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Knowledge and perceptions of regional anesthesia and block room usage among orthopaedic surgeons and nurses

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Abstract

Background: The performance of regional anesthesia (RA) in a block room (BR) may have an impact on the efficiency of the orthopaedics operating room (OR). The aim of this study was to understand the knowledge of healthcare professionals regarding RA and BR.

Methods: Two types of pilot surveys were developed and applied in three independent hospitals. Statistical validation of the survey was performed (Cronbach alpha coefficient and factor analysis), followed by its restructuring. Validated surveys were randomly delivered to orthopaedists and OR nurses from our institution, and a descriptive analysis was performed.

Results: The pilot surveys presented a Cronbach alpha of 0.533 and 0.417 in the orthopaedic and OR nurse groups, respectively. Two questions in each survey were removed, increasing the internal consistency of the final restructured surveys. There was a total of 126 validated surveys completed (46 by orthopaedists and 76 by OR nurses). Both groups consider that, compared with general anesthesia, RA is associated with better pain control (95.7%/93.4%), fewer side effects (63%/73.7%), and improved patient satisfaction (84.7%/69.7%). Both groups would choose RA for themselves (89.1%/89.5%) and recommend it to a family member (89.1%/92.1%). Regarding BR, 80.4% of orthopaedists agreed that it is associated with less time wasted in anesthetic preparation, higher productivity (65.2%), and greater efficacy (65.2%).

Conclusions: Most orthopaedists and OR nurses recognized the various benefits of RA. Orthopaedists agreed that BR improves outcomes and provides efficiency gains in the OR. Genuine support from the entire OR team can play a critical role in the change.

Keywords: anesthesia and analgesia, block room, orthopaedics, outcome, economics, efficiency

Introduction

Regional anesthesia (RA) can be used in several types of orthopaedic surgeries.[1] RA has been associated with better postoperative pain control and, consequently, decreasing the chance of chronic pain and use of systemic opioids.[1,2] The use of RA has a positive impact on hospital costs by reducing expenses related to perioperative complications, admissions to intensive care units, and early readmissions.[1,2]

Despite all the evidence supporting the use of RA as beneficial, in clinical and economic terms, it is observed that in Portugal, and more specifically at our institution, this type of technique is not widely used. As RA is performed just before surgery at our institution, the increase in turnover time causes a longer stay inside the operating room (OR) and decreases the number of patients operated on per day.[3] Turnover time is defined as the time from the end of surgery until the beginning of the next surgery.[4] These factors result in postponing surgeries and worsening wait lists.[3] Thus, the use of RA tends to be limited by organizational difficulties, due to the lack of an ideal time and place to perform the procedure at our institution.

In several international institutions, patients who are candidates for RA are admitted to the OR 1 hour before the scheduled starting time for the surgery. RA techniques are performed in a specific RA room (block room [BR]) that includes all the standard monitoring equipment stated by the American Society of Anesthesiology. The patient is then transferred to the OR, thus ensuring the scheduled patient is ready for the surgical team at its scheduled OR time and allowing the surgical team to start the

Conflicts of interest: none.

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Table 1

Pilot survey questions.

Pilot surveys: Orthopaedics and OR Nurses
1. Do you recommend anesthetic techniques to your patients?
2. Do you recommend RA to your patients, if possible?
3. GA vs RA: is RA safer?
4. GA vs RA: is RA associated with increased patient anxiety?
5. GA vs RA: does RA cause less postoperative sedation?
6. GA vs RA: does RA provide better postoperative pain control?
7. GA vs RA: does RA have more side effects/complications?
8. GA vs RA: should RA be reserved for high-risk patients only?
9. GA vs RA: is RA associated with an increased risk of postoperative nausea/vomiting?
10. GA vs RA: is RA associated with greater patient satisfaction?
11. GA vs. RA: is RA associated with earlier hospital discharge?
12. Regarding the number of patients operated during an operative period, do you think that the early call of the patient, by decision of the anesthesiologist, will be useful to increase the turnover of the OR?
13. For a certain type of surgery (hip, knee, foot, shoulder, arm, forearm, hand), do you think it is relevant to maintain a group of anesthesiologists dedicated to these pathologies?
14. To be able to monetize the OR, do you think you should have periods of 6 hours of work, without interruptions, in normal production?
15. To be able to monetize the OR, do you think you should have periods of 12 hours of work, without interruptions, in normal production?
16. Would you choose RA for yourself?
17. Would you recommend RA to a friend or family member?
Specifics for orthopaedists
18. GA vs RA: is RA associated with significant delays in postoperative neurological assessment?
19. Regarding BR, is it associated with a shorter anesthetic preparation time?
20. Regarding BR, is it associated with greater productivity and compliance with surgical plans?
21. Regarding BR, is it associated with greater efficiency?
Specifics for OR nurses
22. Is RA associated with a lower intraoperative workload?
23. Is RA associated with shorter bypass/recovery duration?

