

Impact of the Covid-19 Pandemic on Resilience of Pharmaceutical Preparations Management, Case Study of MMC Hospital Jakarta

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Abstract— The COVID-19 pandemic has brought great challenges to healthcare service providers, including the pharmaceutical-logistics sector. This study aims to determine the evaluation of the impact of covid-19 on the resilience of inventory management at the Metropolitan Medical Center (MMC Hospital). This study uses a qualitative method in the form of a case study with descriptive analysis of several secondary data in the form of reports or documents related to inventory data, patient visit data, as well as hospital income and expenditure data during the Covid-19 pandemic starting from February 2020 to December 2021. The research population is hospital management who are involved in the inventory management process at the hospital. This study shows that hospital inventory conditions are not ideal in terms of inventory fulfillment to inventory turnover due to the influence of the Covid-19 Pandemic situation which began in 2020 and will continue until 2021. The number of inventory fulfillment for unit requests to warehouses has decreased, especially at the beginning of the pandemic, besides that, the inventory turnover rate also decreased, indicating that there were supplies that were not being used because the majority of the supplies needed were centered on the Covid-19 disease with a fairly high number of visits during pandemic conditions. Hospitals need to make various efforts, such as improving forecasting and planning mechanisms, arranging scheduled purchasing, determining drug priorities, and formulating policies according to certain conditions experienced by hospitals.

Keywords: covid-19, resilience, pharmaceutical-logistics, inventory management

1. Introduction

At this time the world is being hit by the "Covid-19" pandemic which was first discovered in Wuhan China and is an outbreak caused by the Coronavirus and has occurred in 2019 until now with the death toll reaching 5,936,884 people until February 2022(Worldometer, 2022). Coronavirus Disease 2019 (Covid-19) is an infectious disease caused by a new type of coronavirus, namely SARS-CoV-2 with a very high transmission rate so that this condition brings great challenges to health service providers, the covid-19 pandemic encourages hospitals to be careful in managing pharmaceutical logistics needs so that the availability of drugs and vitamins for COVID-19 and non-COVID-19 patients is fulfilled. The impact of the pandemic on the pharmaceutical sector can be viewed from a different perspective. From one side, COVID-19 can be seen as an opportunity in the pharmaceutical industry, because it can increase the demand for medicines, vaccines, and medical consumables. However, on the other hand, a pandemic can also cause short-

term and long-term losses. Short-term losses that may arise include demand fluctuations, panic buying, and stockpiling of medicines, while long-term losses include delays in the supply chain of medicines and delays in the pharmaceutical industry's manufacturing process due to activity restrictions. Drug logistics planning is one of the important things which is the main part of operational management in hospitals which is responsible for planning and procurement, storage, distribution of drugs to patients, as well as monitoring and evaluation. The results of previous research conducted at the hospital by Oktaviani, et al (2017) stated that pharmaceutical logistics management in hospitals can control the availability of medicines and maintain the quality of hospital services(Oktaviani et al., 2018).

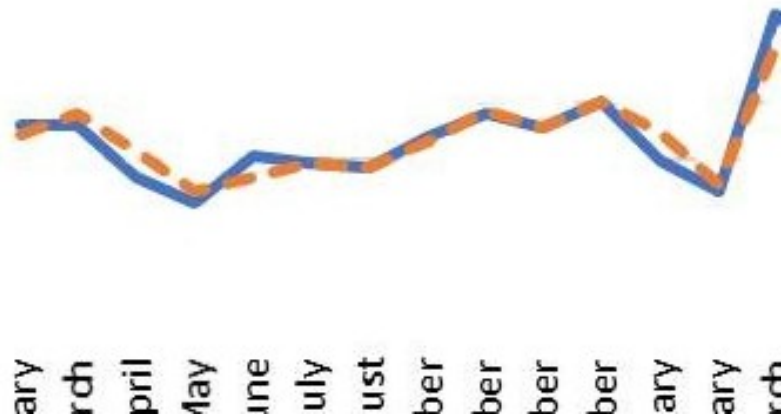
The current COVID-19 pandemic requires the government to have extraordinary policies. Policies to address health issues, protect the public with social security, and protect the business world are priorities. Budget realization, refocusing of activities, as well as adjustments to the amount of mandatory spending are the government's main ways to fund the needs of handling COVID-19. The policies issued are required to reduce existing problems. At least efforts to eradicate epidemics and pandemics in Indonesia are carried out through actions, such as: self-awareness, handling of sufferers, sources of disease must be destroyed, and socialization to the public. Systematic efforts that have been carried out include planning a national scale movement to eradicate disease and regional and international scale agreements(Sumampouw, 2017).

