ORIGINAL ARTICLE

REVISTA ENFERMAGEM ATUAL IN DERME

NURSING ACTIVITIES SCORE MOBILE APP IN THE INTENSIVE CARE UNIT OF OPHIR LOYOLA HOSPITAL

APLICATIVO MÓVEL DO NURSING ACTIVITIES SCORE NA UNIDADE DE TERAPIA INTENSIVA DO HOSPITAL OPHIR LOYOLA

APLICACIÓN MÓVIL NURSING ACTIVITIES SCORE EN LA UNIDAD DE CUIDADOS INTENSIVOS DEL HOSPITAL OPHIR LOYOLA

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ABSTRACT
It aims to model a mobile application prototype from the NAS. The quantitative, descriptive method was used and the research site was the clinical ICU of the HOL, the participants were the patients and nurses of this ICU. As collection instruments, the NAS form and the patient and professional control form were used. The collection took place retrospectively from March 24 to April 7, 2023, through medical records and other forms related to patient care and assistance. Data treatment was through descriptive statistics and storage in spreadsheets of the EXCEL 2016 program, being displayed through tables and graphs. 43 patients participated in the research, generating 117 NAS measurements. The average ICU bed occupancy rate was 78%; the mean NAS was 49.9%; extreme NAS values were 28.2% and 120.6%. The profile of the patients that prevailed was the semi-intensive. The effective daily staff was, on average, 18.6 nursing professionals, with a general average of 6.2 professionals per shift. In most shifts, 60% (n=27), there were 6 nursing professionals working, 1 nurse and 5 technicians (17% corresponding to the professional nurse and 83% nursing technicians). As for the patient/nursing professional ratio, the ratio 1 patient per nursing professional was predominant (28.8% of the shifts). The average NAS need found was lower (3.9) than the actual number of professionals present (average per shift 6.2). Thus, it is concluded that the NAS score is not related to the ICU bed occupancy rate, but rather to the patient's severity profile. Therefore, nursing needs to have its workload quantified for better dimensioning, in order to avoid work overload generating illness in the team, which is often reflected in the high rate of absenteeism. The main purpose of this NAS mobile application prototype is precisely the operationalization of the NAS in an easy and fast way for nurses.
Keywords: Nursing Activities Score; Intensive care unit; Nursing; Sizing.

RESUMEN
Objetivo: Modelar un prototipo de aplicación móvil a partir de NAS. Método: Se utilizó el método cuantitativo, descriptivo y el sitio de investigación fue la UCI clínica del HOL, los participantes fueron los pacientes y las enfermeras de esta UCI. Se utilizaron como instrumentos de recolección de datos el formulario NAS y el formulario de control paciente y profesional. La recolección de datos se realizó de manera retrospectiva del 24 de marzo al 7 de abril de 2023, a través de historias clínicas y otros formularios relacionados con la atención y asistencia al paciente. Los datos fueron tratados a través de estadística descriptiva y almacenados en planillas electrónicas del programa EXCEL 2016, siendo visualizados a través de tablas y gráficos. Un total de 43 pacientes participaron en el estudio, generando 117 mediciones de NAS. Resultados: La tasa media de ocupación de camas UCI fue del 78%; la media del NAS fue de 49,9%; los valores extremos de NAS fueron de 28,2% y 120,6%. El perfil de paciente predominante fue el semi-intensivo. La plantilla diaria fue, en promedio, de 18,6 profesionales de enfermería, con un promedio global por turno de 6,2 profesionales. En la mayoría de los turnos, 60% (n=27), había 6 profesionales de enfermería trabajando, 1 enfermero y 5 técnicos (17% correspondió a profesionales de enfermería y 83% a técnicos de enfermería). En cuanto a la relación paciente/profesional de enfermería, la relación predominante fue de 1 paciente por profesional de enfermería (28,8% de los turnos). La necesidad media de NAS encontrada fue menor (3,9) que el número efectivo de profesionales presentes (media por turno 6,2). Conclusiones: Se concluye que la puntuación NAS no está relacionada con la tasa de ocupación de camas UCI, sino con el perfil de gravedad del paciente. Por lo tanto, la enfermería necesita tener su carga de trabajo cuantificada para un mejor dimensionamiento, con el fin de evitar la sobrecarga de trabajo que genera enfermedades en el equipo, lo que muchas veces se refleja en la alta tasa de ausentismo. El objetivo principal de este prototipo de aplicación móvil NAS es precisamente la operacionalización del NAS de una manera fácil y rápida para las enfermeras.
Palabras clave: Puntuación de la Actividad de Enfermería; Unidad de Cuidados Intensivos; Enfermería; Viscoso.