GA, general anesthesia; OR, operating room; RA, regional anesthesia.

surgical incision as soon as the patient is placed in the OR. This reduces anesthesia-controlled time and increases productivity.[4-6] By reducing turnover times, there is an increase in the number of patients operated on per day, which translates into efficiency gains in reducing wait lists.[2] Thus, the performance of RA in a BR may have an impact on the efficiency of the orthopaedics OR.

The perceptions of healthcare providers can play a critical role in changing the organization of the OR. The aim of this study was to understand prior knowledge and satisfaction of nonanesthetist health professionals, more specifically orthopaedists and nurses, concerning RA techniques and the use of a BR. A study conducted in Canada included surveys of orthopaedic surgeons about their attitudes and preferences toward regional anesthesia. However, it did not evaluate the perceptions of nurses regarding RA and orthopaedists about BR, making our study one of the first reporting that aspects in the literature until now.[7] Based on the surveys, we aim to develop a surgical approach program protocol for the orthopaedic OR in our institution with a focus on performing RA techniques in the BR.

Methods

This is a prospective observational study, with the application of opinion surveys to nonanesthesiologist health professionals (orthopaedists and nurses trained in anesthetic techniques) at Centro Hospitalar Universitário de Santo António. The study has been divided into two phases: validation of the pilot survey and application of the final survey to our institution. Statistical analysis was performed using IBM SPSS version 25 software.

The human research and ethics committees of all hospitals contributing to this study approved the project as a quality assurance activity with low-risk research.

The pilot surveys

Two types of pilot surveys were developed, one for each of the professional groups. All questions were close ended. The surveys included three single-answer questions (age group, sex, and number of years of practice); multiple-choice questions (source of information regarding RA); and three dichotomous questions (yes/no), which address previous personal experience and degree of satisfaction with RA. The surveys also included matrix questions, which evaluate the opinion and theoretical knowledge of RA and its benefits, by using a Likert scale as presented in Table 1.

The number of questions varied according to the professional group to whom the survey was addressed to. Specific questions in the orthopaedists' surveys, which were not included in the nurses' surveys, sought the opinion of these professionals regarding the organization of the OR and block room. After the initial pilot surveys were written, qualified experts (including psychology and clinical statistics experts) reviewed to make sure they are accurate and free of item construction problems.

Validation of the pilot survey

The sample for this phase included orthopaedists and OR nurses from different hospitals (Centro Hospitalar Póvoa de Varzim/ Vila do Conde, Centro Hospitalar de Viana do Castelo, and Centro Hospitalar Tâmega e Sousa). The selection was non-random and completed through direct contact with all professionals who agreed to participate.

For the validation of the pilot surveys, an analysis of the questions on a Likert scale was conducted: assessment of internal consistency through the calculation of Cronbach alpha

Table 2

Statistical validation of pilot surveys.

Validation	Orthopaedics (N = 38)	OR Nurses (N = 42)
α Cronbach	0.533 After excluding questions 4 and 18: 0.753	0.417 After excluding question 4: 0.539
Existence of correlation and adequacy of data	KMO of sampling adequacy test: 0.587 Bartlett sphericity test: $x^2 = 188.239$; df = 55; $P < .001$	KMO of sampling adequacy test: 0.387 Bartlett sphericity test: $x^2 = 80.199$; df = 36; $P < .001$
Factor analysis	4 factors, after excluding question 4 No interpretation difficulties (loadings > 0.5)	4 factors, after excluding question 4 e 23 No interpretation difficulties (loadings > 0.5)

KMO, Kaiser-Meyer-Olkin.

