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Research Article

Analysis of Nurses' Workload in the Inpatient Installation Using the Workload Indicator of Staffing Need (WISN) Method at Pekerja General Hospital, North Jakarta

Eka Riadi[1*], Eddy Hermawan Hasudungan[2], Nurmansyah[3], Bambang Nurakhim[4], Aidah Hami[5]

[1-5] Universitas Mitra Bangsa, Indonesia, e-mail : ekariadi22@gmail.com
* Corresponding Author : Eka Riadi

Abstract: This study aims to analyze the workload of nurses in the inpatient installation at Pekerja General Hospital, North Jakarta, using the Workload Indicator of Staffing Need (WISN) method. The main objective is to assess whether the number of implementing nurses aligns with the standards set by the Indonesian Ministry of Health Regulation No. 340/MENKES/PER/III/2010 and to provide input regarding the ideal staffing needs for nursing services. This research applies a descriptive quantitative approach with bivariate analysis. The study sample consisted of 68 respondents, encompassing all nurses in the inpatient unit, using probability sampling techniques. Data collection was conducted through work sampling techniques and calculations based on the WISN method. The findings indicate that out of 117 beds, the Bed Occupancy Rate (BOR) ranges from 72.6% to 82.6%, which remains within the normal limit (maximum BOR >85%). The majority of respondents were female (85.2%) and had over one year of working experience. Based on the workload calculation using the WISN method, the hospital is still short of two nurses to meet optimal service requirements. The shortage of nursing staff, although small, has the potential to impact the quality of care, nurse performance, and patient satisfaction. This situation highlights the importance of accurate workload assessment and proper human resource allocation in hospital settings. Nurse managers and hospital administrators are encouraged to use the WISN method regularly as a decision-making tool for staffing adjustments. This study suggests that future research should incorporate additional variables, such as nurse satisfaction, patient acuity levels, and turnover rates, to obtain a more comprehensive understanding of staffing needs. The findings are expected to contribute to nursing human resource planning and management, especially in optimizing nurse-to-patient ratios for better healthcare delivery outcomes.

Keywords: Human Resource Planning; Inpatient Nurses; Staffing Needs; WISN Method; Workload.

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1. Introduction

Hospitals serve as multifunctional institutions that provide complex services, including healthcare, education, and research. These institutions are expert- and capital-intensive, requiring professional management in both medical and health administration, guided by standard operating procedures and a high level of discipline. Both medical and administrative fields must have benchmarks for improving service quality at various levels, such as achieving accreditation from intermediate to full status, to ensure professional performance (Alfiansyah et al., 2020).

According to Law No. 44 of 2009 on Hospitals, a hospital is a health service institution that provides inpatient, outpatient, and emergency services in a comprehensive manner, either individually or in teams, following established procedures (Ministry of Health RI, 2019). Therefore, consumer perception of service quality is vital after receiving services from hospital staff. High-quality service must be perceived positively by patients, which drives hospitals to compete in providing the best possible services and facilities. Patients tend to choose hospitals that deliver high-quality care (Assauri, 2008).

Service delivery depends significantly on human resources aiming to provide optimal quality. However, excessive workloads without proportional staffing may lead to reduced performance. Increased workload can result in staff burnout, stress, job dissatisfaction, or even prolonged handovers, which compromise service quality. Fatigue among nurses may lead to errors in care delivery and negatively affect patient outcomes (Tappen, 2016).

The inpatient unit plays a critical role in hospitals, as most hospital revenue is derived from inpatient and surgical services (Rinjani & Triyanti, 2016). Thus, improvements in inpatient care significantly affect overall hospital performance and patient satisfaction. Efficiency, one of the key indicators of hospital performance, is often evaluated using inpatient indicators such as Bed Occupancy Rate (BOR), Length of Stay (LOS), Turnover Interval (TOI), and Bed Turnover (BTO). According to Barber Johnson, the ideal values are: BOR 75–85%, LOS 3–12 days, TOI 1–3 days, and BTO 30 times per period (Prasetyorini, 2018).

