Postsurgical pain management among obstetrics and gynecology patients in a teaching hospital in Tabriz, Iran: a best practices implementation project

Sakineh Hajebrahimi,[1] Maryam Vaezi,[2,3] Farnaz Moslemi Tabrizi,[3] Azam Asghari Khatooni[4] and Khadijeh Zahed[4]

[1]Department of Urology, School of Medicine, Research Center for Evidence Based-Medicine, Health Management Research Institute, Imam Reza Medical Research & Training Hospital, [2]Department of Obstetrics and Gynecology, School of Medicine, Women's Reproductive Health Research Center, Clinical Research Institute, Alzahra Hospital, [3]Department of Anesthesiology, School of Medicine, Imam Reza Medical Research & Training Hospital, and [4]Alzahra Hospital, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract

Objectives: The purpose of this project was to improve the compliance of patients' pain management process after surgery using evidence-based criteria at the Al-Zahra Educational Hospital in Tabriz.

Introduction: Reducing and relieving pain are among the basic rights of patients, and the management of this component should be one of the basic goals of the patient care team. Inadequate pain control can have many unpleasant consequences for the patient and increase hospital costs. Due to the importance of pain control and a gap in this area, it was decided to implement a project to improve pain control in postoperative patients grounded in evidence-based recommendations.

Method: This project was carried out at a Level III hospital in Iran from December 2019 to June 2020. A baseline audit, based on the JBI Practical Application of Clinical Evidence-Based System (JBI PACES) and Getting Research into Practice (GRiP) audit and feedback tool was conducted with 40 patients in the surgery ward of the hospital. After developing the GRiP table (barriers, strategy, resources and outcome), a follow-up audit was done three times. The different stages of the audit were centered in evidence-based criteria. At each stage of follow-up, 40 patients were randomly selected in the postoperative stage.

Results: At the baseline audit, out of a total of eight criteria, only criterion 2 corresponded to the audit criteria where there was no pain assessment tool or protocol for pain or for training patients and nurses. Over the three follow-up audits, 100% improvement was achieved in half of the criteria through preparing visual analogue scale pain instruments, and development of a pain protocol and a pain self-care protocol, and a 63% improvement was observed in one of the criteria. Patients' pain decreased from very severe to mild/moderate in the first few hours in 70% of patients after surgery.

Conclusion: The use of this best practices implementation project led to the improvement of the postoperative pain management process of patients and the improvement of patient care quality. The use of the JBI Institute Method is recommended to address other current or defective hospital processes.

Key words: audit, best practice, evidence-based criteria, pain management

JBI Evid Implement 2022; 20:1–9.

Correspondence: Maryam Vaezi, Associate Professor of Obstetrics and Gynecology, Department of Obstetrics and Gynecology, School of Medicine, Women's Reproductive Health Research Center, Clinical Research Institute, Alzahra Hospital, Tabriz University of Medical Sciences, Tabriz, Iran. E-mail: mva260@yahoo.com

DOI: 10.1097/XEB.0000000000000331

What is known about the topic?
- 'Unpleasant sensory and emotional experience associated with possible or potential tissue damage' is the definition of pain.
- Reducing and relieving pain is among the basic rights of patients, and the management of this component should be one of the basic goals of the patient care team.
- Inadequate pain control can have many unpleasant consequences for the patient and increase hospital costs.

What does this article add?
- This evidence-based implementation project used the Joanna Briggs Institute Practical Application of Clinical Evidence System (JBI PACES) and the Getting Research into Practice (GRiP) audit and feedback tool.
- The use of this best practices implementation project led to the improvement of the postoperative pain management process of patients and the improvement of patient care quality.
- This project showed that sometimes small changes, if done correctly, can have large effects.

