

# Physiological parameters of patients in post-anesthetic recovery: cross-sectional study

*Parâmetros fisiológicos dos pacientes na recuperação anestésica: estudo transversal*

*Parámetros fisiológicos de los pacientes en la recuperación postanestésica: estudio transversal*

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**ABSTRACT: Objective:** To map the profile of physiological parameters of patients upon discharge from the Post-Anesthesia Care Unit (PACU) and analyze physiological changes related to the Aldrete and Kroulik Index (AKI) parameters in immediate postoperative patients in anesthesia recovery. **Method:** Cross-sectional study conducted from May 2021 to April 2022 at the PACUA of a public university hospital, evaluating physiological parameters and AKI scale. Data collection was prospective, with simultaneous medical record review during patient care in PACU to record variables at five different time points. The sample comprised 88 patients. **Results:** Predominance of female patients (57.9%), mean age 52.39 ( $\pm 16.57$ ) years, and average stay in the unit was 91 minutes. At discharge, patients showed average normal blood pressure (121/71 mmHg), heart rate (71 bpm), normal respiratory rate (17 breaths per minute), hypothermia (35.0°C), and adequate oxygen saturation (97%). The overall mean AKI score was 8.5. **Conclusion:** Patients demonstrated stable physiological parameters consistent with the minimum AKI score for discharge from PACU, although intervention was needed for body warming to maintain temperature.

**Keywords:** Perioperative nursing. Nursing care. Surgicenters.

**RESUMO: Objetivo:** mapear o perfil dos parâmetros fisiológicos dos pacientes ao receber alta da sala de recuperação pós-anestésica (SRPA) e analisar as alterações fisiológicas em relação aos parâmetros do Índice de Aldrete e Kroulik (IAK) nos pacientes em pós-operatório imediato na recuperação anestésica. **Método:** estudo transversal, realizado de maio de 2021 a abril de 2022 na SRPA de um hospital universitário público, por meio da avaliação fisiológica dos pacientes e escala do IAK. A coleta de dados foi realizada de modo prospectivo, com consulta em prontuário simultânea ao atendimento do paciente na SRPA para registrar as variáveis analisadas em cinco tempos distintos. A amostra foi composta por 88 pacientes. **Resultados:** predominância do sexo feminino (57,9%), idade média de 52,39 ( $\pm 16,57$ ) e tempo médio de permanência no setor de 91 minutos. No momento da alta, a média dos pacientes estavam normotensos (121x71 mmHg), normocárdicos (71 bpm), eupneicos (17 irpm), hipotérmicos (35,0°C) e com saturação de oxigênio adequada (97%). A média geral do IAK foi de 8,5. **Conclusão:** evidenciou-se que os pacientes possuíam os parâmetros fisiológicos estáveis, compatíveis com o escore mínimo do IAK para alta da SRPA, no entanto, precisavam de intervenção para o aquecimento corporal a fim de manter a temperatura. **Palavras-chave:** Enfermagem perioperatória. Cuidados de enfermagem. Centros cirúrgicos.

**RESUMEN: Objetivo:** Mapear el perfil de los parámetros fisiológicos de los pacientes al recibir el alta de la sala de recuperación postanestésica (SRPA) y analizar las alteraciones fisiológicas en relación con los parámetros del Índice de Aldrete y Kroulik (IAK) en pacientes en el postoperatorio inmediato de la recuperación anestésica. **Método:** Estudio transversal realizado de mayo de 2021 a abril de 2022 en la SRPA de un hospital universitario público, mediante la evaluación fisiológica de los pacientes y la escala del IAK. La recolección de datos se realizó de manera prospectiva, con consulta simultánea a la historia

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clínica durante la atención del paciente en la SRPA para registrar las variables analizadas en cinco momentos distintos. La muestra consistió en 88 pacientes. **Resultados:** Predominio del sexo femenino (57,9%), con una edad promedio de 52,39 ( $\pm 16,57$ ) años y un tiempo medio de permanencia en el sector de 91 minutos. Al momento del alta, los pacientes presentaban una media de presión arterial normal (121x71 mmHg), frecuencia cardíaca normal (71 lpm), respiración eupnoica (17 rpm), hipotermia (35,0°C) y saturación de oxígeno adecuada (97%). La media general del IAK fue de 8,5. **Conclusión:** Se evidenció que los pacientes tenían parámetros fisiológicos estables, compatibles con la puntuación mínima del IAK para el alta de la SRPA; sin embargo, necesitaban intervención para calentar el cuerpo y mantener la temperatura.

