pandemic. The **inclusion criteria**, however, rely on randomized trials of surgical plans to overcome the pandemic. On the other hand, commentaries, review articles and observational studies are **excluded.**

- The **"statistical analysis of data and headings"** have been identified for study selection
- The topic not suitable for the study has been excluded from the selection of the study
- Abstracts coupled with "full-text reading" have been taken into consideration for study selection

2.4 Heterogeneity and publication bias

Heterogeneity as well as publication bias both play essential roles in a systematic evaluation of the literature, particularly in medical research. The variation in the outcomes of appropriate research investigations shows heterogeneity (Boustani and Shanks, 2022). As a result, a low level of heterogeneity indicates a strong correlation between the consequences of the findings. Publication bias, on the other hand, undermines the ability the evaluation of effective outcomes results in terms of the accuracy and usefulness of the data used and analysed in the study (Bartos et al. 2019). There is no heterogeneity across the research articles in this study, which shows the correctness of previous research on this research issue. As a result, publication bias is likewise negligible in the current study.

2.5 Data extraction

Data extraction performed by researchers offer an independent approach to regulating research outcomes. However, disagreements have been resolved by reviewers when required. Furthermore, several pieces of information have been extracted from qualified articles chosen for the study. These include the author lists, publication year, study design,

study population, subject age range, study duration, sample size, surgical triage, the number of participants involved, and clinical outcomes of surgery (Civantos et al. 2020)

Methods: The "research methods" utilised in the evaluation of previous research papers along with the time considered to conduct the research study have been addressed for the "data extraction process".

Participants: The research has emphasised participants aged 18 years or above to consider the collection of relevant information for conducting the research. The gender, name, age, and level of Covid-19 disorders are considered for chosen participants in consideration of research needs.

2.6 Data Quality assessment

The validity and reliability of the research studies have been independently assessed by researchers by using the Risk of Bias tool, which covered sampling error, performance bias, detecting bias, extinction bias, reporting bias, and many other significant sources of bias. The studies are divided into three categories based on their risk of bias: "high," "ambiguous," and "small."

3. Results

3.1 Characteristics of the included studies

The findings have been collected from the literature throughout the study that has been collected through the systematic literature review. The **"Systematic Review"** has helped in providing the assistance for proper analysis and the explanation of the findings that have been gained through the last literature review. There has been a collection of different forms of the effect of the changes in the surgical plan during the Covid-19 pandemic (Brindle et al. 2021). Additionally, it has been observed that researchers in the past have conducted a few of the meta-analyses that have been particularly used for the analysis of the quantitative analysis of data. Moreover, there has been an illustration of the proper investigation of the study that has been done through the "PRISMA Flow Diagram". Further note, it has been seen that this flow diagram can help in the collection of different types of data through literature (Kogan et al. 2020). On the other hand, in this article, there has been an application of meta-analysis and its performance in the literature review and its process.

3.2 Literature search outcome

There has been the use of the "PRISMA" flow chart that has been used for searching literature within the research. It has been further helped in the conduction of the proper illustration of the variety of literature that has appeared that has been based on the results. As it has been said by Dotzauer et al. (2021), this flowchart helps in the proper representation of the different types of the literature that have been included in the study. The "PRISMA" flow chart helps in bringing out the process within the "systematic Literature Review" and "Meta- Analysis' from the past literature that happened. Additionally, it has been seen that there has been a description in the form of the "Meta-Analysis manner". Hence, it can be said that "PRISMA' flow chart helps in giving a visual representation of the data in the form of the screening of the past kinds of the literature (Collins et al. 2021).