Introduction

'Unpleasant sensory and emotional experience associated with possible or potential tissue damage' is the definition of pain by the International Association for the Study of Pain.[1] Patient pain is a subjective issue; if not properly controlled, it has adverse effects on quality of life and satisfaction. The importance of pain is such that the Joint Commission considers it another component of vital signs.[2]

Appropriately reducing and relieving pain is among the basic rights of patients, and the management of this component should be one of the basic goals of the patient care team.[1] Given that more than 200 million people undergo major surgeries worldwide each year, acute postoperative pain and its treatment is a significant problem. The cause of postoperative pain is tissue trauma caused by dissection during surgery.[3] The severity of pain in the early hours following surgery tends to be high and is one of the most common complaints of patients. Despite human success in modern medicine, pain control is a major challenge for patient care team members and patients themselves. In spite of significant improvements over the past decades, 66% of patients complain of moderate-to-severe pain in the time following surgery to discharge from the hospital, and 59% of patients complain of the same pain at 2 weeks following discharge.[4,5] Inadequate control of pain, whether over-treated or under-treated, can have unpleasant consequences, such as reduction of patient satisfaction, prolonged hospitalization or increased hospital costs and risk of hospital infections, and, as a result, disruption in rehabilitation, and increased risk of re-hospitalization, as well as side effects from overuse of painkillers, cardiac changes, and increased risk of myocardial ischemia or infarction, thromboembolic and pulmonary complications, immune changes, and the experience of persistent and chronic pain, which ultimately can have a negative effect on a person's quality of life.[6,7] Due to the fact that in the composition of the treatment team, the nurses who care for the patient have an important and major role in this field, training the relevant team and acting in a multidisciplinary fashion are recommended. On the other hand, as opioids are one of the most important analgesics used after surgery, this may be a factor in its long-term use in some patients, which is associated with increased mortality. Therefore, an appropriate strategy for pain control can be multimodal therapy and the use of pharmaceutical and nonpharmaceutical methods.[8,9]

The Al-Zahra Educational, Research and Medical Hospital is a Level III referral hospital in Tabriz, in the province of East Azerbaijan in northwestern Iran. The hospital is about 50 years old and is one of the largest centers for prevention, diagnosis, treatment and rehabilitation services for women, mothers, and infants. The center has about 220 active beds, and over 1000 surgeries are performed every month. No special protocol for controlling postoperative pain existed. Due to the context given and the importance of postoperative pain management as well as the high number of surgeries in this hospital, there was perceived to be a need to address postoperative pain management for patients. As a fellowship project, the researchers decided to implement a pain-management project using the JBI Practical Application of Clinical Evidence-Based System criteria and tools.

Aims and objectives

The aim of this project was to assess compliance with evidence-based criteria regarding postsurgical pain management amongst obstetrics and gynecology patients in the Al-Zahra Teaching Hospital, Tabriz, Iran.

The specific objectives were:

(1) To determine current compliance with evidence-based criteria regarding postsurgical pain management.
(2) To identify barriers and facilitators to achieving compliance and develop strategies to address areas of noncompliance.
(3) To improve knowledge regarding best practice regarding postsurgical pain management amongst obstetrics and gynecology patients in the Al-Zahra Teaching Hospital, Tabriz, Iran.
(4) To improve compliance with evidence-based criteria regarding postsurgical pain management.
(5) To improve outcomes regarding postsurgical pain management.

Methods

This evidence-based implementation project used the JBI Practical Application of Clinical Evidence System (JBI PACES) and the Getting Research into Practice (GRiP) audit and feedback tool. The JBI PACES and GRiP framework for promoting evidence-based healthcare involves three phases of activity:

(1) Establishing a team for the project and undertaking a baseline audit grounded in criteria informed by the evidence.
(2) Reflecting on the results of the baseline audit and designing and implementing strategies to address noncompliance found in the baseline audit informed by the JBI GRiP framework.
(3) Conducting a follow-up audit to assess the outcomes of the interventions implemented to improve practice, and identify future practice issues to be addressed in subsequent audits.

Ethical consideration

The project was registered as a quality improvement activity within the hospital, and therefore, did not require ethical approval.

Setting

The project site is a 21-bed ward of a 220-bed hospital where patients were admitted after gynecological surgery. The inclusion criteria were patients undergoing abdominal surgery and 20–60 years of age. Exclusion criteria were vaginal and laparoscopic surgery. The project leader was doing a JBI evidence-based clinical fellowship program.

Phase I: stakeholder engagement and baseline audit

Project team members include:

(1) Team leader who is the head of the hospital and obstetrician and gynecologist and a faculty member
(2) An anesthesiologist working in the operating room of the hospital and a faculty member
(3) Hospital health education supervisor
(4) Head nurse of the surgical department

All team members shared duties of attending project meetings, helping to collect and interpret data, discussing barriers and strategies, and analyzing results (Table 1).