**Palabras clave:** Enfermería perioperatoria. Atención de enfermería. Centros quirúrgicos.

## INTRODUCTION

The advancement and development of surgical techniques have given the population greater access to clinical and surgical treatments that previously had poor prospects, thereby optimizing good prognoses<sup>1</sup>.

During the intraoperative period, complications may occur that must be managed in advance to avoid and/or minimize adverse events through nursing care actions<sup>2</sup>. In this context, the post-anesthesia care unit (PACU) aims to provide immediate and targeted assistance to patients under the influence of various anesthetic and surgical modalities. Therefore, the nursing team must be trained to provide this specialized care<sup>3</sup>. The nurse and their team are responsible for post-anesthetic care, which includes monitoring, surveillance, and appropriate treatment activities to ensure the patient's recovery, well-being, and safety after an anesthetic-surgical procedure<sup>4</sup>.

The multidisciplinary team is responsible for directing care to the patient, aiming to stabilize the respiratory, circulatory, and neurological systems, and to prevent and minimize complications inherent to the immediate postoperative period. The team also manages pain control, instituting measures for the patient's comfort and well-being<sup>4</sup>. Nurses must act through the perioperative nursing process, implementing care tailored to the particular needs of each patient until their physiological state is stabilized<sup>5</sup>.

The method generally used to evaluate patients in the PACU is the Aldrete and Kroulik Index (AKI), a scale developed to standardize the evaluation of physiological conditions, post-anesthetic organic responses, and eligibility for post-anesthetic discharge. The scale has five assessment parameters: level of consciousness, respiratory function, circulatory function, motor activity, and oxygen saturation,

with a total score of ten points, used worldwide<sup>6</sup>. A patient who reaches a score of 8 or higher can be discharged from the PACU<sup>7</sup>.

Nurses are professionals trained to act on several fronts, with the competence to plan strategies aimed at continuous improvements in health care processes, mitigating errors, and implementing protocols to achieve good care practices<sup>5</sup>. Therefore, the nursing team must ensure adequate and continuous monitoring of the patient in the immediate postoperative period. Proper application of the AKI will provide successful care indicators and ensure the safe discharge of patients from the sector.

A study conducted in a public teaching hospital in Minas Gerais aimed to identify the influence of variables such as gender, age, type of anesthesia, occurrence of intraoperative complications, pain, and surgical size on AKI scores in patients during the immediate postoperative period in the PACU. The results showed that pain and the type of anesthesia ( $p < 0.01$ ) influenced the decrease in AKI scores<sup>8</sup>.

That said, there are gaps that need to be explored and researched in the period from intraoperative to immediate postoperative. Thus, the following research problems arise: How are the profiles of patients' vital signs characterized when they are discharged from the PACU? What physiological changes in relation to AKI parameters should the nursing team be aware of in patients during the immediate postoperative period and anesthetic recovery?

## OBJECTIVE

Map the profile of physiological parameters of patients upon discharge from the PACU and analyze the physiological changes in relation to AKI parameters in patients during the immediate postoperative period and recovery from anesthesia.

## METHOD

This is a descriptive research study with a non-experimental, cross-sectional, quantitative design. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) tool was used to support the completion of the necessary steps for this type of research<sup>9</sup>.

Data collection took place in the PACU, which comprises five fully operational beds, located within the surgical center of a public university hospital in Rio de Janeiro. This hospital serves as a reference center for serological guidance and support, with a total capacity of 160 beds and an average of 5,000 surgeries performed annually.

No sample calculation was performed, as the convenience sample consisted of patients present in the surgical schedule during the data collection period, which spanned from May 2021 to April 2022. It is important to note that the research team adhered to the guidelines and protocols adopted by the sector during the COVID-19 pandemic.

Inclusion criteria were patients aged 18 years old or older, of both genders, undergoing elective surgical procedures. Exclusion criteria included patients whose surgeries were canceled or who did not utilize the PACU postoperatively.

