

SYSTEMATIC REVIEW

WHAT IS THE IMPACT OF PRE-OPERATIVE MULTI-DISCIPLINARY TEAM BRIEFINGS ON EFFICIENCY IN THE OPERATING THEATRE?

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Abstract

Aims/Objectives: The aim of this systematic review was to establish the impact of multi-disciplinary team pre-operative briefings on operating theatre efficiency. **Background:** The operating room is a stressful, high consequence environment which utilises multi-disciplinary personnel and complex equipment. It is highly comparable to aviation which standardises communication and team work practices. The research suggests that briefings improve communication and safety within the operating room. However, much emphasis has been on the World Health Organisation safe site surgery checklist, which focuses on individual surgeries and preventing major adverse events. It is also estimated that up to 25% of operating time is not used due to delays and inefficiencies. However, a full briefing prior to the beginning of an operating list could be an effective way to improve operating theatre efficiency, communication, reduce theatre delays and can provide immediate clarification of potential patient safety issues. **Design:** Systematic review-Data Sources: The following databases were searched between October 2020 and January 2021: Cinahl, Medline, Psychinfo, Health Business Elite and the Cochrane Database. Bibliographic scanning of articles was also completed. **Review Methods:** The PICO model (Population, Intervention, Comparison and Outcome) was used to form the research question. The review included nine studies deemed relevant to answer the research question. These articles were screened for quality to ensure rigour using an EBL (evidence based librarian) checklist. Due to the heterogeneous nature of the data, a narrative synthesis of the literature was completed. **Results:** Efficiency was measured using on time operating lists start times and reduced delays and disruptions. Comparing pre and post intervention of 9 total studies; five studies indicated improved theatre start times and one study yielded mixed results for day cases and inpatient operating lists. The remaining three studies all indicated improved surgery start times, reduced delays between cases and disruptions during surgery. Secondary outcomes included improved communication, reduced patient safety issues and cost saving. **Conclusion:** Pre-operative briefing may have a positive impact on theatre efficiency. This may be due to the briefing itself or a more collaborative team approach which improves communication, morale and open dialog within the operating theatre. Therefore this warrants further research.

Keywords: pre-operative, multi-disciplinary team, efficiency in the operating theatre

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BACKGROUND

The Institute for Healthcare Improvement (1) defines a briefing or huddle as a short, stand up meeting which typically lasts 10 minutes or less that is used at the start of a shift in a clinical setting. Studies conducted in the United States of America (USA) referred to these meetings as "huddles", whereas the remainder of the studies in the United Kingdom (UK) and Europe referred to them as "briefings". Throughout this systematic review the terms briefings and huddles will be used interchangeably. Huddles are typically an American term. Huddles and briefings encourage open discussion and communication amongst MDT team members, time spent on them is typically outweighed by the time saved later (2). The multi-disciplinary team (MDT) within the operating room (OR) team consists of anaesthetists, surgeons, perfusionists, scrub/circulation nurses, anaesthetic nurses and technicians (3).

Huddles or briefings are a ritual at ward level and in many high consequence environments such as intensive care unit (ICU) and the emergency department (ED), but have not been widely accepted in the OR (4). Effective communications among the MDT within the OR are critical drivers of efficiency and safety (5). Efficiency in the OR environment can be broadly defined as spanning three factors: improved surgery start times, reduced delays and disruptions in theatre (6). Efficiency is achieved through utilisation of clinical activity and productivity (7). Inefficiency in the OR is widely recognised as a significant source of time and financial waste within health services (8). Detrimental effects of poor co-ordination between the MDT in the OR include, but are not limited to, delays, over-running of lists and patient safety issues (9).

Therefore, efficiency in the OR remains a key issue as increased efficiency allows increased surgical capacity with more operations performed for the same cost impacting on surgical waiting lists (7). For example, an audit completed in the UK in 2002 indicated that only 73% of planned operating hours are actually utilised, strongly indicating that OR activity needs to be utilised more efficiently using existing resources (9). Common reasons for delays in the OR include surgeon delays (10), anaesthesia delays, equipment and instrument issues/malfunctions (11), patient related factors and support issues (such as radiology/laboratory) (7). Technical and medical problems are not the primary cause of OT inefficiency and

the literature continuously points to breakdowns in communication (12). These reoccurring issues which cause delay in inefficiency are universal in the OR and repeatedly reported internationally (13). Although many have sought to identify different approaches to improve theatre efficiency, there is limited guidance or standards for improvement (13). Frustratingly, many of these issues are preventable with optimised communication and organisation within the OR among the MDT (14). However, previous research has shown resistance in the OR to briefings due to time restraints organisational cultural barriers (4).

