

CHAPTER I

INTRODUCTION

This chapter consists of research background, problem formulation, research objectives, research scopes and assumption, and outline of the report.

1.1 Background

Queuing theory is used extensively in engineering and industry for analysis and modeling of processes involving queuing. In the real system, it allows the manager to calculate the optimal supply of fixed resources necessary to meet variable demand. Nowadays, health policy researcher has also attempted to apply this technique more widely throughout the health care system. (Gross, 1998) Unfortunately, most of the proposed queuing model has no real-world validation and perhaps for this reason, has not been embraced by physicians and hospital administrators. Therefore, to explore the utility and the implications of queuing theory as it relates to the supply and demand for critical care services, it is needed to develop and analyze a queuing model in a busy hospital (Robin, 2015).

Health care providers face increasing pressure to deliver high quality and efficient services while fighting rising costs. One of the main measure for the quality of service is the waiting time of patients. The long waiting times would lead to patient dissatisfaction, resulting choose another health care provider who can provide better service quality. Therefore, time is a valuable asset to patients in seeking service at any health center, either public or private providers, and even more valuable for patients who are in critical condition (Najmuddin, 2010).

Hospital services either private or government-owned focuses has a mission of providing excellent and quality health services as well as sustainable and affordable in order to improve the health of society. The most practical approach is the use of queuing theory. A major element in the queue theory includes people

looking for services, login, form a queue, queue discipline, and service processes (Wijewickrama, 2005)

Regarding satisfying the needs of the patients, it cannot be separated with the number of counters that serving the needs of the patient. Therefore, the number of the counter and room doctors has an important role to the excellent service of a hospital. Good quality service is serving the patient quickly, so the patients do not need to waiting for a long time (Almasdi, 2012). All hospitals must always pay attention to the quality of their service to achieve patient satisfactions.

Outpatient services become one of major concern hospitals around the world, because the number of outpatients much larger than of inpatient. Effect to outpatients become a source of financial huge income. Income of inpatient in the future can improve hospital finance (Kurniawan, 2006). Based on the 2018 annual report the total number of outpatients in RSUD dr. Rasidin Padang are 69,089 patients greater than of inpatients are 4,081 patients.

The main problem in outpatient services usually caused by doctor often late, double job of doctor (functional and structural), human resources are not friendly, waiting time patient is too long, the workload of nurses, uncomfortable waiting rooms, incomplete facilities, medicines are not available at the pharmacy, layout of hospital is not good, distance of supporting room are so far and patient files are often late (Melina, 2011).

Regional Public Hospital of dr. Rasidin Padang (RSUD dr. Rasidin Padang) is a Regional Apparatus of the Regional Government of Padang City, West Sumatra Province. It is one of the General Hospital owned by Padang City Government Agency located at Sungai Sarik, Kuranji, Padang, West Sumatra - Indonesia. This hospital has 15 polyclinics to serve patients consist of Paediatric Polyclinic, Surgical Polyclinic, Internal Medicine Polyclinic, Dental Polyclinic, Cardiac Polyclinic, OB/GYN Polyclinic, Dermatology Polyclinic, Ophthalmology Polyclinic, Pulmonology Polyclinic, Orthopaedic Polyclinic, Neurology Polyclinic,

ENT Polyclinic, Oral Surgery Polyclinic, General Practitioner Polyclinic and Paediatric Surgery Polyclinic.

Data of outpatient visits in RSUD dr. Rasidin from 2014 – 2018 can be seen in **Table 1.1**:

Table 1.1 Data of Outpatient Visits in RSUD dr. Rasidin Padang (Source: Annual Report, 2018)

Year	Number of Outpatients
2014	40,527
2015	37,188
2016	46,271
2017	62,944
2018	69,089

One problems that often arise in the installation of outpatient care of a hospital is waiting too long to get the service. Long waiting time is calculated from the patient register to get service by a Doctor. According to the Regulation of the Minister of Health of the Republic Indonesia No. 129 / Menkes / SK / II / 2008 on Minimum Service Standards (SPM – *Standar Pelayanan Minimal*) Hospital, noted that the standard waiting time for outpatient service is 60 minutes (Ministry of Health, 2008).

In the 2018 survey of minimum service standards for hospitals, the average waiting time on outpatient services is 239 minute. Long waiting time of outpatient caused by the late doctor, too long waiting to get doctor's service and long queues at the registration (Annual Report of RSUD dr. Rasidin Padang, 2018). Based on **Table 1.1** the number of outpatient visits an increase of 1.10% from 2017 to 2018. Total patient arrival of RSUD dr. Rasidin Padang in January – December 2018 can be seen in **Table 1.2**.