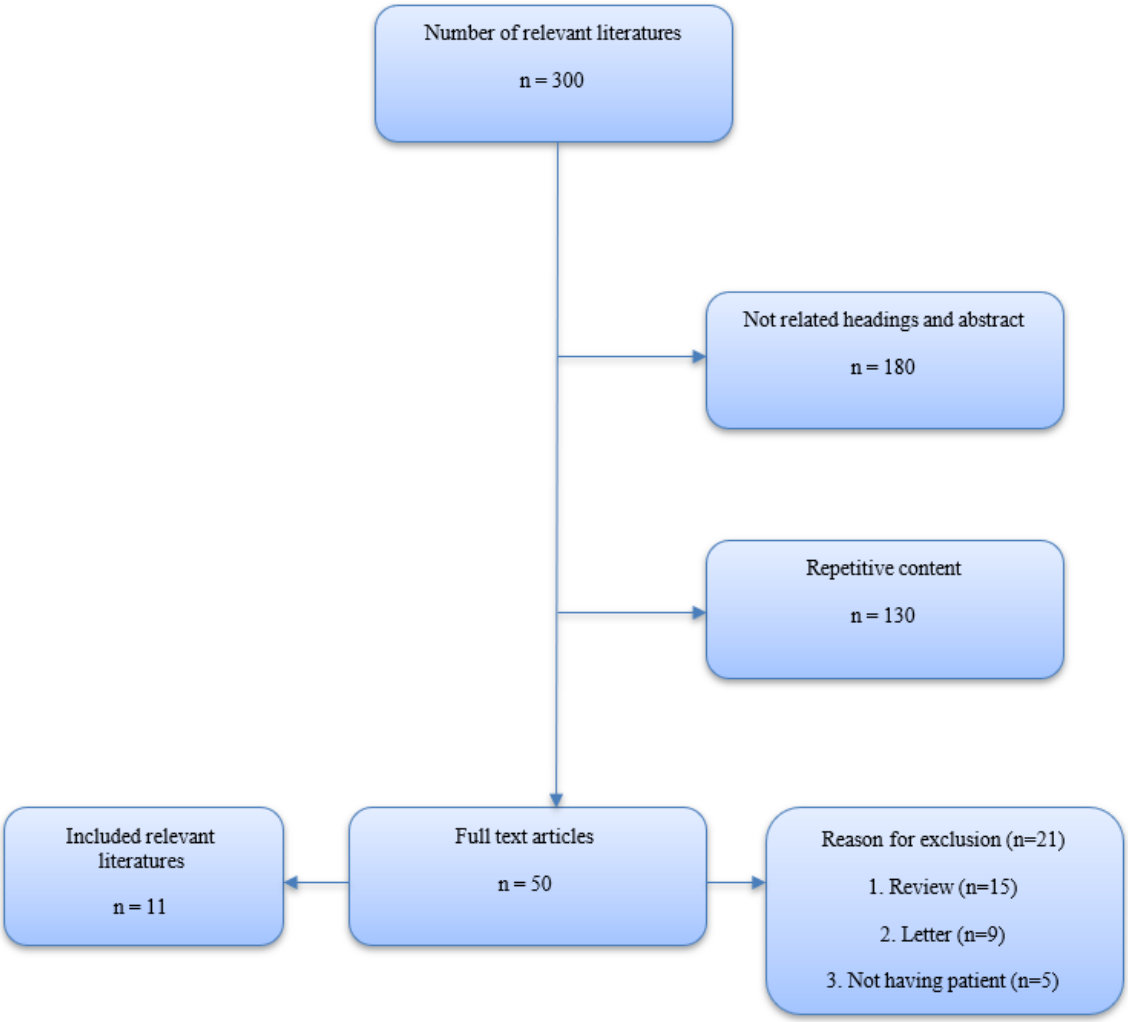

Figure 3.2:'PRISMA Flow Chart"

(Source: self-created)

In the above study, there has been visualization of 300 past research articles that have been searched, of which articles that have been excluded for not having the right headings and abstract. On the contrary, it has been seen that in the PRISMA flow diagram, there has been little repetition within the context from the search of the literature that has been excluded from the study. Moreover it has been seen that the total number of the full text article that has been found for this particular study is 50, as shown in flowchart (Gaston et al. 2020). However, about 21 articles have been excluded from the research. Out of which 11 articles have been selected for the conduction of meta analysis in this research.

3.3 Quantitative syntheses of results

Here, in this section there has been a collection of research and its results that has been used for addressing the Covid 19 effect on the surgical change for the Covid 19. As commented by Bresadola et al. (2020), the systematic review has been evaluated for the identification of the issue that has been related to the corporation with in the study.