The OR remains the most common site for incidents with errors occurring in up to 14.5% of surgical patients with half of these due to poor communication (15). Current systematic reviews focus on the importance of briefings and huddles in the OT surrounding communication and safety (16). These are primarily based on each individual surgery. The World Health Organisation (WHO) pre-operative safe site surgery "time out" has been implemented internationally and takes place at the beginning of each individual surgery, it has been shown to decrease wrong site surgery and mortality rates (15). Despite its implementation many preventable complications still occur which suggests a more dynamic approach is needed (4). Pre-operative briefings or huddles are distinct from the WHO surgical time-out, in that they occur before the beginning of the operating list. Their aim is to improve OR team communication and highlight potential logistical and clinical issues that might occur throughout the operating list (17). However, there are no SRs focused on a full team briefing or huddle prior to commencing the operating list and the impact on OR communication and delays. The perioperative briefing is additional to the surgical time-out to improve functionality of the surgical team (12). The use of OT MDT briefing before the theatre list starts can provide immediate clarification of potential patient safety issues (10,18,19).

The OR is the greatest source of revenue and simultaneously the greatest expenditure in acute care hospitals (7,9). With each minute of theatre time costing approximately £15, delays and inefficiency in the OR can be costly and largely avoidable (13). Such delays and inefficiencies have many implications for practice, both clinically and economically. Long surgical waiting lists have significant adverse effects on patient's health, thus, ensuring efficiency in the OR is of financial and patient centred interest (8). Therefore, it is imperative to

consider the impact of pre-operative MDT briefing in the surgical context.

The first wave of Covid19 caused a halt in many elective and non-urgent surgeries for a period of at least three months (20,21). Waiting lists for day surgeries or inpatient care have increased by 31.7% (21). To date, no SR has been carried out to assess the impact of MDT briefing on efficiency in the OR. Therefore, the aim of this SR is to research this hypothesis and the implications it may have to clinical practice.

AIM

The aim of this SR is to collate the research and examine the impact of pre-operative MDT briefing on OR efficiency. The review will do this using the PICO format. The use of the four part PICO model will facilitate a precise clinical question (P); the intervention or exposure (I); the comparison intervention or exposure (C), if relevant; and the clinical outcome of interest (O)(22).

PICO Table - Table 1

Population:	OR staff.
Intervention:	MDT briefing prior to the commencement of the theatre list.
Comparison:	None/No MDT briefing.
Outcome:	The primary outcome is OR efficiency. This concept will be explored as on time starts and reduced disruptions/delays. Secondary outcomes identified include; communication, patient safety and cost saving in the OR. These will be fully disseminated on completion of the SR.

MATERIAL AND METHODS

Inclusion criteria

Studies which looked at the effect of briefings and huddles in the operating theatre prior to the beginning of the operating list were eligible for inclusion. Briefings which included the OR

staff, such as nurses, surgeons, anaesthetists and technicians were included. Only studies in the English language were used, due to budgetary restrictions prohibiting the recruitment of an interpreter. Original research articles which were appraised as appropriate to answer the question were included.

Exclusion criteria

Briefings in other areas of the hospital such as ICU and the ED were not included. Studies which examined briefings/huddle/handover or the safe site surgery checklist prior individual surgeries were not included. Foreign language studies were not included if found in a search. Research that did not study the primary and secondary outcomes of this SR were excluded.

Search Strategy

A preliminary search was conducted between the dates October 2020 – January 2021 with the guidance of the PICO model. Boolean operators (AND, OR, NOT) were utilised (23) for precision. The key words used in literature search were; Briefing, huddle, handover, pre/peri operative, theatre/theatre, surgery, operating room/operating theatre, efficiency, delays, start time, team. These terms were searched for within the following databases: Cinahl, Medline, Psycinfo, Health Business Elite and The Cochrane Database.

A range of terms were used, including American linguistic conventions, to ensure all relevant articles from international journals are obtained(24). Database search results were recorded in PRISMA flow diagrams (see APPENDIX 1).