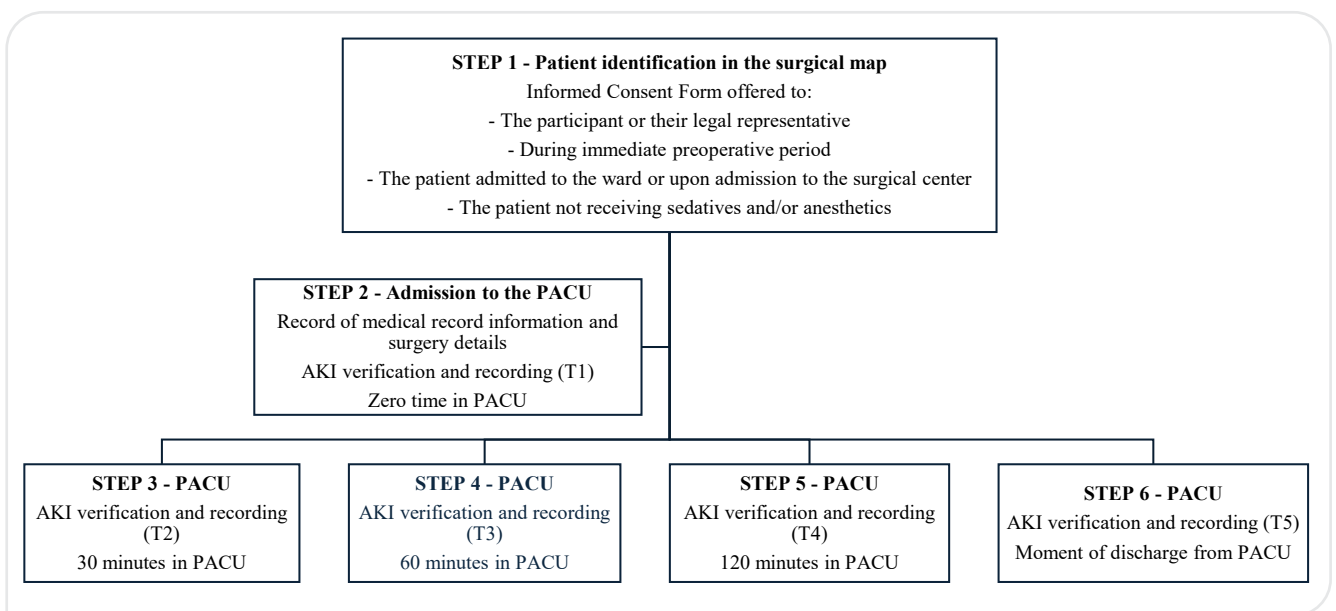
Data were collected prospectively. Upon the patient's arrival at the surgical center, epidemiological data

(gender, age range, and comorbidities) were collected. Subsequently, surgical information (American Society of Anesthesiologists (ASA) risk index, surgical specialty, anesthesia time, surgical size, and type of anesthesia) were retrieved from the patients' medical records. Simultaneously, during the patient's care in the PACU, total AKI scores and other health information (temperature, heart rate, respiratory rate, assessment of pain, nausea, and/or vomiting) were documented.

To initiate data collection, it was essential to train the two students who were members of the research team and responsible for data production, in order to mitigate bias. The data collection protocol proceeded through six stages (Figure 1).

The Informed Consent was offered to the patient or their legal representative during the immediate preoperative period — either upon admission to the ward or upon arrival at the surgical center —, while still free from sedatives and/or anesthetics, ensuring they could understand and freely consent to participate in the research.

The verification and recording of the observed variables in the study at different follow-up times were conducted as follows: time 1 (T1) at admission to the PACU; time 2 (T2) at the 30<sup>th</sup> minute of PACU stay; time 3 (T3) at the 60<sup>th</sup> minute of PACU stay; time 4 (T4) after 120 minutes of PACU stay; and time 5 (T5) at discharge from the PACU.



TCL: Informed Consent Form; Post-Anesthesia Care Unit (PACU); Aldrete and Kroulik Index (AKI); T1: time 1; T2: time 2; T3: time 3; T4: time 4; T5: time 5.

**Figure 1.** Flowchart of the data collection stages. Rio de Janeiro (RJ), Brazil, 2021-2022.

It is worth noting that vital signs, including blood pressure (BP) and heart rate (HR), were measured using DX 2023<sup>®</sup> distal multiparameter monitors, all of which were calibrated and validated, as well as oxygen saturation (SpO<sub>2</sub>) was also monitored using these devices. Respiratory rate (RR) was manually checked by counting the number of respiratory episodes per minute, using a calibrated digital stopwatch. This method aimed to mitigate potential inaccuracies due to common interferences in electronic monitors. Body temperature (T) was measured using a G-Tech<sup>®</sup> thermometer placed in the axilla.

