ANALYSIS OF HEMODIALYSIS SERVICE UNIT DEVELOPMENT IN SRI PAMELA HOSPITAL TEBING TINGGI

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ABSTRACT

Indonesia currently following the global non-communicable disease trend, such as the growth of chronic kidney disease and end-stage kidney disease numbers. In the last eight years, the number of end-stage kidney disease patients jumped from 9.649 to 66.433 (2010-2018). One of the consequences of this increasing incidence is the increasing need for kidney replacement therapy, one being hemodialysis. Strength-Weakness-Opportunity-Threat (SWOT) analysis in a common business tool used to assess and evaluate the feasibility of business development and/or expansion. This study aims to assess the potential of the development of a hemodialysis unit in Sri Pamela Tebing Tinggi Hospital. This study is an analytical descriptive evaluation study. Data in this study was gathered from three key informants (nephrologist-in-charge, head of the hemodialysis unit, and hemodialysis nurse) and two additional informants (regular hemodialysis patients) in Sri Pamela Tebing Tinggi Hospital. Data gathered from this study was analyzed using Internal-External (IE) and SWOT matrix. This study discovers that the existing hemodialysis unit in Sri Pamela Tebing Tinggi Hospital stands on the first quadrant of the IE matrix, grows and is built with vertical integration, and is at S-O strategy in the SWOT matrix. According to these findings, it can be concluded that the Sri Pamela Tebing Tinggi Hospital's hemodialysis unit has great potential for further development by expanding its service capacity by expanding its building, adding more hemodialysis machines along with more manpower.

Keywords: ESRD, Hemodialysis, Hospital Management, SWOT

BACKGROUND

End-stage renal disease (ESRD) is one of the diseases that treatment covered by National Health Insurance (*Jaminan Kesehatan Nasional*/JKN) through *Badan Penyelenggara Jaminan Sosial Kesehatan* (BPJS Kesehatan). ESRD is also among the top five of largest claims against the BPJS by hospitals besides heart diseases, cancer, and diabetes (BPJS Kesehatan, 2019; Teerawattananon et al., 2020). In 2020, BPJS Kesehatan spent more than 2,2 trillion rupiah to cover the treatment of ESRD in Indonesia (BPJS Kesehatan, 2019). This enormous spending by BPJS Kesehatan for ESRD treatment was largely used for renal replacement therapy, especially hemodialysis.

According to the 13th Indonesian Renal Registry (IRR) Report there was a significant increase of ESRD cases in Indonesia,

from 4.977 new cases in their first report in 2007 to 61.786 cases in 2020 (Indonesian Renal Registry, 2023b). For patients with ESRD, especially in developing countries, renal replacement therapy like hemodialysis is inevitable to prolong patient's lives and maintain their quality of life (Hughes, 2022; Levy et al., 2016; Murdeshwar & Anjum, 2023; National Kidney Foundation, 2018, 2023; Nissenson et al., 2023). According to the aforementioned report, the number of hemodialysis patients in Indonesia in 2010 was slightly over 20.000 patients but increased significantly in the next 10 years to almost 200.000 hemodialysis patients in 2020 (Indonesian Renal Registry, 2023b). This data shows that Indonesia's need for hemodialysis services steadily increases year after year.

Considering all the infrastructures, facilities, and human resources needed to run a Hemodialysis Service Unit, only some healthcare facilities can establish a Hemodialysis Service Unit. One such healthcare facility is Sri Pamela Hospital in the city of Tebing Tinggi. Sri Pamela Hospital is one of six hospitals in the city of Tebing Tinggi with a Hemodialysis Service Unit and still the largest provider of hemodialysis service in the city of Tebing Tinggi with 17 hemodialysis machines.

To provide service to all ESRD patients in the city of Tebing Tinggi, Sri Pamela Hospital split the hemodialysis sessions into three shifts every day, morning, afternoon, and evening. However, despite having almost half of the city's hemodialysis machines and the highest capacity per day, Sri Pamela Hospital is still unable to fulfill the hemodialysis needs of the city and refer several patients to other hospitals for hemodialysis. Hence, further development of the Hemodialysis Service Unit is needed.