Grey literature can include further data such as government reports and non-conventional publications which should be included in the search to reduce the incidence of publication bias (25). Therefore, grey literature was also searched by deploying the aforementioned search strategy on both OpenGrey and Google Scholar. This search did not yield any original research. However, it did yield some relevant government publications. Reference lists of articles returned were checked for studies which have been co-cited (10,19). This yielded two further studies which were deemed relevant to the SR. No limitations were set in relation to age or year of publication.

This yielded 132 potential studies. 105 studies remained after duplicates were removed. The abstracts of the studies were screened for eligibility. After reviewing 25 full text studies to further assess their relevance to the research question,

16 of them were excluded as they did not meet the inclusion criteria.

Overview of included studies

Nine studies were deemed appropriate for inclusion REF

Year of study

The dates of the studies included were published from between 2008 to 2020.

Geographical Location

The studies were all conducted in operating theatres across the UK (6,27), Europe (28) and the USA (5,10,11,19,25-30). The location most prevalent in the relevant research literature was from the USA, then the UK followed by Europe. It is notable that none of the studies were conducted in Ireland or from low- and lower-middle-income countries, such as countries located in the Global South.

Study Participants

Participants in the studies were OR staff, consisting of nurses, surgeons and anaesthetists and theatre technicians. The mean sample size was $n=105$.

Study Design and methods

The data collection methods included electronic database reviews (theatre management systems), observational data, questionnaires and focus groups. Five studies utilised mixed methods, combining retrospective data from the hospital database and qualitative data (5,6,25-28). Qualitative data was gathered using semi-structured questionnaires and focus groups. One was retrospective study of prospectively collected data on on-time surgery starts over 7 years, the data were collected by OR staff (29). Another study used mixed methods using observational data and questionnaires completed by the orthopaedic surgeons but did not include any of the other OR staff (30). Two of the studies were retrospective studies which used a retrospectively constructed database of pertinent times to make statistical comparison (10,11). Each study quantified efficiency using different questionnaires and scales. Five of the studies design focused on a mix of surgical specialties: general surgery, ear nose and throat (ENT) neurosurgery, vascular, orthopaedic and plastic surgery (19,27,28,29). Two of the studies focused solely on urology (10,11) and another study focused only on orthopaedic surgical lists (30). Finally, another

study focused on cardiovascular surgery, which included perfusionists in their sample (5). The duration of these data collection methods ranged from 6 weeks to 7 years.

Quality Appraisal

Research can vary greatly in quality and credibility. Quality assessment is deemed necessary in a SR to ensure a deeper understanding of the researchers' robustness of methodological design and, consequently, their results (31). For this SR, the EBL quality appraisal tool was utilised. A quality result of >75% ensures that the study is valid and of necessary quality. Quality appraisal was confirmed by the second reviewer (research supervisor) and the mean EBL quality result was 80.35%.

Data Analysis

Due to the heterogeneity of the studies, a narrative synthesis of data was completed. Data from mixed methods were analysed. By including diverse forms of evidence and different types of research, the researcher was positioned to maximise findings relevant to the SR (32).

RESULTS

The results show that the primary outcomes are on-time starts and reduced delays and disruptions during surgery. On-time starts specifically refer to the first surgical case of the day on the operating list (29). Two studies used time in minutes before the list started which examined the difference in start times before and after the intervention (6,27). Ali et al (27) measured on time starts prior to briefings and after the introduction of briefings. Prior to the briefings, no theatre list started on time. However, with briefings one theatre list started on time out of a total of 34 lists. The mean time in minutes to theatre start time reduced from 30.7 to 23.5 (P value: 0.1), using unpaired 2-tailed t test (difference of means: 7.2), indicating reduced delays to start time. Ali et al (27) used a briefing which incorporated team introduction, planned procedures and safety discussion points. Before briefings, the operating lists lasted 411.0 minutes and 385.9 minutes after briefings (p value: 0.21). Moreover, Bethune et al (6) also found that theatre start times tended to be earlier and, similarly, that list lengths tended to be shorter. Bethune et al (6) also measured on time start in minutes. The com-

bined data of operating lists started 24.4 minutes after baseline decreased to 20.7 minutes with briefing (p value: 0.14). This study only reached significant findings on day-case surgeries, a reduction from 41.0 minutes to 25.0 minutes (P value: 0.01) but did not yield a statistical difference for "all day lists" 20.6min to 19.6 (P value: 0.38).

