

## Nursing workload in the health services of a Peruvian hospital

Carga laboral de enfermería en los servicios de un hospital peruano  
Carga de trabalho da enfermagem nos serviços em um hospital peruano

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### ABSTRACT

**Objective:** To evaluate the workload of nursing staff in the hospital services of a Peruvian public hospital using the Nursing Activities Score (NAS) instrument. **Materials and methods:** Descriptive, quantitative, and cross-sectional study with a sample of 518 observations carried out in the Pediatrics, Medicine, Surgery, and Gynecology departments of a public hospital in Lima. The NAS instrument was used and administered through the NAS Manager® software, with descriptive statistical analysis performed using STATA 17. **Results:** An overall average workload of 36.7% was identified. By hospital service, the percentages were as follows: Pediatrics (40.5%), Gynecology (37.8%), Medicine (35.7%), and Surgery (32.9%). In specific areas, the following stood out: Pediatrics (isolated area: 54.7%; Area C: 40.9%), Medicine (Pneumology: 43.8%; Area E: 36.1%), Surgery (Area G: 35.7%; Area F: 33.3%). The predominant activities were administrative tasks (97.3-100%), hygiene procedures (92.8-97.0%), and monitoring and evaluation (89.9-100%). Less frequent activities included ventilatory support (4.8-10.9%) and metabolic support (7.4-30.3%). **Conclusions:** The nursing workload significantly exceeds the internationally recommended optimal ranges (10.0-25.0%). The use of NAS enabled an objective and systematic evaluation, highlighting the urgent need to appropriately redistribute human resources to improve the quality of care and patient safety.

**Keywords:** workload; nursing; patient care management; health workforce; personnel management.

**Received:** May 11, 2025

**Accepted:** July 6, 2025

**Online:** August 7, 2025



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Revista Enfermería Hereditiana.

### Scientific contribution:

This study presents the nursing workload and its impact on performance, patient safety, and professional well-being. Furthermore, it provides evidence to optimize human resource allocation, improve the quality of care, and reduce occupational burnout, supporting administrative decision-making with real-world data for a more equitable and sustainable staff distribution.

## INTRODUCTION

Nursing workload refers to the amount of work that includes both direct tasks and responsibilities, such as patient care, and indirect tasks, such as documentation and care coordination within healthcare services. According to several studies, a high workload increases the risk of errors and compromises patient safety (1). In turn, staff shortages, constant pressure, and inadequate infrastructure may lead to limitations and reduced quality in healthcare service delivery. Given this reality, nurses are often forced to prioritize certain tasks and, consequently, neglect others (2, 3).

Additionally, an increase in workload may generate considerable levels of stress, which in turn affects job satisfaction and professional performance (4). This phenomenon is more pronounced in hospital healthcare settings, where the demand for care and the complexity of cases require adequately trained and sufficient staff (5).

In this regard, a binational study involving Mexico and Peru demonstrated that nursing administrators in hospital institutions face increasing demands due to resource scarcity, which hinders their ability to efficiently manage their teams' workload (6). Simultaneously, factors such as extended working hours and pressure to meet quality standards, without adequate institutional support, have resulted in a significant rate of burnout among nursing staff (7).

On the other hand, the Nursing Activities Score (NAS) is an internationally recognized tool for measuring nursing workload. This instrument comprises 23 distinct nursing activities covering both direct and indirect patient care tasks, enabling a comprehensive understanding of workload through quantifiable metrics (8, 9). Therefore, it is a well-established tool that significantly contributes to understanding and managing nursing workload. Its use allows healthcare managers to better plan resources, improve the quality of patient care, and reduce the incidence of adverse events.

Accordingly, this study aimed to evaluate the workload of nursing staff across different inpatient hospital services of a Peruvian public hospital, using NAS as the primary assessment tool.

## MATERIALS AND METHODS

This was a quantitative, descriptive, and cross-sectional study conducted in the inpatient service of a public

healthcare facility located in the district of San Juan de Lurigancho, Lima, Peru. This hospital has eleven nursing professionals per 12-hour shift (day and night), distributed across care areas as follows: two in Pediatrics, one in Gynecology, four in Medicine, and four in Surgery. During ten days in September 2024, data were collected from 518 inpatient care episodes across these clinical areas.