To understand the current situation based on the audit criteria, the design of the checklist was done by the team members and completed by the nurse at the relevant department, baseline audit, and the project team members were provided with relevant data for analysis and discussion (Table 2).

Phase II: designing and implementing strategies to improve practice

During group meetings, completed data from the baseline audit were analyzed. Project team members discussed the current situation before the intervention, obstacles and strategies to overcome, resources used, and the results. In addition to official meetings, the group members also kept in touch via telephone, email and virtual networks (Telegram, WhatsApp). After completing comments, the GRiP table was used to document them. The project began on 14 December 2019 and lasted for 6 months. The results compiled in GRiP are shown in Table 3.

Phase III: follow-up audit

After implementing the strategies developed in GRiP, the team completed the first follow-up audit using Project 2020 using the same evidence-based criteria as in the baseline audit, and the checklist was prepared. Due to devoting insufficient time at the beginning of the project, the process of improving the procedure at the first follow-up was less.

Table 1. Al-Zahra Educational, Research and Treatment Center Project team

Team member	Position	Role
Team leader	Hospital head Obstetrician Faculty member	Leading and coordinating the training team Data analysis and reporting
Anesthesiologist	Faculty member Anesthesiologist working in the operating room	Help develop a pain protocol and teach it to doctors
Health care practitioner	Head nurse of surgery ward	Training nurses to use pain measuring instruments Controlling pain and recording it in files
Health care practitioner	Health supervisor Charge of Education Development Office of hospital	Preparing pain measuring instruments and teaching how to use them Help prepare a checklist of data Develop a self-care protocol for patients

Table 2. Audit criteria, sample and approach to the measurement of compliance with best practice

Audit criterion	Sample	Method used to measure percentage compliance with best practice
01. Patients have received individually tailored education about pain and its management, including information about treatment options for post-operative pain.	Patients after surgery Base line: 40 Follow-up 1, 2, 3: 40	A checklist prepared by the ward nurses
02. A pre-operative evaluation including assessment of medical and psychiatric comorbidities, current medications, history of chronic pain, substance abuse and previous postoperative treatment and responses has been undertaken for each patient to guide postoperative pain management plan.	Patients with surgical indication Base line: 40 Follow-up 1, 2, 3: 40	Studying the case file and reviewing the recorded information
03. A validated pain assessment tool is available and accessible to all healthcare professionals involved in the pain management of the surgical patient.	Patients admitted to the ward after surgery Base line: 40 Follow-up 1, 2, 3: 40	Examination of VAS completed in patient file by ward nurses
04. Patients have received a multimodal pain management that involves a combination of pharmacological and nonpharmacological interventions.	Patients operated on during discharge Base line: 40 Follow-up 1, 2, 3: 40	Reviewing the contents of patient records as well as interviewing patients
06. The ward has an organizational structure that oversees the development, implementation and evaluation of policies and practices to ensure evidence-based postoperative pain control.	Al-Zahra Hospital surgery ward	Review of documents in the ward (protocols) Interviews with head nurse, physicians and nurses
08. Healthcare professionals involved in the pain management of surgical patients have access to referral pathways to facilitate appropriate referral to relevant specialists.	14 nurses working in the surgery ward	Interview with ward nurses Interview with head nurse

VAS, visual analogue scale.

Results

Phase I: baseline audit

The baseline audit was conducted in December 2019.

For this stage, 40 patients undergoing gynecological surgeries, such as hysterectomy, abdominal myomectomy, salpingo-oophorectomy, cystectomy, were included in the study. The age range was from 20 to 57 years (average 40 years).

The conformity of the current situation with the audit criterion is shown in Figure 1. The best performance was related to criterion 2, while the other seven audit criteria (1, 3–8) were in poor condition. Patients did not receive adequate pain training (criterion 1). There was no valid pain measurement tool for postoperative pain management and it was not used except in the case of monopolies in dissertations (criterion 3). Multimodal pain control was not performed for patients (criterion 4). The inpatient ward lacked organizational structure based on evidence and monitoring of development and implementation and evaluation of policies and procedures to ensure postoperative pain control (criterion 6). Nurses did not have access to facilitated ways to refer patients to specialists or psychiatrists to control pain after surgery (criterion 8). In the case of criterion 5, there was no case for referral to other specialists at the time of the study, and in the case of criterion 7, there were no patients with pain control by routine methods who needed to be referred to a pain specialist.