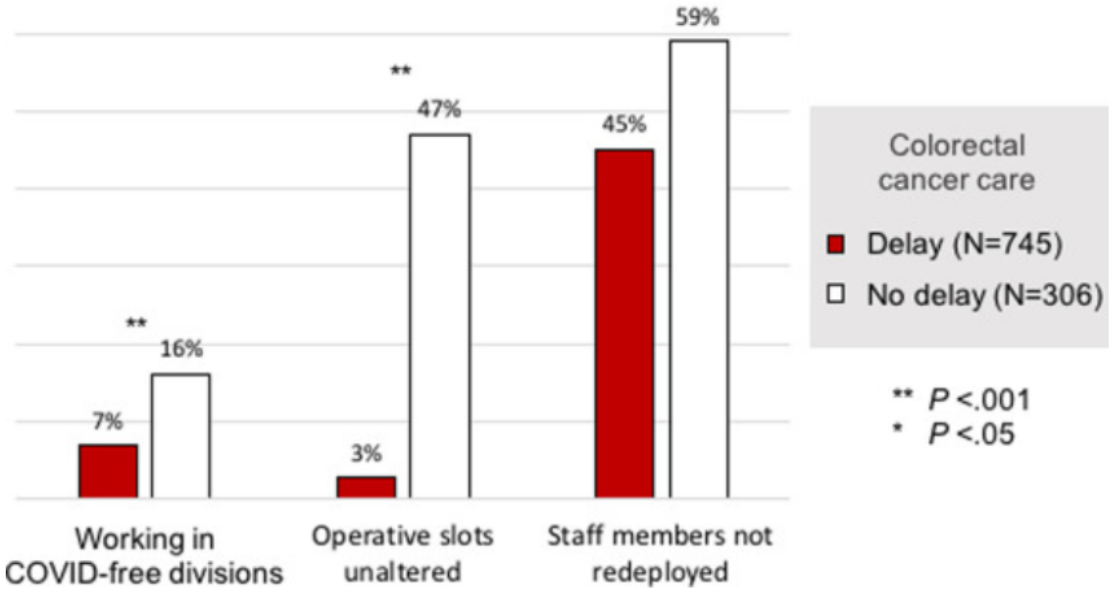

Figure 3.3: Comparison between delay and no delay groups in colorectal cancer care
(Source: Santoro et al. 2021)

The above figure helps in the showcasing that there has been differentiation between patients that have got delay in the care after the surgery in Covid 19 situation. It has been visualized 7% of employees working in the Covid free division are doing the delay in the work. On the other hand, it has been 16 % that is N=306 has n]ot delayed the working within Covid 19 free division (Santoro et al. 2021). In addition it has been visualized that 35 has made the delay within the operative with a slot as unaltered.