AKI evaluation criteria were used to calculate the final score for each patient, which was assessed at five different times based on whether the patients remained in the PACU sector or not. The calculation was performed by the two students responsible for data collection, following evaluation of the five criteria: muscular activity, breathing, circulation, consciousness, and oxygen saturation. Each criterion had three evaluation conditions, with scores ranging from maximum (two points), intermediate (one point), to minimum (zero points). The total AKI score can range from zero to ten points.

It is noted that for the classification of surgical size in this study, the following durations were standardized based on bibliographic references: small size: up to 120 minutes; medium size: 120 to 210 minutes; and large size: over 210 minutes<sup>10</sup>.

Data were organized in an Excel<sup>®</sup> spreadsheet and analyzed using descriptive statistics, which included calculating relative values, percentages, means, and maximum and minimum values.

The research protocol was reviewed and approved by the Ethics and Research Committee of Universidade Federal do Estado do Rio de Janeiro (UNIRIO), under approval number 3.774.913 on December 16, 2019, following the guidelines of Resolution No. 466 of 2012, which pertains to research involving human subjects.

## RESULTS

The sample comprised 88 patients undergoing anesthetic-surgical procedures and admitted to the PACU. The average length of stay in the PACU was 91 minutes. Patient profile was predominantly female (57.9%), with a mean age of 52.39 ( $\pm 16.57$ ) years, presenting associated comorbidities (63.6%),

categorized as ASA II (55.7%) (Table 1). It is noteworthy that there were no patients classified as ASA IV, V, or VI.

Regarding the variables related to the procedures performed (Table 2), it was evident that general surgery was the most frequent specialty (28.4%), and the majority of surgeries were classified as minor (61.4%). In terms of anesthesia type, almost half of the patients analyzed underwent general anesthesia (45.4%), with combined anesthesia being the second most commonly used type (39.8%).

To facilitate the interpretation of the data, the averages of the patients' physiological findings were organized according to the five evaluation times under the AKI parameters (Table 3). Collecting data at these different times aimed to observe changes in the patients' physiological systems in relation to their AKI scores.

Regarding hemodynamic findings, the mean systolic and diastolic blood pressures remained within acceptable physiological ranges, except at T2, where an increase in the mean systolic blood pressure of patients (167 mmHg) was observed.

Regarding mean heart and respiratory rates, patients maintained normocardic (69–71 bpm) and eupneic

**Table 1.** Profile of surgical patients (n=88). Rio de Janeiro (RJ), Brazil, 2021–2022.

Characteristics	n	%
Gender		
Female	51	57.9
Male	37	42.1
Age range (years)		
18–30	10	11.4
31–50	33	37.5
51–70	34	38.6
More than 71	11	12.5
Comorbidities		
Yes	56	63.
No	32	36.4
ASA		
I	27	30.7
II	49	55.7
III	9	10.2
Not registered in the medical records	3	3.4

ASA: American Society of Anesthesiologists.

(16–17 bpm) statuses throughout all times. The average body temperature was 34.7°C across all evaluation periods. Oxygen saturation averaged 97% consistently across the different times. The overall average AKI score across the evaluation times was 8.5.

The patients' health conditions were assessed in relation to nausea/vomiting, pain, and AKI scores across the five evaluation periods (Table 4).

Most patients did not report pain or experience nausea and/or vomiting during the designated evaluation periods.

**Table 2.** Characteristics of the anesthetic-surgical procedures performed (n=88). Rio de Janeiro (RJ), Brazil, 2021–2022.

Characteristics	n	%
Specialty		
General Surgery	25	28.4
Gynecology	12	13.6
Urology	14	15.9
Orthopedics	7	7.9
Neurology	3	3.4
Plastic Surgery	6	6.8
Otorhinolaryngology	6	6.8
Vascular Surgery	6	6.8
Proctology	3	3.4
Head and Neck Surgery	1	1.2
Breast Surgery	2	2.3
Ophthalmology	1	1.2
Endoscopy	2	2.3
Surgical complexity (minutes)		
Small (up to 120)	54	61.4
Medium (120–210)	28	31.8
Large (more than 120)	6	6.8
Anesthesia duration (minutes)		
<120	21	23.9
≥120 <230	45	51.1
≥230	22	25
Type of anesthesia		
General	40	45.4
Spinal (Epidural)	9	10.2
Spinal (Spinal Block)	2	2.3
Sedation	2	2.3
Combined	35	39.8