Phase II: strategies for Getting Research into Practice

During several meetings, project team members developed barriers, strategies, resources, and outcomes based on GRiP (Table 3).

Phase III: follow-up audits

The baseline audit was performed on 14 December 2019 using a prepared checklist. At this stage, only criterion 2 (preoperative evaluation, including evaluation of disease symptoms and medications, history of chronic pain, drug abuse, and treatment measures and previous responses after the patient's operation to guide the postoperative pain management program) reached a score of 100% (40 out of 40 patients); and the other criteria received scores of zero.

In general, follow-up audits were done for the next three stages at 2-month intervals: the first audit was performed on 14 February 2020, the second audit was on 16 April 2020, and the third audit was on 20 June 2020.

Table 3. Getting Research into Practice matrix

Barrier	Strategy	Resources	Outcomes
1. Lack of valid assessment tools for postoperative pain	Providing reliable tools for assessing and measuring VAS pain and its use in postoperative patients	Teaching and practicing the correct strategies for using and registering VAS for patient care nurses in the relevant department	Nurses pay more attention to patient pain management, better patient pain control (reducing patient pain according to patient records)
2. Lack of patient training or incomplete training regarding treatment options for postoperative pain	Preparing and developing a self-care protocol for pain and teaching it to patients	The use of the 'Individual Care for Self-Care Planning' and 'Self-Care Principles in Mental Health' care and information package developed and sent by the Ministry of Health and Medical Education	Increasing patient awareness about pain control and using nonpharmaceutical methods and pain control and realization of multimodal therapy
3. Lack of pain control and management protocol for operated patients	Develop a pain control protocol for patients operated on by the project team under the supervision of an anesthesiologist	Using the sent protocol of the Ministry of Health and Medical Education and teaching it to doctors, fellows and residents to use it in patient orders	Prevention of personal tastes in treatment, better control of patients' pain, satisfaction of patients, reduction of patients' complaints and their companions, realization of multimodal therapy
4. Lack of training or insufficient training of patient care nurses	Training nurses in the relevant ward regarding pain control (available options as well as self-care pain package and using VAS and recording it in files)	In addition to VAS prepared, the use of pain control protocol and self-care protocol developed by the project team	Better control of patients' pain, prevention of possible complications
5. Lack of multimodal pain control program	Teaching nonpharmaceutical methods for pain control to patients, companions and nurses in their pain care package including a variety of treatment options in the sent pain protocol	Using protocols prepared by the project team	Proper and better control of patients' pain, use of various methods of pain control

VAS, visual analogue scale.

At the first follow-up audit of 14 February 2020, for criterion 1 (patient received appropriate training on pain and how to manage it in terms of information about postoperative treatment options) the adaptation rate ranged from 0 to 53% (21 out of 40 people). At the second and third follow-up, the rate increased to 100% (40 out of 40 people).

For criterion 2 (preoperative evaluation), at the first follow-up, it decreased from 100 to 73% (29 out of 40 people); at the second and third follow-ups, it increased again to 100% (40 out of 40 patients).

For criterion 3, the performance was unacceptable and was 0% at the first follow-up. After preparing and training and performing pain assessment with the visual analogue scale (VAS), a rate of 100% (40 out of 40 patients) was seen at the second and third follow-up. The use of pain assessment with the afore-mentioned tool was performed every 2 h for 12 h after the patient was moved to the ward, and then done for another 12 h (in total, the first 24 h after surgery).

For criterion 4, the performance was poor, 0% at the first follow-up. It improved from 0 to 38% (15 out of 40 patients) at the second follow-up, and then to 63% (25 out of 40 patients) at the third follow-up with the preparation of the pain protocol and the development of self-care guidelines for pain and training the physicians, nurses and patients to use pharmaceutical and nonpharmaceutical methods for pain control.