For data collection, the Nursing Activities Score (NAS) tool was used, a standardized instrument designed to measure nursing workload. It consists of 23 items categorized into seven main groups that assess aspects such as basic care activities, cardiovascular support, ventilatory support, neurological care, renal care, metabolic care, and specific interventions. Each item has a predefined score that represents the percentage of the average time required by nursing staff to perform the task (10).

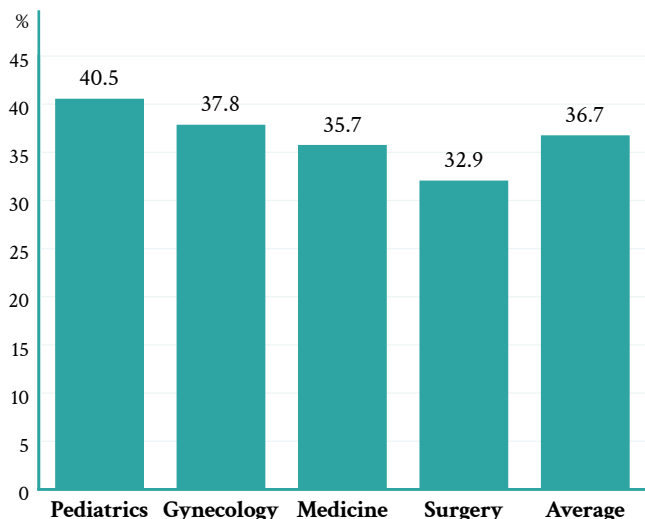
The Nursing Activities Score (NAS) has been internationally validated. For example, one study reported strong concurrent validity, with a correlation coefficient ( $r$ ) of 0.67 compared to the Therapeutic Intervention Scoring System (TISS-28), indicating its ability to accurately reflect nursing workload against a recognized standard (11). Similarly, its interobserver reliability has been evaluated in multiple studies, showing high agreement (99.8%), with a mean Kappa index of 0.99, suggesting its reliable applicability across diverse clinical settings (12).

Before data collection, five nursing professionals were identified and trained regarding the methodology and instrument. For data collection and analysis, the NAS Manager® software was used, a specialized program that allows data entry, automatic calculation, and analysis of NAS scores per patient and per hospital service. Data were collected over ten consecutive days during day shifts, from 07:00 to 14:00 hours, when nursing professionals perform both clinical and administrative duties.

The data were coded and subsequently entered into the NAS Manager®. They were later analyzed using the statistical software STATA 17. Data were processed using descriptive statistics, including frequencies, percentages, means, and standard deviations. A NAS score greater than 100% was considered to indicate work overload, meaning that the demand exceeded the individual working capacity of a nurse per shift. Frequency distribution tables were obtained according to the global classification scales of the instrument and its respective dimensions. Results were presented in tables and graphs. Finally, institutional authorization was obtained to conduct the research study.

## RESULTS

Figure 1 shows that the nursing workload across the Pediatrics, Medicine, Surgery, and Gynecology services, based on the 518 evaluations conducted, presents an average of 36.7%. Among these, the Pediatrics service demonstrated the highest workload, with 40.5%.