Table 3

Factor analysis matrix (variance explained and items loadings) of survey of the orthopaedists' and nurses' group.

Factor analysis									
Orthopaedists					**Nurses**				
	Factor (74% variance explained)					**Factor (79% variance explained)**			
	1	**2**	**3**	**4**		**1**	**2**	**3**	**4**
Q. 3	—	0.722	—	—	Q. 3	0.935	—	—	—
Q. 5	—	—	—	0.641	Q. 5	0.706	—	—	—
Q. 6	—	0.727	—	—	Q. 6	—	—	0.932	—
Q. 7	—	—	0.844	—	Q. 7	—	0.855	—	—
Q. 8	—	—	—	0.808	Q. 8	—	0.850	—	—
Q. 9	—	—	0.690	—	Q. 9	—		—	—
Q. 10	—	0.812	—	—	Q. 10	—		0.607	—
Q. 11	—	0.702	—	—	Q. 11	—		0.989	—
Q. 19	0.922	—	—	—	—	—	—	—	—
Q. 20	0.920	—	—	—	—	—	—	—	—
Q. 21	0.703	—	—	—	—	—	—	—	—

Extraction method: principal component analysis
Rotation method: Varimax with Kaiser normalization

Q., question.

coefficient. An item-by-item correction, reliability analysis (Kaiser-Meyer-Olkin [KMO] test of sampling adequacy), and Bartlett sphericity test were performed. Finally, the structure of the survey was studied with exploratory factor analysis.

Based on the results, a restructuring of the surveys was performed. This included reordering of the questions according to the factors identified and the elimination of nonexplanatory questions.

Application of validated surveys

At this stage, the surveys were applied to orthopaedists and OR nurses with functions in anesthesiology at our institution (Centro Hospitalar Universitário de Santo António). A descriptive statistical analysis was performed on all data, including an analysis of the answers to the matrix questions on the Likert scale, with confirmation of internal consistency through the calculation of the Cronbach alpha coefficient. An item-by-item correlation analysis was also conducted.

Results

Data were collected between January 1, 2022, and February 28, 2022. The main outcome questions were "Would you choose RA for yourself?" "Would you recommend RA to a friend or family member?" and the questions related to BR, as listed in Table 1.

Pilot surveys

A total of 80 surveys were completed: 42 by OR nurses and 38 by orthopaedists. The pilot surveys showed a Cronbach alpha of 0.533 in the orthopaedists' group and 0.417 in the nurses' group, both presenting unacceptable consistency (Table 2).

In the orthopaedists' survey, when removing the question related to patients' anxiety (Table 1, question 4) and the question concerning postoperative neurological assessment (Table 1, question 18), a final internal consistency of 0.753 was obtained (acceptable). In the nurses' survey, after a more detailed analysis, the question related to patients' anxiety (Table 1, question 4) reduced the internal consistency. However, removing this question would increase internal consistency to only 0.539, making it still inadmissible. If other items were removed, the internal consistency would not increase. When applying the KMO test, a value of 0.387 was obtained, thus indicating that there was no reasonable correlation between the variables (minimum 0.5). Hence, it was not possible to proceed with the factor analysis. For this reason, the individual measure of sample adequacy (MSA) of the correlation matrix was applied, being that it indicated the presence of several inappropriate questions. The question with the lowest MSA was question 9 (Table 1), with a value of 0.273, followed by question 23 (Table 1), with an MSA of 0.299. According to these results and returning to the analysis of internal consistency, it was noticed that removing question 23 improved internal consistency but removing question 9 reduced it. Therefore, questions 4 and 23 (Table 1) were removed, consequently finding the nurses' survey at the border of reasonable to continue the study with factor analysis. The work proceeded with an exploratory factor analysis after removing the mentioned questions.

The factor analysis in both surveys confirmed the existence of four factors, which explained 74% and 79% of the variance in the results in the orthopaedists' group and the nurses' group, respectively. In the interpretation of the factor matrix (Table 3), all items loadings had a value greater than 0.5, so there was a clear association with a factor, without any difficult questions in terms of interpretation.

