JOURNAL LA MEDIHEALTICO

VOL. 06, ISSUE 04 (981-995), 2025
DOI: 10.37899/journallamedihealtico.v6i4.2248

Analysis of Workload and Needs for Nursing Staff at the Inpatient Installation of M.Zein Painan Regional Hospital

Dona Hamrita[1], Firdawati[1], Yulastri Arif[1]

[1]*Andalas University, Indonesia*

**Corresponding Author: Dona Hamrita*
E-mail: hamritadona@gmail.com

Article Info

Article history:
Received 22 May 2025
Received in revised form 17 Juny 2025
Accepted 12 August 2025

Keywords:
Workload Analysis
Nursing Staff Needs
Ilyas Method

Abstract

The nursing staff at M. Zein Painan Regional Hospital is experiencing an excess number of nurses which has a major impact on the hospital. Causing an increase in the burden of expenses and not having a function and maximum in improving the quality of service at the Hospital. The purpose of this study was to calculate the workload with the work sampling formula and calculate the need for nursing staff with the Ilyas method. This study was conducted starting in August 2024 using the mixed-methods method. The results of qualitative research showed that the nursing workload method system in the inpatient installation of M.Zein Painan Regional Hospital was not structured and the workload given to nurses did not match the number of nurses available. This is reinforced by the results of quantitative research on each inpatient installation at M.Zein Painan Regional Hospital with the Work Sampling method, the nurse's workload was relatively light. The number of nurses with the Ilyas Method found an excess of 43 nurses. The Hospital can carry out employee efficiency and effectiveness at M.Zein Painan Regional Hospital. It is hoped that this research can be the basis for a method for calculating the need for nursing staff at Class C Regional Hospitals.

Introduction

HR planning in Hospitals is very important in the sustainability of an organization to answer future challenges related to Hospital performance, quality and productivity. According to Ilyas (2017), the definition of HR planning is the process of estimating the number of HR needed to run health services based on position, skills, and behavior. The problem of health workers that occurs in Indonesia is the number of workers who are still lacking, and the workload is not appropriate. The results of a study conducted by the Australian Graduate School of Management on 541 organizations found that only 37% of institutions had an HR planning system based on scientific analysis and 41% did not have a good HR planning system, and the remaining 22% did not have HR planning at all. This kind of HR planning policy ultimately has an effect on the low performance of hospital quality and productivity (Yulia, 2016; Abdulkareem & Adekunle, 2025; Saeed et al., 2025).

Many hospital organizations complain about the heavy workload of employees, especially nursing staff. According to research conducted by Kim De Groot (2022), the majority of community nurses feel a high workload due to documentation activities. Likewise, research from Iqra and Tahir in 2020 reported that there was a significant difference in the workload of nurses between Classes I, II and III, where the heaviest workload was in Class III. So it is necessary to conduct an analysis of the need for nursing staff.

ISSN 2721-1215 (Print), ISSN 2721-1231 (Online)

The function and workload of health services to patients are the basis for planning the needs of Nursing Human Resources. In analyzing the workload, it is necessary to observe the workload that can be completed with the right resources and time (Ilyas, 2017; Rudolph et al., 2025; Kumar et al., 2025). This method can calculate personal workload quickly and with a high level of accuracy so as to produce reliable information for management decision making. Calculating the workload of a nurse is not an easy job. Several approaches are taken such as: technical work sampling, time and motion study and daily log. The approaches above are scientifically accountable (Ilyas, 2017; Lall, 2025; Apooyin, 2025). All of these methods can be used to calculate the workload of nurses.

The workload analysis approach is carried out with two approaches. First, if the purpose of the workload analysis is to determine remuneration among organizational structures, then the workload is carried out at the individual level (Susilowati, 2020; Mayasari & Gustomo, 2014; Qureshi et al., 2013). Second, if the goal is to calculate the number of human resources needed by a unit in the Hospital, then we can calculate the workload of the unit and provide convenience for calculating the human resources of the unit or Hospital. The purpose of conducting a workload analysis is to plan HR needs in the appropriate amount in order to achieve HR efficiency and effectiveness. So that it can determine the rational basis of the compensation structure based on the workload of each position and the workload analysis is also used to plan HR needs in an accurate amount in order to achieve personnel cost efficiency (Ilyas, 2024; Yunanto et al., 2025; Salsabila et al., 2025).

Many nursing staff needs analysis have been made by experts such as the WISN, DEPKES/PPNI, Gillies and Ilyas methods. Each method has its own advantages and disadvantages. The WISN and PPNI methods are greater than the Gillies and Ilyas calculations. The calculation results with the Ilyas Formula are an alternative to the Gillies and PPNI Formulas where the Gillies Formula gets smaller results so that the nurse burden is high, while the PPNI Formula produces a large number of nurses which is considered to burden the hospital from a financial aspect, the Ilyas Formula is identical to the Gillies and PPNI Formulas which use the average nursing hours per 24 hours, based on the patient's level of dependency. (Wildiani, 2023; Nuraeni, 2025; Nuraeni, 2025; Pirwani, 2024).

The advantage of the Ilyas method is that it carries work productivity using a demand approach by calculating the workload based on demand to produce units of products or services per time needed. Using analytical engineering methods, this method is a scientific method using careful measurement of business transaction time indicators through direct observation to analyze employee workload. (Ilyas, 2024; Daga & Samad, 2025; Febriana et al., 2025).