LITERATURE REVIEW

Hemodialysis is a form of replacement therapy, where the role of the kidneys as blood filtering organs is replaced by artificial devices to remove excess water, metabolites, and toxins from the blood (Hughes, 2022; Levy et al., 2016; Murdeshwar & Anjum, 2023; National Kidney Foundation, 2018, 2023; Nissenson et al., 2023). There are several conditions that have indications for hemodialysis, including ESRD, Chronic Kidney Disease (CKD), Acute Kidney Injury (AKI), uremic encephalopathy, refractory acidosis, pericarditis, hypervolemia, hyperkalemia, malnutrition and fail to thrive, peripheral neuropathy, asymptomatic patient with GFR between 5-9 mL/minute/1.73m^2, or poisoning (Murdeshwar & Anjum, 2023; National Kidney Foundation, 2018).

In Indonesia, hemodialysis service was carried out in a government or private hospital or clinic. In the hospital setting, hemodialysis was held in the Hemodialysis Service Unit, a special unit in a hospital for hemodialysis with specific building and facility requirements. According to *Peraturan Menteri Kesehatan No. 812 Tahun 2010 tentang Penyelenggaraan Pelayanan Dialisis Pada Fasilitas Pelayanan Kesehatan* (Regulation of Minister of Health) any Hemodialysis Service Unit needs at least five different rooms: 1)hemodialysis room; 2) consultation room; 3) procedure room; 4) nursing, sterilization, medication storage, and medical support room; and 5) administration and waiting room (Peraturan Menteri Kesehatan Republik Indonesia Nomor 812 Tahun

2010 Tentang Penyelenggaraan Pelayanan Dialisis Pada Fasilitas Pelayanan Kesehatan, 2010).

The Hemodialysis Service Unit also must consist of at least four hemodialysis machines, standard medical equipment, manual and automatic reuse dialyzer devices, sterilization instruments, and dialysis-standard water treatment (Peraturan Menteri Kesehatan Republik Indonesia Nomor 812 Tahun 2010 Tentang Penyelenggaraan Pelayanan Dialisis Pada Fasilitas Pelayanan Kesehatan, 2010). Besides infrastructures and facilities, the Hemodialysis Service Unit also needs to have at least one nephrologist as a unit supervisor and three hemodialysis nurses for every four hemodialysis machines (Peraturan Menteri Kesehatan Republik Indonesia Nomor 812 Tahun 2010 Tentang Penyelenggaraan Pelayanan Dialisis Pada Fasilitas Pelayanan Kesehatan, 2010).

SWOT (Strength, Weakness, Opportunities, and Threats) analysis is a tool used for planning and management of an organization (Gurel & Tat, 2017; Sarsby, 2016; Taherdoost & Madanchian, 2021; Teoli et al., 2023). SWOT analysis, often referred to as the SWOT matrix, consists of internal and external considerations of an institution.

The S (Strength) and W (Weakness) components are internal conditions of an institution where S are factors that benefit the institution in question, while W are factors that harm the institution. Meanwhile, the O (Opportunities) and T (Threats) components are external/environmental conditions around the institution, where O is an environmental condition around the institution in question that can be utilized by the institution in question, while T is an environmental condition around the institution in question that is a barrier or threat to the existence of the institution in question. (Teoli et al., 2023). Thus, SWOT analysis is a strategic planning framework that can be used to evaluate an organization, plan, project or business activity (Gurel & Tat, 2017).

RESEARCH METHODOLOGY

This study is an analytical descriptive evaluation study. The study was conducted in Sri Pamela Hospital Tebing Tinggi in January 2024 involving five informants consisting of three key informants (nephrologist in-charge, chief of hemodialysis service unit, and hemodialysis nurse) and two regular informants (routine hemodialysis patients).