The World Health Organization (WHO) has also released provisional guidance in accordance with the International Health Regulation 2005 instrument (Organization, 2008) such as guidance on surveillance and response, laboratory diagnosis, clinical management, infection prevention and control measures, risk communication, pattern care for patients with status under surveillance or suspected of being infected with Covid-19, and empowering the public. Previously, WHO said that Covid-19 was classified as a virus with a very high spread of escalation and also spread in various countries so that it immediately determined the status of Public Health Emergency of International Concern (PHEIC) since January 30, 2020(Tim Kerja Kementerian Dalam Negeri, 2013). In the field of pharmaceutical logistics, the Indonesian government also has various policies, some of which are the Regulation of the Minister of Health Number 7 of 2020 concerning Importation of Medical Devices through the Special Route Mechanism and the Decree of the Minister of Health Number 218 of 2020 which states that imported medical devices do not require any further marketing permits. This provision applies to imports of medical devices including rapid test kits and PPE with the aim of accelerating the handling of the Covid-19 pandemic in Indonesia.

Metropolitan Medical Center Hospital (MMC Hospital) is one of the hospitals appointed by the DKI Jakarta Provincial Government as a Covid referral hospital, allocating 30% of operational costs for pharmaceutical preparations during the pandemic. This is because pharmaceutical preparations are the most important component in service. The adequacy and availability of pharmaceutical preparations is highly dependent on the logistics and pharmaceutical planning process. Thus, this thesis was prepared to design a pharmaceutical preparation planning strategy as an effort to optimize pharmaceutical preparations during the Covid-19 pandemic, to maintain the sustainability of the logistics management of pharmaceutical preparations in hospitals. The

following is a description of the condition of the MMC Hospital;

Figure 1: Total of Revenue and Cost MMC Hospital (2020-2021)
(2020-2021)



The graph above provides an overview of the condition of the MMC Hospital which is reflected through the income and expenses of the MMC Hospital from February 2020 to December 2021, it can be seen from the data that the income and expenses of the MMC Hospital experienced fluctuating conditions during that period, the decline in income gradually became significant. seen at the beginning of the covid-19 pandemic that entered Indonesia, namely in March, April and reached its lowest point in May 2020, in June 2020 it rose and experienced improvements, then in May 2021 MMC Hospital again experienced a significant decline in income again. This is also in line with the expenditure graph shown, where in March 2020 there was an increase in spending in line with the high number of COVID-19 cases when they first entered Indonesia. The increase in MMC Hospital expenditures occurred again in the month of the first wave of Covid-19 cases, namely in November 2020-20 January 2021 and in the second wave of Covid-19 cases in June 2021. The expenditure component for hospitals was dominated by expenditure on pharmaceutical needs, which amounted to 33 % in 2020 and 30% in 2021 of total hospital expenses.

Thus, the COVID-19 pandemic has a relationship with hospital cash flow conditions as a basis for looking at detailed evaluations, especially in inventory management (pharmaceutical logistics) because the drug spending budget in hospitals is the largest component of hospital expenditures. In many developing countries, drug spending in hospitals can absorb around 40 to 50% of the total hospital costs. These large costs must be managed effectively and efficiently, considering that funds for purchasing drugs in hospitals do not always match the needs according to the guidelines for preparing drug needs plans and controlling drug supplies in hospitals(KEMENKES RI 2019, n.d.).