Ariani and Ilyas's research in (2020) at Cengkareng Regional Hospital reported that the nursing time for isolation room nurses was 3.5 hours, so an increase in the number of personnel in the room was needed. The calculation of the amount of workload according to Ilyas depends on the determination of nursing time. In general, nurses are the largest proportion of staff in a hospital, estimated at 60-75% depending on the number of beds available. The dominance of the number of nurses has resulted in a number of researchers conducting research to be able to calculate inpatient nursing staff with a special formula. Dr. Muhammad Zein Painan Regional General Hospital is a Type C Hospital that has 200 beds. In addition to functioning as a referral hospital, the Regional General Hospital is also a teaching hospital. The total number of employees is 715 people, the number of health workers is 543 people (75.9%), with the number of nurses 295 people (41.2%). The inappropriate workload on nurses in the inpatient installation of M. Zein Regional Hospital makes the nursing staff ineffective in working because the number of nurses is excessive or overloaded and also has a major impact on the hospital by increasing financial expenditure to provide salaries to nurses who do not have maximum function and benefits in improving the quality of health services in the hospital (McCue et al., 2003; Yakusheva et al., 2024;

The problem of manpower does not only occur in other hospitals but also in Dr. M. Zein Painan Regional Hospital which has never done a more accurate workload analysis calculation. So that there is a mismatch between the number of nurses and the workload carried out. The legal basis for this workload analysis is the 2014 Law on State Civil Apparatus and Domestic Regulation Number 12 of 2008 concerning Workload Analysis where M. Zein Painan Regional Hospital is a Type C General Hospital owned by a Government Agency which should carry out Workload Analysis on all employees in the Hospital. (Ilyas, 2024; Puspandari et al., 2025; Aggasi et al., 2025).

RSUD until now still uses the workload assessment method based on the DEPKES/PPNI method, but many employees still complain about the lack of manpower and the hospital still complains that it is not enough. Therefore, it is necessary to calculate manpower with another method as a comparison to the existing method. Based on data obtained from Dr. M. Zein Regional Hospital, all officers in the Hospital are dominated by Nurses, which is around 54% of nurses compared to all health workers in the Hospital. From the observation results, there are 12 inpatient rooms with the number of nurses on duty in the inpatient rooms as many as 187 people (63.3%) of all nurses in the Hospital. The average BOR achievement of the Hospital is 59.8%.

BOR RSUD. M. Zein Painan is included in the category below the BOR standard for Type C Hospitals that have been set. Although the BOR of the Hospital is low, several interview results with the Head of the Class III Integrated Room complained about the lack of nursing staff with various reasons "there are several inpatient rooms that lack nursing staff" (Informant 1). "workload analysis has never been done before, the distribution of nursing staff in the room still uses the DEPKES method" (Informant 2).Based on data obtained from the number of visits and inpatient assessment indicators at RSUD. M. Zein Painan from 2016-2021 has decreased every year, especially in the Hospital BOR. Because the decrease in BOR affects the workload of nurses at RSUD. M. Zein Painan. From the LOS (Length Of Stay) data, the average patient is treated for 3-4 days, and this is still included in the Ideal LOS category of the Hospital. From the TOI (Turn Over Interval) data, the average of 3 days is still included in the Ideal TOI. However, from the results of the interview, nurses still complained about the lack of personnel (Kurnat et al., 2017; Alteren et al., 2021; Hafianti et al., 2022).

Based on the problems above, researchers are interested in researching and analyzing the workload in hospitals using the Ilyas approach method, because this calculation carries efficient work productivity and work effectiveness by considering rational needs, work conditions, work design and nurse competencies in hospitals.

Methods

This study uses a mix-methods research method or a combination of two forms of research methods from quantitative research approaches and qualitative research, with the aim of obtaining more comprehensive, valid, reliable and more objective research data. Both research methods are carried out simultaneously and none is superior to the other. According to Sarwono J (2011) mixed-methods research is research that uses more than one method in one or more research activities that use quantitative and qualitative approaches to obtain quantitative data and qualitative data used as empirical evidence in answering the formulation of research problems. (Pane, 2021; Tasci et al., 2025; Apriani et al., 2025; Esmaeili et al., 2025).

Population is a generalization area consisting of objects/subjects that have certain quantities and characteristics determined by researchers to be studied and then conclusions drawn (Sugiyono, 2020; Kurniawan et al., 2025; Yusnita et al., 2025; Gunawan et al., 2025). The population in this study were all inpatients at M. Zein Painan Hospital who were admitted for three months, namely from August to October 2024.method of data collection or research, sampling is the right sampling technique to determine what will be used in the study. In this

study, the researcher used a proportionate stratified random sampling technique with the aim of obtaining a representative sample by looking at the number of patients in each inpatient room of RSUD. M. Zein. Based on the number of samples of 49, each inpatient room has a proportional sample according to the population with 11,312 patients in all rooms, with a total of 11,312 patients, the proportion of samples taken was 49 patients. The sample criteria for this study were patients with minimal care, partial care, total care categories taken randomly from all patients treated in their respective rooms, by observing the nurses' activities towards the patients.

The data analysis technique in this quantitative study uses descriptive statistics. These statistics are used to analyze data by describing or depicting sample data that has been collected using the Ilyas method. After the data is collected, a workload analysis calculation is carried out on the suitability of the implementation of activities with nursing care. The workload calculation will then be used as input for calculating the need for implementing nurses at the Inpatient Installation of RSUD. Dr. M. Zein Painan.

