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Analysis of Nurse Staffing Needs Based on Workload Using the ABK-KES Method in the Emergency Department of Teuku Umar Regional Hospital, Aceh Jaya

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Abstract

This study aims to analyze the need for nursing staff based on workload using the Health Workload Analysis (ABK-Kes) method in the Emergency Department (IGD) of Teuku Umar Aceh Jaya Regional Hospital. The research design used is a mixed method sequential exploratory, namely a quantitative approach to measure nurses' workload and a qualitative approach to deepen understanding of the quantitative results. Data collection was conducted through one month of observation of 21 ER nurses and in-depth interviews with five key informants from the hospital management. The analysis results show that nurses have Available Working Time (WKT) of 72,000 minutes per year with 58 main tasks and 2 supporting tasks. Based on the calculation of Workload Standards (SBK) and Supporting Task Standards (STP = 1.0221), the ideal need for nursing staff in the ER is 17 people, while the actual number available is 21 people, resulting in an excess of four nurses. From the interview results, most informants stated that the current number of nursing staff is sufficient, but still needs regular evaluation to ensure balanced distribution of staff between units. The main obstacles identified included limited emergency competency and unequal distribution of training certificates. This study confirms that the implementation of the ABK-Kes method can produce more objective, efficient, and field-specific workforce planning. It can also serve as a reference for hospitals in developing nursing human resource management policies.

Keywords: ABK-Kes Method, Emergency Room, Nursing Needs, Workload

Introduction

Hospitals are healthcare centers that play a vital role in supporting national health development efforts. As organizations providing primary and secondary

healthcare services, hospitals are responsible for providing quality services in accordance with their respective standards and must be accessible to all levels of society (Faysal et al., 2018). Hospitals are also an essential component of the national healthcare system, as a significant portion of the healthcare budget, in both developed and developing countries, is allocated to hospital management (Rahimi et al., 2018). This demonstrates that the efficiency and effectiveness of hospital management significantly determine the quality of public healthcare services.

According to Law of the Republic of Indonesia Number 17 of 2023 concerning Health, a hospital is a health care facility that provides comprehensive individual health services through promotive, preventive, curative, rehabilitative, and/or palliative efforts. One of the vital units in hospital services is the Emergency Department (ER), which is responsible for treating patients with life-threatening conditions, whether patients come directly or through referrals from other health facilities. The ER operates 24 hours continuously and functions to examine, resuscitate, and stabilize patients according to emergency standards (Amanda et al., 2024).

The number of patient visits to the emergency department (ER) in Indonesia has increased significantly each year. In 2017, there were 4,402,205 patients, then increased to 8,597,000 patients in 2020. This trend continued, with the number of visits reaching 10,124,000 patients in 2021 and jumping to 16,712,000 patients in 2022, or approximately 28.2% of total hospital visits (Merliyanti et al., 2024). These data indicate an increasing workload in emergency departments, which demands the readiness of human resources, especially nurses, to provide fast and accurate services.

However, the increase in patient numbers is not always accompanied by an increase in the availability of adequate facilities, infrastructure, and human resources (HR). The problem of a shortage of healthcare workers in the emergency room (ER) is a major factor affecting service quality (Fajri, 2020). Optimal service in hospitals depends on a balance between the number of medical and non-medical personnel appropriate to the workload (Faysal et al., 2018). A shortage of healthcare workers can directly impact service quality, while an excess of personnel will lead to wasteful operational costs (Fajri, 2020).

The quality of emergency room services is also closely related to patient satisfaction. Efforts to improve patient satisfaction depend on the availability of competent and efficiently distributed human resources (Bustamin, 2022). Therefore, human resource planning is a key managerial function that must be implemented in hospitals to ensure the availability of the right workforce in positions that match their competencies (Raziansyah et al., 2021). Nurses play a strategic role in supporting emergency services, as they are the healthcare workers who interact directly with critically ill patients (Merliyanti et al., 2024).

The Ministry of Health has set a standard for nursing staff requirements of 2.4 nurses per 1,000 residents (Kemenkes, 2022). According to data from the Central Statistics Agency (BPS), Indonesia's population is projected to reach 277.5 million by 2023, with 549,337 nurses (Siburian et al., 2024). Nationally, the nurse-to-population ratio meets this standard, but their distribution across healthcare units is often uneven. This imbalance can lead to overstaffing in some units and understaffing in others, including the emergency department (ER).