RESUMO
Objetivo: modelar um protótipo de aplicativo móvel a partir do NAS. **Método:** Utilizou-se o método quantitativo, descritivo e o local de pesquisa foi a UTI clínica do HOL, os participantes foram os pacientes e os enfermeiros dessa UTI. Como instrumentos de coleta utilizaram-se a ficha NAS e a ficha de controle de pacientes e profissionais. A coleta ocorreu de modo retrospectivo de 24 de março a 7 de abril de 2023, através dos prontuários e demais impressos relativos a assistência e cuidados aos pacientes. O tratamento dos dados foi por meio da estatística descritiva e armazenamento em planilhas eletrônicas do programa EXCEL 2016, sendo exibidos através de tabelas e gráficos. Participaram da pesquisa 43 pacientes, gerando 117 aferições do NAS. **Resultados:** A taxa média de ocupação de leitos na UTI foi de 78%; a média NAS foi de 49,9%; os valores extremos NAS foram 28,2% e 120,6%. O perfil dos pacientes que prevaleceu foi o semi-intensivo. O quadro efetivo diário foi, em média de 18,6 profissionais de enfermagem, com média geral por turno de 6,2 profissionais. Na maior parte dos turnos, 60% (n=27), havia 6 profissionais de enfermagem trabalhando, sendo 1 enfermeiro e 5 técnicos (17% correspondente ao profissional enfermeiro e 83% de técnicos de enfermagem). Quanto à relação paciente/profissional de enfermagem foi predominante a relação 1 paciente por profissional de enfermagem (28,8% dos turnos). A necessidade NAS média encontrada foi menor (3,9) do que o quadro efetivo de profissionais presente (média por turno 6,2). **Conclusões:** Assim, conclui-se que o escore NAS não apresenta relação com a taxa de ocupação de leitos na UTI, mas sim com o perfil de gravidade do paciente. Por isso, a enfermagem necessita ter sua carga de trabalho quantificada para melhor dimensionamento, a fim de evitar sobrecarga de trabalho gerando adoecimento da equipe que reflete muitas vezes na alta taxa de absenteísmo. O intuito maior desse protótipo de aplicativo móvel NAS é justamente a operacionalização do NAS de forma fácil e rápida para os enfermeiros.
Palavras-chaves: Nursing Activitieis Score; Unidade de Terapia Intensiva; Enfermagem; Dimensionamento.

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INTRODUCTION

The Intensive Care Unit (ICU) is a highly complex sector within a hospital unit, with patients in critical health conditions who require specialized equipment to provide greater support in maintaining life. These patients mostly present hemodynamic instability, thus requiring differentiated, qualified and continuous/comprehensive nursing care[1].

Several scientifically based ways of measuring nursing workload have been developed, each with peculiarities and limitations. Among the many, in 2001, the Nursing Activities Score (NAS) was developed in order to achieve maximum representation of nursing duties in an ICU, promoting a highly accurate assessment of nursing workload and, currently, has recognized scientific and technical value for this function[2].

Based on the above, we modeled a prototype of a mobile application based on the parameters of the existing NAS, with the aim of having greater practicality in the application of the NAS and precision in the results. Therefore, the objective of this work is to model a mobile application prototype based on the Nursing Activity Score (NAS) to detect the severity level of patients admitted to an oncology ICU, while also supporting the dimensioning of nursing professionals needed for assistance.

METHODS

This is an applied research, of the technological production type with a descriptive quantitative approach. The research was developed in the Intensive Care Unit of the Ophir Loyola Hospital, a large public hospital located in Belém, State of Pará, recognized as a reference in clinical and surgical oncology. We chose to develop the research in ICU 4 (clinical) due to the profile of the patients admitted there, which is where the patients are for long stays, which facilitated the analysis of requirements for the development of the prototype.

The period for collecting research data was from March 24 to April 7, 2023, after approval by the Ethics Committee of the Federal University of Pará (Opinion No. 5,636,063) and by the Ethics Committee of the Ophir Loyola Hospital (Opinion No. 5,923,552). The participants in this study were patients (who had the NAS score performed) who had been hospitalized for more than 24 hours and nurses (who provided daily patient data) from the aforementioned intensive care unit.

The data collected by completing the NAS were organized and stored in an electronic spreadsheet format in the Microsoft Office Excel 2016 software program, forming a group of data organized in tables structured in spreadsheets. Descriptive statistics were used to process and analyze the data, highlighting the arithmetic mean of the NAS, as well as maximum and minimum values and the daily sum of the NAS.

The IT professional developed the data collection organization screens, which are nothing more than the fragmentation of the NAS

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score, with each screen representing an item of the score to be scored.