Application of validated surveys

A total of 126 questionnaires was completed, 46 by orthopaedists (29 specialists and 17 specialist interns) and 76 by OR nurses with experience with RA. As for the years of practice, in the orthopaedists' group, 39.1% of respondents had up to 6 years of practice, 15.2% 7–9 years and 10–14 years, 2.2% 15–19 years, and 3% more than 24 years of service (Table 4). In the nurses' group, 2.7% of respondents had up to 6 years of practice, 5.3% 7–9 years of practice, 16% 10–14 years and 15–19 years of practice, 28% 20–24 years of practice, and 32% more than 24 years of service (adjusted for a missing answer—Table 4).

Regarding the source of knowledge about RA, most mentioned that the greatest acquisition was through clinical practice (69.6%/76%), followed by contact with anesthesiologists (60.9%/60.0%), with lower percentages for university education (30.4%/24.0%), congresses (6.5%/16.0%), scientific journals (6.5%/5.3%), and internet (4.3%/8.0%) (Table 4). Of the respondents, 13% of orthopaedists and 39.5% of nurses have undergone RA (Table 4). Both groups often recommended anesthetic techniques to their patients (39.1%/34.1%), and of those, 50% of orthopaedists and 44.8% of nurses recommend RA (Table 4).

Opinion questions related to RA, in the orthopaedic group, have a good reliability (Cronbach alpha 0.815), whereas for nurses it is reasonable (Cronbach alpha 0.649). For both professional groups, in comparison with general anesthesia and intravenous analgesia, RA is considered safer (89.1%/69.7%) (Table 4, Figs. 1 and 3), associated with less sedation postoperatively (95.6%/94.8%) (Table 4) and better pain control (95.7%/93.4%) (Table 4, Figs. 1 and 3). Regarding its side effects and complications, both consider that it is associated with a lower overall risk (63%/73.7%) (Table 4), with a less incidence of postoperative nausea and vomiting (84.8%/77.6%) (Table 4) and that should not be exclusive to high-risk patients (89.2%/89.5%) (Table 4, Figs. 1 and 3). As for the outcome and patient

Table 4

Results of common questions to orthopaedists' and nurses' groups.

