Analysis of Pharmaceutical Technical Personnel Needs Based on Workload by Method Workload Indicator of Staffing Need at Sunan Holy Islamic Hospital

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Abstract. Human resource planning is one of the main functions of an organizational leader in determining its success. Institutions need manpower to carry out their duties properly so as to produce a balance between the amount of manpower needed and their workload activities. Workload is the number of types of work that must be completed by professional health workers in one year in one health service facility. The workload is said to be heavy because the main tasks are too many, causing an imbalance between the amount of energy and the workload. The purpose of this study was to analyze the number of pharmaceutical technical personnel needed in the Outpatient Pharmacy Installation Room 1 and Room 2 RSI Sunan Kudus using the WISN (Workload Indicator Staffing Need) method. This research is a type of quantitative descriptive research with a cross sectional research design. Research instruments in the form of interviews, work sampling forms, and document review guidelines. The results obtained from the study were that there was a shortage of pharmaceutical technical staff at the Outpatient Pharmacy Installation of RSI Sunan Kudus as many as 12 people at room 1 and 10 people at room 2. These results were obtained based on calculating the workforce requirements using the WISN method. The WISN ratio shows a result of 0.4 at room 1 and room 2. This means that the number of pharmaceutical technical personnel is still insufficient compared to the existing workload. It can be concluded that the room 1 and room 2 Outpatient Pharmacy Installations at Sunan Kudus Islamic Hospital still have a shortage of pharmaceutical technical personnel in overcoming the existing workload.

Key words: Manpower Requirement Analysis, Workload, WISN, Pharmaceutical Installation, Pharmaceutical Technical Personnel.

INTRODUCTION

Human resource planning is one of the main functions of an organizational leader in determining its success (Bakri, 2017). Human resource needs can be adjusted to the type of hospital, the type of services offered to the community, and the number of personnel required (Nisaa, 2019). In determining the number of staff needed in a hospital, one of the important things that must be done is to also determine the workload of the staff (Sari & Rosa, 2016).

Workload is the number of types of work that must be completed by professional health workers in one year at one health service facility (Kepmenkes RI, 2004). The workload is said to be heavy because there are too many main tasks, causing an imbalance between the amount of energy and the workload (Setiawan & Wulandari, 2016).

Institutions need personnel to carry out their duties well so that they can produce a balance between the amount of energy required and their workload activities (Christina et al., 2015). One of the methods used to analyze energy needs is WISN (Sari & Rosa, 2016). WISN (Workload Indicator Staffing Need) is an indicator that shows the magnitude of the need for personnel in health facilities based on workload, so that allocation or relocation will be easier and rational (Kepmenkes RI, 2004).

METHODS

This research is descriptive in nature using a non-experimental method using a cross-sectional design approach. The Islamic Hospital was chosen as the research location because it is one of the hospitals in Kudus Regency which provides services to the community in the health sector so it requires special competencies. This research has obtained permission from the Health Research Ethics Committee of the Muhammadiyah University of Purwokerto with registration number KEPK/UMP/57/III/2023.

The population in this study were all employees of the Outpatient Pharmacy Installation at Sunan Kudus Islamic Hospital. The sample in this study were employees of the Outpatient Pharmacy Installation who met the inclusion and exclusion criteria. The inclusion criteria in this study were employees who were willing to be observed, permanent or temporary outpatient pharmacy employees at Sunan Kudus Islamic Hospital, Pharmaceutical Technical Personnel (TTK) with a minimum D3

Pharmacy education, pharmacy admins with a minimum SMF (Pharmacy High School) education. Meanwhile, the exclusion criteria are employees who are not currently on duty, and professional pharmacists.

This research instrument consists of interviews, work sampling forms, and document review guidelines. The interview sheet contains a list of questions regarding the analysis of energy needs. The work sampling form contains a list of activities for conducting observations during working hours. Then, the document review guidelines are used as a guide for researchers in reviewing documents related to the analysis of personnel needs.