This study aims to determine the evaluation of the impact of covid-19 on the resilience of inventory management at the Metropolitan Medical Center (MMC Hospital). In depth, the following research aims to describe the changing pattern of health services during the pandemic at the Metropolitan Medical Center (MMC Hospital); knowing the evaluation of inventory delivery lead times during the pandemic at the Metropolitan Medical Center (MMC Hospital); knowing the fulfillment of the needs for the planned achievements with the goods received; as well as knowing the inventory turnover of drugs during the pandemic at the MMC hospital. This study uses a qualitative method in the form of a case study with descriptive analysis of several secondary data in the form of reports or documents related to inventory data, patient visit data, as well as hospital income and expenditure data during the Covid-19 pandemic starting from February 2020 to December 2020, 2021. The research population is the hospital management involved in the inventory management process in the hospital, namely the pharmacy unit, purchasing unit, receiving and disbursing unit, and the finance department. The research location of this study is the Metropolitan Medical Center Hospital in Jakarta, Indonesia, which is one of the hospitals that participated in providing services during the Covid-19 pandemic.

2. Result and Discussion

In 2019, MMC Hospital used the consumption method through historical trends (MIN and MAX method), annual trends and upfront pharmacy discounts. In 2020, since the Covid Pandemic first attacked Indonesia, MMC hospital used the consumption method with a just in time approach and a short term trend weekly basis. In addition, the COVID-19 pandemic has also prompted MMC hospitals to use the ABC-VEN method to analyze fast-moving and slow-moving goods, that methods related to stock optimization, lead time, pharmacies panel partnership, cashflow availability optimization, applied discounts on invoices term-compensate pharmacies panel price. In 2021, the logistics management method used by MMC Hospital is the consumption method on a half month basis in collaboration by looking at the morbidity trend which refers to the 10 most diseases (9ICD X) and pareto based secured optimization. In 2021, MMC hospital logistics management will also use a forecast planning system by looking at the margin concern.

In this study, several analyzes were carried out on the situation that occurred at MMC Hospital in terms of inventory management which was faced with several non-ideal conditions due to the Covid-19 pandemic. Some of the data observed included changes in terms of patient visits, inventory lead times, inventory fulfillment, to inventory turnover that occurred at the beginning of the Covid-19 pandemic from March 2020 to December 2021.

2.1 Patient Visits and Disease

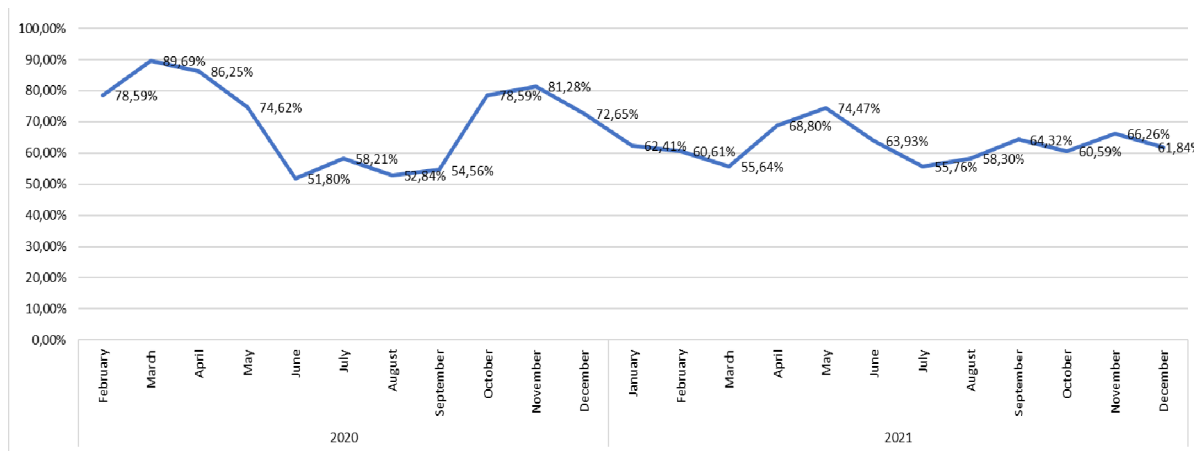
Patient Visit in MMC's Hospital show that in 2020 the occurrence of the Covid-19 Pandemic forced hospitals to provide services for Covid-19 patients, its made the data on visits to Covid-19 services increase from 2020 to 2021 both in outpatient (approximately 1.219 patient in 2020 increase to 3.716 patient in 2021) and inpatientcare (approximately 463 patient in 2020 increase to 1.142 patient in 2021), while in Non-Covid service has decreased from to 2021 both in outpatient 2020 (approximately 147.059 patient in 2020 decrease to 137.993 patient in 2021) and inpatient care (approximately 6.848 patient in 2020 decrease to 6.284 patient in 2021).Its shows a positive