Questions	Validity	Answer options	Orthopaedists		Nurses	
			Total (n)	Total (%)	Total (n)	Total (valid %)
How many years of practice do you have?	Valid	0 a 6	18	39.1	2	2.6
		7 a 9	7	15.2	4	5.3
		10 a 14	7	15.2	12	15.8
		15 a 19	1	2.2	12	15.8
		20–24	0	0.0	21	27.6
		>24	13	28.3	24	31.6
		Total	46	100	75	98.7
	Missing				1	1.3
How did you acquire knowledge about RA techniques?	Valid	University	14	30.4	18	24.0
		Clinical Practice	32	69.6	57	76.0
		Anesthesiologists	28	60.9	45	60.0
		Scientific Journals	3	6.5	4	5.3
		Conferences	3	6.5	12	16.0
		Internet	2	4.3	6	8.0
		Other	—	—	5	6.7
Have you previously undergone RA?	Valid	Yes	6	13.0	30	39.5
		No	40	87.0	46	60.5
		Total	46	100	76	100
Do you recommend anesthetic techniques to your patients?	Valid	Very frequent/Often	18	39.1	26	34.1
		Occasionally	12	26.1	16	21.1
		Rarely/Never	16	34.8	34	44.8
		Total	46	100	76	100
Do you recommend RA to your patients, if possible?	Valid	Very frequent/Often	23	50.0	34	44.8
		Occasionally	12	26.1	18	23.7
		Rarely/Never	11	23.9	24	31.5
		Total	46	100	76	100
GA vs RA: is RA safer?	Valid	Agree	41	89.1	53	69.7
		Indifferent	3	6.5	16	21.2
		Disagree	2	4.4	6	7.9
		Total	46	100	75	98.7
	Missing		—	—	1	1.3
GA vs RA: does RA cause less postoperative sedation?	Valid	Agree	44	95.6	72	94.8
		Indifferent	2	4.4	1	1.3
		Disagree	0	0.0	3	3.9
		Total	46	100	76	100
GA vs RA: does RA provide better postoperative pain control?	Valid	Agree	44	95.7	71	93.4
		Indifferent	2	4.3	2	2.6
		Disagree	0	0.0	3	3.9
		Total	46	100	76	100
GA vs RA: does RA have more side effects/ complications?	Valid	Agree	5	10.9	7	9.2
		Indifferent	12	26.1	13	17.1
		Disagree	29	63.0	56	73.7
		Total	46	100	76	100
GA vs RA: should RA be reserved for high-risk patients only?	Valid	Agree	1	2.2	1	1.3
		Indifferent	4	8.6	7	9.2
		Disagree	41	89.2	68	89.5
		Total	46	100	76	100
GA vs RA: is RA associated with an increased risk of postoperative nausea/vomiting?	Valid	Agree	0	0.0	6	7.9
		Indifferent	7	15.2	11	14.5
		Disagree	39	84.8	59	77.6
		Total	46	100	76	100
GA vs RA: is RA associated with greater patient satisfaction?	Valid	Agree	39	84.7	53	69.7
		Indifferent	6	13.0	17	22.4
		Disagree	1	2.3	6	7.9
		Total	46	100	76	100
Regarding the number of patients operated during an operative period, do you think that the early call of the patient, by decision of the anesthesiologist, will be useful to increase the turnover of the OR?	Valid	Agree	45	97.8	59	77.6
		Indifferent	0	0.0	6	7.9
		Disagree	1	2.2	11	14.5
		Total	46	100	76	100
For a certain type of surgery (hip, knee, foot, shoulder, arm, forearm, hand), do you think it is	Valid	Agree	41	89.2	65	85.5
		Indifferent	3	6.5	9	11.8
		Disagree	2	4.4	2	2.6

(*continued on next page*)

Table 4 (*continued*)

Questions	Validity	Answer options	Orthopaedists		Nurses	
			Total (n)	Total (%)	Total (n)	Total (valid %)
relevant to maintain a group of anesthesiologists dedicated to these pathologies?		Total	46	100	76	100
To be able to monetize the OR, do you think you should have periods of 6 hours of work, without interruptions, in normal production?	Valid	Agree	34	73.9	37	48.7
		Indifferent	8	17.4	24	31.6
		Disagree	4	8.7	15	19.7
		Total	46	100	76	100
To be able to monetize the OR, do you think you should have periods of 12 hours of work, without interruptions, in normal production?	Valid	Agree	22	47.9	6	7.9
		Indifferent	7	15.2	14	18.4
		Disagree	17	36.9	56	73.7
		Total	46	100	76	100
Would you choose RA for yourself?	Valid	Yes	41	89.1	68	89.5
		No	5	10.9	8	10.5
		Total	46	100	76	100
Would you recommend RA to a friend or family member?	Valid	Yes	41	89.1	70	92.1
		No	5	10.9	6	7.9
		Total	46	100	76	100

BR, block room; GA, general anesthesia; OR, operating room; RA, regional anesthesia.

satisfaction, the overall opinion is that it is associated with greater satisfaction (84.7%/69.7%) (Table 4, Figs. 1 and 3).

With respect to the specific questions for orthopaedists, this group considers that the presence of an induction room is associated with a shorter anesthetic preparation time (80.4%) (Table 5, Fig. 2), with greater productivity and compliance with surgical plans (65, 2%) (Table 5, Fig. 2) and more efficiency (65.2%) (Table 5, Fig. 2). These questions have good reliability (Cronbach alpha 0.876). As for the nurses' questions about these techniques, they consider RA to be associated with a lower intraoperative workload (42.1%) (Table 6).

To optimize OR profitability, most professionals consider that an early call by the anesthesiologist is useful in increasing turnover (97.8%/77.6%) (Table 3). Similarly, maintaining a distinct group of anesthesiologists for specific types of surgeries is significant (89.2%/85.5%) (Table 3). Regarding working hours to make the OR profitable, most professionals consider that periods of 6 hours of uninterrupted work should be maintained (73.9%/48.7%) (Table 3) and up to 12 hours demonstrated unequal results (47.9%/7.6%) (Table 3). In both groups, professionals chose RA as a technique if they were undergoing an orthopaedic surgical procedure (89.1%/89.5%) (Table 3), as well as recommending RA to a family member (89.1%/92.1%) (Table 3).