Data in this study was collected through in-depth interviews with interview guidance tools to ensure every needed information was collected and audio-recorded. During the interview, the interviewer also triangulates every piece of information from the previous informant to make sure every piece of information is correct and accurate. This recording is then transcribed into writing to help with data processing and analysis. Data analysis was carried out following Miles et al.'s guide to analyzing qualitative data (Miles et al., 2014)

RESULTS RESEARCH

Sri Pamela Hospital in the city of Tebing Tinggi is a hospital under the management of PT. Sri Pamela Medika Nusantara, a subsidiary of PT. Perkebunan Nusantara III. Sri Pamela Hospital has a very long history as the oldest hospital in the city of Tebing Tinggi, established as Central Hospital Tebing Tinggi by the Padang and Bedagai *Hospitaal*

Verceneeging Foundation in 1907 and became Sri Pamela Hospital in 198

Figure 1. Building in red circle (top left image) is the existing Sri Pamela Hospital Hemodialysis Service Unit building. The L-shaped green line (bottom left image) is the planned expansion for the Hemodialysis Service Unit building. The top right image is the existing Hemodialysis Service Unit floor plan, while the one below it is the floor plan after the building expansion.

Sri Pamela Hospital stands on 131,574 sqm of land with 7.500 sqm of buildings at Jalan Jenderal Sudirman No. 299 Sri Padang, Tebing Tinggi, North Sumatera. Sri Pamela Hospital Hemodialysis Service Unit was established in 2008 with four initial hemodialysis machines and continuously growing through the year, ended up with a total of 17 machines in 2024, the largest number of machines in the city of Tebing Tinggi. Sri Pamela Hospital Hemodialysis Service Unit building is located next to *Ruang Cemara* and about a three-minute walk from the parking area. Sri Pamela Hospital Hemodialysis Service Unit is currently located in ±180 sqm building housing 16 regular machines with 11 hospital beds and five sofas, and one special machine for patients with infectious diseases along with one hospital bed.

Further development of the existing Sri Pamela Hospital Hemodialysis Service Unit was possible due to the planned expansion of the existing building which connects the existing building with the *Ruang Cemara* building and adds more buildings behind *Ruang Cemara*, resulting in an L-shaped new building. With the expansion, the new Hemodialysis Service Unit building will have more than 500 sqm floor area.

Table 1. Sri Pamela Hospital Hemodialysis Service Unit SWOT Profile

Strength/S	Weakness/W
1. The only C-class hospital with a nephrologist in the city of Tebing Tinggi 2. Have the largest number of hemodialysis machines in the city of Tebing Tinggi 3. Services were carried out in 3 shifts (morning, noon, and evening) 4. Providing traveling hemodialysis service. 5. Straightforward administration process. 6. Availability of land for expansion and development. 7. Availability of infectious hemodialysis machine. 8. Availability of existing financing cooperation with BPJS Kesehatan 9. Availability of existing MOA with hemodialysis machine provider.	1. Water availability. 2. Limited existing human resources. 3. Limited existing hemodialysis machine. 4. Limited existing hospital beds and/or sofas. 5. Fully booked hemodialysis schedule. 6. The existing Hemodialysis Service Unit was not following the current regulations.
Opportunity/O	**Threat/T**
1. The number of CKD and ESRD constantly growing (according to Sri Pamela Hospital record) 2. Limited availability of hemodialysis service in the city of Tebing Tinggi. 3. Hemodialysis is covered by BPJS Kesehatan. 4. As the oldest hospital in the region, public trust in Sri Pamela Hospital is very high. 5. Sri Pamela Hospital is trusted with delivering healthcare for multiple companies in and around the city of Tebing Tinggi.	1. Development of other Hemodialysis Service Units in the city of Tebing Tinggi.