Table 2: Theatre start times before and after implementation of briefings

Time to start operating list (after due start time) (Minutes)	Without Briefings: Baseline	With Briefings
Ali et al., (27)	30.7	23.5
Bethune et al (6)	20.6	19.6
Amount of on-time starts %		
Tresh et al (11)	61%	71%
Martin and Langell (29)	15%	72%
Weld et al (10)	48.9%	69.8%

The remaining three studies compared the percentage of lists that started on time as displayed in the above table. Martin and Langell (30) conducted a study over 7 years which also included a modest pay incentive (\$1000-\$2000) for surgeons who had <90% of on-time surgery starts. In the last year of the study, 72% of theatre lists started on time compared to 15% prior to implementation of pre-operative briefing (P value: < 0.001). All first surgical cases over the study showed significant improvement in on-time surgery starts. However, significant improvements were found in all surgical specialties with the exception of thoracic surgery. A limitation due to the retrospective design of this study was the inability to ascertain why there was no improvement given that no additional explanatory data were collected. Notably, despite to the pay incentive given only to surgeons, there was no reference made to the potential for bias. Comparably, Weld et al (10) found that on time rates in urology surgery increased by 21% with the introduction of briefings over a one year period (P value: .001). Notably, for this study, the most substantial improvement was realised in the instrument and equipment category.

Jain et al (30) found that disruptions during surgery were frequently caused by equipment issues. After implementation of huddles, equipment issues dropped from the most frequent

disruption to the second most frequent disruption. Tresh et al (11) identified the main barriers to on-time starts as surgeon delays (35.9%), equipment issues (21.5%), anaesthesia delays (17.2%) and patient related factors (11.4%). This study introduced the Lean Daily Management System (LDMS) which included a 5 minute huddle before a urology operating list. After 1 year the urology operating list start time was 72% v 61% respectively, this yielded a 10% improvement in urology lists than the overall OR mean (11).

Reduced delays/disruptions

Henrickson et al (5) used descriptive analysis to compare the overall amount of surgical delays between non-briefing and briefing groups. The total surgical disruptions in the OR per case reduced from 9.5 in the non-briefing group compared to 5.0 in the briefed group (P value: 0.000002), yielding an overall reduction of 47% in disruptions. This study focused specifically on cardiac surgery and used a combined questionnaire and focus group methodology from 56 participants.

Delays and disruptions are described as unexpected disruption to the surgery resulting in longer operating time and delays to the list (26). Similarly, using the operating room briefing assessment Tool (ORBAT), Nundy et al (26) indicated in responses to questionnaires that unexpected delays reduced post intervention of a huddle from 2.4 to 2.1 (1 being strongly disagree to 5 indicating strongly agree) giving a difference of -0.3 (P value: 0.4). Among surgeons alone the percentage of unexpected delays reduced from 38% to 7% (P value: <.001). This study used a large sample size of 360. Conversely, OR teams reported the lowest response of (strong) agreement were for the terms "less work to rectify agreements failed" (33.3%) and "start on time" (35.9%) indicating that briefing has less influence on efficiency (28).

Comparison results from baseline and after the implementation of a huddle also indicated a reduction of interruptions from 163 to 35 questions asked outside of huddle (30). The number of questions/disruptions were categorised by planned procedure, patient position, tourniquet requirements, equipment, x-ray, antibiotics, nerve block, blood loss and special considerations. This yielded a reduction in total unexpected delays from 15 (23.08%) to 4 (6.45%) total unexpected delays. The number of questions per surgery outside of the huddle was reduced by 77%. Such reduction indicates a significant improvement and connects to a reduction of unexpected

delays in the operating theatre with introduction of a briefing or huddle. However, one limitation is that the study was conducted only over 19 day period and indicated a relatively small sample size.

Table 3: Disruptions/delays

Disruptions/delays	Before intervention	Post-intervention
Henrickson et al (5)	9.5 per case	5 per case
Nundy et al (26)	38%	7%
Jain et al (30)	23.08%	6.45%

Secondary outcomes

Communication

Five of the studies noted communication outcomes due to implementation of huddles (5,6,19,27,30). In cardiothoracic OR surgical lists, teams who were briefed had 53% fewer miscommunication events per case 2.5 vs. 1.17, (P value: 0.03). Examples of these miscommunication events were safety in nature. Examples include: heparin not being administered, phenylephrine not being administered and the perfusionist not rewarming the patient at the appropriate time (5). However, it is important to note a limitation of this study was that the "trained" observer was a medical student and not a seasoned field researcher experienced in the conduct of observational studies.