Nurses in the emergency department (ED) are required to possess specific competencies in providing emergency care, as stipulated in Minister of Health Regulation No. 47 of 2018. They must be able to provide life support quickly and accurately. The high workload in the ED requires nurses to be constantly prepared to deal with fluctuating patient volumes and unpredictable medical severity (Yulliswandi, 2021). In addition to competency, the availability of facilities and organizational support also influence nurses' ability to perform their duties (Putri et al., 2023).

Inaccurate planning of nursing staffing requirements can have various consequences. A mismatch between the number of staff and the actual workload can lead to organizational inefficiencies and reduced productivity (Raziansyah et al., 2021). A surplus of nurses leads to budget wastage, while a shortage can increase the workload and reduce service quality (Ishak et al., 2024). Therefore, planning staffing requirements based on workload analysis is a crucial step in hospital management.

The Health Workload Analysis (ABK-Kes) method, regulated in Ministerial Regulation No. 33 of 2015, is one approach used to calculate health human resource needs based on actual workload. This method provides

an accurate picture of the number of personnel required according to the characteristics and intensity of services in each unit (Permenkes Nomor 33, 2015). By implementing the ABK-Kes method, hospitals can plan their workforce needs more objectively and efficiently, thus ensuring optimal and sustainable service delivery.

Teuku Umar Aceh Jaya Regional Hospital, a government-owned type C hospital, offers a variety of services, including the Emergency Department (ER), outpatient care, and inpatient care. The hospital's ER is staffed by 21 nurses, consisting of civil servants (PNS), community health workers (PPPK), and contract workers, with three shifts per day. However, data shows that the number of ER patient visits has increased sharply from 6,889 patients in 2023 to 9,471 patients in 2024, with the average daily visit increasing from 19 to 26 patients. This increase has the potential to increase the workload of ER nurses and requires an analysis of staffing needs based on workload to ensure effective and efficient services. This study aims to analyze the need for nurses based on workload using the ABK-Kes method in the Emergency Department of Teuku Umar Aceh Jaya Regional Hospital.

Method

This study employed a mixed methods sequential exploratory design, integrating both quantitative and qualitative approaches. The quantitative phase was conducted first to obtain numerical data regarding the workload of nurses in the Emergency Department, followed by a qualitative phase aimed at explaining and deepening the quantitative findings. This design allows for a more comprehensive understanding of the research problem by combining statistical analysis with contextual insights. The use of both data types enables triangulation, which strengthens the validity of the results and provides multiple perspectives in interpreting the phenomena under study.

The research was conducted at the Emergency Department (ED) of Teuku Umar Regional Public Hospital (RSUD Teuku Umar) located in Krueng Sabee District, Aceh Jaya Regency, Aceh Province. The study was carried out from March 27 to April 28, 2025. The study population included all nurses working in the ED as well as members of the hospital management involved in human resource planning for nursing personnel. A purposive sampling technique was applied to select participants based on inclusion and exclusion criteria. The quantitative sample consisted of 21 nurses who met the inclusion criteria and agreed to participate, while qualitative data were obtained from five key informants—four from hospital management (the Director, Head of Nursing, Head of Human Resources, and Head of ED) and one from the Aceh Jaya Regional Civil Service Agency (BKPSDM).

Data collection involved both observation and interviews. Observations were conducted continuously for one month using standardized observation sheets to record the primary and supporting tasks performed by nurses in the ED. The results were analyzed using the Analisis Beban Kerja Kesehatan (ABK-Kes) method as outlined in the Indonesian Ministry of Health Regulation No. 33 of 2015, including calculations of workload components, available working time, standard workload, and supporting task factors. Qualitative data were gathered through semi-structured interviews focusing on strategies and challenges in fulfilling nursing workforce needs. Quantitative data were processed using Microsoft Excel through editing, coding, entry, and tabulation, while qualitative data were analyzed thematically. Both datasets were triangulated to ensure consistency and credibility of findings. Ethical approval for this study was obtained from the Health Research Ethics Committee of the Faculty of Medicine, Universitas Syiah Kuala (No. 043/EA/FK/2025), and research permission was granted by RSUD Teuku Umar Aceh Jaya (No. Peg.000.9.3/299/2025).