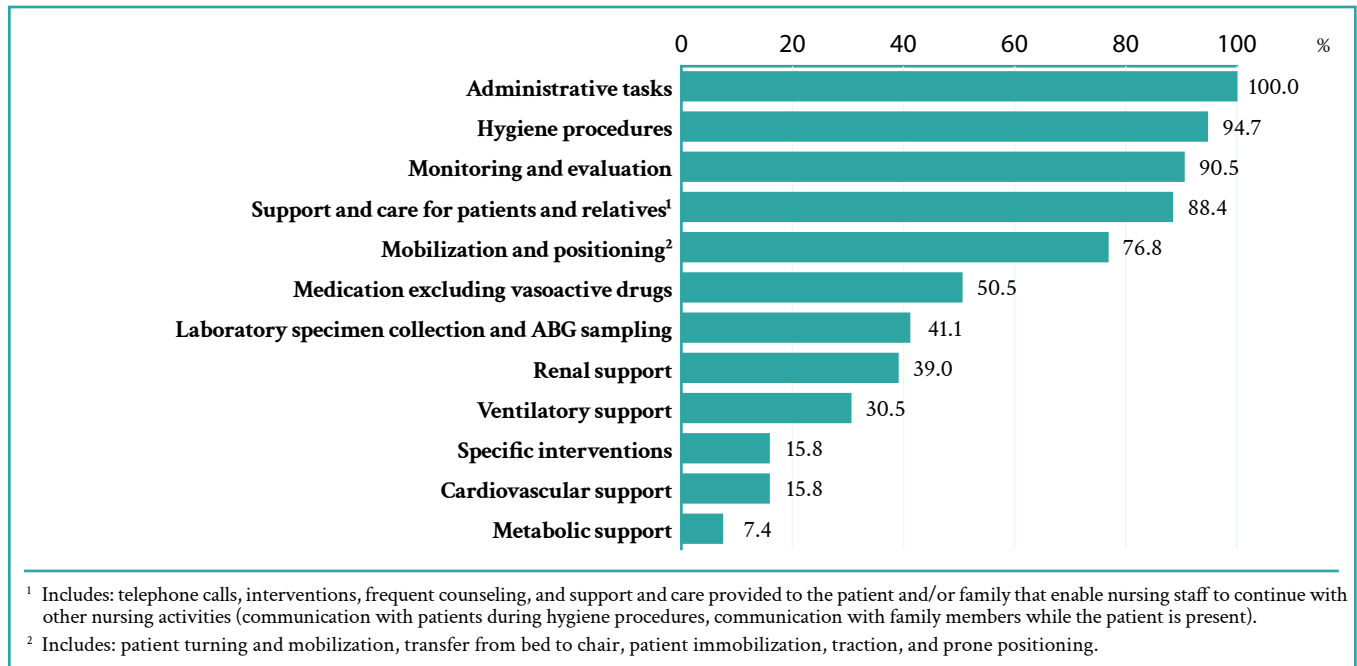
**Figure 1.** Nursing workload in the services of a public hospital in Lima. Data obtained from the inpatient nursing service (September 2024).

Among the services included, three were subdivided into clinical areas (Pediatrics, Internal Medicine, and Surgery). Table 1 presents a detailed breakdown of nursing workload by each clinical area. Findings showed that the nursing workload in the Pediatrics service was higher in the Isolation Area (54.7%) and Area C (40.9%), exceeding the overall average of 40.5% based on 95 evaluations. In the Medicine service, out of 198 evaluations, the workload was higher in the Pneumology Area (43.8%), Area E (36.1%), and Area H (35.8%), surpassing the overall average of 35.7%. In the Surgery service, nursing workload was higher in Area G (35.7%) and Area F (33.3%), exceeding the overall average of 32.9% based on 192 evaluations. In the Gynecology service, the nursing workload was 37.8%, based on 33 evaluations.

Figure 2 shows the nursing workload by nursing activities in the Pediatrics service, which are divided into twelve different activities. Among these, the most frequently performed activities were administrative tasks (100%), hygiene procedures (94.7%), and patient monitoring and evaluation (90.5%). In contrast, the least frequently performed activities were cardiovascular support (15.8%), specific interventions (15.8%), and metabolic support (7.4%).