Table 2. Internal Factor Evaluation Matrix of Sri Pamela Hospital Hemodialysis Service Unit

Internal Factor	Weight	Rating	Score
Strength (S)			
The only C-class hospital with a nephrologist in the city of Tebing Tinggi	0.11	4	0.44
Have the largest number of hemodialysis machines in the city of Tebing Tinggi	0.15	4	0.60
Services were carried out in 3 shifts (morning, noon, and evening)	0.07	4	0.28
Providing traveling hemodialysis service.	0.05	3	0.15
Straightforward administration process.	0.05	3	0.10
Availability of land for expansion and development.	0.07	3	0.21
Availability of infectious hemodialysis machine.	0.08	4	0.32
Availability of existing financing cooperation with BPJS Kesehatan	0.05	3	0.10

Availability of existing MOA with hemodialysis machine provider.	0.07	3	0.21
Weakness (W)			
Limited water availability.	0.05	2	0.10
Limited existing human resources.	0.03	2	0.06
Limited existing hemodialysis machine.	0.05	2	0.10
Limited existing hospital beds and/or sofas.	0.05	2	0.10
Fully booked hemodialysis schedule.	0.07	1	0.07
The existing Hemodialysis Service Unit was not following the current regulations.	0.05	1	0.05
Total	**1**		**3.01**

Internally, Sri Pamela Hospital has four major strengths in the hemodialysis service in the city of Tebing Tinggi; being the only C-class hospital with an in-house nephrologist, operating the largest number of hemodialysis machine, offering hemodialysis service in three shifts, and the existence of exclusive machine for infectious patient. High weight was attributed to the in-house nephrologist in the strength component because of the limited number of nephrologists, not only in the city of Tebing Tinggi but in Indonesia in general.

Meanwhile, the large number of hemodialysis machines is also given high weight because Sri Pamela Hospital Hemodialysis Service Unit operates 17 out of 37 hemodialysis machines in the city of Tebing Tinggi, while the rest are operated by Dr. H. Kumpulan Pane Regional Hospital (6 hemodialysis machines), Bhayangkara Tk. III Hospital Tebing Tinggi (10 hemodialysis machines), and Chevani Hospital (4 hemodialysis machines). Besides that, Sri Pamela Hospital also stands on 131.574 sqm of land, which gives them a lot of room for expansion for further development of the Hemodialysis Service Unit.

However, despite this overwhelming strength, due to the high need for hemodialysis in the city of Tebing Tinggi, the current Sri Pamela Hospital Hemodialysis Service Unit schedule is fully booked by the ESRD patients, resulting in some patients being referred to another hospital for hemodialysis. The current Hemodialysis Service Unit building in Sri Pamela Hospital also did not meet the current Minister of Health standard for the hemodialysis unit and there is a constraint in the staffing level, especially since the Hemodialysis Service Unit service was divided into three shifts.

Table 3. External Factor Evaluation Matrix of Sri Pamela Hospital Hemodialysis Service Unit

External Factor	Weight	Rating	Score
Opportunity (O)			
The number of CKD and ESRD constantly growing (according to Sri Pamela Hospital record)	0.18	4	0.72
Limited availability of hemodialysis service in the city of Tebing Tinggi.	0.21	4	0.84
Hemodialysis is covered by BPJS Kesehatan.	0.21	4	0.84

As the oldest hospital in the region, public trust in Sri Pamela Hospital is very high.	0.11	3	0.33
Sri Pamela Hospital is trusted with delivering healthcare for multiple companies in and around the city of Tebing Tinggi.	0.14	3	0.42
Threat (T)			
Development of other Hemodialysis Service Units in the city of Tebing Tinggi.	0.15	1	0.15
Total	**1**		**3.3**

Externally, Sri Pamela Hospital Hemodialysis Service Unit found a great opportunity for further development and expansion, especially with the limited availability of hemodialysis service in the city of Tebing Tinggi, the constant increase of CKD and ESRD cases in the city of Tebing Tinggi, and the fact that hemodialysis covered by BPJS Kesehatan.