Result and Discussion

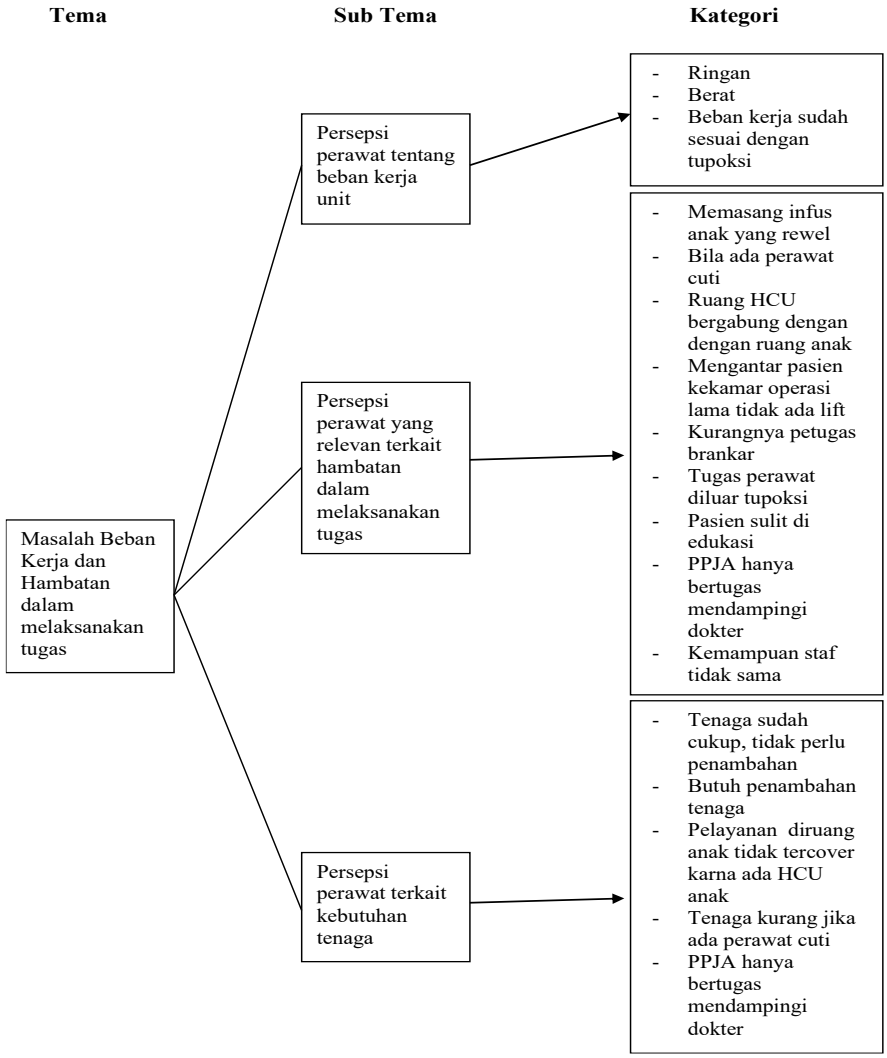

Figure 1. Theme of Workload Problems and Obstacles in Implementing

Task

The following presents a reduction from the results of in-depth interviews regarding the problem of workload and the number of nurses on duty at M.Zein Painan Regional Hospital:

Table 1. Reduction of In-depth Interview Results on Workload and Number of Nursing Staff at M.Zein Painan Inpatient Care

Topics	Answer	Conclusion
Nurses' perceptions of unit workload	1. The work done is not heavy (IFP 1, IFP 3, & IFK 6) 2. The work of nurses will feel a little heavy because the bed capacity is greater than the number of nursing staff (IFK 2) 3. The activities carried out will feel difficult if there are patients with extensive burns (IFK 4) 4. Work carried out in accordance with job descriptions (IFP 5, IFP 9, IFP 11, IFP 17, & IFK 18) 5. Activities in the Internet space can be carried out well (IFP 7) 6. The work of nurses feels heavy because the bed capacity is not balanced with the number of nurses (IFK 8) 7. Some of the work that is done feels heavy and some of it is not heavy (IFK 10, & IFK 16) 8. The work carried out by nurses in the Integrated Class II room is not burdensome (IFK 12) 9. Work is a bit burdensome because of the variety of patients (IFP 13 10. There is no burdensome work if the bed capacity is in accordance with the number of available workers (IFK 14) 11. The work is not hard because that is the nurse's job (IFP 15) 12. Activities carried out by nurses are not burdensome and are in accordance with their duties and functions (IFP 19) 13. Whether the work done by nurses is difficult or not depends on the type of work (IFK 20)	The nurse's workload is not considered heavy because the number of patients is not large, and the work is carried out according to the job description.
Relevant nurses' perceptions regarding barriers in carrying out tasks	1. Administering an IV to a child patient because the child is fussy (IFP 1) 2. If there is a nurse on leave, there will only be 1 implementing nurse (IFK 2, IFP 9 & IFK 16)	The most frequently performed nursing activities in the children's room are installing IVs, serving patients with extensive burns, redressing and taking patients to the OR takes a