It is noteworthy that five patients (5.7%) were discharged before completing T2 (30 minutes of stay in the sector), and out of the total evaluated, ten patients (11.4%) were discharged before completing T3 (60 minutes in the PACU). Additionally, it was found that 31 patients (35.2%) were discharged before completing the predetermined time of T4 (120 minutes). The fifth period (T5) includes a total of 88 patients (100%), representing the average values of the variables analyzed at the time of discharge for all patients admitted to the sector.

## DISCUSSION

There was a predominance of females (57.9%), with a mean age of 52.39 ( $\pm 16.57$ ) years, and a mean length of stay in the PACU of 91 minutes. At the time of discharge, the average patient exhibited stable physiological parameters: normotensive (121x71 mmHg), normocardic (71 bpm), eupneic (17 irpm), and with adequate oxygen saturation (97%), but hypothermic (35.0°C). The overall mean AKI score was 8.5. Hypothermic patients required interventions for body warming to maintain their temperature, even if they met the minimum AKI score required for discharge from the PACU.

Hypothermia is a common intraoperative event that often extends into the immediate postoperative period. This condition can contribute to postoperative complications, affecting multiple organ systems.

A study conducted in a public hospital in Minas Gerais identified a significant difference ( $p=0.024$ ) in the length of stay between groups, with hypothermic patients having a mean length of stay exceeding 84.60 hours.

Regarding the development of pain, the group of patients with hypothermia had a 3.57 times greater chance of experiencing pain compared to the normothermic group. In the analysis of nausea and vomiting, these events were more prevalent in the hypothermic group compared to normothermic patients<sup>11</sup>.

The consistently low body temperature across the five evaluation times, averaging 34.7°C, underscores that hypothermia is a common consequence of anesthetic procedures, resulting in a clinical condition. A multicenter study conducted in the Federal District identified that aged patients had a greater tendency toward hypothermia and a lower capacity to recover from this condition compared to younger patients ( $p<0.001$ )<sup>12</sup>.

**Table 3.** Mean physiological findings of patients at the five assessment times under AKI parameters. Rio de Janeiro (RJ), Brazil, 2021-2022.

Characteristics/No. of patients	T1 (n=88)	T2 (n=83)	T3 (n=78)	T4 (n=57)	T5 (n=88)
Blood pressure (mmHg)					
Systolic					
Minimum	76	68	79	89	81
Mean	120	167	120	121	121
Maximum	175	189	171	174	167
Diastolic					
Minimum	45	41	46	44	43
Mean	71	71	71	71	71
Maximum	109	126	112	118	106
Heart Rate (bpm)	72	70	70	69	71
Respiratory rate (irpm)	16	16	17	16	17
Temperature (°C)	34	34.7	35	34.8	35
O <sub>2</sub> Saturation (%)	97	97	97	97	97
AKI	8.4	8.4	8.5	8.5	8.9

Caption: time one (admission to the PACU); T2: time two (30 minutes after T1); T3: time three (60 minutes after T1); T4: time four (120 minutes after T1); T5: time five (discharge from the PACU); and AKI: Aldrete and Kroulik Index.

**Table 4.** Distribution of patients related to nausea/vomiting, pain, and AKI at the five time points. Rio de Janeiro (RJ), Brazil, 2021-2022.

Characteristics/ No. of patients	T1 (n=88; %)	T2 (n=83; %)	T3 (n=78; %)	T4 (n=57; %)	T5 (n=88; %)
Nausea/vomiting					
Yes	2 (2.3)	2 (2.4)	4 (5.1)	2 (3.5)	3 (3.4)
No	86 (97.7)	81 (97.6)	74 (94.9)	55 (96.5)	85 (96.6)
Pain					
Yes	9 (10.2)	7 (8.4)	8 (10.25)	5 (8.8)	5 (5.7)
No	79 (89.8)	76 (91.6)	70 (89.75)	52 (91.2)	83 (94.3)
AKI					
<8	11 (12.5)	9 (10.85)	7 (9)	6 (10.5)	2 (2.3)
≥8	77 (87.5)	74 (89.15)	71 (91)	51 (89.5)	86 (97.7)

Caption: time one (admission to the PACU); T2: time two (30 minutes after T1); T3: time three (60 minutes after T1); T4: time four (120 minutes after T1); T5: time five (discharge from the PACU); and AKI: Aldrete and Kroulik Index.