**Table 1.** Nursing workload according to clinical areas of services in a public hospital in Lima.

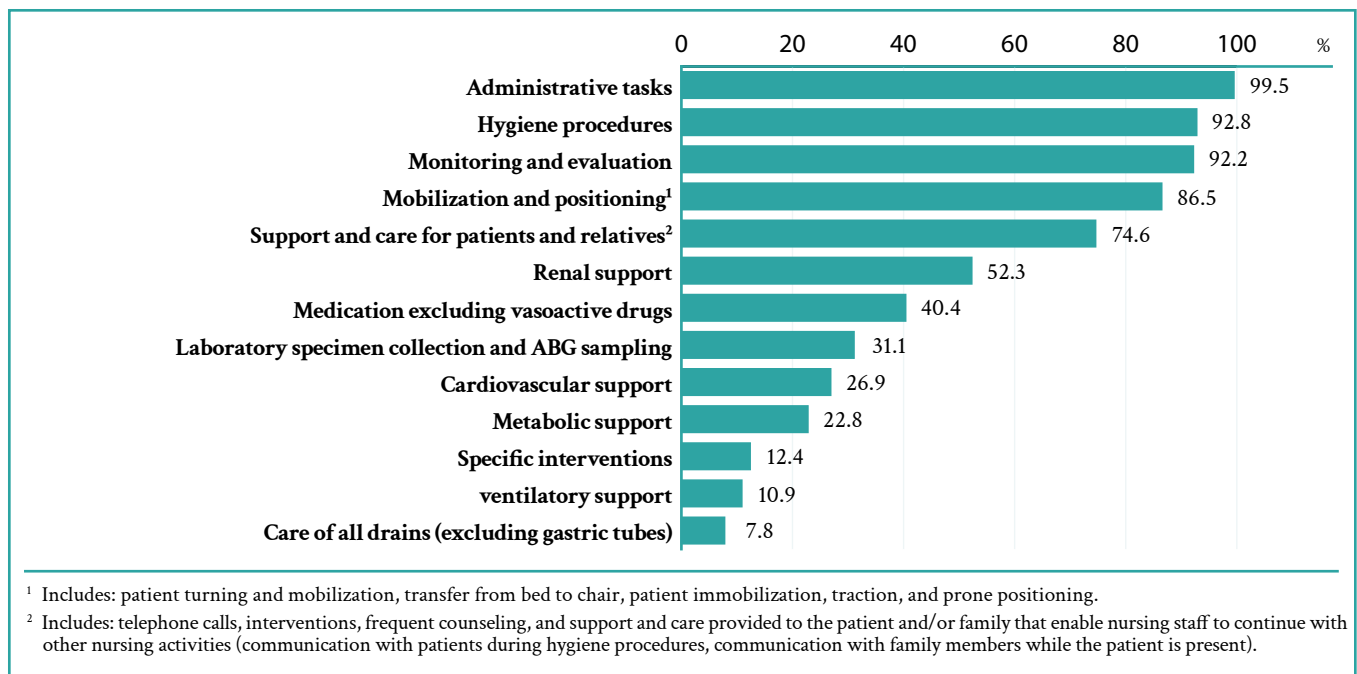
Service Areas	Workload (%)
<b>Pediatrics</b>	
Isolation Area	54.7
Area C	40.9
Area B	40.5
Area A	36.2
Pediatrics average (95 evaluations)	40.5
<b>Medicine</b>	
Pneumology	43.8
Area E	36.1
Area H	35.8
Area D	32.9
Medicine average (198 evaluations)	35.7
<b>Surgery</b>	
Area G	35.7
Area F	33.3
Surgery Area 4	32.8
Surgery Isolation Area	31.1
Traumatology Area	29.1
Surgery average (192 evaluations)	32.9
<b>Gynecology</b>	
Gynecology average (33 evaluations)	37.8



**Figure 2.** Nursing workload by nursing activities in the Pediatrics service of a public hospital in Lima. Data obtained from the inpatient nursing service (September 2024).

Figure 3 shows the nursing workload by nursing activities in the Medicine service, which are divided into thirteen different activities. Among these, the most frequently performed activities were administrative tasks (99.5%), hygiene proce-