	3. The Children's HCU room is still connected with children's care room (IFK 2) 4. Wound care and taking patients to the operating room takes a long time, because it is on the 3rd floor and there is no lift, and there is a shortage of stretcher personnel (IFP 3, IFP 11, IFK 12 & IFK 14) 5. There are duties of nurses outside of their main duties, namely help push the stretcher to escorting patients, cleaning bed, and taking AGD (IFK 6, IFP 13 & IFK 16) 6. Patients who are difficult to educate hinder the nurse's activities (IFP 7) 7. PPJA is only tasked with providing assistance Doctors so that work does not covered (IFK 10 & IFP 15) 8. Staff capabilities are not the same, they cannot master all service units, we are testing the primary nurse method, not the TEAM method (IF 21)	long time, evaluating the number of stretcher officers, adding lift facilities for officers, and reviewing the main nursing tasks, understanding how to educate patients effectively, it is necessary to improve nursing skills, and form better human resources.
Nurses' perceptions regarding the need for human resources	1. A total of 16 people is sufficient and no additional personnel are needed (IFP 1, IFK 4, IFP 5, IFK 6, IFP 11, IFK 12, IFP 15, IFP 19) 2. Need additional nursing staff (IFK 2, IFK 8, IFK 10, IFK 16, IFP 17, IFK 18) 3. With the number of nurses available services in the children's room are not covered because there is a children's HCU (IFK 2) 4. The number of nurses does not affect the service, because each nurse has already determined how many patients they must provide service to (IFP 3) 5. The number of nursing staff at Interne is lacking because some nurses are on leave (IFP 7) 6. Nursing staff is limited if someone is on leave (IFP 9) 7. The number of nursing staff currently available is not yet able to cover the work in the integrated Class III room (IFP 13)	The need for nursing staff will be sufficient if there are not too many patients, the PPJA task needs to be reviewed, the HCU room is in several Children's and Lung rooms.

	8. With only 17 nursing staff and 20 beds, the integrated Class III room is short of nursing staff (IFK 14) 9. With the current number of nurses, the number of nurses is still lacking because PPJA only focuses on accompanying doctors and there is total care in HCU (IFK 16) 10. The number of nursing staff is currently sufficient in the perinatology room (IFP 19) 11. With the current number of nurses, they can cover all the work in the perinatology room (IFK 20)	

The following is a triangulation matrix which is a reduction of the results of in-depth interviews regarding the problem of workload and the number of nurses on duty at M.Zein Paina Regional Hospital.

Table 2. Triangulation Matrix on Workload and Number of Nursing Staff in M.Zein Painan Inpatient Care M.Zein Painan Inpatient Care

Topics	Interview Results	Documents and observations	Triangulation Analysis
Nurses' perceptions of unit workload	The description of a nurse's job can be classified as heavy if the number of patients and beds is greater than the number of nursing staff, and the work is carried out according to the job description.	The workload is classified as light, the average productive activity of the entire room is 59.15% in the light category with a work sampling standard of <60%.	The workload is not considered heavy
Relevant nurses' perceptions regarding barriers in carrying out tasks	The most frequently performed nursing activities in the children's room are installing IVs, serving patients with extensive burns, redressing and taking patients to the OR takes a long time, evaluating the number of stretcher officers, adding lift facilities for officers, and reviewing the main nursing tasks, understanding how to educate patients effectively, it is necessary to improve	Review the patient transfer form when taking the patient to the operating room for approximately 15 minutes. The time to carry out redressing activities based on the nurse's logbook is approximately 15 minutes. From the hospital profile and observations, there are no lifts available yet.	Review the nursing method system and main nursing tasks, review the number of stretcher officers.

	nursing skills, and form better human resources.	The number of stretcher officers from the duty schedule is only 3 people per shift Not all nurse personnel files have certificates of expertise in special rooms	
Nurses' perceptions regarding the need for human resources	The need for nursing staff will be sufficient if there are not too many patients, the PPJA task needs to be reviewed, the HCU room is in several Children's and Lung rooms.	Data on the number of nursing staff and facilities from the hospital profile in 2023	Need to review the number of nursing staff

Based on table 5.5 above, it can be concluded that the workload is not considered heavy, it is necessary to review the nursing method system and the main nursing tasks and review the number of stretcher officers and the number of nursing staff at M. Zein Painan Regional Hospital.

Overview of Productive and Unproductive Activities

The results of the study showed that the average productive activities of nurses in the M.Zein Painan inpatient ward were below the productivity standard, namely less than 80% (59.15%) in the light category with a work sampling standard of less than 60%, in line with the research of Yeni Susilawati, et al. (2023) which stated that the proportion of direct and indirect activity time at the Bandung Kiwari Regional Hospital was still in a light workload, namely 66.6%, nurses need to increase productive activities by focusing on their main tasks and functions.

The highest productive activity in the inpatient room is in the Internal room, the longest direct productive activity time is in the Internal room with a time of 283.2 minutes (80.52%), the longest indirect productive activity is in the Obstetrics room with a time of 33.81 minutes (28.12%), the longest unproductive activity is in the NICU/Perinatology room with a time of 147 minutes (37.75%), and the longest personal activity is in the VIP/Integrated Class I room with a time of 141.2 minutes (59.93%).

The most direct productive activities in the Interne room were on the day shift at 202.3 minutes. The most frequent activity was providing injection therapy to patients with 13 activities (0.68%), because the DPJP doctor made a visit in the morning, while the longest direct productive activity was monitoring PRC transfusion patients for 90 minutes on the day shift (44.49%) and night (77.79%), while based on research by Ni Putu Retno Ariani and Yaslis Ilyas (2021) in the Covid-19 ICU room at Cingkareng Hospital, the most direct productive activities were carried out on the night shift at 5492 minutes.