Due to the constant increase of ESRD diagnoses in the Sri Pamela Hospital every year, the need for hemodialysis also increased. Along with the limited availability of hemodialysis services in the city of Tebing Tinggi and BPJS Kesehatan's coverage of ESRD treatment (including hemodialysis), the opportunity for further development of the Hemodialysis Service Unit certainly exists. Sri Pamela Hospital also has a Memorandum of Agreement (MOA) with the hemodialysis machine vendor; hence procurement of new additional hemodialysis machines is relatively easy. The only threat to the current Hemodialysis Service Unit in Sri Pamela Hospital is the development of other Hemodialysis Service Units in other hospitals in the city.

According to the internal and external factor evaluation, an IE matrix was built (Figure 2). In the IE matrix in Figure 2, the Sri Pamela Hospital Hemodialysis Service Unit was located in the first quadrant (top left). In the first quadrant, the Sri Pamela Hospital Hemodialysis Service Unit has a strong internal and external position. In this condition, the best option for Sri Pamela Hospital Hemodialysis Service Unit is doing further development by developing/introducing a new product or service (offering continuous ambulatory peritoneal dialysis/CAPD to alleviate the current constraint on the schedule), while increasing its market absorption (adding more hemodialysis machines) to fulfill the surplus need for hemodialysis service in the city of Tebing Tinggi.

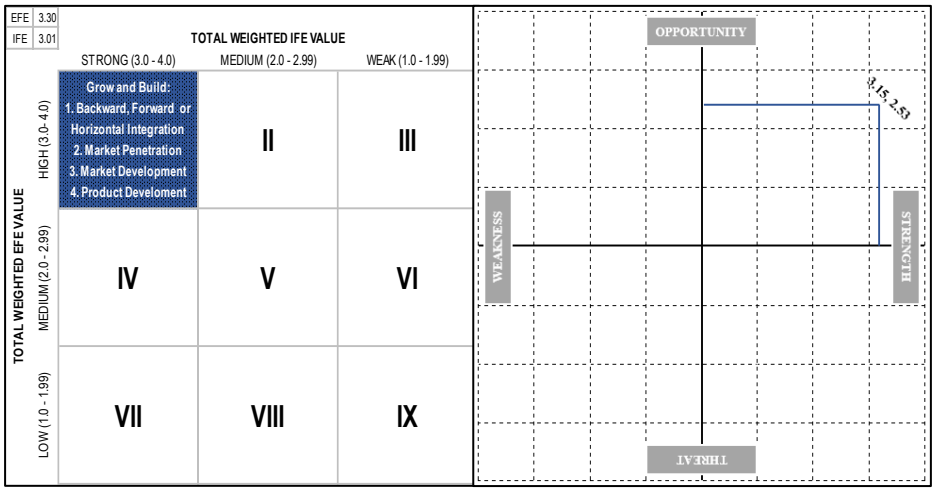

Figure 2. IE Matrix (left) and SWOT Plotting (right) of Sri Pamela Hospital Hemodialysis Service Unit

These findings were further supported by Sri Pamela Hospital Hemodialysis Service Unit's position in the SWOT matrix (Figure 2) which was in the S-O (strength-opportunity) quadrant, which emphasizes the need to exert Sri Pamela Hospital Hemodialysis Service Unit's strength as much as possible to maximally take advantage of the current opportunity. With the large need for hemodialysis in the city of Tebing Tinggi adding more hemodialysis machines through MOA with a hemodialysis machine vendor is the best option for Sri Pamela Hospital to expand and develop its Hemodialysis Service Unit without adding more expenses to the hospital.

DISCUSSION

The 13th Indonesian Renal Registry Report which was released in 2023 found that there are slight decrease in the number of new hemodialysis patients from 69,124 new hemodialysis patients in 2019 down to 61,786 new hemodialysis patients in 2020 (Indonesian Renal Registry, 2018, 2023b). However, considering the report from the previous year, there was an increasing trend of new hemodialysis patients (2007-2018).