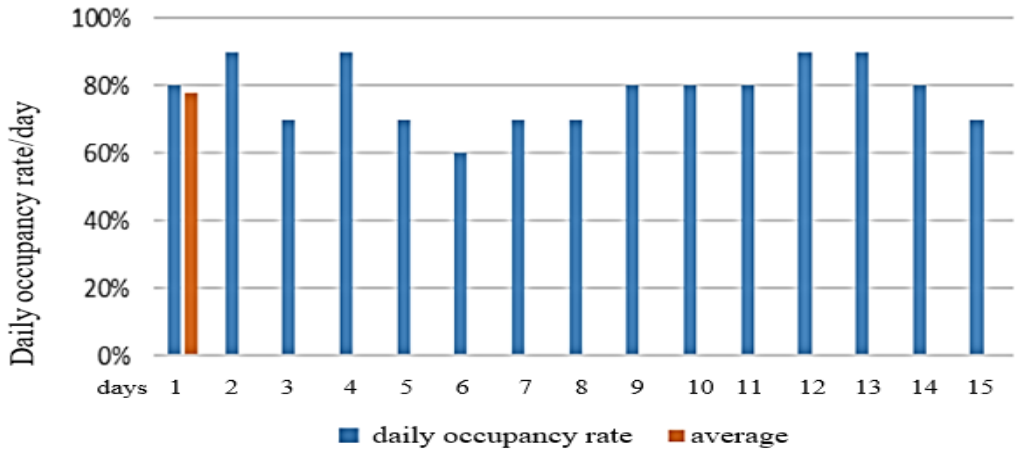
RESULTS

CHARACTERIZATION OF THE ICU

Composed of 10 beds, including 1 isolation bed. During the research period, the service had 1 nurse per work shift (morning, afternoon, night or 12-hour daytime shifts on holidays and weekends). The number of nursing technicians on these work shifts varied.

An intensive pace of nursing activities was observed, adjusting staffing to the daily patient demand. Between the days of the research, the occupancy rate varied between 60% and 90% of the total ICU capacity, with an overall average of 78% bed occupancy during the period. On 9 of the 15 data collection days, the occupancy rate reached 80% or more, allowing a fairly approximate assessment of the maximum nursing work capacity in the sector. On no day were the beds fully occupant, as can be seen in Graph 1.

Graph 1 - Daily occupancy rate of ICU beds at HOL from March 24 to April 7. Belém, 2023.



Source: author of the research, Belém-Pará-Brazil, 2023

APPLICATION OF NAS AND PATIENT SEVERITY PROFILE

The NAS instrument was applied to 43 patients over the course of the two-week research period, generating 117 measurements of nursing workload, using percentages of hours per day, as provided for in the use of the score.

Thus, the NAS varied between 28.2% and 120.6%; the overall average for the period was 49.9%; while the daily average indicated that the 6th day had the lowest score, 37.3%; and the 1st day of the research recorded the highest workload, with 63.9%.

The transliteration of the NAS into nursing work hours confirmed that the 1st day

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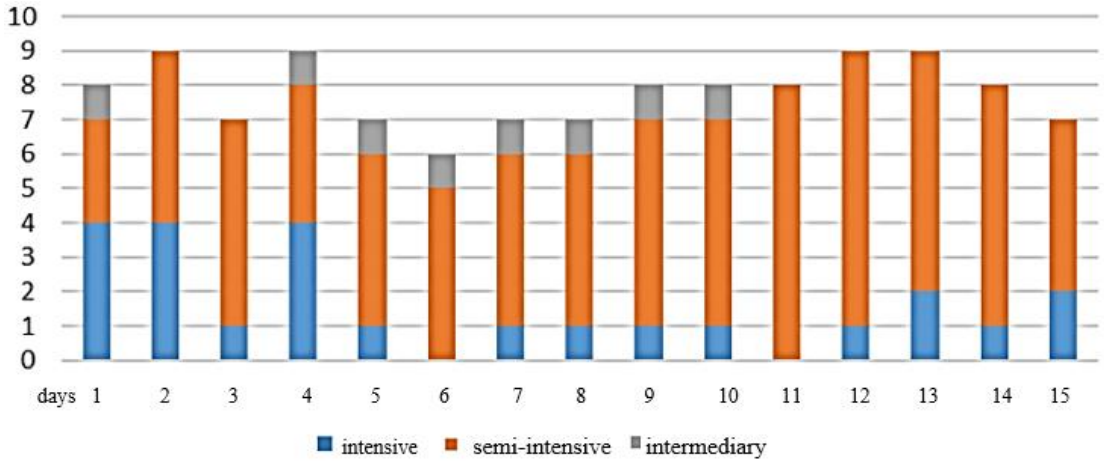
had the highest workload, where, on average, 15 hours and 20 minutes of that day were spent on patient care, and it was also the day that recorded the highest NAS in the research. Next, the 2nd day required approximately 14 hours and 22 minutes of nursing activities. The 6th day revealed the need for 8 hours and 57 minutes for practical and managerial assistance, followed by the 8th day, which required professionals to spend an average of 9 hours and 40 minutes on patient care needs and showed one of the lowest NAS scores in the study.