Ali et al (27) found that 89% of OR staff felt the briefings were an effective tool to improve communication. Furthermore, they felt that briefing made them more aware of cases. Comparably, Bethune et al (6) found that briefing had a positive impact in the OR with 69% of 13 respondents reporting improved communication and 100% agreeing that it improved teamwork in a questionnaire. Nundy et al (19) reported a decrease in breakdowns in communication in the OR from 80% to 65% post intervention of a briefing (P value: <0.006. Jain et al. (29) specifically noted that surgeon's ratings for the "days flow", increased from a rating of 5 to 9 after implantation of the huddle (on scale of 1 being disorganised 5 being average and 10 being extraordinarily smooth). This study also suggested from additional comments in a questionnaire, that the huddles improved nursing staff satisfaction. However, the questionnaire rating the "days flow" was only given to and completed by orthopaedic surgeons. Therefore, it is difficult

to determine if overall communication improvements were perceived by the OR team owed to limitations in the data that were collected as they were limited to one professional's perspective.

Patient safety

Three of the main studies noted patient safety outcomes as a result of briefing (10,27,28). In one study, over the period of a year patient safety issues were categorised into realised and potential safety issues (10). Safety was divided into three categories: (i) personnel, (ii) instruments/equipment and (iii) support services. The most substantial improvement of safety was seen in the instruments/equipment category. The incidence of potential safety issues was statistically similar, however the incidence of realised safety issues decreased from 15.8% to 6.2% ($p < 0.001$) and remained at that rate for the remainder of the year (10). Ali et al (27) conducted a questionnaire to explore OR staff's attitudes after the implementation of a briefing. 97% of respondents agreed that the OT briefing highlighted potential patient safety issues, thus having a positive impact on patient safety. The OR team also commented that the briefing was a "useful tool in highlighting important points about the patient" and that "safety briefings should continue in all operating theatres" (27 p140). Similarly, a longitudinal study over 5 years which measured team climate inventory saw a significant increase in "participative safety" (P value: 0.2), indicating a 95% confidence interval (28).

Cost savings

Two studies mentioned cost savings (5,29). In one large scale study the implementation of briefings saved an estimated 37,556 minutes of theatre time at an estimated cost of \$15-\$20 per minute at that particular institution. Estimated gross savings from the project were \$751,120 (30). Henrickson et al (5) also examined waste reports and cost, showing a tendency toward decreased waste in briefed teams. However, the difference did not attain statistical significance (P value: 0.31). Nonetheless, the percentage of cases with waste costs was lower post implementation of the briefing (30% versus 17%).

DISCUSSION

The primary aim of this SR was to examine the impact of MDT briefing or huddles on OR efficiency. Other outcomes of the research extends to the positive impact on communication, patient safety and cost saving. The background to this SR highlights the importance of huddles or briefing in healthcare for optimal communication and collaboration as a team within the OR. Teams that work together are said to collaborate as they take shared ownership, responsibility and have a sense of collective ownership of a desired impact (32,33). Where clear communication and trust exists, this extends to critical questioning and discussions to pre-empt any problems, challenges or obstacles that may occur (34).

Each study looked at different areas of efficiency in the OR such as improved start times,(6,10,11,27,29), reduced delays (26), and reduced disruptions (5,30). Although the studies measured efficiency in different ways, each study aimed to measure ways to reduce time wastage in the OR as it is shown that up to 25% of OR time is not utilised (9). The studies all clearly show improvements in theatre efficiency due to the implementation of MDT huddles. The research shows more pronounced improvements in theatre start and turnover times for mixed elective day-case lists, urology and orthopaedic surgeries. More pronounced improvements may be due to the quick turnover of these types of surgeries. Comparably, cardiothoracic operating lists showed that briefings reduced disruptions during surgery, which may be owed to the lengthy and complex nature of cardiac surgeries. Importantly, data demonstrate briefings do not delay lists, which has often been a criticism of running briefings (27). Ali et al (27) also noted that operating lists tended to be shorter with briefings, indicating improved surgical efficiency.