Along with the significant decrease in the number of new hemodialysis patients number in 2020, the number of active hemodialysis patients (existing and new hemodialysis patients) also drastically decreased, from more than 185 thousand patients in 2019 sink to around 130 thousand patients (55 thousand decrease) (Indonesian Renal Registry, 2023b). This large dip was likely due to the high mortality rate of ESRD. The same report also found that 93.21% of new hemodialysis patients were due to stage 5 CKD or ESRD, while the rest of 6.79% were due to acute kidney injury (AKI) (Indonesian Renal Registry, 2023b).

In tune with these findings, the number of renal units (Hemodialysis Service Unit), hemodialysis machines, and hemodialysis-certified nurses continuously increased every year (Indonesian Renal Registry, 2014,

2015, 2016, 2017, 2018, 2023b, 2023a).

A similar pattern is also found in Sri Pamela Hospital, where the number of hemodialysis patients constantly growing every year. Despite having the largest number of hemodialysis machines in the city of Tebing Tinggi (17 hemodialysis machines), the high incidence of ESRD in the city of Tebing Tinggi made Sri Pamela Hospital unable to accommodate all patients for hemodialysis in-house. Especially since the 2018 Basic Health Research found that the prevalence of ESRD in North Sumatera was only slightly lower than the national average (0.33% vs 0.38%) (Dinas Kesehatan Provinsi Sumatera Utara, 2018; Kementerian Kesehatan Republik Indonesia, 2018).

The 13th Indonesian Renal Registry Report found that the largest cause of ESRD in Indonesia was hypertension (35%) and diabetic nephropathy or renal disease due to diabetes (29%) (Indonesian Renal Registry, 2023b). These findings are also in accordance with 2018 Basic Health Research data which found that prevalence of hypertension in North Sumatera was 5.5% (national prevalence: 8.36%), while prevalence of diabetes was 1.4% (national prevalence: 1.5%) (Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia, 2018; Dinas Kesehatan Provinsi Sumatera Utara, 2018). The Directorate of Non-Communicable Disease Report in 2022 also found that utilization of healthcare services for hypertension and diabetes mellitus in North Sumatera was quite high (Kementerian Kesehatan Republik Indonesia, 2022).

Increased need and demand for hemodialysis services is a big investment opportunity for hospitals as a business. SWOT analysis is one method to assess the appropriate development step in business. In the context of the Hemodialysis Service Unit, this analysis can help new or existing Hemodialysis Service Units take appropriate steps whether to build a new Hemodialysis Service Unit or expand the existing one, either by adding more machines, expanding the building, all the way to service diversification, like developing peritoneal dialysis service (Dahliana et al., 2022; Lisman et al., 2023; Redyardani et al., 2022). IE matrix and SWOT analysis in Sri Pamela Hospital's existing Hemodialysis Service Unit found that there is a big potential for service expansion.

IE matrix analysis on internal and external factors of Sri Pamela Hospital Hemodialysis Service Unit put them in the first quadrant, giving them a strong position and high potency for further development and expansion. This finding was in accordance with another study on the development of a Hemodialysis Service Unit in a hospital in the city of Depok, West Java, which also falls in the first quadrant (Lisman et al., 2023). In this position, the development strategy must focus on vertical integration to strengthen its supply chain in order to increase service capability at lower cost (Lisman et al., 2023). There are three types of vertical integration: forward, backward, and balanced integration. Forward integration is when one focuses on raw material procurement or production and then develops their business into retail or distribution. Backward integration is the opposite of forward integration, where someone who focuses on retail or distribution develops their business into raw material procurement or production. When a business develops its business unit both ways, to the retail and/or distribution and raw material

procurement and/or production at the same time, it is called balanced integration (Lisman et al., 2023).