The highest Indirect Productive Activities in the morning shift in the Obstetrics room were 98.9 minutes, the most frequent activities were nursing documentation activities for inpatient status 3 activities in the night shift, while the longest activity was preparing patients to go home or move rooms for 15 minutes (15.17%) in the morning shift. The highest nursing documentation activities in the Obstetrics room were because the Hospital had not implemented Electronic

Medical Records comprehensively, if the EMR was running optimally the documentation activities could be reduced.

In Kim De Groot's 2022 study, Ease of Use of Electronic Medical Records in Perceived Workload. Providing ease of use of electronic medical records for nursing documentation, improving intercommunication of different electronic systems by integrating clinical documentation into individual patient care are also recommended as measures to reduce the perceived workload of community nurses from documentation activities.

The highest unproductive activities and the lowest productive activities are in the VIP/Integrated Class I room, the highest unproductive activities in the morning shift are playing with cellphones and answering friends' calls with a total time of 16 minutes, the longest activity is playing with cellphones while the highest personal activities are also in the VIP/Integrated Class I room. The most common activity is eating where 2 activities (8.53%) are in the morning shift, while the longest activity is resting 120 minutes (91.46%) in the morning shift, afternoon shift (84.98%), and night shift (91.46%).

The highest personal activity in the VIP/Integrated Class I room is due to the small number of patients with an average of 5 patients per day from 12 beds in the VIP/Integrated Class I room, patients who are treated with the minimal care and partial care patient categories, while total care patients are treated in the Integrated HCU room.

The lowest productive activity is also found in the ICU room because the ICU room of RSUD M. Zein has not routinely used ventilators for the average patient treated in the ICU room, besides RSUD M. Zein being a Type C Hospital, there are still DPJP considerations to refer patients to a Hospital with more complete facilities, namely RSUP M. Djamil Padang. The condition of human resources in the ICU room also does not all have ICU training certificates, out of 18 nurses in the ICU room who have training certificates, only 4 nurses.

Direct productive activities in the ICU room are highest on the night shift, direct productive activities that require more time to mobilize patients (12.38%), help patients bathe and change patient sheets per day (10.31%), change diapers and clean up bowel movements (16.30%), perform EKG (10.31%). What distinguishes the ICU room from other rooms is that every vital sign and EKG result is observed and recorded on the intensive care room observation sheet every hour. According to the results of the interview with IF 5 "Because in this ICU there is a division of labor, and there is also PPJA so we are also divided into patients. So we carry out tasks according to the division of labor and the division of patients. so the work does not feel heavy because it is in accordance with the duties and functions and helps each other"

In a study conducted by Ika Fajarwati (2017) at Ciracas Regional Hospital, it was stated that personal activities (31.3%) in the Emergency Room of Ciracas Regional Hospital were greater than unproductive activities (13.5%) because at night, fewer patients came to the Emergency Room, so they did more personal activities, as well as unproductive activities such as chatting, watching TV, and looking at cell phones.

Analysis of Calculation of Number of Nursing Staff

Ilyas Formula

From the observation results of 10 inpatient rooms, the most excessive staff conditions with a ratio of 2.7 are in the Perinatology/NICU room, from the existing staff there are 16 nurses while the staff needed are only 6 nurses with an excess condition of 10 nurses. This condition is due to the nursing time of 4.4 hours, but the BOR condition in the Perinatology/NICU room is 29.10%, the BOR achievement condition in the room determines the number of nurses needed, because it is in accordance with the demand or request of clients to the Hospital. According to the results of the interview with (IF 20) "The condition of the number of patients has decreased

due to competition with Private Hospitals in terms of service, facilities and the implementation of free visiting hours for patients".

In the condition of the number of personnel in the Integrated Class III room from the results of the Ilyas Formula obtained, there was a shortage of 2 nurses with a ratio of 0.9 from the existing nursing staff of 18 nurses, from the need for personnel based on the Ilyas Formula of 20 nurses, with a nursing time of 4.5 hours. Because the BOR of the Integrated Class III room of 97.38% is categorized as high, and the average number of patients per day is 16 patients from 20 bed capacities. In accordance with the results of the interview with (IF 14) "With a bed capacity of 20 with only 18 nurses, the nursing staff is felt to be lacking because per shift only 2 nurses are on duty".

The shortage of nursing staff from the Ilyas Formula results also occurred in the Interne room, which based on the Ilyas Formula calculation, there was a shortage of 2 nurses with a ratio of 0.9 from the existing 13 nurses, while the need for staff based on the Ilyas Formula was 15 nurses, with a nursing time of 4.3 hours. BOR in the Interne room was 71.98% with an average of 12 patients per day from 16 bed capacities.

In the Ilyas method, it calculates and adjusts to the level of nurse productivity in the hospital, where research is conducted to find out nursing hours and the level of nurse productivity itself, so that the results of the calculation of manpower will be more accurate according to actual needs.

In a study conducted by Ni Putu Retno Ariani and Yaslis Ilyas (2021), the calculation results obtained were based on patient data as of December 2020, the number of patients treated in the ICU isolation room for Covid-19 patients was 251 people, while the nursing staff consisting of nurses from Cengkareng Hospital and volunteer nurses was 171 people. Based on these data, the workload analysis using the Ilyas method found that the nursing time for nurses in the ICU isolation room for Covid-19 patients was 3.5 hours, and the calculation of the need for nursing staff was 178 people. The addition of the number of nurses in the ICU inpatient isolation room at Cengkareng Hospital is still needed. Meanwhile, research conducted by researchers in the inpatient room of M.Zein Painan Hospital must reduce the number of nurses, because based on the calculation data, the number of nurses in each room that is hospitalized has an excess of nurses and needs to be reduced because the large number of nurses is considered to be a burden on the hospital from a financial aspect.