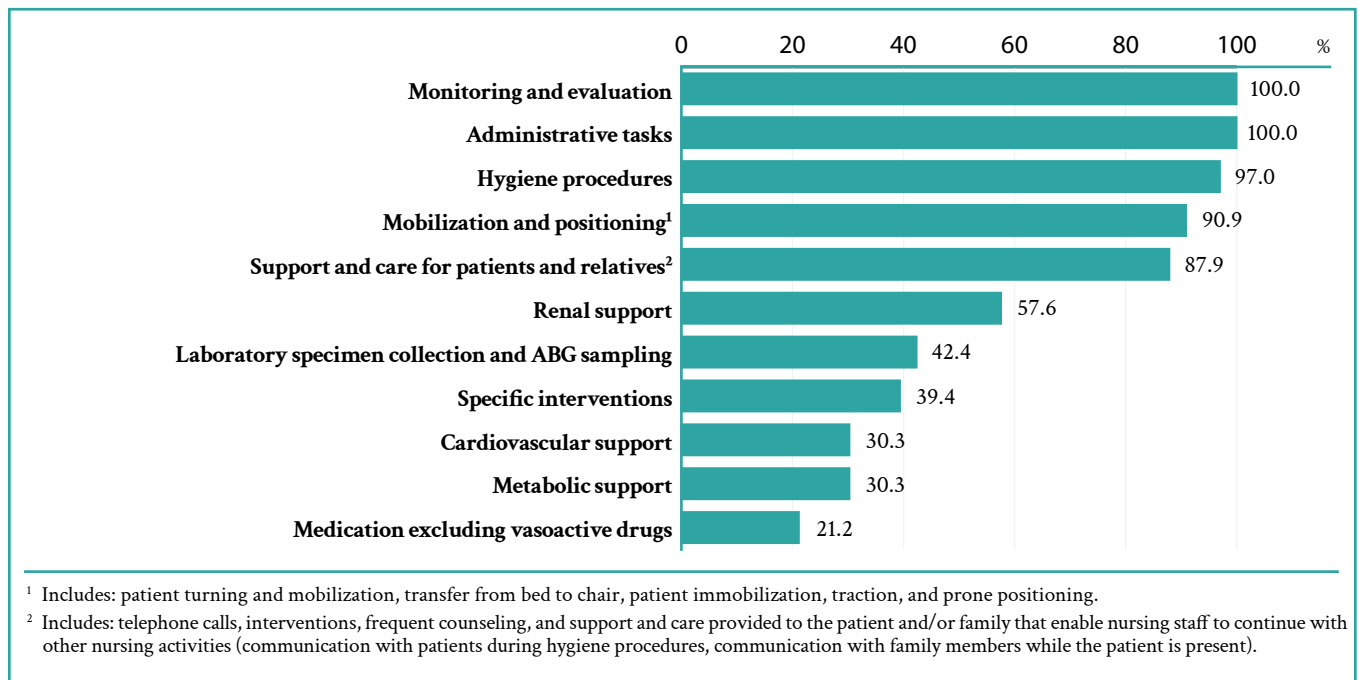
dures (92.8%), and patient monitoring and evaluation (92.2%). In contrast, the least frequently performed activities were specific interventions (12.4%), ventilatory support (10.9%), and care of all drains (7.8%).



**Figure 3.** Nursing workload by nursing activities in the Internal Medicine service of a public hospital in Lima. Data obtained from the inpatient nursing service (September 2024).

Figure 4 shows the nursing workload by nursing activities in the Gynecology service, which are divided into eleven activities. Among these, the most frequently performed activities were administrative tasks (100%), patient monitoring and evaluation