It is understood that the nursing team needs to be vigilant in monitoring and controlling changes in body temperature to intervene preventively. They should use resources to warm the most vulnerable patients effectively.

Corroborating the present study, which showed a predominance of females, a survey conducted with 851 patients undergoing surgical interventions in a philanthropic general hospital found that 61.7% were female. This prevalence

may be associated with the greater demand for health services by this population.

Thus, females tend to have a higher rate of elective surgical procedures for small and medium-sized operations compared to males. Scientific evidence shows that males often seek medical services due to specific discomforts, which can result in a greater degree of surgical intervention *a posteriori*<sup>13</sup>.

In the same study, there was a prevalence of patients with some type of comorbidity<sup>10</sup>. Chronic diseases are persistent and common public health issues, negatively impacting the Brazilian healthcare system. These diseases cause vulnerabilities and disabilities in individuals, compromise quality of life, lead to premature deaths, and incur high costs to public coffers. In Brazil, 52% of the population over 18 years of age is diagnosed with at least one chronic disease<sup>14</sup>.

Regarding surgical risk classification, 55.7% of patients were classified as ASA II. A similar result was found in a study conducted in a large hospital in Minas Gerais, where 59.8% of patients were also classified as ASA II.

For the ASA classification, criteria are used to assess surgical risk. This assessment considers the risk to the patient, focusing on two main components: the nature of the preoperative clinical state and the characteristics of the anesthetic-surgical procedure. This classification is based on mortality analysis.

According to the current definition of the American Society of Anesthesiology, ASA II includes patients with mild or moderate systemic diseases that do not significantly impair or limit their daily activities. These conditions may or may not be related to the need for surgical intervention. ASA II classification applies to individuals such as smokers, social drinkers, pregnant women, obese individuals, those with diabetes, and those with mild lung disease.

The results found regarding surgical specialties are reflective of the study institution, a public teaching hospital that primarily conducts elective surgeries and serves emergency inpatients only. In this context, general surgery was the most frequently performed specialty (28.4%), followed by urology (15.9%) and gynecology (13.6%). In contrast, a study conducted at Santa Casa de Misericórdia de Barra Mansa, Rio de Janeiro, showed vascular surgery as the most prevalent procedure between April 2015 and April 2016, with general surgery ranking second in prevalence<sup>17</sup>. These variations highlight the diversity of scenarios influencing the patient profile and directly impacting the provision of specialized care in each respective specialty.

Out of the 88 surgeries performed, 54 (61.4%) lasted between 60 to 120 minutes, categorized as minor procedures. It is notable that despite this classification, the predominant types of anesthesia were 40 cases of general anesthesia (45.4%) and 35 cases of combined anesthesia (39.8%), indicating their substantial use even in procedures with longer surgical durations.

In a study conducted at a large university hospital in Belo Horizonte, with a sample of 50 subjects, it was observed that 60% of surgical procedures were classified as minor<sup>16</sup>. For surgeries above the umbilical line or when it is not feasible to locally anesthetize the operative area, general anesthesia may be recommended as the appropriate technique<sup>17</sup>.

The choice of anesthesia type is influenced by several factors, including physiological conditions, pre-existing diseases, the duration of the surgical procedure, and the specific requirements of the procedure. Anesthesia must encompass the induction, maintenance, and safe reversal of the condition<sup>17</sup>.

General anesthesia is associated with a specific patient profile, characterized by particular demands for the PACU. Nurses working in this sector, assisting patients who have undergone general anesthesia, must recognize and anticipate the need for multimodal assistance. These professionals and their teams must be vigilant about potential issues such as decreased levels of consciousness, delayed awakening, hypothermia, and common gastrointestinal changes like nausea and vomiting<sup>18</sup>.

The hemodynamic results showed an increase in mean blood pressure (167 mmHg) after 30 minutes in the PACU (T2). During post-anesthetic recovery, systemic arterial hypertension may be related to pain, neuromuscular agitation, and bladder distension. Nurses need to conduct a thorough and targeted assessment of both apparent and underlying issues, documenting the findings in the medical record.