Figures 1, 2 and 3 show the analysis of the answers of the orthopaedists' group and nurses' group. It demonstrates an important disparity of opinion between professionals with similar education and the same questions.

Discussion

The benefits of RA are already described in the literature. By analyzing the results of our surveys, both the group of nurses and the group of orthopaedists understand the benefits of RA. The answers to the personal questions allow us to reaffirm the samples' positive opinion related to RA; given that if they had to undergo a surgical procedure with the possibility of RA, the majority would prefer the use of this technique, as well as recommending it to a family member/friend. This positive opinion associated with RA is a fundamental point for BR

Table 5

Results of specific questions for orthopaedists.

Questions	Validity	Answer options	Orthopaedists	
			Total (n)	Total (%)
GA vs. RA: is RA associated with earlier hospital discharge?	Valid	Agree	22	47.9
		Indifferent	17	37.0
		Disagree	7	15.1
		Total	46	100.0
Regarding BR, is it associated with a shorter anesthetic preparation time?	Valid	Agree	37	80.4
		Indifferent	3	6.5
		Disagree	6	13.0
		Total	46	100
Regarding BR, is it associated with greater productivity and compliance with surgical plans?	Valid	Agree	30	65.2
		Indifferent	3	6.5
		Disagree	13	28.3
		Total	46	100
Regarding BR, is it efficiency?	Valid	Agree	30	65.2
		Indifferent	10	21.7
		Disagree	6	13.0
		Total	46	100

BR, block room; GA, general anesthesia; RA, regional anesthesia.

Table 6

Results of specific questions for operating room nurses.

Questions	Validity	Answer options	Nurses	
			Total (n)	Total (%)
GA vs RA: Is RA associated with a lower intraoperative workload?	Valid	Agree	32	42.1
		Indifferent	21	27.6
		Disagree	23	30.2
		Total	76	100

GA, general anesthesia; RA, regional anesthesia.

implementation. As Hadzic mentioned, the key to change starts with the agreement between a team.[5]

The sample also considered RA as a safer anesthetic technique, with a lower proportion of side effects and greater overall patient satisfaction. In addition, they reported an improvement in patient outcomes in the postoperative period, utilization of less sedation, and better pain control, with subsequent faster recovery and better cooperation in rehabilitation. These observations have already been noted and described by Hutton and Kettner.[2,8] Further mentioned in the literature, these professionals emphasize that RA should be considered for all patients with a potential indication and not exclusively for high-risk patients.[1,9]

The orthopaedists' preferences are a major factor when it comes to patients' anesthetic choices. Most patients do not have enough knowledge regarding anesthesia techniques, being mostly influenced by the recommendations of the professionals with whom they establish a greater connection. A study conducted in Canada, which included surveys of orthopaedic surgeons, found that 48% influenced patients in their anesthetic choice.[7] Of these, 84% were found to recommend RA.[7] Compared with our institution, it was found that a slightly lower number of orthopaedists (approximately 40%) frequently recommended anesthetic techniques to their patients and a significantly lower number (approximately 50%) recommended RA. This difference can potentially be explained by orthopaedists having lower confidence in these techniques, which translates to a decreased number of patients undergoing RA. At our institution, in 2019, there were 125 elective orthopaedic surgeries per month. Only 40% of the patients underwent RA.

According to our surveys, the most common reasons for surgeons not to prefer RA is the possible delay at the start of surgery and the decrease in OR efficiency. Both these factors have already been highlighted in the study conducted in Canada.[7] Considering that the patient's refusal is an absolute contraindication for RA, the opinion of the nonanesthesiologist professionals who accompany the patient can be extremely relevant in the implementation of RA. Therefore, it is crucial to have close communication with OR professionals and their education to ensure the successful implementation of a BR.