Based on the NAS scores found, we classified the patients admitted to the ICU by severity level and observed that the majority presented a semi-intensive patient profile during the period studied. Of the 15 days of data collection in the ICU, it was detected that on 13 of these, the majority of the ICU had patients with a semi-intensive profile, which according to resolution no. 543 of April 18, 2017, require at least 10 hours of nursing care[3].

On the 1st day, the predominant patient profile was intensive (requiring at least 18 hours of nursing care), which generated the highest average NAS in the study (63.9%); On the 2nd day, although most patients were in semi-intensive care, they only gained in number by 1, which made nursing care for intensive care patients very competitive, hence the second highest average NAS (60.6%). On the 4th day, there was a balance between semi-intensive and intensive care patients, generating an average NAS of 55.3%. These results can be seen in Graph 2.

Graph 2 - Severity profile of patients admitted to the oncology ICU at HOL, during the period March 24 to April 7. Belém, 2023.



Source: author of the research, Belém-Pará-Brazil, 2023

On 7 of the 15 days of the study, we detected an intermediate care patient who remained in the aforementioned ICU (requiring an average of 6 hours of nursing care). This situation was due to the fact that a surgical patient was admitted to the clinical ICU awaiting

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surgery due to a lack of beds in the appropriate ICU. This caused the daily NAS score to be lower during the time this patient was hospitalized in the clinical ICU until he was transferred to the surgical ICU.

This is an important fact to be considered when analyzing the results, since a preoperative patient generally requires less time in nursing care compared to chronic oncology clinical patients who are already exhausted and have health devices to be handled by the nurses.

NUMBER OF PROFESSIONALS

Over the 15 days of research, 45 work shifts were analyzed and, as for the number of nursing professionals, it was found that in 6 shifts (13.3%) there were 5 people working, always 4 technicians and 1 nurse. In 9 shifts (20%) there were 7 nursing professionals working, 1 nurse and 6 technicians. In only 3 shifts (6.7%) were 8 professionals working, being 1 nurse and 7 technicians. In most shifts, 60% (n=27), there were 6 nursing professionals working, being 1 nurse and 5 technicians, that is, 17% corresponding to the professional nurse and 83% to nursing technicians.

The daily effective staff was, on average, 18.6 nursing professionals, with an average of 6.2 professionals working in the morning shift, 6.1 in the afternoon and 6.3 in the evening. The overall average was 6.2 professionals per shift. The days with the lowest number of nursing staff were the 2nd, 6th, 8th and 13th day, all with 17 professionals; the highest number of workers was recorded on the 9th day, with 21 professionals.

Regarding the patient/nursing professional ratio, it was found that the ratio varied from 1 to 1.6 patients per nursing professional in the shifts, with the ratio of 1 patient per nursing professional being predominant (28.8% of the shifts).

In the analysis of the need for professionals according to the NAS, decimal numbers were obtained that were rounded up when the decimal was greater than or equal to 0.5 and down if less than or equal to 0.4.

To determine the need for nursing professionals according to the NAS, the NAS scores of the patients present on each day of the study were added up. An average of 393.7 points of the NAS score was observed. The average NAS need found was lower (3.9) than the actual number of professionals present (average per shift 6.2).

MOBILE APPLICATION PROTOTYPE SCREENS

Screen 1: program presentation screen with start key; Screen 2: fill in the names of the professional and patient, press next key; Screen 3: NAS question 1: monitoring and controls, alternatives A, B and C; Screen 4: NAS question 2: laboratory investigations, alternatives A and B; Screen 5: NAS question 3: medication, except vasoactive drugs, alternatives A and B; Screen 6: NAS question 4: hygiene procedures, alternatives A, B and C; Screen 7: NAS question 5: drain care - all (except gastric tube),

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alternatives A and B; Screen 8: NAS question 6: mobilization and positioning, alternatives A, B and C; Screen 9: NAS question 7: support and care for family members and patients, alternatives A, B and C; Screen 10: NAS question 8: Administrative and managerial tasks, alternatives A, B and C; Screen 11: NAS question 9: respiratory support, alternatives A and B Screen 12: NAS question 10: airway care, alternatives A and B; as per Figure 01:

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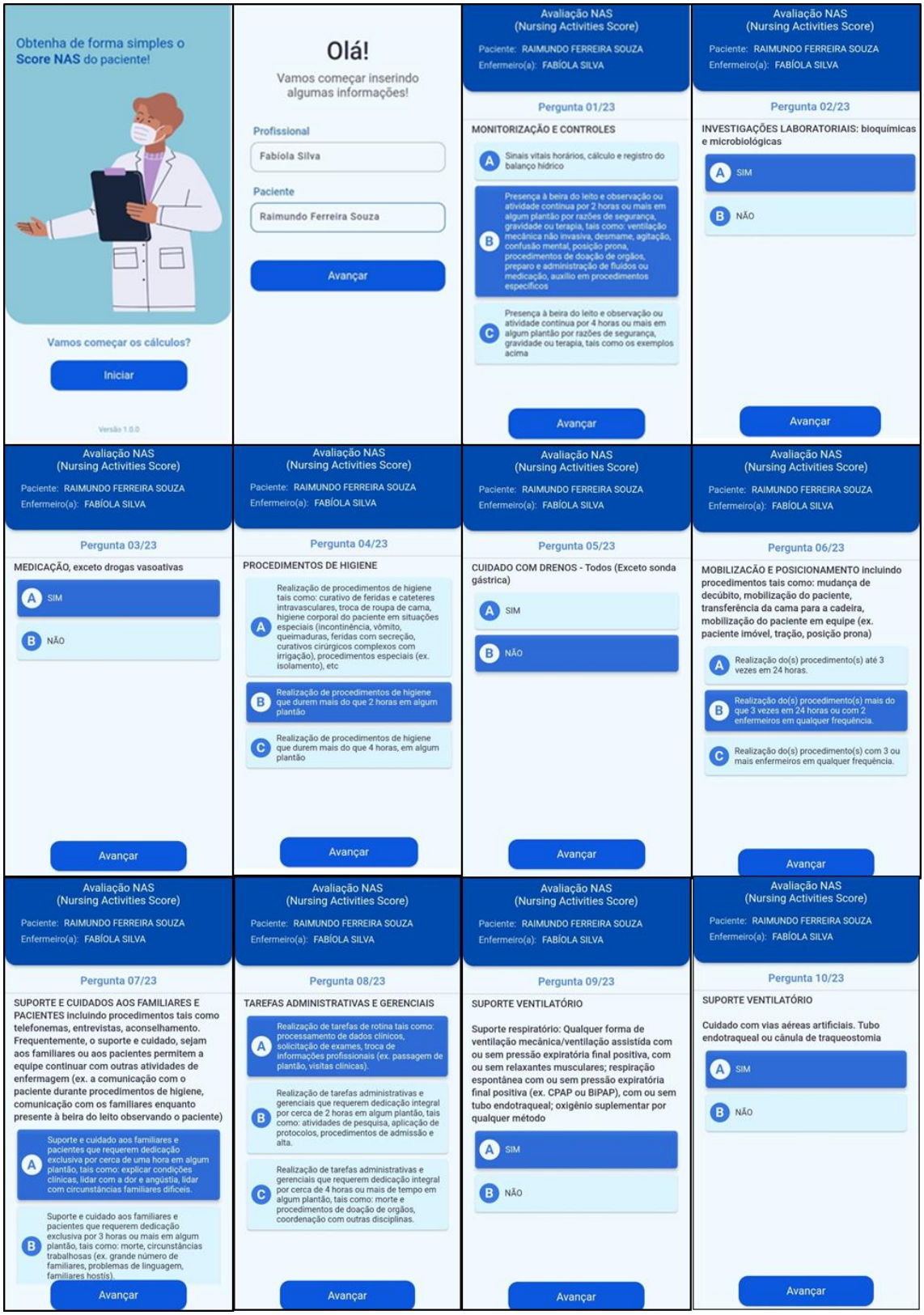
Figure 1 – Application screens 1 to 12.



Screen 13: NAS question 11: treatment to improve lung function, alternatives A and B; Screen 14: NAS question 12: vasoactive medication, alternative A and B; Screen 15: NAS question 13: intravenous replacement of massive fluid losses, alternatives A and B; Screen 16:

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NAS question 14: left atrial monitoring, alternatives A and B; Screen 17: NAS question 15: cardiopulmonary resuscitation in the last 24 hours, alternatives A and B; Screen 18: NAS question 16: hemofiltration techniques. Dialysis techniques, alternatives A and B; Screen 19: NAS question 17: quantitative measurement of urine output (e.g., indwelling urinary catheter), alternatives A and B; Screen 20: NAS question 18: neurological support, measurement of intracranial pressure, alternatives A and B; Screen 21: NAS question 19: treatment of complicated metabolic acidosis/alkalosis, alternatives A and B; Screen 22: NAS question 20: intravenous hyperalimentation, alternatives A and B; Screen 23: NAS question 21: enteral feeding. Through gastric tube or other gastrointestinal route (e.g. jejunostomy), alternatives A and B; Screen 24: NAS question 22: specific interventions in the ICU, alternatives A and B; as shown in Figure 02:

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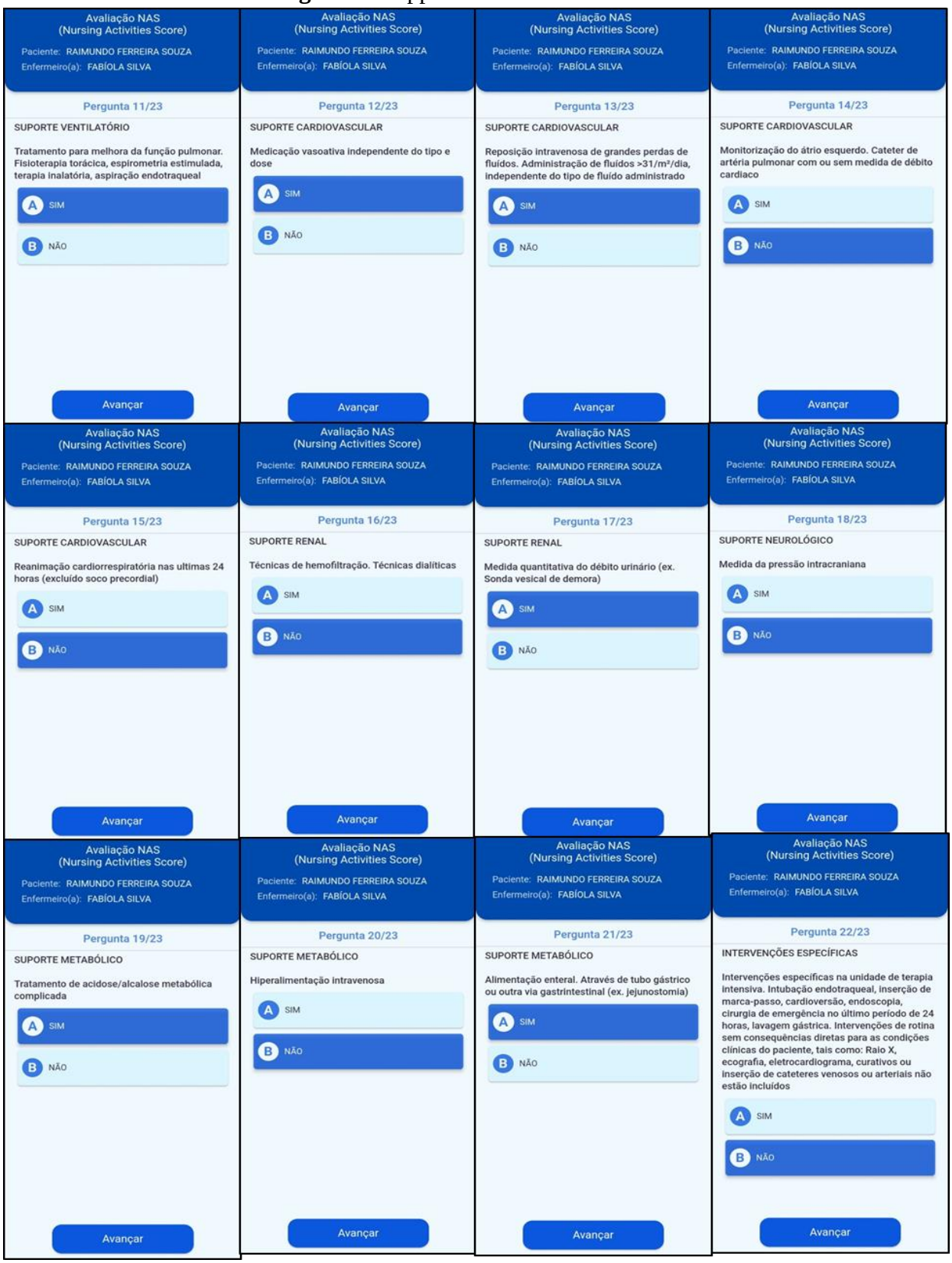
Figure 2 – Application screens 13 to 24.



Screen 25: NAS question 23: specific interventions outside the ICU, alternatives A and B; Screen 26: Result with NAS score value, value in hours and patient classification suggestion according to COFEN Resolution 543/2017. As shown in Figure 03:

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Figure 3 – Application screens 25 and 26.

DISCUSSION

The bed occupancy rate does not appear to be strictly related to the NAS score presented. So much so that on the days with the highest number of bed occupancies (days 2, 4, 12 and 13, all with 9 beds occupied), none of them presented the highest average NAS. This was found on day 1, when the ICU had 80% of its beds occupied.

Still comparing the occupancy rate with the NAS, when we group the days in which the ICU had an occupancy rate of 80% (days 1, 9, 10, 11 and 14). We observed that although the number of beds occupied was the same, the average NAS varied considerably, 63.9%, 43.4%, 50.7%, 45.6% and 48.5% respectively. Likewise, the 15th day generated the 3rd highest average NAS of 55.6%, despite having only 70% of the total bed capacity occupied (one of the lowest occupancy rates).