PPNI

Based on the calculation results of the number of nurses according to the PPNI Formula, the largest excess of nurses is in the Perinatology/NICU room, excess nurses are 7 nurses with a ratio of 1.8, from the total number of existing staff of 16 nurses, while the need for nurses based on the PPNI method is 9 people. This condition is with a nursing time of 5.6 hours, but the BOR of the Perinatology/NICU room is very low at 29.10%. There is also an excess of nurses in the Obstetrics room as many as 6 nurses with a ratio of 1.6, from the total number of existing staff of 16 people, while the need for staff is only 10 people. With a nursing time of 3.58 hours and a room BOR achievement of 49.03%.

Based on the calculation results of the number of nurses according to the PPNI Formula, the largest shortage of personnel was found in the Integrated Class III room, as many as 4 nurses with a ratio of 0.8, from the number of existing personnel of 18 people, while the need for personnel is 22 people. With a nursing time of 4.25 hours and a room BOR achievement of 97.38%. This condition is supported by the average number of patients per day of 16 people with a capacity of 20 beds, and the Integrated Class III room treats patients with a variety of patient diagnoses. In accordance with the results of the interview with (IF 13) "The work in the Integrated Class III room feels a little burdensome because of the diversity of patients, with the number of nurses currently unable to cover all the work".

One way to calculate the need for manpower based on workload is formulated by the Indonesian National Nurses Association (PPNI). This guideline for calculating the need for nursing staff has been adjusted to the conditions of hospitals in Indonesia. This calculation method is easy to operate, easy to use, technically acceptable, comprehensive, realistic and acceptable to both medical and non-medical managers. This PPNI method is based on the actual work results carried out by each nurse. However, it is certain that the number of nurses needed is at least 25% greater than the total number of nurses needed by the hospital (Sade, 2013:33).

The calculation based on the PPNI Formula uses several workload inputs such as the patient's treatment time per day for 24 treatments in the hospital, the number of beds (TT) in the hospital, BOR (Bed Occupancy Rate) the percentage of bed utilization taken through a daily census in the care unit, and the number of effective working days. So this method can better calculate the need for nursing staff without being general but involving elements of workload measurement (Sade, 2013:37).

Gillies

Based on the calculation results of the number of nurses according to the Gillies Formula from 10 observed rooms, the largest excess of nurses was found in the VIP/Integrated Class I room with an excess of 13 nurses and a ratio of 3.6, from the existing number of 18 nurses while the need for nurses based on the Gillies Formula is only 5 nurses. This condition with a nursing time of 3.8 with a BOR achievement of 59.45%, with an average of 5 patients per day from a capacity of 12 beds.

In the Gillies Formula, there is an excess in all observed rooms, compared to the calculation of the number of nurses between the Gillies Formula and PPNI, the PPNI calculation results are always greater while the Gillies Formula is always smaller because this formula assumes that all nurses in the United States work professionally with optimal productivity using sophisticated equipment and the number of holidays in America is smaller than in Indonesia (Ilyas, 2024:148). In line with the research of Wildani, Amelia and Hardi (2023) the results of the Ilyas Formula calculation are an alternative to the Gillies Formula and PPNI, Gillies gets small results so that the burden on nurses is high, PPNI produces the need for a large number of nurses burdening the hospital from a financial aspect.

Comparison of Ilyas, PPNI and Gillies Formula Nurse Calculations

Based on the calculation results above, there are differences in the number of nurses from 10 rooms in the inpatient room of M.Zein Painan Regional Hospital. In the calculation using the Ilyas method, 125 nurses were obtained, while the PPNI method obtained 148, and Gilies obtained 99 nurses. The total number of nurses currently available is 164 nurses.

The differences in the three results above are caused by Ilyas' formula in calculating the number of nurses is based on time, volume, and nurse workload. While Gillies uses the average number of nursing hours needed by patients per day, the number of patients per day, the number of days per year, the number of holidays per year, the number of nurses' working hours. Furthermore, the PPNI calculation result is multiplied by 125% because the productivity level assumed by nurses by PPNI is calculated at only 75%.

The number of results of the calculation of nursing staff using the PPNI Formula is greater when compared to the Gillies and Ilyas Formula, namely 148 nurses, while Gillies 99, and Ilyas 125 nurses.

Research Limitations

This study was conducted through 3 stages, the workload calculation stage, the calculation of nursing staff needs and the analysis of each calculation method. The limitation in this study is that the researcher did not see the characteristics of each nursing expertise and competence,

length of service, other aspects such as non-nursing administrative tasks in calculating the workload.

Conclusion

Based on the results of the study on the analysis of workload and the need for implementing nurses in the Inpatient Installation of M.Zein Painan Hospital in 2024, it can be concluded that: The workload of nurses using the Work Sampling Results method is in the light category. The highest productive activities and the lowest unproductive activities are in the internal inpatient room. The lowest productive activities and the highest unproductive activities are in the integrated VIP/Class I inpatient room. The need for nurses in the PPNI calculation is greater than Ilyas and Gillies, the calculation results using the Ilyas method are an alternative choice because the results are more relevant to the conditions needed by the Hospital. The workload problem encountered is the workload of nurses which is relatively light with an excess number of nurses. obstacles encountered in carrying out tasks are the lack of stretcher officers and lift facilities that are not yet available at M.Zein Painan Hospital as well as reviewing human resources and nursing methods.