Nurses are considered the frontline in delivering services, especially in inpatient wards. Therefore, analyzing their workload, particularly in terms of staffing, is essential. Among various staffing calculation methods such as Nina, Need, Demand, and BOR-based formulas, this study uses the Workload Indicator of Staffing Need (WISN) method. This method is applied within the same institution where the researcher is employed, allowing easier data collection and observation while maintaining efficiency in time and resources. One indicator of excessive workload at Pekerja General Hospital is the imbalance between the number of nurses and beds. The current workforce only fulfills 85% of the ideal requirement. According to Ministry of Health standards for inpatient, outpatient, and emergency services, staffing should correspond to workload. This research thus aims to calculate workload and determine nursing needs using the WISN method.

The study also aligns with national guidelines for HRH (Human Resources for Health) planning at provincial, district/city, and hospital levels, where WISN is recommended as the most appropriate and endorsed method. This planning tool is vital for unit managers to design both short-term and long-term programs that align with institutional vision, mission, and goals.

The research problem formulation is based on the shortage of implementing nurses according to Permenkes 340/MENKES/PER/III/2010, aiming to determine the appropriate number of nurses using work sampling techniques. Each unit is also required to develop annual work plans for evaluation purposes (Ministry of Health, 2010).

Hence, the research is conducted to analyze the workload of nurses in the inpatient installation of Pekerja General Hospital in North Jakarta using the WISN method.

2. Theoretical Review

According to Ministry of Health Regulation No. 3 of 2023, a hospital is a health facility that provides individual health services including promotive, preventive, curative, and rehabilitative care, covering inpatient, outpatient, and emergency services. As a healthcare institution, hospitals must deliver quality services, ensure patient safety, and be accountable, especially within their service areas. They are expected to provide specialized and sub-specialized medical care with adequate infrastructure, from patient admission to discharge. To ensure patient satisfaction, human resource planning and staffing must be effective and efficient.

A comprehensive healthcare system includes promotive (health improvement), preventive (prevention), curative (treatment), and rehabilitative (recovery) services. Human resource needs analysis is crucial for developing effective training and staffing programs. This process involves identifying the competencies—skills, knowledge, and critical attitudes—required in each role, using interviews, observations, or other qualitative methods (Masulah & Agustina, 2021).

According to Mahawati et al. (2023), workload refers to tasks that must be completed by an individual or organizational unit within a specific timeframe. The delegation of tasks should align with the employee's capabilities; otherwise, unresolved workloads may lead to ongoing problems and hinder performance. Kusumawati & Istiqomahi (2021) add that when an employee cannot complete their assigned tasks, these tasks accumulate and become a burden, affecting mental, physical, or social wellbeing. Iqra & Tahir (2020) define workload as an effort driven by urgent job demands. Workload encompasses all physical and mental tasks assigned to workers. If these demands exceed individual capacity, they can result in significant stress and performance decline (Mahawati et al., 2021).

A nurse is a professional authorized to provide nursing care at various service levels. According to Suprapto et al. (2021), a nurse must possess knowledge, skills, attitudes, and authority to provide care within their scope of practice. The term "nurse" originates from the Latin word nutrix, meaning to care or nurture.

2.1. WISN METHOD (Workload Indicator of Staffing Need)

WISN is a method to calculate the required number of health workers based on actual workload across job categories and units. It is favored for being user-friendly, comprehensive, and realistic. The WISN calculation involves:

a. Determining available working time
b. Defining work units and HR categories
c. Establishing allowance standards
d. Calculating staffing needs

Available Working Time Formula: Available Working Time = A − (B + C + D + E) × F Where:

A = Total working days
B = National holidays
C = Annual leave
D = Absenteeism
E = Training/Education days
F = Daily working hours

The total available time is adjusted before adding specific allowance standards per HR category