In the first hours after surgery, cardiovascular system instabilities are common. Therefore, during the patient's stay in the PACU, it is essential for the nursing team to remain vigilant in monitoring vital signs<sup>19</sup>.

In the present study, no differences were found between specialties regarding the prevalence of cardiac and respiratory complications. However, scientific evidence indicates that respiratory complications may be more frequently associated with general and gynecological surgeries due to the decrease in metabolism caused by hypothermia, particularly in women<sup>20</sup>. Overall, the mean heart rate and respiratory rate remained within standard levels (69–71 beats per minute and 16 to 17 breaths per minute, respectively).

Peripheral oxygen saturation (SpO<sub>2</sub>) is an indicator of complications such as hypoxemia. In this study, the mean SpO<sub>2</sub> was 97% at all times, indicating that the patients maintained a physiological standard of SpO<sub>2</sub>.

It was evident that only nine patients reported pain in the post-anesthetic period. Pain is a common symptom

in the immediate postoperative period, resulting from the incision and manipulation of tissues and organs. One of the nurses' key responsibilities at this time is to inform the patient of the available options to minimize pain and maintain an open communication channel, allowing the patient to express their discomfort and needs<sup>21</sup>.

Regarding the influence of pain on AKI, a study conducted in a public hospital in Minas Gerais revealed a statistically significant relationship: the lower the pain intensity, the higher the AKI scores. Although pain is not directly included in the AKI parameters, it is expected to cause physiological changes that can interfere with these scores<sup>8</sup>.

Regarding nausea and/or vomiting in the post-anesthetic period, similar to the previous findings, there was no significant prevalence. Only four patients reported nausea, and none experienced vomiting.

The length of stay in the PACU is crucial for the patient's well-being and for ensuring an effective discharge free from immediate postoperative complications. The values obtained on the AKI are determinants of the patient's stay in the PACU. It is important for the patient to have a score of  $\geq 8$  on the AKI scale to ensure a safe discharge. In line with this, the overall AKI average across the different times was 8.5.

It should be noted that while AKI is a commonly used scale, there are alternative assessment methods available. Researchers from Minas Gerais developed and validated the Nursing Assessment Scale (*Escala de Avaliação de Enfermagem – AEPR*) specifically for patients in the post-anesthesia recovery room. AEPR evaluates ten parameters: body temperature, HR, ventilation, systolic blood pressure, SpO<sub>2</sub>, consciousness, mobility, pain, nausea/vomiting, and surgical wound. Each parameter is graded on a scale from one (higher severity) to four (lower severity) points, with the total score ranging from 10 to 40 points<sup>22</sup>. The AEPR scale is considered reliable for assessing patients in the recovery room setting.

Furthermore, it is important to note that the research was conducted during the pandemic period, which imposed specific limitations on data collection due to protocols adopted in the hospital unit chosen as the setting, in response to the COVID-19 pandemic.

## CONCLUSION

The study aimed to map physiological parameters and analyze physiological changes observed at strategic times

using the AKI scale, focusing on its minimum discharge score from the PACU. It was observed that, on average, patients in the immediate postoperative period exhibited stable physiological parameters, aligning with the minimum AKI score required for PACU discharge. However, many required interventions to maintain body temperature due to hypothermia.

The correlation between surgical time, categorization of minor surgeries, ASA II classification, predominance of general anesthesia, and elective surgeries is noteworthy. Scientific evidence gathered aids nursing decision-making for effective care, specifically targeting safe discharge of these patients from the PACU. The research is believed to have clarified information within the surgical care context, emphasizing critical moments requiring a prepared team and qualified nursing staff to minimize immediate postoperative complications. However, further research is essential to develop effective perioperative care strategies and nursing interventions tailored to the profiles of surgical patients.

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## CONFLICT OF INTERESTS

The authors declare there is no conflict of interests.

## AUTHORS' CONTRIBUTION

AAL: Project administration, Conceptualization, Methodology, Resources, Writing – original draft; Supervision, Visualization. CMP: Data curation, Investigation, Visualization. SAMC: Data curation, Investigation, Resources, Writing – original draft. CMCP: Data curation, Investigation, Resources, Writing – original draft, Software. FFS: Conceptualization, Resources, Writing – original draft, Validation. CSF: Formal analysis, Writing – review & editing. NCMS: Formal analysis, Writing – review & editing. PAS: Formal analysis, Writing – review & editing.



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