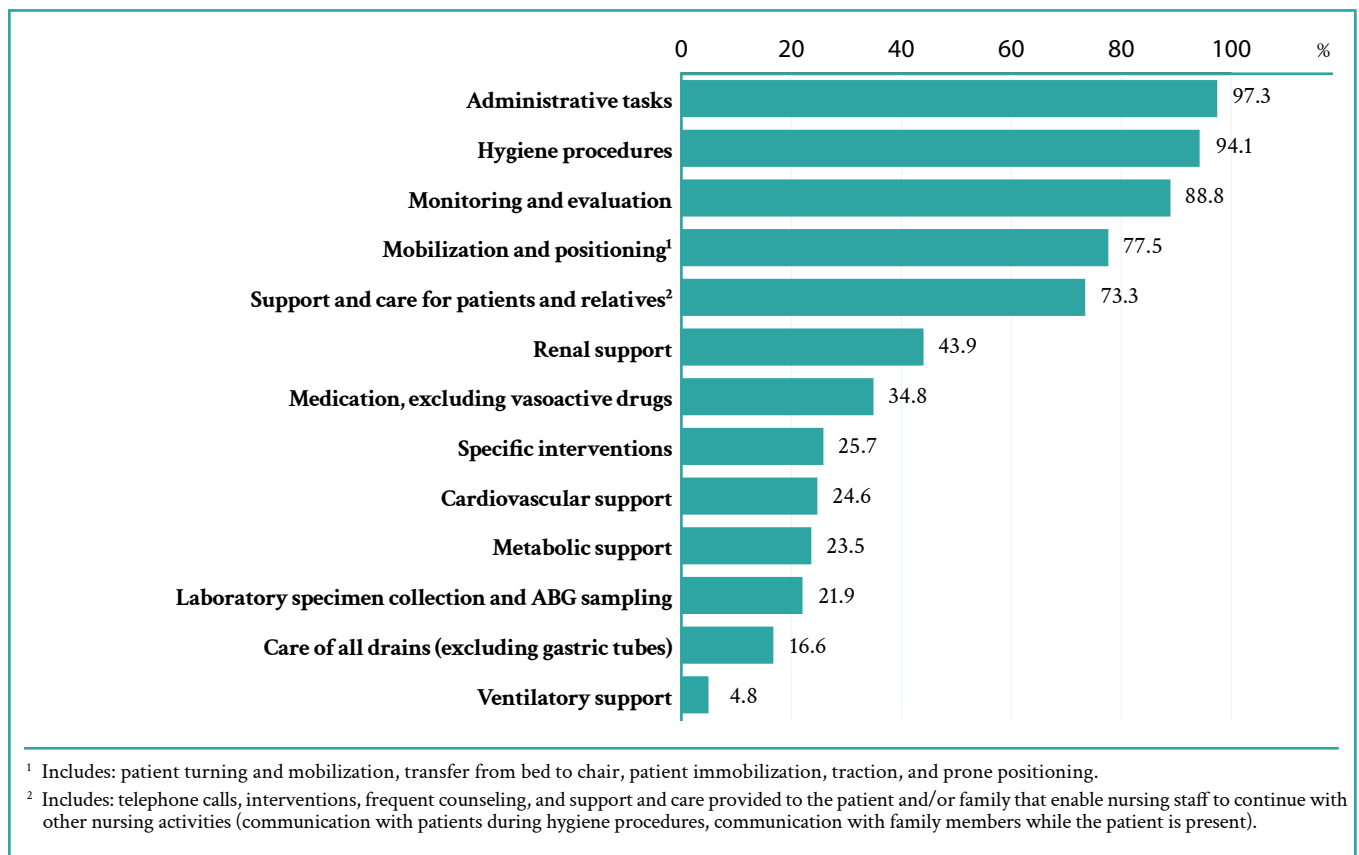
(100%), and patient hygiene procedures (97.0%). Conversely, the least frequently performed activities were cardiovascular support (30.3%), metabolic support (30.3%), and medication excluding vasoactive drugs (21.2%).



**Figure 4.** Nursing workload by nursing activities in the Gynecology service of a public hospital in Lima. Data obtained from the inpatient nursing service (September 2024).

Figure 5 shows the nursing workload by nursing activities in the Surgery service, which are divided into thirteen different activities. The most frequently performed activities were administrative tasks (97.3%), hygiene procedures (94.1%), and patient monitor-

ing and evaluation (88.8%). On the other hand, the least frequently performed activities were laboratory specimen collection and arterial blood gas (ABG) sampling (21.9%), care of all drains (16.6%), and ventilatory support (4.8%).



**Figure 5.** Nursing workload by nursing activities in the Surgery service of a public hospital in Lima. Data obtained from the inpatient nursing service (September 2024).

## DISCUSSION

The findings of this study clearly demonstrate that the nursing workload in the inpatient services of a Peruvian hospital exceeds the optimal values established in the international literature. Indeed, the overall mean NAS score was 36.7%. The Pediatrics service reached the highest value (40.5%), followed by Gynecology (37.8%), Medicine (35.7%), and Surgery (32.9%).

These workload levels represent an institutional concern, as studies such as those by Miranda et al. (10) indicate that a NAS workload above 25% may compromise the quality of care. This is due to the excessive number of patients assigned to a single healthcare professional. Consequently, this workload not only increases clinical risks—such as healthcare-associated infections and medication administration errors—but is also associated with issues such as burnout, staff turnover, and decreased job satisfaction (13, 14).

### Pediatrics

Within the Pediatrics service, the Isolation Area stands out, with a NAS of 54.7%, demonstrating a substantial overload compared with the other areas (A: 36.2%; B: 40.5%; C: 40.9%). This value is particularly concerning, as it implies a high demand for care among potentially immunocompromised patients or those with infectious diseases, where the margin for error must be minimal.