Table 1.2 Patients Arrival of RSUD dr. Rasidin Padang in January - December 2018

No	Polyclinic	Total Patients per Month 2018												Total	Percentage
		January	February	March	April	May	June	July	August	September	October	November	December		
1	Paediatric Polyclinic	253	175	209	227	240	168	249	291	218	228	214	221	2693	3,90%
2	Surgical Polyclinic	599	352	310	262	413	163	399	252	262	283	295	326	3916	5,67%
3	Internal Medicine Polyclinic	1397	1388	1390	1346	1278	1035	1344	1353	1253	1288	1319	1375	15766	22,82%
4	Dental Polyclinic	123	95	102	107	91	167	81	120	92	147	109	179	1413	2,05%
5	Cardiac Polyclinic	343	322	297	435	452	285	407	430	351	396	401	407	4526	6,55%
6	OB/GYN Polyclinic	542	376	225	249	365	147	225	230	221	229	297	285	3391	4,91%
7	Dermatology Polyclinic	395	241	328	212	293	159	245	281	234	169	196	232	2985	4,32%
8	Ophthalmology Polyclinic	247	195	253	261	165	139	215	171	172	238	286	316	2658	3,85%
9	Pulmonology Polyclinic	885	836	899	912	994	668	952	964	944	1006	948	985	10993	15,91%
10	Orthopedic Polyclinic	491	577	666	892	682	322	357	252	191	333	273	287	5323	7,70%
11	Neurology Polyclinic	560	551	539	511	504	356	498	541	501	541	507	497	6106	8,84%
12	ENT Polyclinic	337	399	524	308	324	230	323	314	334	430	294	385	4202	6,08%
13	Oral Surgery Polyclinic	1	18	15	9	27	22	30	14	14	34	34	26	238	0,34%
14	General Practitioner Polyclinic	212	201	558	1271	129	100	397	145	262	490	323	743	4831	6,99%
15	Pediatric Surgery Polyclinic							4	8	5	17	6	8	48	0,07%
Grand Total		6385	5726	6315	7002	5957	3961	5726	5363	5051	5829	5502	6272	69089	100%