RESULTS

Table 1. Characteristics of research informants

Informant	Gender	Umur	Pendididkan
Director of Teuku Umar Regional Hospital, Aceh Jaya	Woman	40 Years	Master of Public Health

General and Personnel Subsection	Woman	41 Years	Bachelor of Public Health
Nursing Management Section	Woman	41 Years	D4 Nursing
Head of the Emergency Room	Woman	39 Years	Profesi Ners
Acting Head of Organizational Division & Head of Mutation and Promotion Division	Man	42 Years	Master of Public Administration

Table 2. Characteristics of emergency room nurses

Characteristics	n	%
Gender		
Male	12	57.1
Female	9	42.9
Age Group		
21-30 Years	7	33.3
31-40 Years	14	66.7
Education		
Diploma III	12	57.1
Bachelor's Degree/Equivalent	3	14.3
Nursing Profession	6	28.6
Employee Status		
Civil Servants	5	23.8
Government Employees with Employment Agreements	12	57.1
Contract/Service	4	19.1
Types of Training		
ATCN	10	47.6
BHL	5	23.8
BTCLS	2	9.5
Not Yet Trained	4	19.0

Of the 21 nurses in the emergency room at Teuku Umar Aceh Jaya Regional Hospital, the majority were male (57.1%) and aged 31–40 years (66.7%). Most had a Diploma 3 degree in Nursing (57.1%) and were employed as PPPK (57.8%). In terms of training, nearly half had attended ATCN training (47.6%), while a small proportion had never attended training (19%), and only a small number had attended BTCLS (9.5%) (Table 2).

Table 3. Results of quantitative analysis of emergency room nurses

Analysis Components	Description of Main Results	Value / Result
Available Working Time (AWT)	Based on the provisions of Permenpan-RB No. 26/2011, Perka BKN No. 19/2011, and Permenkes No. 35/2013, the working hours for nurses are set at one year.	72,000 minutes/year
Workload Components	The total number of activities observed consisted of 58 main tasks and 2 supporting tasks carried out by emergency room nurses during the period 27 March–25 April 2025.	60 activity components
Workload Standard (SBK)	Determined based on the average completion time (time norm) and the annual WKT. For example: accepting a new patient takes 8 minutes with a SBK of 9,000 cases/year.	Varies per activity (highest SBK 36,000, lowest 200)
Supporting Task Standards (STP)	Includes two main activities: monthly meetings and training. The Supporting Task Factor (FTP) value of 2.1667% results in an STP of 1.0221.	STP = 1,0221
Calculation of HRD (Nurse) Needs	Based on the results of the annual achievement projections and SBK, the total need for nurses is 17 people, while the number available is 21 people.	Advantages of 4 nurses

The results of the quantitative analysis show that the emergency room nurses at Teuku Umar Aceh Jaya Regional Hospital have an available working time of 72,000 minutes per year, with 60 types of activities consisting of 58 main tasks and 2 supporting tasks. Based on the calculation of the Workload Standard (SBK) and the Supporting Task Standard (STP = 1.0221), the results show that the ideal need for nursing staff in the emergency room is 17 people, while the actual number available is 21 people. Thus, there is an excess of 4 nurses, indicating that the workload of nurses in the emergency room at Teuku Umar Regional Hospital is relatively sufficient and still has the capacity to support optimal services (Table 3).

This study reveals the results of in-depth interviews with informants regarding perceptions of the adequacy of nursing staff, methods for calculating needs, strategies for handling shortages, obstacles in fulfilling staff, and management policies regarding excess staff in the Emergency Room of Teuku Umar Aceh Jaya Regional Hospital.

Perception of the adequacy of the number of nursing staff. Most informants stated that the number of nursing staff in the ER is currently sufficient to handle the number of existing patients. This was expressed by one informant: "From what we see, it's enough. It's enough considering we count the number of patients we treat in the ER...". Another informant also emphasized that the staff in the ER is a top priority and must be complete: "...So in general, it is, because that's the staff we prioritize most and must be complete. This is my opinion, perhaps in terms of application if the calculation is done again there may be differences." However, there are also informants who stated that administratively, previous calculations showed that the need was not fully met, so additional positions were submitted: "According to the calculations that we have done before, it is not sufficient, so we are still submitting the staff needs through the P3K formation last year. And thank God, some have passed but are waiting for the appointment process."

Method for calculating nursing staff needs. Interviews indicate that Teuku Umar Regional Hospital has undergone changes in its method for calculating staff needs. Previously, it used the Gillies method and patient dependency calculations, but now it has begun implementing the Health Workload Analysis (ABK-Kes) in accordance with Ministry of Health regulations.