3.4 Inferential analysis 150

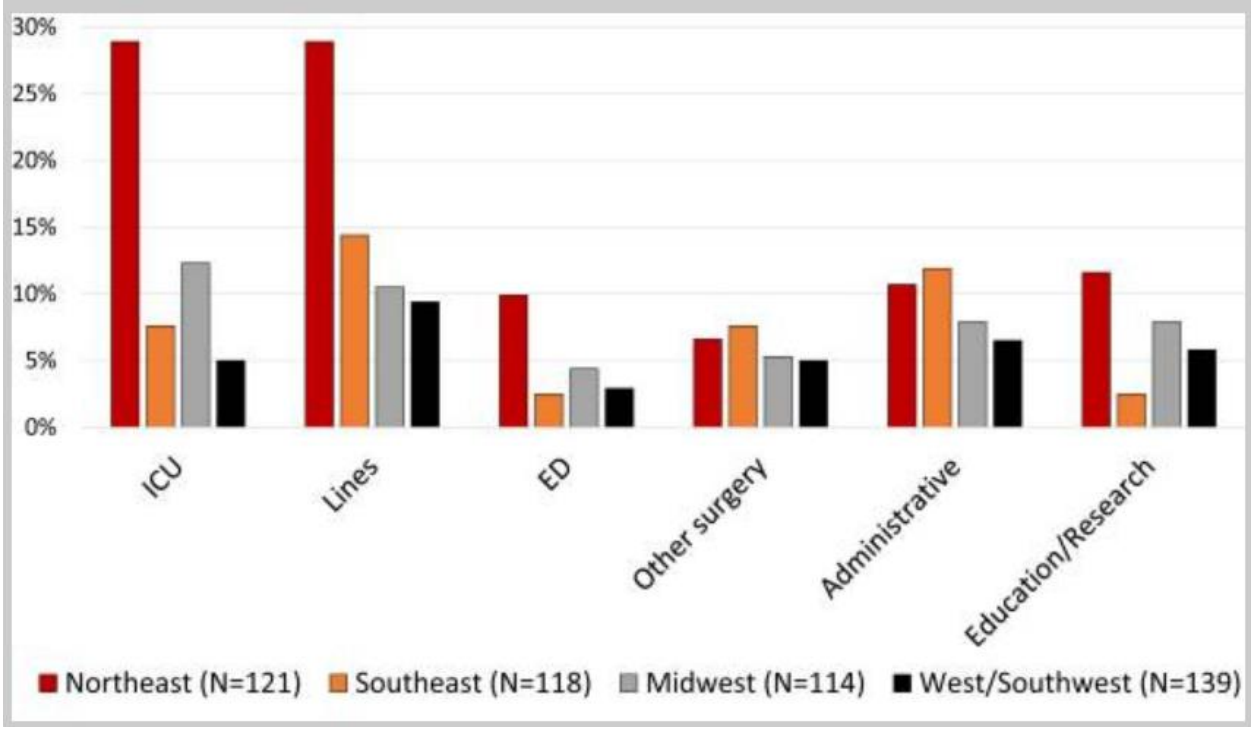

Figure 3.4: Covid 19 changes to in- hospital surgical practices

(Source:Mouawad et al. 2021)

The above figure helps in the illustration of the distribution of the duties that have been related to the vascular surgeons that have been re-deployed. It has been seen that there has been a call and its rescheduling has been modified for about 45.9 5 with a majority of the notice that has been the same as the overall of the call and its days in the alternation distribution. It has seen that 171- 34.8 has been producing assistance in the form of duties other than of the vascular surgeon (Mouawad et al. 2021). This has been created as the primary deployment within the ICU. The Data extraction performed by researchers offer an independent approach to regulating research outcomes. However, disagreements have been resolved by reviewers when required. Furthermore, several pieces of information have been extracted from qualified articles chosen for the study.

4. Discussion

4.1 Introduction

This part delves into the examination of major study findings from earlier sections. “surgical change planning” is said to be a key practice in treating persons with Covid-19 risks. In terms of findings, it has been introduced in the section of the research that surgical triage has paved the way for ease of surgery through the use of technological equipment to overcome Covid-19.

4.2 Discussion of key findings

It has been encountered that the influence of surgical planning in medical science has revolutionised the concept of effective approaches to surgery. With the advancement of magnetic simulation in the field of science, surgery has become faster with high accuracy in place. From the journal published by Picht et al. (2021), it has been encountered that Nuro surgery has ensured severe “subarachnoid Homprrhage” through Targeted temperature management with the intervention given in nonrandomized trials of rebound fever. However, the realization of Covid free has been achieved allowing the **“continuation of a safe surgical activity”** from the perspective of restoration of “non-urgent activity”.

The comparative investigation of what is analysed throughout the period of the research has allowed grasping how surgeons' approaches changed and evolved. However, this reflects which suggestions were embraced, and which might be amended. In particular, the analysis of the study specifically has looked through the examination of relevant elements concerning the research. This emphasises surgical department reorganisation, the number of procedures conducted in discretionary and emergency contexts, and also the surgical method utilised in times of Covid-19. As reported by Bracale et al. (2021), a change in surgical planning improves the accessibility and reliability of COVID-19 screening procedures. This, however, has intended to investigate how surgeons' behaviours in the surgical procedure have evolved, such as which and where PPEs were utilised. Furthermore, the use of safe “pneumoperitoneum management” during laparoscopy has been addressed to overcome the pandemic.