References

Abdulkareem, F. O., & Adekunle, O. B. (2025). Effect of Strategic Human Resource Management Practices on Human Capital Flight in Selected Hospitals in the Federal Capital Territory, Abuja. *African Journal of Management and Business Research*, *19*(1), 334-356. https://doi.org/10.62154/ajmbr.2025.019.01026

Aggasi, V. R. P., Sumartik, S., & Ubaidillah, H. (2025). The Effect Of Employee Commitment, Self Efficacy And Job Satisfaction On Employee Performance At Pt. Natura Plastindo. *Jurnal Ekbis*, *26*(1).

Alteren, J., Hermstad, M., Nerdal, L., & Jordan, S. (2021). Working in a minefield; Nurses' strategies for handling medicine administration interruptions in hospitals,-a qualtiative interview study. *BMC health services research*, *21*(1), 1094. https://doi.org/10.1186/s12913-021-07122-8

Apooyin, A. (2025). Integrated reporting and its impact on financial transparency: A pathway to enhanced corporate accountability. *International Journal of Science and Research Archive*, *15*(1), 900-913. https://doi.org/10.30574/ijsra.2025.15.1.1100

Apriani, E., Daulay, S. H., Aprilia, F., Marzuki, A. G., Warsah, I., & Supardan, D. (2025). A Mixed-Method Study on the Effectiveness of Using ChatGPT in Academic Writing and Students' Perceived Experiences. *Journal of Language and Education*, *11*(1 (41)), 26-45.

Ariani, NPR & Ilyas, Y. 2021. 'Rapid Assessment Analysis of Workload of Nurses in Non-ICU Inpatient Isolation Rooms for Covid-19 at Cengkareng Regional General Hospital', Journal of Health Management of the Dr. Soetomo Hospital Foundation, 7(2), Pp. 225–232.

Daga, R., & Samad, A. (2025). Analysis of The Influence of Leadership Style, Workload and Work Stress on Employee Performance: Empirical Study from The MATSC Branch of Aviation Navigation Service Provider Institution. *Golden Ratio of Human Resource Management*, *5*(2), 383-405. https://doi.org/10.52970/grhrm.v5i2.1282

Esmaeili, M., Sheydayi, A., & Jamalabadi, F. (2025). A Systematic Review of Qualitative and Quantitative Content Analysis Applications in Urban Planning Research: Proposing a Mixed Method Approach. *Journal of Urban Planning and Development*, *151*(3), 04025020. https://doi.org/10.1061/JUPDDM.UPENG-5080

Fajarwati, I. 2017. Analysis of Nursing Needs Planning at Class D Ciracas Hospital in 2016. University of Indonesia Thesis.

Febriana, W., Sumadewa, I. N. Y., Anggriani, R., & Zahrah, Z. (2025). Analysis of The Effectiveness of Cloud-Based Operations Management in Digital SMES. *JMET: Journal of Management Entrepreneurship and Tourism*, *3*(2), 222-235. https://doi.org/10.61277/jmet.v3i2.198

Gunawan, A. S., Hambali, A. H., & Mutiara, D. (2025). The Influence of Tactical Approach on Critical Thinking and Futsal Playing Skills of MTS Nurul Hidayah Students. *COMPETITOR: Jurnal Pendidikan Kepelatihan Olahraga*, *17*(2), 2033-2038. https://doi.org/10.26858/cjpko.v17i2.296

Hafianti, R., Lestari, Y., & Erlinengsih, E. (2022). Measuring Performance of Padang Panjang Public Hospital in Achieving Its Targets Using the Balanced Scorecard Method. *Media Kesehatan Masyarakat Indonesia*, *18*(2), 74-82.

Ilyas, Yaslis. 2024. Hospital Human Resources Planning Theory Formula Method. Depok: Faculty of Public Health, University of Indonesia.

Kumar, B., Verma, A., & Verma, P. (2025). A multivariate transformer-based monitor-analyze-plan-execute (mape) autoscaling framework for dynamic resource allocation in cloud environment. *Computing*, *107*(3), 69. https://doi.org/10.1007/s00607-025-01426-x

Kurnat-Thoma, E., Ganger, M., Peterson, K., & Channell, L. (2017). Reducing annual hospital and registered nurse staff turnover—A 10-element onboarding program intervention. *SAGE Open Nursing*, *3*, 2377960817697712. https://doi.org/10.1177/2377960817697712

Kurniawan, A., Hidayatun, U. S., Jayanti, A., Septyarini, E., & Sudibyo, T. D. (2025). Enhancing Customer Loyalty: The Role Of Service Quality In Customer Satisfaction. *Journal of Lifestyle and SDGs Review*, *5*(2), e04412-e04412. https://doi.org/10.47172/2965-730X.SDGsReview.v5.n02.pe04412

Lall, R. (2025). Making global governance accountable: Civil society, states, and the politics of reform. *American Journal of Political Science*, *69*(1), 96-117. https://doi.org/10.1111/ajps.12824

Mayasari, M., & Gustomo, A. (2014). Workload Analysis on CV Saswco Perdana. *Journal of Business and Management*, *3*(6).

McCue, M., Mark, B. A., & Harless, D. W. (2003). Nurse staffing, quality, and financial performance. *Journal of health care finance*, *29*(4), 54-76.