"...we've tried several methods, yes. We coordinate with the nursing department. We've used Gillies' calculations and patient dependency levels, but recently the regulations have changed..."

"...in health, there is already an application for capturing SDMK, and now there is ABK-Kes. This year we are designing a recalculation for evaluation, but in the calculation we must have basic field data and details of activities that will be grouped later."

Another informant added that in 2025, the hospital would begin calculating needs based on work units, rather than the general calculation as before: "...previously, we calculated it comprehensively, not specifically for certain rooms. So, in 2025, we will only calculate according to the needs of each room."

"...we will try to calculate based on crew needs and workload analysis. That's probably what we'll try to develop this year."

Strategies for dealing with nursing shortages. When shortages occur due to specific circumstances such as leave or patient referrals, hospital management implements adaptive strategies, such as calling in off-duty nurses or requesting assistance from other units.

"...we will take the solution, we will contact the nurse who is off duty... or a nurse from another room..."

This strategy is considered effective in maintaining smooth service without disrupting other nurses' shift schedules.

Barriers to meeting the need for nursing staff. The main obstacles identified relate to competency and career path. Most nursing staff in the emergency department are relatively new with a Diploma 3 educational background, while the ideal need requires nurses with a Clinical 2 or 3 career path.

"...our only obstacle here is that we are all new staff, and if we talk about nursing, there should be a career ladder, there are clinical nurses 1, clinical nurses 2, and clinical nurses 3. In the ER, there should be a minimum of clinical nurses 2."

Nevertheless, management continues to address this issue through the recruitment of experienced personnel and ongoing training: "We're also recruiting as many senior personnel as possible in the emergency room. There are also nursing terms for PK 1, PK 2, and PK 3, which correspond to the PK. Furthermore, some have already undergone BTCLS training."

Management policy regarding excess nursing staff. If there is an excess of nursing staff, management implements a redistribution policy to other units to ensure optimal utilization of the workforce.

"...if a unit has reached its capacity, we will allocate the excess personnel to other departments according to their competencies. We will reorganize and recalculate the needs for each unit."

"...yes, if there is indeed a surplus, usually based on our calculations, we add an estimated 10% for needs in case someone is sick or on leave, but if there is still a surplus,

then it will be allocated to other units so that it doesn't pile up in one unit."

For executive positions, the redistribution process must still follow official personnel mechanisms: "...internal hospitals can distribute directly if there are no functional issues, except for executive positions. If the name of the executive position changes, it must still go through the BKPSDM and the Regent's Decree."

Discussion

Characteristics of Emergency Room Nurses

The majority of nurses in the Emergency Department of Teuku Umar Aceh Jaya Regional Hospital have a Diploma 3 (D3) in Nursing, followed by Nurses and Bachelor's degrees, and are required to have an emergency training certificate according to Minister of Health Regulation Number 47 of 2018. Nurse qualifications are considered important because they meet the requirements for clinical leadership and supervision of emergency protocols (Putri et al., 2022). Based on characteristics, there are more male nurses (57.1%) than female nurses (42.9%) due to the physical demands and high mobility in the Emergency Department, in line with the findings of Shen et al. (2022) that male nurses are more often placed in high-intensity work units such as the Emergency Department and ICU.

In terms of age, the majority of nurses were aged 31–40 years (66.7%), demonstrating greater work maturity and decision-making skills (Imam et al., 2024). Most were PPPK (PPPK) (57.1%), followed by civil servants (23.8%) and contract workers (19.1%), and employment status did not impact productivity as long as management implemented a reward and punishment system (Oktaviza, 2008). Most nurses had undergone ATCN, BHL, or BTCLS training, but four nurses did not yet have training certificates. BTCLS is an important basic competency in emergency management. BHL training needs to be supplemented with BTCLS to meet trauma competency standards (Supriyatno et al., 2021).

Available Working Hours

The determination of Available Working Hours (WKT) for Human Resources in Health (HRH) is based on Presidential Decree Number 68 of 1995, which stipulates government agency working hours of 37 hours and 30 minutes per week. This provision applies to employees with a five- or six-day workweek, depending on regional policies. Working hours are closely related to workload, namely the number of actions or services performed by nurses to meet patient needs (Tuasikal, 2020).