Table 1.3 The Doctor's Schedule of RSUD dr. Rasidin Padang in 2019

No	Polyclinic	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	Paediatric Polyclinic	dr. Trisna Resti Yanti, Sp.A.M.Biomed	dr. Tri Desvita, Sp.A	dr. Trisna Resti Yanti, Sp.A.M.Biomed	dr. Dani Andesta, Sp.A	dr. Tri Desvita, Sp.A	dr. Dani Andesta, Sp.A
2	Surgical Polyclinic	dr. Fauzil, Sp.B	dr. Hendrizal Ischan, Sp.B	dr. Fauzil, Sp.B	dr. Hendrizal Ischan, Sp.B	dr. Fauzil, Sp.B	dr. Hendrizal Ischan, Sp.B
3	Internal Medicine Polyclinic	dr. Deasy Natalia, Sp.D	dr. Tries Ennaldi, Sp.D	dr. Lisa Oktamuva, Sp.D	dr. Tries Ennaldi, Sp.D	dr. Lisa Oktamuva, Sp.D	dr. Deasy Natalia, Sp.D
4	Dental Polyclinic	drg. Nestrauzza	drg. Irsyadi	drg. Lola Nofrita	drg. Vonny Amelia	drg. Nydhia Hardi	drg. Zola Taurisia
5	Cardiac Polyclinic	dr. Putri Mardatillah, Sp.J	dr. Putri Mardatillah, Sp.J	dr. Putri Mardatillah, Sp.J	dr. Putri Mardatillah, Sp.J	dr. Putri Mardatillah, Sp.J	dr. Bobby Arfan, Sp.J
6	OB/GYN Polyclinic	dr. Dian Zivira, Sp.OG	dr. Dian Zivira, Sp.OG	dr. Dewi Arita, Sp.OG	dr. Arief Rinaldy, Sp.OG	dr. Arief Rinaldy, Sp.OG	dr. Dewi Arita, Sp.OG
7	Dermatology Polyclinic	dr. Irdawati Izroel, Sp.KK	dr. Yenny Rafis, Sp.KK	dr. Irdawati Izroel, Sp.KK	dr. Yenny Rafis, Sp.KK	dr. Irdawati Izroel, Sp.KK	dr. Yenny Rafis, Sp.KK
8	Ophthalmology Polyclinic	dr. Chandra Adilla, Sp.M	dr. Chandra Adilla, Sp.M	dr. Ewi Prima Dona, Sp.M	dr. Gordia Rusdji, Sp.M	dr. Gordia Rusdji, Sp.M	dr. Reni Angrami, Sp.M
9	Pulmonology Polyclinic	dr. Nilas Warlen, Sp.P	dr. Emelia Afif, Sp.P	dr. Emelia Afif, Sp.P	dr. Nilas Warlen, Sp.P	dr. Nilas Warlen, Sp.P	dr. Emelia Afif, Sp.P
10	Orthopedic Polyclinic	dr. Almu Muhammad, Sp.ORT			dr. Almu Muhammad, Sp.ORT		dr. Almu Muhammad, Sp.ORT
11	Neurology Polyclinic	dr. Tati Khairani, Sp.S	dr. Rahmi Ulfah, Sp.S	dr. Tati Khairani, Sp.S	dr. Rahmi Ulfah, Sp.S	dr. Tati Khairani, Sp.S	dr. Rahmi Ulfah, Sp.S
12	ENT Polyclinic	dr. Wahyu Triana, Sp.THT-KL	dr. Yanti Fitri Yasa, Sp.THT-KL	dr. Sri Mulyani, Sp.THT-KL	dr. Wahyu Triana, Sp.THT-KL	dr. Yanti Fitri Yasa, Sp.THT-KL	dr. Sri Mulyani, Sp.THT-KL
13	Oral Surgery Polyclinic	drg. Angel Laura, Sp.Ort	drg. Oryce Zahara, Sp.Ort	drg. Oryce Zahara, Sp.Ort			
14	General Practitioner Polyclinic	General Practitioner	General Practitioner	General Practitioner	General Practitioner	General Practitioner	General Practitioner
15	Pediatric Surgery Polyclinic		dr. Ferny Octavia, Sp.BA	dr. Ferny Octavia, Sp.BA	dr. Ferny Octavia, Sp.BA		

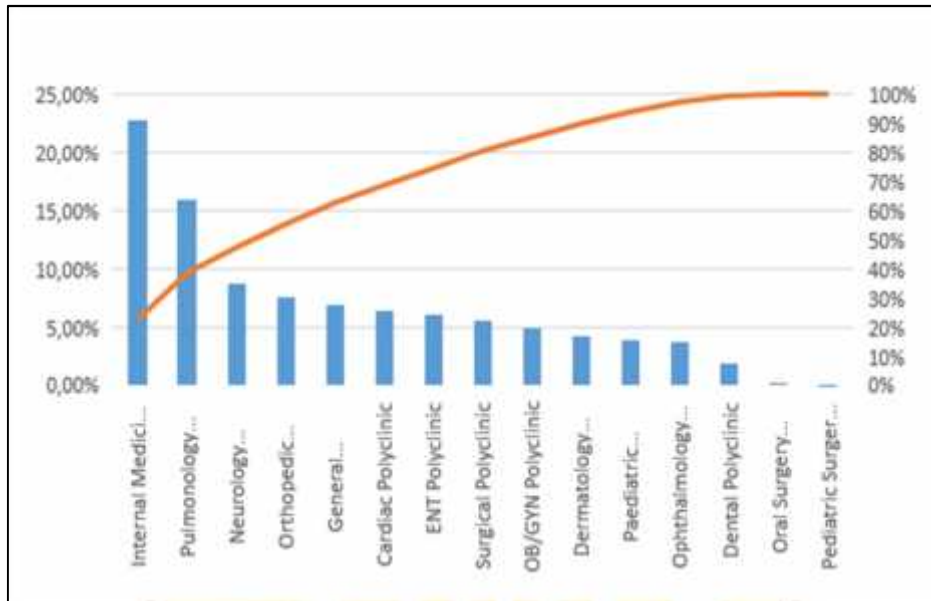


Figure 1.1 Percentage of Outpatients Visit (Source: Annual Report, 2018)

Table 1.2 presents the data of total patient arrival in RSUD dr. Rasidin Padang in January - December 2018. From **Table 1.2**, the largest number of patients were coming from Internal Medicine Polyclinic and Pulmonology Polyclinic. **Table 1.3** shows the schedule of doctors in Polyclinic for 6 days working time from Monday – Saturday, which is start in registration hours on Monday to Thursday at 07.30 – 12.00 AM, on Friday at 07.30 – 10.30 AM and on Saturday at 07.30 – 11.00 AM. It can be concluded that the queue line is potentially occurs from patients at Internal Medicine Polyclinic and Pulmonology Polyclinic and one of the causes of queuing problems can be seen in **Table 1.3** because there is only 1 doctor to serve all patients in every day for each polyclinic. This situation causes patient dissatisfaction for services.