Analysis of this research data uses the WISN (Workload Indicator Staffing Need) method with several stages including:

1. Determine Available Working Times
   Formula :

   Working hours available = A – { (B+C+D+E) } X F

   Information :
   A = Working Days (number of working days/week)
   B = Annual leave
   C = Education and training
   D = National holiday
   E = Absence from Work
   F = Working Time (working time in one day)

2. Determine Work Units and HR Categories

3. Develop Workload Standards
   Formula :

   $$\text{Develop Workload Standards} = \frac{\text{Working Hours available}}{\text{Averange time of main activities}}$$

4. Develop allowance standards
   Formula :

   $$\text{Standartd allowance} = \frac{\text{Average Time per Activity Factor}}{\text{Time Available}}$$

5. Analyze the number of understaffing
   Formula :

   $$\text{Energy requirements} = \frac{\text{Quantity of main activities + Allowance standards}}{\text{Workload standards}}$$

   Ratio = Number of Staff Avaiable : WISN calculation results

   Information :
   Number 1 = The number of staff is balanced with the workload
   Number >1 = The number of staff exceeds the workload
   Number <1 = The number of staff is less than the workload

RESULTS AND DISCUSSION

Setting Available Working Time (WKT)

Determining available working time aims to obtain available working time for each category of human resources working in the hospital for a period of one year (Kepmenkes RI, 2004). Available working time is obtained based on secondary data and formula calculations according to the WISN method. The results of available working time are presented in table 1.

Table 1. Available Working Time

Code	Component	Amount	Unit
A	Working days	312	day/year
B	Annual leave	12	day/year
C	Education and training	412	day/year
D	National holiday	16	day/year
E	Absence or absenteeism from work	12	day/year
F	Working time	7	Hours/day
	Available Working Time (Days)	268	day/year
	Available Working Time (Hours)	1876	hours/year
	Available Working Time (Minutes)	112560	minutes/year

Source: Processed Primary Data, (2023)

Based on table 1, it shows that working time is not always the same between one study and another. Due to several policies at each hospital, especially regarding absence from work and during training. This statement is in line with Prastyawati's (2013) research which was conducted at Tugu Ibu Hospital and found that available working time was 288 days per year or 108,360 minutes per year.

Determine Work Units and HR Categories

The work unit that will be observed and measured workload and calculated the number of personnel requirements is the Outpatient Pharmacy Installation at Sunan Kudus Islamic Hospital, with the HR category being pharmaceutical technical personnel.

Develop Workload Standards

The workload standard is the volume/quantity of workload for 1 year per HR category. Workload standards for a main activity are prepared based on the time needed to complete it (average time) and the time available per year for each category of personnel (Kepmenkes RI, 2004). The standard workload is obtained from the available working time divided by the average time per main activity. The results of the workload standards are presented in table 2. year.

Table 2. Standard Workload

Number	Activity	Average time (minutes)	Workload Standards	Total
1	**Planning and Procurement**			
	Drug Defecta	30	3752	7504
	Pick up goods at the warehouse	30	3752	
2	**Reception**			
	Checking the pharmaceutical supplies taken	30	3752	11256
	Check the psychotropic and narcotic drugs taken	15	7504	
3	**Storage**			
	Arranging medicines from the warehouse	60	1876	4127
	Labeling of LASA and HAM Drugs	5	22512	
4	**Distribution**			
	Receiving prescriptions, providing prescription queue numbers, screening prescriptions and inputting prescriptions	3	37250	
	Taking non-mixed and compounded drugs	5	22512	82274
	Check the suitability of drugs and prescriptions then hand over the drugs to patients	5	22512	
5	**Monitoring and Evaluation**			
	Write an operant book	10	11256	1860
	Make daily reports	30	3752	
	Make psychotropic and narcotics reports	30	3752	

Source: Processed Primary Data, (2023)

According to Verawaty, *et al.* (2017), the standard workload is obtained from the main activities which are arranged based on the time needed to complete them. Standard workload at the Outpatient Pharmacy Installation at Sunan Kudus Islamic Hospital includes planning and procurement, receiving,

storage, distribution, monitoring and evaluation activities.

Develop Allowance Standards

The aim of preparing slack standards is to obtain slack factors for each HR category including the type of activity and time requirements to complete an activity that is not directly related to or influenced by the high or low quality or number of main activities/services (Kepmenkes RI, 2004). Slack factors are activities carried out by employees during work and are not included in the workload category. The slack standard is obtained from the average slack factor time divided by available work time. The results of the allowance standards are presented in table 3.