In a study that used the NAS to measure nursing workload in an intensive care unit, similar findings were obtained in their research, finding high bed occupancy rates in the ICU studied, between 80% and 100%, and median NAS levels, with an average score of 65.5%. Thus, the greater severity of the patient's condition is more reflective of the increase in nursing workloads than the number of occupied beds[4,5].

The death of the patient generally represents an increase in the nursing workload, due to the extremely serious condition that usually precedes death and the management procedures involved in the occurrence. Another study, with similar objectives, conducted in the state of Paraná, found that 41% of deaths occurred among ICU patients, and that non-surviving patients generate a greater workload

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compared to those who survive and are discharged[6,7].

Our study also showed that on the days of the study in which deaths occurred, individual NAS values increased, which consequently increased the average daily NAS. Therefore, no patients were excluded from the study, even those who did not complete 24 hours, proving that nursing care for patients admitted to the ICU will always exist, and even becomes greater in some cases, such as death.

Regarding nursing workload, the average total score was 68.1%, which corresponds to the percentage of time spent by the nursing professional in direct patient care in 24 hours. This shows that the patients had a high need for care, as they were mostly intensive care patients[8,9].

In our study, an overall average of 49.9% of the NAS score was observed during the study period, which, in practice, is equivalent to 11 hours and 59 minutes of nursing care for ICU patients. This value is consistent with the classification according to hours of care provided, with most of these patients being in semi-intensive care levels (average of 10 hours of care)[10].

In general, studies of this type already conducted in Brazil have presented average NAS values above 50%[7], which naturally implies an overload of the professional who takes care of two or more patients. Queijo, a promoter of the application of NAS in our country, found a NAS of 66.1%[12]; other studies obtained similar results, such as 55.1%8; 67.3%; 72%[9]. Other researchers have presented results similar to those described above, but our research differed from this pattern.

Perhaps what influenced the average NAS of our study, which was lower than that of other studies found, was the admission and stay of a patient who did not fit the profile of the clinical ICU, due to a lack of beds in the surgical ICU. The patient was in the preoperative stage, practically without basic needs, eating without assistance, with spontaneous diuresis, helping to change position, breathing without oxygen, hemodynamically stable without vasoactive drugs, among other items that do not score in the NAS score, hence the low value found. It is worth highlighting the diagnosis of this patient that justifies his admission to the ICU, cerebral aneurysm.

In addition to the fact that this oncology ICU also works with palliative care, thus avoiding futile and unnecessary measures for patients already in palliative care (laboratory collection, use of vasoactive drugs, cardiopulmonary resuscitation, dialysis techniques, enteral and parenteral nutrition, imaging tests, invasive devices, among others)[8]. This justifies a low NAS score when applied to palliative patients.

The NAS value found accurately reflects the nursing workload observed in the ICU studied, where dealing with oncology patients, generally coming from other health situations and with the body already devastated by this chronic-degenerative disease, is accompanied by

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a great deal of commitment and willingness to provide direct and indirect care by nursing staff[8].

Due to this characteristic, the aforementioned COFEN Resolution No. 543 of 2017, which specifically deals with nursing staffing, points out, in paragraph 5 of its article 4, the need to consider the peculiarities of patients in specialized ICUs, such as oncology patients, regarding the classification of severity level and staffing, as a way of adapting quantity and quality during care[3].

The extremes of the NAS values were, the lowest 28.2% (equivalent to 6 hours and 46 minutes of care); and the highest 120.6% (28 hours and 56 minutes). The minimum and maximum scores obtained vary greatly in the various studies, for example: values of 32.5% - 78.9%[11]; 55.7% - 107.2%[12], 70% - 141%[13].

Therefore, the dichotomy presented in the present study, where one patient may generate a higher NAS score compared to another and require up to approximately five times as many nursing hours, as in this example of the minimum and maximum values found, highlights the clear need for a dimensioning that is consistent with the care demands observed in the sector, which follow the severity levels of the clientele[12].

It is worth noting that the research revealed a moderate variation in the number of nursing workers per shift (5 to 8 workers), with a daily average of 18.6 and an overall average per shift of 6.2. This number of professionals was shown by the NAS score (average 3.9) in addition to the real needs of a service, whose classification of patients assisted, according to the main legal supports of nursing and regulation of services in Brazil, varies between the need for semi-intensive and intensive care. This does not take into account the technical safety index (IST), which adds 15% to the total number of professionals working[3].

However, although the actual number of professionals working was greater than that indicated by the NAS, regarding the percentage distribution of the total number of nursing professionals, we observed a non-conformity, since in all shifts there was only 1 nurse. The following minimum proportions would be: for semi-intensive care: 42% nurses and the rest nursing technicians; and for intensive care: 52% nurses and the rest nursing technicians.