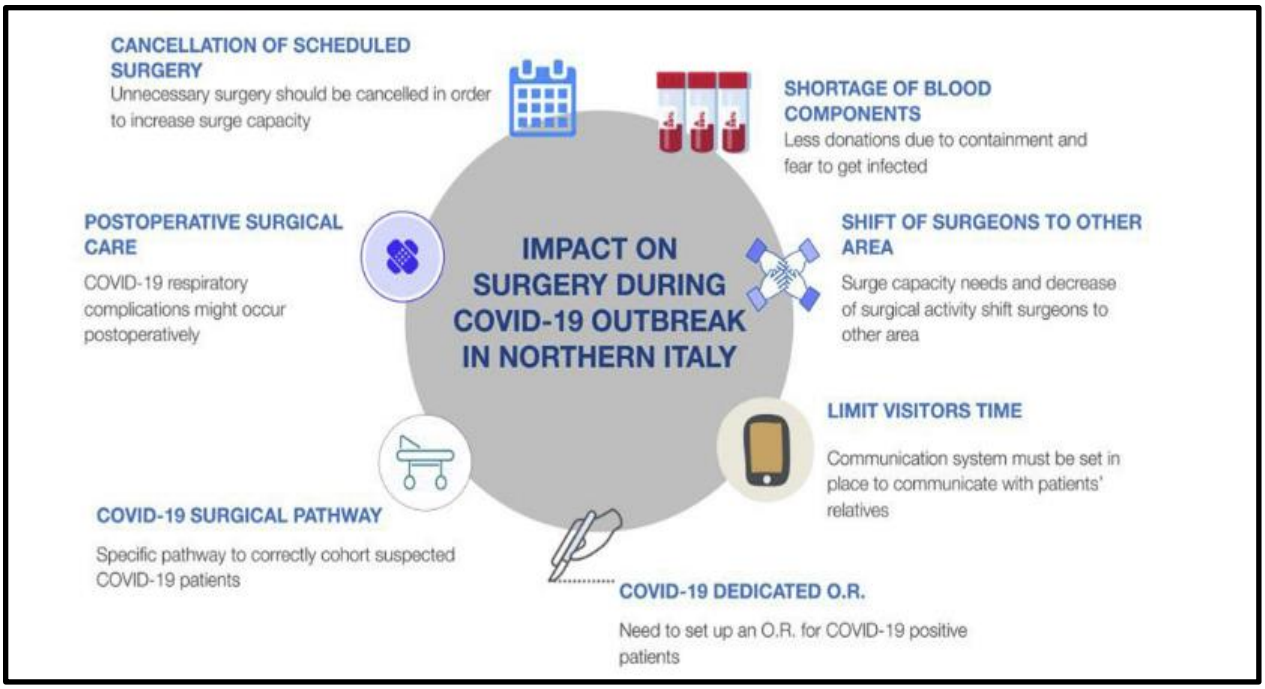

Figure 4.1: Covid Impacts on Surgical Practice
(Source: Al-Jabir et al. 2020)

Clements et al. (2021), have investigated the impacts of "Surgical training and Recovery Planning" during Covid-19. The authors have made a cross-sectional observational study to review the impacts of the pandemic on surgical training across Ireland and the UK. It has been found from the result that the pandemic has brought necessary changes in the surgical plan to boost healthcare settings. However, it has been encountered that the anticipation of surgical facilities has allowed access to caregivers in European countries. Figure 4.1 depicts the Covid-19 surgical pathway in hospitals across Italy during the pandemic (Adesoye et al. 2021). This shows adapting roles of patient care units with a focus to deliver surgical change.

4.3 Summary

This section summarises the impact of changes on the surgical plan during Covid-19. This approaches surgical triage in times of the pandemic. However, the research has addressed several issues faced by hospitals to manipulate surgical planning during the pandemic. This, in turn, has explored the critical understanding of transitions addressed in "surgical planning" to get through the crises faced by hospitals due to a sudden change in the process of hospital settings. However, Covid-19 infection has been found to have a considerable influence on this surgical community.

5. Conclusion

It is concluded that the pandemic has changed the way of making necessary approaches to surgery due to a fear of rapid contraction to Covid. The research has addressed significant impacts made by the aftermath of Covid-19 while addressing the ease of surgery in hospitals. In this regard, the research has highlighted key areas of concern related to the influence of surgical plans during the pandemic. It has been encountered that hospitals across the globe have faced severe challenges while manipulating the ease of surgery. However, the research methodology is associated with the collection of secondary data concerned to determine the critical understanding of those challenges concerning surgical planning. Lastly, the recommendations have paved the way for necessary improvements to be considered regarding adequate changes in the surgical plans.

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