The results of the study indicate that nurses in the Emergency Department of Teuku Umar Regional Hospital work in three shifts, namely morning (08.00–14.00 WIB), afternoon (14.00–20.00 WIB), and night (20.00–08.00 WIB). Based on BKN Regulation Number 19 of 2011, effective working hours are set at 1,250 hours per year, while PAN-RB Regulation Number 26 of 2011 sets effective working hours between 1,192–1,237 hours per year which is rounded to 1,200 hours or 72,000 minutes per year. Therefore, the calculation of WKT in this study refers to the provisions of PAN-RB Regulation Number 26 of 2011, BKN Number 19 of 2011, and Health Regulation Number 53 of 2013 as the basis for workload analysis using the ABK-Kes method.

Nursing Workload Components

The workload component is a description of the actual tasks performed by nurses in the Emergency Department (ED) in accordance with established core tasks and adjusted to time norms or average completion times in accordance with service standards. In this study, descriptions of core and supporting tasks, as well as time norms, were determined and grouped by conducting initial data collection and observational surveys. These observations aimed to obtain information related to the actual workload of nurses in the ED. In this case, the observations and direct observations obtained refer to Minister of Health Regulation Number 33 of 2015.

Based on Table 4.3, there are 58 components of main job descriptions and 2 components of supporting tasks, along with time norms for carrying out each nurse's duties. An imbalance in the nurse workload is a common problem in hospitals due to the lack of planning that aligns with the work capacity of a unit. Therefore, determining the workload components is important and must be based on the nurse's activities in a department/unit (Hasrawati et al., 2020).

Supporting Task Standards

The standard for supporting tasks obtained from observations of nurses in the Emergency Department is 1.02, consisting of two components of supporting task descriptions. In accordance with the ABK-Kes method based on Minister of Health Regulation Number 33 of 2015, supporting task standards are tasks or activities carried out to support the completion of work, both

directly and indirectly related to the main task. Determining these supporting task standards will reduce available working time, which could actually increase the number of personnel needed (Hasrawati et al., 2020).

Emergency Room Nurse Needs

Based on the calculation results of the number of nurses needed in the Teuku Umar Emergency Department using the ABK-Kes method, it shows that the Emergency Department requires 17 nurses. This number is the result of an analysis process involving available working hours, total main activities carried out by nurses, time norms per activity, and supporting task factors. This analysis refers to the Minister of Health Regulation Number 33 of 2015 concerning Guidelines for the Preparation of Health Human Resource Needs Planning, which states that the use of the ABK-Kes method is to obtain realistic HR needs that are in accordance with the tasks and functions in each service unit.

Based on the data, the number of nurses currently working in the Emergency Room of Teuku Umar Aceh Jaya Regional Hospital is 21 people, while the calculation of needs based on the ABK-Kes method shows that only 17 people are needed. Thus, there is an excess of 4 nurses. The difference in numbers may be caused by differences in calculations used by the hospital and the calculation method used by researchers from the results of interviews conducted. In line with research conducted by Noor et al., (2023), the analysis of calculations using the ABK-Kes method will be able to provide an overview of the shortages and excesses of available health workers.

This excess indicates that quantitatively, the ER has sufficient staff, even exceeding the ideal workload requirement. However, this finding does not necessarily indicate that the system is operating efficiently. In the context of a regional hospital, this excess can be interpreted as a precautionary measure to address absenteeism, leave, or other urgent needs, as evidenced by interviews with five informants. Nevertheless, the difference obtained from this calculation can provide a basis for management to evaluate and review if an imbalance in nursing staff is found between units, as calculated based on workload analysis (Ishak et al., 2024).

Availability of Number of Nursing Staff in the Emergency Room

Calculating nursing staff needs using the ABK-Kes method in hospitals provides an objective picture of the number of staff needed in each service unit. This method is recommended because it can identify the need for Human Health Resources (HRH) based on workload, resulting in more efficient and targeted staffing planning. However, the results of applying the ABK-Kes method do not always indicate a staffing shortage. Research by Marsim et al. (2025) found that some hospital units actually experienced a surplus of nursing staff after the calculation, while others still experienced a shortage, indicating the need for a more proportional staffing arrangement between service units.

Determining the need for nursing staff in hospitals is a dynamic process that evolves in response to changes in national regulations. In practice, various methods have been used, ranging from the Gillies method, WISN, to the ABK-Kes method in accordance with Minister of Health Regulation Number 33 of 2015. Amelia (2025) explains that the Gillies method, which is based on the patient's level of dependency and hours of care per day, has now been largely replaced by the more comprehensive ABK-Kes approach. The ABK-Kes method assesses staff needs based on core activities, supporting activities, available working hours, and workload standards, resulting in more objective calculations that are in line with field conditions.