3. Research Methods

This research was conducted in the Inpatient Installation located on the 4th, 5th, 6th, and 7th floors of Pekerja General Hospital. Data analysis in this study used two approaches: univariate and bivariate analysis, detailed as follows:

a) Univariate Analysis: This type of analysis focuses on a single variable. Using a descriptive approach, it applies descriptive statistics to reveal basic information about each variable. These statistical results serve as a foundation for further analysis (Siyoto & Sodik, 2015). In this study, the descriptive focus is on the mean of each variable being examined.
b) Bivariate Analysis: This analysis aims to explore the relationship between two variables. In this study, the independent variable is the WISN Method, and the dependent variable is Nurse Workload. The relevant statistical test used is the Chi-square test. Chi-square is used to examine the difference between observed and expected data and to assess whether the data follows a normal distribution. According to Sugiyono, inferential analysis refers to statistical techniques used to analyze data samples and apply the results to the population, thus fulfilling the sample criteria using Slovin's formula. Data obtained through research instruments were processed and analyzed using SPSS software to answer research questions and validate findings through hypothesis testing.

3.1. Descriptive Data Analysis Test

Descriptive data analysis provides an overview of the data distribution for each research variable within specific categories. In this study, descriptive analysis includes calculating the mean, median, standard deviation, variance, range, as well as minimum and maximum scores. Score distributions for each variable are arranged in frequency distribution tables and visualized using histograms. The resulting scores are grouped into three categories: high, moderate, and low. In addition, validity and reliability tests were conducted.

3.2. Normality Test

The normality test was conducted to determine whether the distribution of the independent variable (Nurse Workload) and the dependent variable (WISN Method) is normally distributed. This test is important because correlation analysis requires that the variables being studied be normally or approximately normally distributed. According to Sugiyono (2019:226), "In statistical analysis, sample distribution must tend toward normal distribution." The Chi-square (X^2) formula used for testing is as follows:

- X^2 = Chi-square

- fo = Observed frequency
- fh = Expected frequency

The calculated Chi-square value is then compared with the table value at a degree of freedom (df) = k − 1 and significance level α = 5%. Data distribution is considered normal if X^2 calculated < X^2 table, meaning the observed values do not significantly deviate from the expected frequencies.

3.3. Type and Technique of Data Collection

This research is a quantitative study focusing on the calculation of nurse workload in inpatient rooms, conducted from January 12 to February 2025 at Pekerja General Hospital. The research adopts both quantitative and qualitative approaches to calculate the number of inpatient nurses. Quantitative research aims to solve a problem by describing conditions, objects/subjects, and actual circumstances as they are at the time of the study.

Data were collected by distributing Google Form questionnaires to all inpatient nurses using a Likert scale. Additionally, several nurses were randomly interviewed while on duty in the inpatient unit using random sampling. The quantitative aspect of the study includes analyzing nurse workload through responses collected via Google Forms from nurses across morning, afternoon, evening, and off-duty shifts. These nurses were stationed in the following inpatient wards:

1. 4th Floor: Obstetrics and Internal Medicine
2. 5th Floor: Pediatrics
3. 6th Floor: Adult Care
4. 7th Floor: Isolation Ward

The research was conducted in North Jakarta, specifically on Jalan Tipar Cakung, Sukapura sub-district, at the border of East Jakarta and North Jakarta, designated at Pekerja General Hospital. The study period was from January 12 to February 2025.

4. Results and Discussion

Pekerja General Hospital was inaugurated in 2014 by the sixth President of the Republic of Indonesia, Mr. Susilo Bambang Yudhoyono (SBY). In 2019, it became a subsidiary of PT Kawasan Berikat Nusantara (KBN) under the name PT KBN Graha Medika. The hospital employs 322 personnel, including 33 specialist doctors, 140 nurses, 46 health workers, and 70 general staff. It is a Type C non-educational hospital located in North Jakarta and received paripurna accreditation status in December 2024. The hospital has been providing health services for more than nine years.

Patient visits have increased steadily since 2019, when the hospital was managed by Pelni Hospital. By 2024, the facility was independently operating and experienced significant growth in 2023. Outpatient visits rose by 24.3%, from an average of 3,495 in 2022 to 8,508 in 2023. Inpatient admissions also increased by 16.0%, from 676 (2022) to 1,084 (2023), including a rise in executive Tulip clinic admissions from 155 to 180. Emergency department visits also rose significantly by 15.9% in 2023.