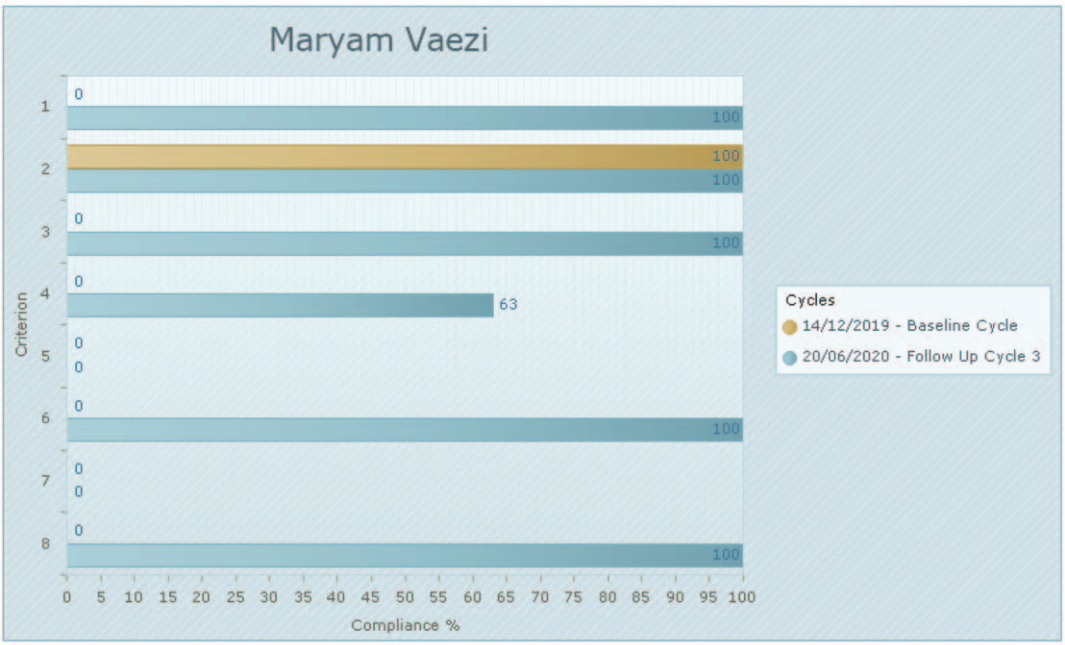
For criterion 5, there were no referrals for all three follow-ups.

For criterion 6, the score was 0% at the first follow-up but by following the consensus strategies in GRiP and creating an evidence-based organizational structure, it improved to 100% at the second and third follow-ups (40 out of 40 patients).

For criterion 7, there were no referrals for all three follow-ups.

For criterion 8, only 5% of patients (2 out of 40 patients) had a positive response at the first follow-up. However, after performing the measures mentioned, this criterion improved to 50% (20 out of 40 patients) at the second follow-up, and at the third follow-up, it improved to 100% (40 out of 40 patients).

Given the strategies for better pain control and the VAS registered in the patients' file, after transferring the patients from the operating room to the ward during the first 12–24 h, very severe pain with a score of 9–7 in 100% of patients decreased to mild to moderate in 70% of patients [mild rate (3–1 = 15%); moderate score was 5–4] in 55% of patients, indicating the success of pain control strategies; however, 29% of patients still had severe pain (Fig. 2).