The ABK-Kes approach also has strategic value in HRH planning because it not only calculates the number of personnel quantitatively but also considers the types and qualifications of healthcare workers in accordance with national service standards. Thus, this method supports government policy in creating an effective, efficient, and equitable healthcare system at various levels of healthcare facilities. Furthermore, implementing this method helps hospitals align workforce needs with the dynamic characteristics of services, such as in the Emergency Department (ER).

Meeting the need for nursing staff in the emergency department of Teuku Umar Regional Hospital, Aceh Jaya, still faces challenges, particularly in terms of competency and career progression. Emergency department nurses must possess the skills of rapid response, diagnostics, therapeutic interventions, and management in rapidly changing conditions (Lam et al., 2020). Knowledge and work experience influence nurses' clinical decision-making abilities (Brata et al., 2023). Nurses with

specialized training, such as BTCLS, have demonstrated superior performance in emergency patient care (Supriyatno et al., 2021), making experience and competency key factors in the effectiveness of emergency department services.

Research results show that some nurses in the emergency department at Teuku Umar Regional Hospital do not yet have emergency training certificates, even though such certification is a key indicator of the Emergency Department's Key Performance Indicator (KPI). Training and certification, such as BTCLS or ATCN, play a crucial role in improving service effectiveness and ensuring patient safety. Therefore, improving competency through training is a top priority for hospital management to ensure the quality of emergency nursing services is maintained (Supriyatno et al., 2021).

Excess staffing in certain units is the basis for hospital management to implement a staff redistribution policy. This measure aims to ensure a more equitable distribution of human resources and appropriate workloads for each unit, while also avoiding waste and inefficiency. Based on the policy of Teuku Umar Aceh Jaya Regional Hospital, a 10% increase in total staffing requirements is implemented to anticipate extraordinary conditions such as disasters and surges in patients. This policy aligns with Article 12 of Law Number 17 of 2023 concerning Health, which mandates regional governments to plan and meet the needs of healthcare workers based on the needs of their communities and regions in accordance with statutory provisions.

Conclusion

The ABK-Kes method is effective in determining nursing staff needs based on the actual workload in the Emergency Department of Teuku Umar Aceh Jaya Regional Hospital. With an ideal requirement of 17 nurses and an actual requirement of 21, the Emergency Department is considered to have four excess staff, which can be optimized through inter-unit redistribution. However, competency and emergency certification aspects still need to be strengthened to ensure optimal emergency services. Continuous implementation of ABK-Kes is recommended to improve efficiency and accuracy of human resource planning, and support the quality of nursing services in accordance with national standards.

References

1. Amanda, A. P., Faridz, H., Kiswanto, M., & Iswanto, A. (2024). Implementation of Lean Hospital in Improving Emergency Services in Hospitals: Literature Review. *JK: Jurnal Kesehatan*, *2*(6), 393–403.
2. Amelia, F. (2025). *Analysis of the Calculation of Outpatient Coding Staff Needs Using the ABK-Kes Method at Dr. Kariadi General Hospital, Semarang*.
3. Brata, B. S., Handoko S, G., & Yunita, R. (2023). The Relationship between Competence and the Performance of Emergency Room Nurses (IGD) in Implementing Triage. *Jurnal Ilmu Kesehatan*, *2*(10), 191–201. https://journal-mandiracendikia.com/jikmc
4. Bustamin, F. (2022). *The Influence of Service Quality on Patient Loyalty and Satisfaction Levels at Dental and Oral Hospitals in Makassar City During the Covid-19 Pandemic*. Universitas Hasanuddin.
5. Fajri, N. (2020). *Analysis of Nursing Personnel Needs Based on Workload Using the Workload Indicator Staff Need (WISN) Method in the Emergency Department (IGD) of the Aceh Province Women and Children's Hospital*. Universitas Syiah Kuala.
6. Faysal, K., Rivai, F., & Suriah. (2018). Performance Measurement Using the Balanced Scorecard Approach in the Emergency Room of Dr. M. Haulussy Ambon Regional Hospital. *Molucca Medica*, *11*(1), 50–60.
7. Hasrawati, Ahmad, L. O., & Hartoyo, A. M. (2020). Analysis of Nursing Needs Based on Workload Using the Health Workload Analysis Method (ABK Kes) at the Inpatient Installation of Aliyah Hospital, Kendari City in 2020. *Jurnal Administrasi Dan Kebijakan Kesehatan*, *1*(3), 27–37.
8. Ishak, L. O., Kadang, Y., & Yartin, S. (2024). Evaluation of the Implementation of Nursing Management Related to Nursing Human Resource Planning at Banggai Regional Hospital. *Jurnal Ners*, *8*(1), 859–868. http://journal.universitaspahlawan.ac.id/index.php/ners
9. Kemenkes. (2022). *Dokumen Target Rasio Tenaga Kesehatan*. Kementrian Kesehatan Republik Indonesia.
10. Lam, S. K. K., Kwong, E. W. Y., Hung, M. S. Y., & Chien, W. (2020). Investigating the Strategies Adopted by Emergency Nurses to Address Uncertainty and Change in the Event of Emerging Infectious Diseases: A Grounded Theory Study. *International Journal of Environmental Research and Public Health*, *17*(7), 2490.
11. Marsim, E., Setiawan, S., Dwiyovita, R., Bahri, Y. L.,