The effective response to the problems presented by nonanesthesiologist professionals regarding the practice of RA requires greater effort from anesthesiologists. This is due to general anesthesia (GA) with intravenous analgesia remaining a safe and reliable practice that does not require specific technical skills or organizational adaptations. This factor may justify why there is a preference to continue with GA. It is important to bear in mind that the fundamental issue is not about the advantages of RA over GA, as these are globally recognized, but rather if the techniques can transfer the academic context to clinical reality, as an OR environment is competitive and a demanding surgical program.

How RA can have a positive impact on the efficiency of an orthopaedics OR may involve the creation of a specific area for its performance (BR). Performing RA in a BR reduces delays in starting surgery and increases efficiency, as the patient will be ready for surgery on time. In addition, the BR contributes to an increased time for a block procedure and the evaluation of the suitability of RA techniques, while also enhancing the team's confidence in this type of anesthesia.[9] RA also allows for a reduction in costs and a more conscious use of resources, without compromising the quality of health care and patient satisfaction.[10] The above advantages are in alignment with the current

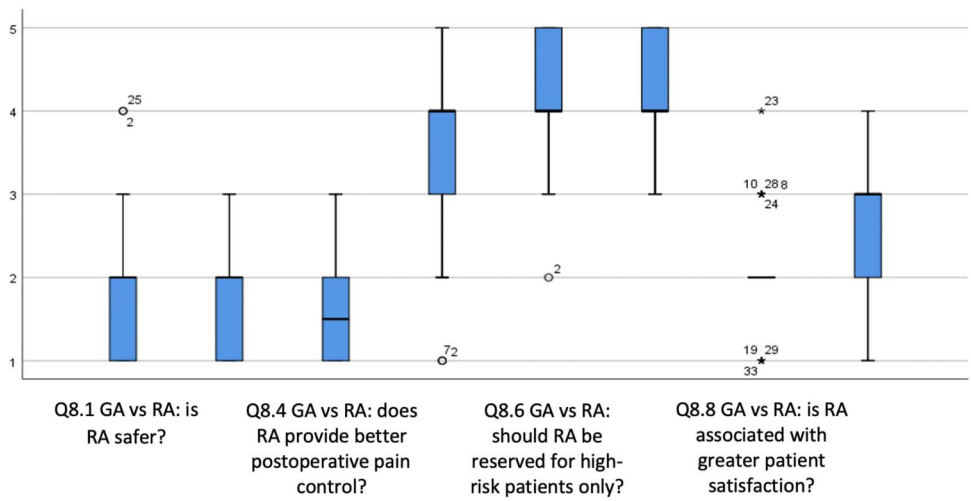

Figure 1. Box plot of question 8 (orthopaedists' survey). GA, general anesthesia; RA, regional anesthesia.

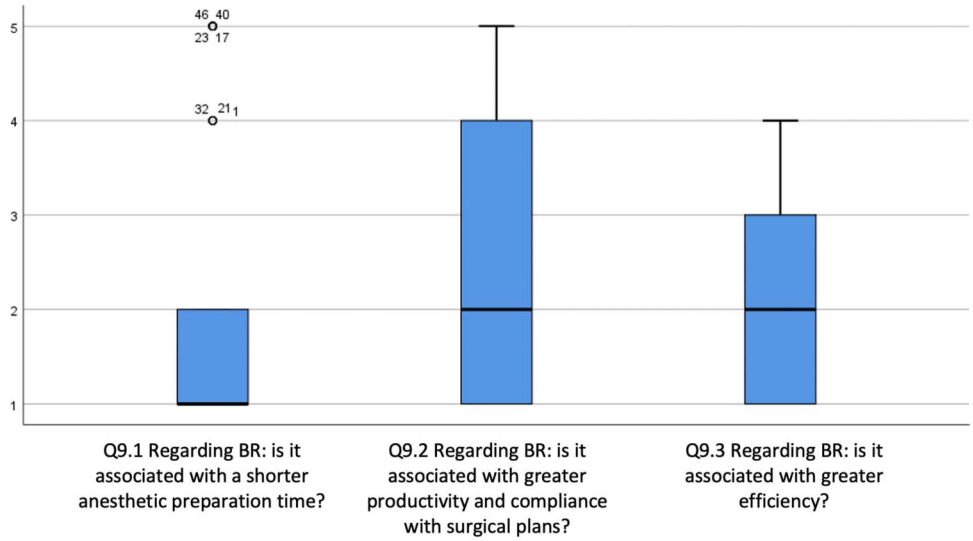

Figure 2. Box plot of question 9 (orthopaedists' survey). BR, block room.

hospital environment of maintaining and increasing hospital profit through surgeries.