Table 3. Allowance Standards

Allowance Factor	Average time (minutes)	Average time (Days)	Average time per activity (minutes/ year)	Allowance Standards
Morning parade	10	312	3120	0,02771855
Regular Study	30	312	9360	0,08315565
Monthly Study	60	12	720	0,006396588
education and training	420	3	1260	0,01119403
Evaluation Meeting	30	12	360	0,003198294
Stock Opname	420	1	420	0,003731343
Take a break to eat and pray	20	312	6240	0,0554371
Organize and tidy up finished medicines	15	312	4680	0,041577825
Mixing finished preparations	60	312	18.720	0,166311301
Total Allowance Standard				**0,398720682**

Source: Processed Primary Data, (2023)

Based on table 3. The standard allowance in the Outpatient Pharmacy Installation at Sunan Kudus Islamic Hospital is 0.39. Slack factors are activities carried out by employees during work and are not included in the workload category. Verawaty, et al. (2017), revealed that each hospital has its own policies in carrying out its duties.

Calculation of the Amount of Energy Shortage

The calculation of the number of staff shortages is obtained from the quantity of main activities divided by the workload standard plus the allowance standard. The results of calculating the number of shortages of pharmaceutical technical personnel in depots 1 and 2 at the Outpatient Pharmacy Installation at Sunan Kudus Islamic Hospital are presented in tables 4 and 5.

Table 4. Number of Depot Staff Shortages 1

Code	Component	Quantity	Results
1	**Planning and Procurement**		
	Drug Defecta	268	0,461428571
	Pick up goods at the warehouse	268	0,461428571
2	**Reception**		
	Checking the Pharmaceutical Supplies taken	268	0,461428571
	Check psychotropic and narcotic drugs	268	0,425714286
3	**Storage**		
	Arranging Medicines in the Warehouse	268	0,532857143
	Labeling of LASA and HAM Drugs	268	0,401904762
4	**Distribution**		
	Receive, check, appreciate and provide prescription queue numbers	120586	3,627208054
	Taking non-mixed medicines and dispensing medicines	120586	5,746520967
	Checking the suitability of drugs and prescriptions and handing over drugs to patients	120586	5,746520967
5	**Monitoring and evaluation**		
	Write an operant book	268	0,413809524

	Make Daily Reports	268	0,461428571
	Make reports on psychotropic substances and narcotics	24	0,396396588
	Total Energy Requirements	**19,13664658**	
	Rounding	**19**	

Source: Processed Primary Data, (2023)

Table 5. Number of Shortfalls in Depot 2

Code	Component	Quantity	Results
1	**Planning and Procurement**		
	Drug Defecta	268	0,461428571
	Pick up goods at the warehouse	268	0,461428571
2	**Reception**		
	Checking the Pharmaceutical Supplies taken	268	0,461428571
	Check psychotropic and narcotic drugs	268	0,425714286
3	**Storage**		
	Arranging Medicines in the Warehouse	268	0,532857143
	Labeling of LASA and HAM Drugs	268	0,401904762
4	**Distribution**		
	Receive, check, appreciate and provide prescription queue numbers	98.471	3,033516779
	Taking non-mixed medicines and dispensing medicines	98.471	4,764156006
	Checking the suitability of drugs and prescriptions and handing over drugs to patients	98.471	4,764156006
5	**Monitoring and evaluation**		
	Write an operant book	268	0,413809524
	Make Daily Reports	268	0,461428571
	Make reports on psychotropic substances and narcotics	24	0,396396588
	Total Energy Requirements	**16,57822538**	
	Rounding	**17**	

Source: Processed Primary Data, (2023)

The number of staff in the Outpatient Pharmacy Installation at Sunan Kudus Islamic Hospital is 22 people, which includes 3 pharmacists, 5 pharmacy admins, and 14 pharmaceutical technical staff. Each outpatient pharmacy depot has 7 pharmaceutical technical personnel in it.