Based on validity and reliability testing using SPSS version 20, the Cronbach's Alpha value for 33 items with 68 nurse respondents was 0.893, indicating strong reliability.

Pekerja General Hospital has eight floors. The first floor houses the Emergency Unit and Registration, beauty clinics, and radiology services. The second floor contains specialist polyclinics, a pharmacy, and laboratories. The third floor includes operating rooms, ICU, Perinatology, and NICU. The fourth floor is for Melati and Obstetrics care; the fifth for Anggrek Pediatrics; the sixth for Edelweiss adult care; and the seventh for Sakura Isolation Ward.

Researchers analyzed staffing in Melati, Anggrek, Edelweiss, and Sakura rooms. Each shift (morning, afternoon, night) includes 3 nurses; plus 3 nurses off duty and 1 head nurse, totaling 13 nurses per unit. Across five units, this sums to 65 nurses, with 3 additional staff, bringing the total to 68 nurses. These units collectively maintain 100% bed occupancy in their designated rooms.

From January 18 to January 27, 2025, the average Bed Occupancy Rate (BOR) ranged between 72% and 83%. According to international Barber Johnson standards, the ideal BOR is 75–85%, Length of Stay (LOS) is 3–12 days, Turnover Interval (TOI) is 1–3 days, and Bed Turnover (BTO) is 30 times per period (Prasetyorini, 2018). The measured BOR, TOI (3 days), and LOS (3 days) were all within normal limits.

The goal of this assessment is to establish available working time for inpatient nurses at Pekerja General Hospital over one year. The data used for determining available working time include:

1. Working Days (A): 300 days/year (6 days/week × 50 weeks)
2. Annual Leave (B): 12 days/year
3. Education and Training (C): 3 days/year
4. Public Holidays (D): 20 days/year (based on government decree)
5. Absenteeism (E): 5 days/year
6. Working Hours per Day (F): 8 hours/day

Calculation of Available Working Time: Available Working Time = {A − (B + C + D + E)} × F = {300 − (12 + 3 + 20 + 5)} × 8 = 260 × 8 = 2,080 hours/year = 124,800 minutes/year.

Determining Work Units and HR Categories: The goal is to identify appropriate work units and HR categories accountable for delivering health services to patients, families, and the community inside and outside the hospital. Hospital organizational structure, staffing data, professional standards, service standards, and standard operating procedures (SOPs) are essential in defining units and HR categories.

Work Unit	Sub-Unit	HR Category
Inpatient Installation	Emergency Section	Nursing Staff
	Nursing Section	Nurses
	Observation Section	Nurses

The workload calculation in this study is limited to the Inpatient Installation Unit of Pekerja General Hospital in North Jakarta, particularly for nursing services and patient observation (including critical patients).

5. Conclusion

This study concludes that the workload of nurses in the Inpatient Installation of Pekerja General Hospital is relatively high, supported by the consistent increase in patient visits across outpatient, inpatient, and emergency units. Despite these increases, the Bed Occupancy Rate (BOR), Length of Stay (LOS), and Turnover Interval (TOI) remained within the normal range according to international standards, indicating efficient utilization of hospital beds.

The total number of nurses, which stands at 68, serves five major inpatient units operating 24/7 with consistent shift coverage. The workload measurement using the WISN method reveals that nurse allocation must be re-evaluated to ensure balanced workload distribution and to avoid fatigue, errors, or declining quality of patient care. The calculated available working time of 2,080 hours or 124,800 minutes per year per nurse serves as a foundational metric in workload analysis. The WISN-based approach provides a data-driven framework for accurately estimating staffing needs.

To improve hospital performance and maintain accreditation standards, it is imperative that hospital management regularly reviews staffing adequacy in alignment with patient demand and professional standards. The results of this study can guide human resource planning, staffing policy development, and future workload assessments to optimize nursing services and enhance patient care quality.

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