This organizational change at our institution could translate into an improvement in the efficiency of the orthopaedic OR. Furthermore, the BR would allow the incorporation of high-security clinical practices, associated with a reduction in the length of hospitalization and need for intensive care.[2,3] Furthermore, the BR facilitates the teaching of RA, which would contribute to an increase in the experience of hospital assistants and trainees.[11]

Thus, the opinion of orthopaedists regarding the use of a BR is essential, given that the support of the entire team facilitates the implementation of new practices. The resistance of others must be interpreted as an obstacle to consider, specifically in relation to the BR. The results of our surveys agree with what was described by Sokolovic, Head, and Chin stating that the BR is associated with a shorter anesthetic preparation time, greater productivity, and compliance with surgical plans, therefore associated with a more effective clinical practice.[9-12]

In our study, we also found an important disparity in the questions comparing RA and GA regarding BR. Despite the results being positive and supportive of RA, professionals with the same higher education tend to vary greatly in opinion among themselves. Although having the same higher education, their perception may be impacted by the work environment and the path they recommend. This is a point to be considered in subsequent studies and to be explored in greater detail.

In conclusion, most orthopaedists and OR nurses recognized the various benefits of RA. Orthopaedists agree that BR improves outcomes and provides efficiency gains in the OR. Genuine support from the entire OR team can play a critical role in the change. Our study is innovative since it intends to modify OR daily practices based on nonanesthesiologist professionals'

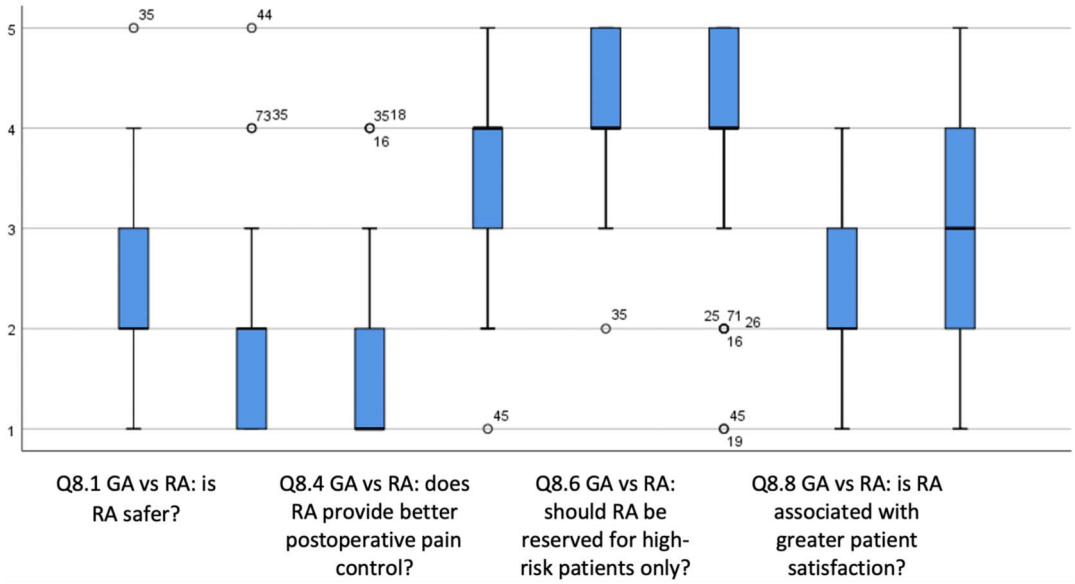

Figure 3. Box plot of question 9 (nurses' survey). GA, general anesthesia; RA, regional anesthesia.

opinions. Therefore, the next step is to carry out and apply the surgical programming protocol for the administration of RA in a BR model.

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