Latifah, M., & Annisa, S. (2025). Efficiency of Inpatient Bed Management Based on the Barber Johnson Chart at X Hospital, Lampung. *J-REMI: Jurnal Rekam Medik Dan Informasi Kesehatan*, *6*(4), 287–295.

12. Merliyanti, R., Meilando, R., & Agustiani, S. (2024). Factors Associated with Family Anxiety in The Emergency Room. *Jurnal Penelitian Perawat Profesional*, *6*(1), 227–236. http://jurnal.globalhealthsciencegroup.com/index.php/JPPP
13. Noor, H. L., Qomariyah, S. N., & Nugraheni, S. W. (2023). Analysis of Manpower Needs in the Hospital Reporting Section Using the Health Workload Analysis Method (ABK-Kes). *Jurnal Ilmiah Rekam Medis dan Informatika kesehatan*, *13*(1), 35–39.
14. Permenkes Nomor 33. (2015). *Regulation of the Minister of Health Number 33 of 2015 concerning Guidelines for the Preparation of Health Human Resource Needs Planning*.
15. Putri, R., Halimuddin, & Irfanita, N. (2023). Overcrowded at the Emergency Room of Dr. Zainoel Abidin Regional General Hospital. *Jurnal Ilmu Keperawatan*, *11*(1), 43–53.
16. Rahimi, H., Bahmaei, J., Shojaei, P., Kavosi, Z., & Khavasi, M. (2018). Developing a strategy map to improve public hospitals performance with balanced scorecard and dematel approach. *Shiraz E Medical Journal*, *19*(7). https://doi.org/10.5812/semj.64056
17. Raziansyah, Pertiwi, M. R., Ifansyah, M. N., & Hasaini, A. (2021). *Hospital Human Resource Management*. Nasya Expanding.
18. Shen, J., Guo, Y., Chen, X., Tong, L., Lei, G., & Zhang, X. (2022). Male Nurses' Work Performance: A Cross Sectional Study. *Medicine (United States)*, *101*(31), 1–6. https://doi.org/10.1097/MD.0000000000029977
19. Siburian, A. S., Ratri, D. R., & Sertyowati, E. (2024). Analysis of the Availability of Nursing Staff in the Outpatient Installation of Brawijaya University Hospital. *Jurnal Administrasi Publik*, *7*(4), 148–155.
20. Supriyatno, H., Prahmawati, P., & Benitius, P. A. (2021). PPGD Training on Nurse Performance in the Emergency Room and Intensive Care Unit of Ahmad Yani Metro Regional General Hospital. *Jurnal Ilmiah Keperawatan Imelda*, *7*(1). http://jurnal.uimedan.ac.id/index.php/JURNALKEPERAWATAN
21. Tuasikal, H. (2020). The Relationship between Experience, Workload, and Nurses' Ability with Independent Actions in Hospitals. *Journal of Healthcare Technology and Medicine*, *6*(1), 515–528.
22. Yulliswandi, D. (2021). *Analysis of Nursing Personnel Needs Using the Workload Indicator Staff Need (WISN) Method in the Emergency Room (IGD) of Datu Beru Hospital, Central Aceh*. Institut Kesehatan Helvia.