In the context of hemodialysis service, Sri Pamela Hospital Hemodialysis Service Unit is currently in the retail position with ESRD patients as the target market. Considering Sri Pamela Hospital currently has an MOA with a hemodialysis machine vendor to provide them with hemodialysis machines and its hemodialysis consumables, the Sri Pamela Hospital Hemodialysis Service Unit is locked in a stable position. Adding more hemodialysis machines into Sri Pamela Hospital Hemodialysis Service Unit would not only increase its service capacity but also increase its need for hemodialysis consumables and dialyzers significantly, therefore putting Sri Pamela Hospital in the bargaining position against the vendor for lower prices on consumables and dialyzers. Since BPJS Kesehatan already capped the reimbursement for each hemodialysis session, bargaining a lower price for consumables and dialyzer will increase the margin between operational cost and the reimbursement by BPJS Kesehatan. Thus, balanced integration is the best option for Sri Pamela Hospital Hemodialysis Service Unit.

SWOT analysis put Sri Pamela Hospital Hemodialysis Service Unit in the first quadrant where an aggressive development strategy is the best option to be employed. However, implementing other strategies (Weakness-Opportunity, Strength-Threat, or Weakness-Threat) would not negatively impact Sri Pamela Hospital Hemodialysis Service Unit's standing in the city of Tebing Tinggi.

As previously discussed, the current weakness of Sri Pamela Hospital Hemodialysis Service Unit is the limited availability of water, staff, and hospital beds/sofas, and the existing building did not meet the regulations. The limited availability of water is because running water from the local water authority is not available all the time. It is highly recommended that the Sri Pamela Hospital increase the water storage unit and the filtration capabilities. Although many guidelines recommend a storage capacity of one day of dialysis (Alcalde-Bezhold et al., 2021; Nissenson et al., 2023), considering the limited availability of water in Sri Pamela Hospital, increasing this capacity would be beneficial for the Hemodialysis Service Unit and in turn for the patients.

Currently, the number of hemodialysis-certified nurses in Sri Pamela Hospital Hemodialysis Service Unit is nine nurses for its 17 hemodialysis machines. The current regulation for staff to hemodialysis machine ratio is three staff for every four machines (Peraturan Menteri Kesehatan Republik Indonesia Nomor 812 Tahun 2010 Tentang Penyelenggaraan Pelayanan Dialisis Pada Fasilitas Pelayanan Kesehatan, 2010), thus the Sri Pamela Hospital existing Hemodialysis Service Unit is short of at least four hemodialysis-certified staff. This staff shortage can lead to lower service quality and patient satisfaction and increase the risk for the patients. A study of multiple in-center hemodialysis care in the United States found that centers with higher patient-to-staff ratios have a 7% higher mortality rate and a 5% higher hospitalization rate (Plantinga et al., 2024). Another study also found that inadequate staffing in hemodialysis centers leads to a higher workload for the existing staff, a higher risk of bloodstream infection, and lower patient safety (Fisher et al., 2020; Thomas-Hawkins et al., 2020). Adequate staffing is not only

beneficial for the patients, but it is also improving staff satisfaction and possibly financially beneficial for the hospital (Cho et al., 2023; Griffiths et al., 2023). Considering the limited availability of hemodialysis-certified nurses in general, recruiting non-hemodialysis-certified nurses and training them to be a hemodialysis-certified nurse is preferable to inadequate staffing.

As the planning for further development of the existing Hemodialysis Service Unit, adhering to the current regulations is the bare minimum. The current regulation dictates that the minimum distance between two hospital beds or sofa is 2.4 meters, and for private room space on one side at least 3 meters wide (Peraturan Menteri Kesehatan Republik Indonesia Nomor 40 Tahun 2022 Tentang Persyaratan Teknis Bangunan, Prasarana, Dan Peralatan Kesehatan Rumah Sakit, 2022). However, the distance between each hospital bed and sofa in the existing Hemodialysis Service Unit varies between 1.7 meters to 2.5 meters. This led to a crowded hemodialysis room, which decreased patients' comfort during the four to six-hour procedure. As Sri Pamela Hospital plans further building expansion, constructing a big enough building to adhere to the regulations is highly recommended.