Based on the calculation of the number of personnel requirements according to the WISN method formula, the results obtained are that the number of personnel requirements at depot 1 is 19 people with the current number of pharmaceutical technical personnel being 7 people, there is still a lack of 12 more people to reach the number in accordance with the calculation results. At depot 2, the number of personnel required is 17 people, with the current number of pharmaceutical technical personnel being 7 people, there is still a lack of 10 more people to reach the number according to the calculation results.

The difference in the results of calculating the amount of energy needed at depots 1 and 2 is due to the different quantities of prescription services. This quantity data is obtained from data taken from monthly prescription recaps in IFRS.

WISN Ratio

The WISN ratio is a measure to find out how much workload is experienced by pharmaceutical technical personnel in hospitals (Verawaty *et al*., 2017). The WISN ratio is obtained by dividing the amount of available power by the calculation results of the amount of power required. The results of the WISN ratio in the Outpatient Pharmacy Installation Depo 1 and Depo 2 at Sunan Kudus Islamic Hospital are presented in tables 6 and 7.

Table 6. Rasio WISN Depo 1

Rasio WISN	
Current number of staff	WISN results
7	19
Yield Ratio = 0.4	

Source: Processed Primary Data, (2023)

Table 7. Rasio WISN Depo 2

Rasio WISN	
Current number of staff	WISN results
7	17
Yield Ratio = 0.4	

Source: Processed Primary Data, (2023)

Based on calculations, the WISN ratio results are the same between depo 1 and depo 2, namely 0.4. This means that the amount of energy is still insufficient compared to the existing workload. Susanto, *et al*. (2017) said that a smaller WISN ratio indicates a greater workload, which can lead to work stress and even fatigue and can possibly trigger conflict.

Pharmaceutical personnel cannot meet the existing workload due to their own lack of energy, resulting in an imbalance between the number of employees and their workload. This is also in line with Prastyawati's (2013) research, which states that insufficient staff cannot meet the existing workload. The impact of a heavy workload without sufficient staff will result in delays in the pharmaceutical service process. This statement is also supported by other research conducted by Susanto, *et al.* (2017), that the impact of staff shortages can have a negative impact on pharmaceutical services.

Energy Activity

The distribution of work shifts at the Outpatient Pharmacy Installation at Sunan Kudus Islamic Hospital is three times a day, namely the mid-morning and mid-morning shifts. Morning shift work hours are from seven in the morning to two in the afternoon. During the day shift from two in the afternoon to nine in the evening. And the last one is the middle shift from ten in the morning to five in the afternoon. The number of working hours in one day at the Outpatient Pharmacy Installation at Sunan Kudus Islamic Hospital is 7 hours, for six working days. On Sundays or national holidays, the outpatient pharmacy installation is closed.

All activities of pharmaceutical technical personnel in the depot 1 outpatient pharmacy installation during the six days of the study were observed and recorded, then the data was processed in Microsoft Excel. The results of calculating the activities of pharmaceutical technical personnel at Depo 1 and 2 Outpatient Pharmacy at Sunan Kudus Islamic Hospital are presented in tables 8 and 9.

Table 8. Depot Staff Activities 1

No	Name of activity	f	Persentase (%)	
			every activity	Whole
1	**Productive Activities**			
	Drug Defecta	250	3,6231884	2,270663034
	Deliver	120	1,7391304	1,089918256
	Psychotropic and Narcotic Medicine Bills at the Inpatient Pharmacy	40	0,5797101	0,363306085
	Receiving and inputting prescriptions	290	4,2028986	2,633969119
	Non-mixed prescription service	3320	48,115942	30,15440509
	Recipe service	910	13,188406	8,265213442
	Medication delivery	1970	28,550725	17,8928247
	Sub-Total	**6900**	**100**	**62,6702997**
2	**Non-Productive Activities**			
	Organize bills for psychotropic and narcotic drugs	50	2,7624309	0,454132607
	Preparing the finished concoction	990	54,696133	8,991825613
	Tidy up the table	30	1,6574586	0,272479564
	Write an operant book	120	6,6298343	1,089918256
	Arranging finished medicine	120	6,6298343	1,089918256
	Pick up the medicine at the warehouse	190	10,497238	1,725703906
	Arrangement of medicines in warehouse	310	17,127072	2,815622162
	Sub-Total	**1810**	**100**	**16,4396004**
3	**Personal Activities**			
	Eat	180	7,826086957	1,634877384