Queueing is an inevitable problem in all system where patients seizing a process or services. There are so many patients that complained and feel uncomfortable because their time is wasted when they wait to be served. Therefore, it is needed to decrease the waiting time of patient to get service in hospital in order to achieve the excellence service quality.

Based on interview with the head of the installation records RSUD dr. Rasidin Padang, it is found the waiting time of patient to get service is relatively long.

Process for outpatient services begins with taking a queue number before registration. For old patient after registration will be sent to the reporting medical records in search for the file, while the new patient created first patient card treatment visit. Document medical records will be sent to each polyclinics for patient examination by a specialist.

A preliminary study was conducted to 30 outpatients RSUD dr. Rasidin Padang. It was obtained that 22 out of 30 patients stated the waiting time starting from the registration service until see the doctor is relatively long, more than an hour of waiting time where the standard of service hospital is 60 minutes. Based on the observations, the average waiting time in outpatient services was 128.7 minutes.



Figure 1.2 Arrival Counter



Figure 1.3 Admission Process



Figure 1.4 Waiting for Doctor Services

Crowded patients occur during the morning from 7:00 am to 11:00 AM as shown in **Figure 1.2**, **Figure 1.3** and **Figure 1.4**. The density of patient inside and outside the waiting room builds up the long queue. Although in the waiting room patients are provided various facilities such as seating, television and others so that patients feel comfortable while waiting, it still cannot eliminate boredom of patient in waiting for services. Therefore, it is needed to analyze the queuing system of

outpatient service in RSUD dr Rasidin Padang. This research hopes can improve the service quality as well as the patient satisfaction.

1.2 Problem Formulation

This research is willing to answer some questions as follows:

1. How the queuing problem of the Outpatient Service in RSUD dr. Rasidin Padang?
2. How to improve the performance of the queuing system of the Outpatient Service in RSUD dr. Rasidin Padang?

1.3 Research Objectives

The research has some objectives as follows:

1. To analyze the queuing problem of the Outpatient Service in RSUD dr. Rasidin Padang.
2. To suggest an improvement to increase the performance of the queuing system of the Outpatient Service in RSUD dr. Rasidin Padang.

1.4 Research Scopes and Assumption

The scopes and assumption of this research are:

1. This research is focused to Internal Medicine Polyclinic and Pulmonology Polyclinic in RSUD dr. Rasidin Padang.
2. This research is assuming the closing time of taking a queue number for all day is the same at 07.00 AM – 12.00 AM.

1.5 Outline of Report

CHAPTER I: INTRODUCTION

This chapter consists of research background, problem formulation, research objectives, research scopes and assumption, and outline of the report.

CHAPTER II: LITERATURE REVIEW

This chapter defines the literatures support the research to results of analysis and recommendation to solve the problem. The literatures are used in this research consist of waiting times, services, queue theory, simulation and overview of RSUD dr. Rasidin Padang.

CHAPTER III: RESEARCH METHODOLOGY

This chapter explains systematically steps in this research, from the preliminary study, literature study, problem identification and formulation, method selection, designing simulation models, develop the improvement, results and discussion, conclusions and suggestions.

CHAPTER IV: DEVELOPMENT OF SIMULATION MODEL FOR QUEUING SYSTEM OF OUTPATIENT SERVICE IN RSUD dr. RASIDIN PADANG

This chapter presents the development of simulation model for queuing system of outpatient serve in RSUD dr Rasidin Padang. It consists of system description, data collection, data processing, development of simulation model, verification, validation, replication of simulation model, simulation report analysis and development of scenarios.

CHAPTER V: DISCUSSIONS

This chapter contains the discussion of the result consist of simulation model and scenarios of simulation model.

CHAPTER VI: CONCLUSIONS AND SUGGESTIONS

This chapter contains conclusions based on research objectives and suggestions for future research.