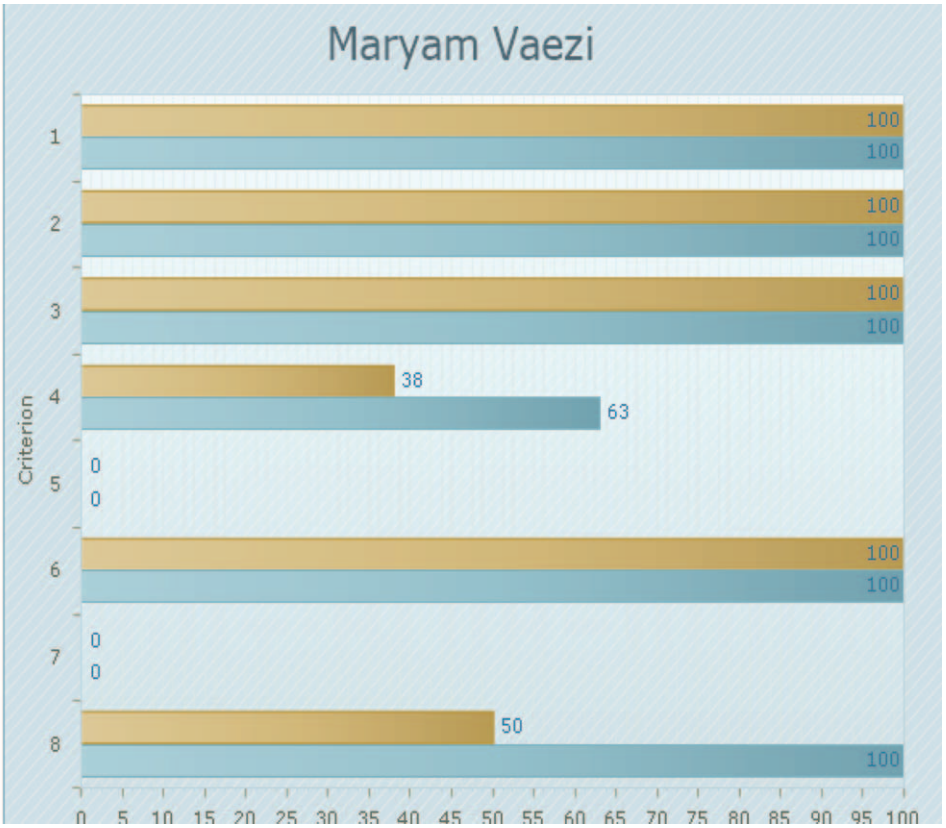
Criteria Legend

1. 01. Patients have received individually tailored education about pain and its management, including information about treatment options for post-operative pain. (40 of 40 samples taken)
2. 02. A pre-operative evaluation including assessment of medical and psychiatric comorbidities, current medications, history of chronic pain, substance abuse and previous post-operative treatment and responses has been undertaken for each patient to guide post-operative pain management plan. (40 of 40 samples taken)
3. 03. A validated pain assessment tool is available and accessible to all healthcare professionals involved in the pain management of the surgical patient. (40 of 40 samples taken)
4. 04. Patients have received a multimodal pain management that involves a combination of pharmacological and non-pharmacological interventions. (40 of 40 samples taken)
5. 05. Patients have been appropriately referred to specialists (e.g. psychologists, social workers, psychotherapists) as part of the multimodal approach to pain management. (40 of 40 samples taken)
6. 06. The ward has an organizational structure that oversees the development, implementation and evaluation of policies and practices to ensure evidence-based post-operative pain control. (40 of 40 samples taken)
7. 07. Patients with inadequately controlled post-operative pain or at high risk of inadequately controlled post-operative pain have been referred to a pain specialist. (40 of 40 samples taken)
8. 08. Healthcare professionals involved in the pain management of surgical patients have access to referral pathways to facilitate appropriate referral to relevant specialists. (40 of 40 samples taken)

Figure 1. Baseline compliance with best practice for audit criteria (percentage).

Discussion

The main goal of this project was to improve the compliance of patients' pain management process after surgery using evidence-based criteria at the Al-Zahra Educational Hospital in Tabriz. Other goals of this project were to assess compliance with these criteria and identify barriers and facilitators to achieving compliance and developing strategies to correct noncompliance and raise awareness of the best practices in this regard to improve outcomes. The tools used in this project were JBI PACES and GRiP.



Criteria Legend

1. 01. Patients have received individually tailored education about pain and its management, including information about treatment options for post-operative pain. (40 of 40 samples taken)
2. 02. A pre-operative evaluation including assessment of medical and psychiatric comorbidities, current medications, history of chronic pain, substance abuse and previous post-operative treatment and responses has been undertaken for each patient to guide post-operative pain management plan. (40 of 40 samples taken)
3. 03. A validated pain assessment tool is available and accessible to all healthcare professionals involved in the pain management of the surgical patient. (40 of 40 samples taken)
4. 04. Patients have received a multimodal pain management that involves a combination of pharmacological and non-pharmacological interventions. (40 of 40 samples taken)
5. 05. Patients have been appropriately referred to specialists (e.g. psychologists, social workers, psychotherapists) as part of the multimodal approach to pain management. (40 of 40 samples taken)
6. 06. The ward has an organizational structure that oversees the development, implementation and evaluation of policies and practices to ensure evidence-based post-operative pain control. (40 of 40 samples taken)
7. 07. Patients with inadequately controlled post-operative pain or at high risk of inadequately controlled post-operative pain have been referred to a pain specialist. (40 of 40 samples taken)
8. 08. Healthcare professionals involved in the pain management of surgical patients have access to referral pathways to facilitate appropriate referral to relevant specialists. (40 of 40 samples taken)

Figure 2. Compliance with best practice for audit criteria in third audit compared with second audit (%).