Aside from expanding the Hemodialysis Service Unit service capacity by adding more hemodialysis machines and expanding the building, service diversification by offering CAPD is also on the table for the Sri Pamela Hospital Hemodialysis Service Unit. This diversification will alleviate the current fully booked hemodialysis schedule in Sri Pamela Hospital Hemodialysis Service Unit since CAPD patients do not need to be in the Hemodialysis Service Unit every week or twice a week, but only once a month. Data from the 11th Indonesian Renal Registry Report, and a study by Lydia *et al*. (2021) and Redyardani, Ayuningtyas, and Fatimah (2022) show that currently, only 2% of ESRD patients in Indonesia use CAPD as their renal replacement therapy (Indonesian Renal Registry, 2018; Lydia et al., 2021; Redyardani et al., 2022).

These studies also suggested that the reason why CAPD utilization in Indonesia was relatively low was due to lack of information among the patients, and generally not readily offered by the healthcare services (Redyardani et al., 2022). Education and promotion of CAPD in the Hemodialysis Service Unit, in hospitals or clinics, can give more information and build patients' knowledge of CAPD, with the expectation that patients can make a calculated decision.

From the payer point of view, whether it is out of pocket, private insurance, or BPJS Kesehatan, CAPD is also more cost-effective with an estimated cost of Rp 8,000,000 per month for the dialysates and Rp 250,000 per six months for the transfer set; compared to between Rp 6,346,400 up to Rp 13,257,600 per month per patient for in-office hemodialysis (Jonny et al., 2022; Peraturan Menteri Kesehatan Nomor 3 Tahun 2023 Tentang Standar Tarif Pelayanan Kesehatan Dalam Penyelenggaraan Program Jaminan Kesehatan, 2023).

Besides that, six to 13 million per month, hemodialysis also incurred additional costs such as blood transfusion and treatment for side effects of hemodialysis. The study also found that ESRD patients who undergo CAPD instead of hemodialysis have better quality of life (90% vs 46%) (Jonny et al., 2022). ESRD patients on CAPD have a better quality of life because they have more time to work and socialize as

usual, compared to hemodialysis patients who are tethered to a machine for 4-6 hours twice a week (Jonny et al., 2022).

Thus, the development of CAPD service in Sri Pamela Hospital Hemodialysis Service Unit must be considered carefully by the administration, because even CAPD has risks such as peritonitis, hernia, and some technical problems (Lydia, 2020). Also, currently, there are no studies on comparison between real CAPD cost and standard non-INA-CBG reimbursement by BPJS Kesehatan thence its feasibility is not known scientifically, but empirically possible.

Despite the high growth of ESRD incidence in Indonesia, knowledge and awareness of this disease and its treatment and management are still low (Kustimah et al., 2019; Liu et al., 2021). This lack of knowledge and awareness also contributed to the high incidence of ESRD, low treatment adherence, and low social support in patients with ESRD (Liu et al., 2021). Thus, one strategy is to improve the awareness and knowledge of CKD through education and counseling, not only for the patients but also for their social support (family and friends).

For patients, early detection and treatment of risk factors of CKD like hypertension and/or diabetes is essential. Education and counseling for the patients and their social support by the cardiologist and/or internist on how to prevent CKD and/or delay its progression are crucial in effort to prevent CKD and its progression and also maintain patients' quality of life.

CONCLUSION

Based on the internal and external factors evaluation and SWOT analysis of Sri Pamela Hospital Hemodialysis Service Unit it can be concluded that the development of Sri Pamela Hospital Hemodialysis Service Unit is highly recommended by expanding the existing building, adding more hemodialysis machines along with more hemodialysis-certified nurse to maintain Sri Pamela Hemodialysis Service Unit standing in the city of Tebing Tinggi. Along with this expansion, it is also highly recommended for the Hemodialysis Service Unit and associated clinics to constantly provide counseling for patients with a high risk of developing CKD.

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