The implementation of the WHO surgical safety checklist demonstrates significant decreases in mortality and morbidity (15). However, these decreases are dependent on conviction and engaged interactions and not simply a more superficially functionalist or so-called "tick the box" exercise (30). Some of the studies which showed a significant improvement in efficiency were also noted to have utilised team training prior to the implementation of briefings. This may have also had an impact on how the OR team worked and communicated together. OR briefings may help toward improving teamwork and between the MDT fostering an improved OR culture (26). A more collaborative approach appears to have more potential in relation to MDT and OR efficiency rather than superficial,

functionalist and individual actions. This hinges on communication and is more accountability driven. This is a question of culture, it seems. Furthermore, all of the studies were on a relatively small scale, with some only examining one particular type of surgical list. A larger scale study examining multiple specialties using a standardised briefing tool is warranted.

The secondary outcomes observed in this SR were communication, safety and cost-saving. Four of the studies noted improved communication (5,6,19,27). Given the interdisciplinary nature of the OR, communication among the MDT is intrinsic to a safe working environment for patients (10). The operational impact of a briefing establishes a professional structure and culture of open and continuing dialogue, resulting in a positive impact on OR communication and patient safety. This collectively leads to a reduction in predictable errors (5). Notably, two of the four studies that resulted in an improvement to overall communication because of briefings also included prior team training before implementation of the briefings (10,19). This reflects the need for professional learning concerning collaboration and communication in order to maximise the potential of huddles, especially because improved teamwork and communication have been shown to decrease mortality rates in structured organisational teams such as those seen in ICU (27). However, most of the studies also noted barriers to briefings and huddles, such as senior staff being cynical regarding their benefits and time constraints, despite all of the briefings taking less than 5 minutes on average more (6,28). Again, this underscores the need for professional learning for OR inter-professional and intergenerational teamwork.

Studies that addressed patient safety ideally aimed to show a reduction in adverse events and mortality. Achieving this was difficult, however, in such small studies and surrogate markers had to be used in one study. Weld et al (10) demonstrated a statistical reduction in both potential and realised safety issues mostly relating to equipment and instruments in the OR using patient safety data comparatively. Moreover, Schaap et al (28) effectively demonstrated that safety briefings were a useful method for improving and sustaining safety within the surgical team as it was a 5 year study. The secondary outcomes of communication and safety appear to be correlated throughout the research. As surgery adopts more advanced instruments and equipment, improved proficiency and communication between OR staff regarding these tools

improves patient safety (2). This is demonstrated in one of the studies where 51% of all safety issues on a Urology list was related to surgical instruments and equipment (10). The benefits of completing a safety briefing before the list starts is that any critical equipment and instrument needs can be noted as recognition of missing devices or instrumentation is much safer and easier to correct prior to anaesthesia than afterwards (30). Safety issues surrounding equipment were more pronounced in urology and orthopaedics throughout the literature in comparison to general surgery, ENT, plastics and gynaecological surgery(10,30).

Cost saving was only noted in two of the studies. One study implemented huddles and performance pay incentives to improve theatre efficiency. Ultimately, the main goal was fiscal benefit, therefore it is difficult to ascertain what aspect of the overall strategy resulted in improving efficiency (29). Henrickson et al (5) also note costs connected to waste, an important consideration as discussion underscoring the importance of sustainability continue internationally. Only one study showed a statistically relevant impact on cost (30). However, it is noted throughout much of the literature that improved efficiency, communication and patient safety will have an impact on cost savings within the health service (19,35-37). Future studies should address the fiscal element but also the human one, having a professional and patient-centred focus.

With the current Covid-19 pandemic surgical waiting lists are critically lengthy. It is clear that in a post-Covid healthcare system that there will be an extensive backlog of surgeries demanding to be cleared, and it is difficult to predict how complex some cases may become as their wait inevitably increases. However, it has been observed that the Irish healthcare system is already struggling to manage those patients who were unable to have surgery due to the operational and risk ramifications of pandemic, who had previously been placed and served time on lengthy waiting lists by international comparison (19). Therefore, there is arguably a clear

indication to streamline clinical activities and conserve healthcare resources as much as possible (36).