Major achievements

At the baseline audit, which was conducted to assess the compliance with the evidence-based criteria, there was the optimal situation only in criterion 2 (preoperative evaluation of patients) and there was noncompliance in the rest of the audit criteria, the most important barriers being as follows:

(1) Lack of adequate training of patients and nurses about pain control options (similar to the Tiscar-Gonzalez study),[2] criterion 1
(2) Lack of valid postoperative pain assessment tools (similar to the Tiscar-Gonzalez study),[2] criterion 3
(3) Lack of pain management protocol in the surgical department (similar to the Garcia-Monasterio study),[1] criterion 6
(4) Failure to use multimodal pain control (similar to the study of Garcia-Monasterio),[1] criterion 4

To overcome these barriers, the project team developed a pain control protocol and a pain self-care protocol. The use of multimodal methods, including pharmaceutical and nonpharmaceutical methods of pain control, were mentioned in these protocols. The project team also localized the VAS tool for measuring patients' pain and included it in each patient's file for pain assessment in the first 24 h. One of the most important corrective measures was the training in developed protocols, as well as the use and registration of the VAS for physicians and nurses, and the self-care protocol was taught to patients and their companions. During these trainings, the use of nonpharmaceutical methods of pain control was taught. After these corrective measures, significant progress was made during the three stages of the follow-up audit. Criterion 1 (appropriate training of patients on pain and options available to control it) improved to 100%, similar to the Jia study in Singapore and better than the Tiscar-Gonzalez study in Spain.[2,10] Criterion 3 (use of pain assessment tools by the nurse), criterion 6 (evidence-based organizational structure in the surgical department), and criterion 8 (access to patient referral methods if needed) improved from 0 to 100%. Criterion 4 (use of multimodal pain control), improved to 38% at the second follow-up and at the third follow-up to 63%.

Kintu *et al.*, who conducted a study of women after cesarean section, similar to our study, suggested the VAS instrument for pain measurement. The study also suggested that because of low satisfaction with pain control after surgery, the procedure should be changed. They have concluded that 'multimodal analgesia', 'interprefessional collaborator', and 'training pain and pain control' will prove to be useful, which our study also deals with, in accordance with criteria 4, 5 and 8.[11]

Small and Laycock[12] found that adequate pain management after surgery is a necessity and indicated that different biological, psychological and social aspects should be considered in pain control.

In addition to the use of pharmacological methods of pain control after surgery, this study also mentioned nonpharmacological techniques (e.g. training of patient, use of music, aromatherapy, etc.). These cases are in accordance with criterion 1, and in our study, considering the importance of this issue, pain protocols for patients were developed.[12]

Ohnesorge *et al.*[13] also noted that postoperative pain intensity should be recorded regularly to assess the success of the treatment, which is consistent with criterion 3 and the use of pain measurement instruments in our study.

According to Bach *et al*., considering nurses as key figures in the process of pain control after surgery, the nurse's training to manage pain is important and should be emphasized. In this study, nurse–patient interaction and training nurses regarding pain control and pain interpretation and evaluation are emphasized to solve Barrier No. 4. In our study, in addition to training nurses, we suggested the training of physicians and patients.[14]

Using the strategies developed and implemented to correct existing barriers, patients' pain after surgery was reduced in 70% of cases from very severe (7–9 VAS score) to mild to moderate (1–5 score). In Chou's study, the pain was reduced to mild in 25% of cases and in Garcia-Monasterio's study, it was reduced to mild in 60% of cases.[1,15]

Challenges and limitation

The project was conducted over 6 months, which did not seem long enough to upgrade several criteria. However, by designing 2-month implementation and follow-up cycles, the project team managed to follow up three times during this period, with only a small negative effect on performance at the first follow-up. At the second and third follow-ups, the improvement of criteria was significant.

Another challenge of the project was the hospital, which is educational and includes the rotation of fellowships, residents and students in the surgery ward. To address this challenge, all fellows, residents, and students were trained in series. It is important to keep this in mind as the project progresses.