As for the activities conducted, both Pediatrics and Medicine showed a high frequency of administrative tasks, hygiene procedures, and patient monitoring and evaluation, all with percentages close to or above 90%. These findings reinforce the need to review organizational processes, since a considerable proportion of nursing time is devoted to indirect tasks, leaving less time available for specialized care and direct pediatric patient care.

In addition, these data are consistent with the scientific literature that has validated NAS as a useful and accurate instrument for measuring nursing workload, particularly due to its ability to capture non-clinical activities such as family support and interprofessional coordination (15–17). Therefore, the implementation of NAS in pediatric inpatient services not only allows objective quantification of workload but also supports redefining human resource allocation and optimizing care delivery models. The institution must consider these findings as inputs for internal policies that ensure adequate staffing allocation, considering not only

the number of patients but also the complexity of required care.

### Medicine

The results obtained in the Medicine service through NAS reflect a significant work overload for nursing staff, with an average of 35.7% in 198 evaluations. This value exceeds the internationally considered optimal range (10–25%), which ensures safe, timely, and high-quality care (10).

Within the analysis by specific areas, Pneumology presented the highest workload (43.8%), followed by Areas E (36.1%), H (35.8%), and D (32.9%). This variation suggests differences in clinical complexity and intensity of care required by patients. Furthermore, high workload may be associated with patients experiencing respiratory failure, multiple comorbidities, and the need for continuous care, all of which require greater time investment by nursing staff.

The most frequently performed items were administrative tasks (99.5%), hygiene procedures (92.8%), and patient monitoring and evaluation (92.2%). This pattern indicates that a large proportion of nurses' time is dedicated to indirect or lower clinical-risk activities, potentially limiting the time available for specialized procedures or patient-centered inpatient care requiring advanced nursing competencies. This finding is consistent with previous studies highlighting that administrative activities tend to occupy a large proportion of working time in general hospitalization settings (13, 14).

On the other hand, activities with lower prevalence—such as ventilatory support (10.9%), drain management (7.8%), and specific interventions (12.4%)—indicate that not all patients require high-complexity care, which should allow better workload redistribution if shifts are organized according to patients' clinical profiles (18).

The use of NAS in Medicine inpatient services has proven to be a valuable tool not only for quantifying workload but also for identifying opportunities for improvement in human resource allocation, evidence-based shift planning, and the establishment of quality standards adapted to the local context. Similarly, it allows anticipation of organizational risks such as staff exhaustion, reduced productivity, and increased absenteeism, phenomena already documented in institutions with high care demands (15). In this regard, its implementation should be complemented by institutional strategies aimed at reducing administrative time, strengthening direct patient care, and ensuring healthcare personnel well-being.

## Gynecology

The results obtained in the Gynecology service using the NAS instrument revealed a significant work overload among nursing staff, with an average of 37.8% out of a total of 33 evaluations. This figure exceeds internationally recommended values, which range between 10% and 25%, considered optimal for safe, timely, and patient-centered care (10, 19).

The fact that the single evaluated area registers this workload level suggests a homogeneous distribution of healthcare demands, with no internal differentiation based on the clinical severity of cases. Moreover, the high percentage of administrative activities (100%), along with monitoring and evaluation (100%), reinforces a concerning trend observed in other services: the predominance of indirect tasks over complex clinical interventions.

The fact that 97.0% of patients requiring hygiene procedures in Gynecology reflects that a large proportion of nursing effort is devoted to basic care, which could limit the operational capacity of staff to assume advanced functions such as specific interventions, high-risk patient care, or advanced clinical support.

In contrast, more clinically complex activities—such as cardiovascular and metabolic support (30.3%) and specialized medication (21.2%)—showed low frequency, which may indicate that the gynecological patient profile in this context largely corresponds to cases of lower medical severity. However, this should not diminish the importance of the reported workload, since the frequency and simultaneity of basic activities constitute a critical factor of physical and mental exhaustion among nursing staff (13, 14).

These findings reaffirm the usefulness of NAS not only as a workload quantification tool but also as a mechanism for detecting operational imbalances. Its systematic use enables more accurate determination of staffing needs based on actual workload rather than traditional indicators such as bed numbers or predetermined shifts (15, 18). Its implementation in the Gynecology service highlights the need to review task distribution protocols, with emphasis on improving operational efficiency, preventing occupational burnout, and ensuring quality care. The generation of this data may also be strategically useful to support improvement proposals to hospital administrators, providing concrete evidence of the real working conditions of clinical staff.