Nuraeni, Y. (2025). Perhitungan Kebutuhan Tenaga Perawat Di Instalasi Rawat Inap NS 3 Utama Rumah Sakit Dr. Hafiz (RSDH) Cianjur: Calculation of the Need for Nursing Personnel in the Main NS 3 Inpatient Installation of Hospital Dr. Hafiz (RSDH) Cianjur. *Indonesian Scholar Jurnal of Health Science*, *1*(02), 1-12.

Nuraeni, Y. (2025). Perhitungan Kebutuhan Tenaga Perawat Di Instalasi Rawat Inap NS 3 Utama Rumah Sakit Dr. Hafiz (RSDH) Cianjur: Calculation of the Need for Nursing Personnel in the Main NS 3 Inpatient Installation of Hospital Dr. Hafiz (RSDH) Cianjur. *Indonesian Scholar Jurnal of Health Science*, *1*(02), 1-12.

Pirwani, S. (2024). *Association of Nurse-to-Patient Ratios in the First 72 Hours of Admission and Outcomes of Very Preterm Infants: A Multicentre Cohort Study*. McGill University (Canada).

Prof. Dr. Sugiyono and Mitha Erlisya Puspandhani, Skm., MK 2020. Health Research

Methods. 1st Print. Edited By MHK Dr. Yani Kamasturyani, Skm. Bandung: Alfa Beta Bandung.

Puspandari, D. A., Rimawati, R., Aristianti, V., Fadlika, F., Septiani, T., Ruby, M., ... & Manurung, K. (2025). Contracts between Referral Health Facilities and Social Health Insurance in Indonesia and England. *Jurnal Kesehatan Masyarakat*, *20*(3), 456-469. https://doi.org/10.15294/kemas.v20i3.21231

Qureshi, M. I., Iftikhar, M., Abbas, S. G., Hassan, U., Khan, K., & Zaman, K. (2013). Relationship between job stress, workload, environment and employees turnover intentions: What we know, what should we know. *World Applied Sciences Journal*, *23*(6), 764-770. https://doi.org/10.5829/idosi.wasj.2013.23.06.313

Rudolph, C. W., Breevaart, K., & Zacher, H. (2025). When are Job Autonomy and Workload "Too Much of a Good Thing" for Job Crafting?. *Journal of Business and Psychology*, 1-23. https://doi.org/10.1007/s10869-025-10048-1

S, I. & Tahir, R. 2020. 'Analysis of the Workload of Nurses in the Inpatient Ward at Bahteramas Hospital, Southeast Sulawesi', Manarang Health Journal, 6(1), Pp. 62–68.

Sade, S. 2013. Analysis of the Need for the Number of Nursing Staff Based on Workload at the Inpatient Installation of the North Mamuju Regional Hospital, North Sulawesi Province. Hasanuddin University Thesis.

Saeed, M., Jalil, M. S., Dahwal, F. M., Mehedy, M. T. J., & Snigdha, E. Z. (2025). The Impact of AI on Healthcare Workforce Management: Business Strategies for Talent Optimization and IT Integration. *The American Journal of Medical Sciences and Pharmaceutical Research*, *7*(03), 136-156. https://doi.org/10.37547/tajmspr/Volume07Issue03-15

Salsabila, P., Fadilasari, N. S., & Harahap, N. (2025). HUMAN RESOURCES OFFICE. *International Journal of Multidisciplinary Reseach*, *1*(2), 175-187.

Sari, F. Y., Rasyid, R., & Firdawati, F. (2025). Analysis of Waiting Time for Outpatient Services at dr Rasidin Padang Regional Hospital. *Journal La Medihealtico*, *6*(2), 477-492.

Sugiyono. 2017. Quantitative and Qualitative Research Methods &D. Bandung: Alfa Beta Bandung.

Susilowati, C. (2020). Workload analysis as basis for strategic decision making of organizational restructuring. *Asian journal of management sciences & education*, *9*(4).

Tasci, A. D., Wei, W., & Milman, A. (2025). The choice between research question and hypothesis for paradigm harmony. *Journal of Hospitality and Tourism Horizons*, *1*(1), 52-68. https://doi.org/10.1108/JHTH-01-2025-0013

Wildiani, Amelia, AR & Hardi, I. 2023. 'Workload Analysis as a Basis for Determining Nursing Staff Needs in Inpatient Installations', Jurnal Ilmiah Pers, 13(4), Pp. 1521–1534.

Yakusheva, O., Lee, K. A., & Weiss, M. (2024). The nursing human capital value model. *International journal of nursing studies*, *160*, 104890. https://doi.org/10.1016/j.ijnurstu.2024.104890

Yulia, S. 2016. 'Analysis of Nursing Resource Planning at X Depok Hospital Using Research Framework Approach', Jurnal Masker Medika 4(1), Pp. 24–30.

Yunanto, E. N., Augustinah, F., & Ferriswara, D. (2025). Implementation Implementation of

SI-PKJ Information Technology in the Preparation of Job Analysis and Workload Analysis as a Planning Tool for Appar. *International Journal of Integrative Sciences*, *4*(5), 1015-1030. https://doi.org/10.55927/ijis.v4i5.265

Yusnita, Y. Y., Fithrie, S., & Aznuriyandi, S. (2025). The Effect Of Competency And Work Motivation On Performance Of Regional Tax Collector Officers At Kampar Regency Revenue Agency. *International Journal Of Management, Finance, And Business*, *1*(1), 26-32.