This requirement of COFEN resolution no. 543/2017, regarding the percentage distribution of the total number of nursing professionals, was not met in any work shift, since there was always only one nurse on duty, regardless of the number and severity profile of the patients[3].

For calculation purposes, the following should be considered: the severity profile of the patients and the professional/patient ratio in the different work shifts respecting the percentages described above, being for semi-intensive care: 1 nursing professional for 2.4 patients; and for intensive care: 1 nursing professional for 1.33 patients[3].

As for the professional/patient ratio, there was no non-compliance with what is recommended in the resolution described above,

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since the ICU under study had the majority of patients with a semi-intensive profile (1 for 2.4). And even if the majority profile were intensive patients (1 for 1.33), there would still be no non-compliance, since the highest finding regarding this ratio was 1 professional for 1 patient (28.8%), followed by 1 professional for 1.3 patients (26.7%).

All these results were possible through the manual application of the NAS score by the researcher, who took an average of 50 minutes for each daily application of this score.

It is worth mentioning that there were some days during the research in which this time was extended, for several reasons, including: relying on the nurses' memory to clarify situations necessary to fill out the NAS that were not clearly recorded in the patient's medical records. Such as the time spent on a dressing, the time spent with the family of a given patient, whether the patient was moved from the bed to a chair, among others, since the NAS corresponds to the 24 hours prior to the application.

In view of this finding, we suggest that, as a way to make better use of this score, it should be applied during the work shift on the same day that the care is provided, thus avoiding forgetfulness and showing in a more realistic way the need for nursing professionals for the next shift.

In addition to highlighting the time spent on manually applying the NAS, we also emphasize that the material needed for its application (NAS score printed on paper, pen to fill out the items, clipboard and calculator to convert the final NAS percentage into hours) is highly susceptible to contamination in this critical hospital environment.

Hence the importance of the study in the proposal to bring a prototype of a mobile application as an innovation to improve the use of the NAS score through electronic format. This saves time in marking the score items and in the final result that would already be calculated automatically with the prototype, thus facilitating the management of the shift with this electronic tool available in the form of an application, in addition to avoiding the use of several physical materials in detriment of just one electronic device.

However, at the beginning of the data collection period, in a conversation with the ICU nursing manager, she was informed that the ICU medical service had outsourced and some changes had been made through them, among them new acquisitions of materials and electronic systems implemented by this medical team, one of them called EPIMED.

This new system acquired by the medical team has several subitems that support the health care of ICU patients, and among the items it presents the NAS. At the time of data collection, we had the opportunity to use the EPIMED system together with the ICU nursing manager, more specifically the NAS subitem.

Despite having this recently acquired instrument, they were not yet using it, as the nurses had not yet been trained, so the system did not have NAS data. I had the opportunity to

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test filling it out, reviewing the NAS data already collected from a day of research.

However, the NAS result from the EPIMED system was presented collectively in 24 hours of care in that ICU, showing whether the patients in that ICU needed low, moderate, high and very high level nursing care, according to the number of professionals.

I was unable to see an individual classification of these patients in the EPIMED system, which would be our differentiator in the proposed mobile application prototype. Since we would classify each patient individually by bed, in the end we would have both the individualized classification of the patient and the general classification of the ICU.

Another advantage of our application is that it would be completely independent of any system and would not require the nurse to go to a computer to enter the data, since the nurse would use his/her own mobile device to apply the NAS score at the bedside, with the advantage of direct observation, avoiding data loss when filling out the NAS and saving time with the practicality that the application would bring. In other words, a fully operational application for nurses.

The main purpose of this NAS application is precisely to make it easy and quick to operate for nurses who deal with time constraints for patient care. The EPIMED system, on the other hand, is a program created and aimed at doctors and general ICU administration, not specifically focusing on the work of nurses. Therefore, our application is more practical, since it will be developed based on our knowledge of nursing, especially the heavy work routine of nurses.

CONCLUSION

The NAS score is not related to the ICU bed occupancy rate, but rather to the patient's severity profile. Therefore, all patients admitted to the ICU generate a workload for the nursing team, especially those who die.

Our study indicates that the actual number of professionals working is greater than that indicated by the NAS, but regarding the percentage distribution of the total number of nursing professionals, we observed a non-conformity, since there was only one nurse on all shifts, regardless of the number and severity profile of the patients.

Therefore, nursing needs to have its workload quantified for better dimensioning, in order to avoid work overload causing illness among the team, which often reflects in the high rate of absenteeism.

The main purpose of this NAS mobile application prototype is precisely to operationalize the NAS in an easy and quick way for nurses who deal with time constraints for patient care. This prototype would also provide individualized classification of patients by severity level, in addition to the general classification of the ICU.

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