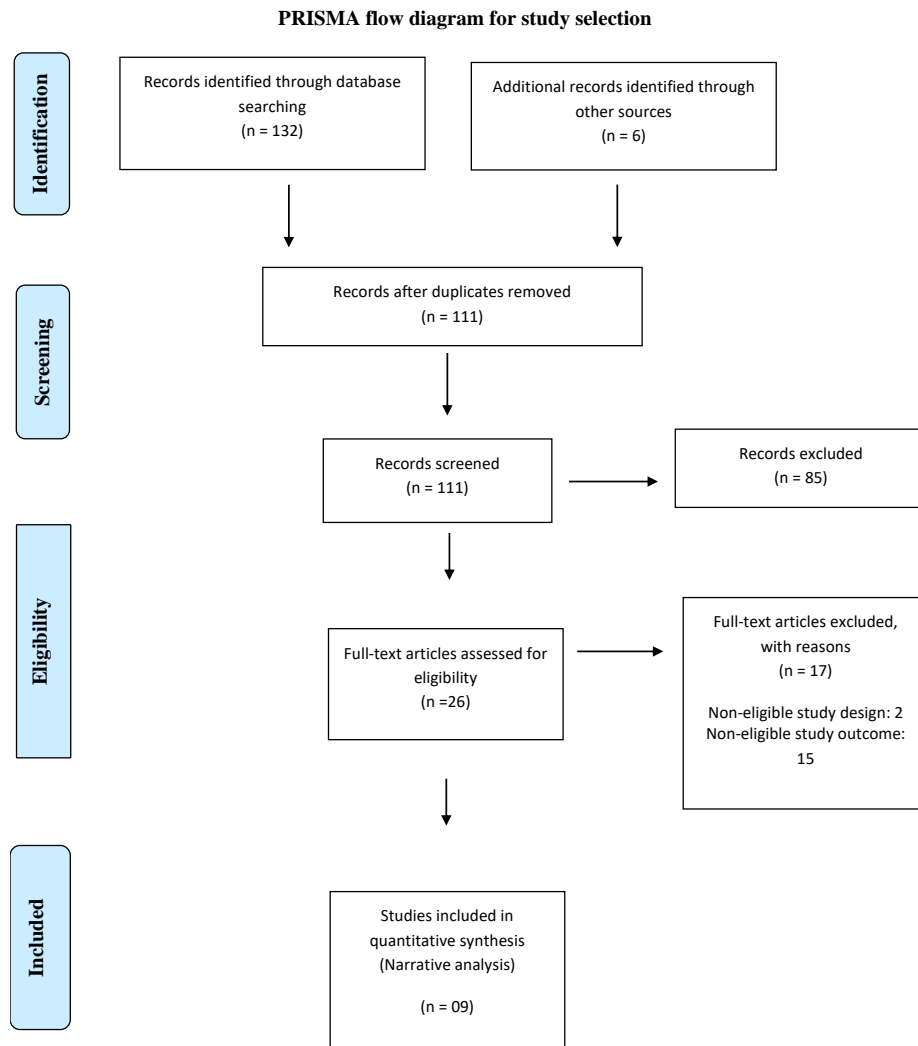
The research also demonstrates that implementation of briefings and huddles in the OR prior to the beginning of an operating list is associated with improved OR efficiency, improvements in communication amongst the OR team and better patient safety outcomes. However, it is important to note that this association does not imply causation. Therefore, briefings should be implemented as part of an overall strategy to improve communication and teamwork within the OR and kept under constant review. Changes in practice can be difficult to implement but are essential if clinical practices cause risk such as those in environments like the OR (37,38) and require wraparound supports through professional learning experiences. Effective implementation of huddles and briefings would need to address these challenges including in nurse education but also in the professional education of other professionals in the OR.

CONCLUSION

This SR aimed to ascertain the impact of MDT briefing on OT efficiency. While the evidence presented clearly demonstrates an improvement in overall OT efficiency, it has also shown that there is a need for a standardised, validated briefing tool which may be modified for widely varying contexts and surgeries. Two of the studies focused only on surgeons perceptions of efficiency, research into the future should capture all the voices of each professional in the MDT as they each have a role in securing the outcome and efficiency, not only surgeons. There is also a need for larger-scale study, such as longitudinal studies across contexts using a standardised tool in future research. Such research will inform high quality, evidence-based collaborative practice, which could be implemented into hospital and health system policies, ultimately, promising the driving of improved practice and patient care.

Appendices: APPENDIX ONE

Figure 1: Flow of articles through this review



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