	Pray	540	23,47826087	4,904632153
	Preparation	360	15,65217391	3,269754768
	Toilet	280	12,17391304	2,543142598
	Chat	440	19,13043478	3,996366939
	Chatting	440	19,13043478	3,996366939
	Take food to the kitchen	60	2,608695652	0,544959128
	Sub-Total	**2300**	**100**	**20,89009991**
	Total	**11010**	**100**	**100**

Source: Processed Primary Data, (2023)

Information :
Nb: f is the frequency in minutes

Table 9. Depot Personnel Activities 2

No	Name of activity	f	Persentase (%)	
			every activity	Keseluruhan
1	**Productive Activities**			
	Drug Defecta	210	2,74151436	1,778907243
	Deliver	180	2,34986945	1,524777637
	Psychotropic and Narcotic Medicine Bills at the Inpatient Pharmacy	60	0,78328982	0,508259212
	Receiving and inputting prescriptions	330	4,30809399	2,795425667
	Non-mixed prescription service	3180	41,5143603	26,93773825
	Recipe service	1250	16,3185379	10,58873359
	Medication delivery	2450	31,9843342	20,75391783
	Sub-Total	**7660**	**100**	**64,88775942**
2	**Non-Productive Activities**			
	Organize bills for psychotropic and narcotic drugs	50	2,7100271	0,423549343
	Preparing the finished concoction	1035	56,097561	8,76747141
	Tidy up the table	30	1,62601626	0,254129606
	Write an operant book	120	6,50406504	1,016518424
	Arranging finished medicine	120	6,50406504	1,016518424
	Pick up the medicine at the warehouse	180	9,75609756	1,524777637
	Arrangement of medicines in warehouse	310	16,802168	2,62600593
	Sub-Total	**1845**	**100**	**15,62897078**
3	**Personal Activities**			
	Eat	180	7,826086957	1,524777637
	Pray	540	23,47826087	4,57433291
	Preparation	360	15,65217391	3,049555273
	Toilet	280	12,17391304	2,371876324
	Chat	440	19,13043478	3,727234223
	Chatting	440	19,13043478	3,727234223
	Take food to the kitchen	60	2,608695652	0,508259212
	Sub-Total	**2300**	**100**	**19,4832698**
	Total	**11805**	**100**	**100**

Source: Processed Primary Data, (2023)

Keterangan :
Nb : f adalah frekuensi dalam satuan menit

Based on table 8, the calculation results for the total percentage of deposit 1 for productive activities are 62.6%, non-productive activities 16.4%, and personal activities 20.8%. The total percentage of deposits for 2 productive activities is 64.8%, non-productive activities 15.6%, and personal activities 19.4%. Based on an interview with one of the pharmaceutical technical staff, there are a lot of prescriptions on certain days, such as Monday to Thursday, because all doctors have practice schedules, so productive activities also run, such as prescription services, which take around 4-50% of the time per activity. However, on Fridays and Saturdays, not all doctors are scheduled to practice, so there is still free time to do non-productive activities such as mixing finished preparations, which takes around 54-56% of the time per activity. For personal activities such as chatting or opening a cellphone

when there is no doctor's office schedule, it takes around 19% of the time per activity.

Similar research was conducted by Wijaya and Prayitno, (2021) at the Madiun City Hospital, obtaining results for productive activities of 84%, non-productive activities of 7%, and personal activities of 9%. The difference in percentage results is due to the number of prescriptions, number of personnel, and service flow. different from one hospital to another.

CONCLUSION

There is a shortage of pharmaceutical technical personnel in the Outpatient Pharmacy Installation at Sunan Kudus Islamic Hospital, as many as 12 people for depot 1 and 10 people for depot 2 with a WISN ratio of 0.4. The total percentage of productive activities is 62.6%, non-productive activities 16.4%, and personal activities 20.8% in depo 1. The total percentage of productive activities is 64.8%, non-productive activities 15.6%, and personal activities 19. 4% on deposit 2.

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