The other challenge of the project was meeting the conditions of the COVID-19 epidemic over 4 months of the project, which changed the daily routine of the hospital. Fortunately, the team members adapted themselves to the situation to implement the project.

Key lessons

This project showed that sometimes small changes, if done correctly, can have large effects. Another important advantage of this project was that this significant improvement did not pose a financial burden on the hospital, which was very significant in the context of the prevalence of COVID-19: a portion of the hospital's resources was dedicated to the provision of protective equipment for staff, and JBI methods for implementing evidence in beds for positive changes in the hospital proved to be very useful.

Strategies for the future

For the sustainability of positive changes, serial follow-up auditing, and developed strategies, it is essential for the cycle be dynamic and improvements to continue. The project team has decided to use similar methods for other defects in hospital processes and act as the EBM center for one current flawed process based on evidence-based method in each period.

Conclusion

The use of this best-practices implementation project led to improvement in patients' pain management process after gynecological surgery, and as a result, the quality of care improved and patient satisfaction increased. This success was made possible by the development of pain assessment strategies and pain protocols along with self-care protocols for physicians and patients. The use of this method in the promotion of other current flawed processes in the hospital will improve the quality of patient care.

Acknowledgements

We would like to thank the doctors, nurses and patients who contributed to this study.

Conflict of interest

There are no conflicts of interest.

References

1. García-Monasterio EI, Alvárez-Vázquez JC, Morado-Quiñoá P, *et al*. Post-operative pain management among surgical trauma patients in an acute ward: a best practice implementation project. *JBI Database Syst Rev Implement Rep* 2019; 17: 1941–53.
2. Tíscar-González V, Uriarte-Diaz A, Morales-Boiza N, *et al*. Postoperative pain management in a surgical unit in a Basque Country hospital: a best practice implementation project. *JBI Database Syst Rev Implement Rep* 2019; 17: 614–24.
3. Weiser TG, Regenbogen SE, Thompson KD, *et al*. An estimation of the global volume of surgery: a modelling strategy based on available data. *Lancet* 2008; 372: 139–44.
4. Buvanendran A, Fiala J, Patel KA, *et al*. The incidence and severity of postoperative pain following inpatient surgery. *Pain Med* 2015; 16: 2277–83.
5. Mitra S, Carlyle D, Kodumudi G, *et al*. New advances in acute postoperative pain management. *Curr Pain Headache Rep* 2018; 22: 35.
6. Argoff CE. Recent management advances in acute postoperative pain. *Pain Pract* 2014; 14: 477–87.
7. Sun EC, Darnall BD, Baker LC, Mackey S. Incidence of and risk factors for chronic opioid use among opioid-naive patients in the postoperative period. *JAMA Intern Med* 2016; 176: 1286–93.
8. Alam A, Juurlink DN. The prescription opioid epidemic: an overview for anesthesiologists. *Can J Anaesth* 2016; 63: 61–8.
9. Mudumbai SC, Oliva EM, Lewis ET, *et al*. Time-to-cessation of postoperative opioids: a population-level analysis of the veterans affairs health care system. *Pain Med* 2016; 17: 1732–43.
10. Jia SC. Enhancing pain management education for postoperative obstetrics and gynaecology patients. *Int J Evidence-Based Healthc* 2012; 10: 263.
11. Kintu A, Abdulla S, Lubikire A, *et al*. Postoperative pain after cesarean section: assessment and management in a tertiary hospital in a low-income country. *BMC Health Serv Res* 2019; 19: 1–6.
12. Small C, Laycock H. Acute postoperative pain management. *J Brit Surg* 2020; 107: e70–80.
13. Ohnesorge H, Günther V, Grünewald M, *et al*. Postoperative pain management in obstetrics and gynecology. *J Turk Ger Gynecol Assoc* 2020; 21: 287.
14. Bach AM, Forman A, Seibaek L. Postoperative pain management: a bedside perspective. *Pain Manage Nurs* 2018; 19: 608–18.
15. Chou R, Gordon DB, de Leon-Casasola OA, *et al*. Management of postoperative pain: a clinical practice guideline from the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' committee on regional anesthesia, executive committee, and administrative council. *J Pain* 2016; 17: 131–57.