## Surgery

The analysis of the Surgery service using NAS revealed an average workload of 32.9% across 192 evaluations,

again exceeding the internationally accepted optimal range (10–25%) for safe and efficient care (10). This finding reflects a persistent trend of work overload in surgical inpatient services, placing care quality, patient safety, and staff well-being at risk (20). The application and validation of NAS across various clinical contexts, such as the Surgery service, demonstrate its effectiveness in providing reliable data on nursing care needs and workload across hospital services. The information obtained serves as a reference framework for establishing staffing adjustments (21, 22).

When segmented by specific areas, the highest workload was observed in Area G (35.7%), while the lowest corresponded to the Traumatology Unit (29.1%). These variations may be associated with the turnover of complex postoperative patients, the type of surgical interventions performed, and the availability of physical and human resources.

A detailed analysis of the activities performed in the Surgery service shows the prevalence of administrative tasks (97.3%), hygiene procedures (94.1%), and monitoring and evaluation (88.8%). This profile confirms observations in other hospital services: a significant proportion of nursing staff time is devoted to basic or indirect support activities. Although these are necessary, their high frequency indicates a potential imbalance in task distribution that should be reassessed through time-management strategies and human resource redistribution (13, 14).

On the other hand, complex clinical activities—such as ventilatory support (4.8%), drain care (16.6%), and laboratory specimen collection (21.9%)—had low representation in the evaluations. While this could reflect a less complex clinical profile in the patients evaluated, it may also be concealing a failure to record certain interventions or an underutilization of the professional potential of nursing staff in clinical procedures.

In this context, NAS emerges as a strategic measurement and management tool in the Surgery Service, enabling the identification of hidden workloads and informed decision-making regarding staffing distribution based on the real level of care demand (15). Additionally, these data are useful to support requests for staffing reinforcement or organizational improvements to the hospital administration.

Finally, the evaluation highlights the urgent need to implement improvement interventions, including time-management training, redefinition of administrative roles, and strengthening leadership in surgical nursing.

## Limitations

The main limitation of this study lies in its descriptive design, which, although it allowed us to characterize the workload of nursing staff in different hospital services, does not enable us to establish causal relationships with organizational, personal, or institutional factors that could influence this workload. In addition, the results are limited to the local context, which restricts their generalizability to other healthcare facilities. The implementation of staffing planning policies based on real workload indicators is recommended to improve healthcare service quality.

## CONCLUSIONS

The analysis of nursing workload in the services of a Peruvian hospital during 2024, according to the

NAS scale, demonstrated an overall level of 35.7%, exceeding the expected optimal range (10–25%), suggesting significant staff overload. The services with the highest workload were Pediatrics (40.5%) and Gynecology (37.8%), with the Isolation Area in Pediatrics reaching 54.7%. In Medicine, Pneumology presented the highest workload (43.8%), while Surgery showed the lowest overall workload (32.9%), although critical areas such as Surgery 4 (32.8%) and Traumatology (29.1%) were also above the recommended threshold. These findings highlight the need to evaluate staffing distribution and resource planning.

The study showed a high workload across the analyzed hospital services. The use of NAS through the NAS Manager® software facilitated an objective and systematic evaluation, proving to be a useful tool for human resource management in nursing.

### Conflict of Interest:

The authors declare no conflict of interest.

### Funding:

Self-funded.

### Ethics Approval:

The study was approved and authorized by the Teaching and Research Support Unit of Hospital San Juan de Lurigancho (AUDI-HSJL) through letter 078-2025-UADI-HSJL-DIRIS LC/MINSA.

### Authorship Contribution:

**FJBB, NNM:** conceptualization, formal analysis, research, methodology, project administration, validation, visualization, writing of the original draft, writing - review & editing.

**RAB:** research, validation, writing of the original draft, writing - review & editing.

**SEBC, TEZC, JVCZ:** research, writing of the original draft, writing - review & editing.

**DTSPC:** research, project administration, writing of the original draft, writing - review & editing.

**APCS:** formal analysis, research, writing of the original draft.

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