relationship between Covid cases and the high number of visits, on the other hand, these conditions put pressure on hospitals due to decreased visits and cases of diseases other than Covid. It has encouraged hospitals to be able to survive and adapt to all system changes that were affected by the COVID-19 pandemic that attacked Indonesia.

The trend of disease that occur in MMC’s Hospital show that from 2020 to 2021, since the Covid-19 Pandemic began, hospital services are also dominated by Covid-19 disease, especially inpatients who occupy the first position in the 10 most diseases, with 14.8% in 2020 and 31% in 2021. In outpatient care, Covid-19 is also included in one of the 10 most diseases, namely the 9th position at 4.7% in 2020 and the 4th position at 11.5% in 2021. The high number of COVID-19 has contributed to the increase in patient visits for COVID-19 cases.

2.3 Supply Fulfillment

Figure 2: Pharmaceutical Fulfillment from Pharmacy Warehouse MMC Hospital (2020-2021)



At the beginning of the Covid-19 pandemic, there was a significant decline in terms of fulfilling the demand for pharmaceutical from units to hospital pharmacy warehouses, in March 2020 the percentage of inventory fulfillment showed the highest number of all data, which was 89.69% and there was a decrease after that. until it reaches the lowest figure of all data, which is 51.80% in June 2020 (MMC Hospital Data, 2022). This is because since the beginning of the Covid-19 pandemic there has been an increase in cases in Indonesia in the following months so that hospitals feel overwhelmed in meeting the demands of each unit. Therefore, adaptation efforts are needed from hospitals to be able to carry out tighter inventory control in the conditions of the Covid-19 pandemic in terms of policies and guidelines including formularies, cooperation agreements with suppliers, mechanisms for anticipating empty stock, drug safety systems, pharmaceutical service guidelines, and drug procurement guidelines (KEMENKES RI 2019, n.d.).

2.4 Turn Over Inventory

Figure 3: Inventory Turn Over at Sales (ITOs) MMC Hospital (2019-2021)

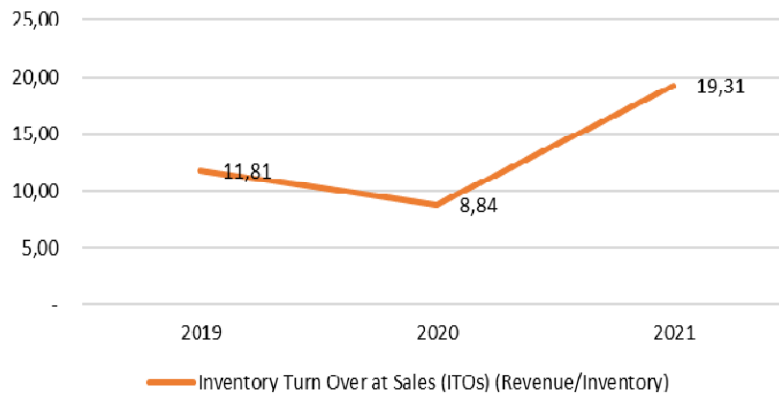
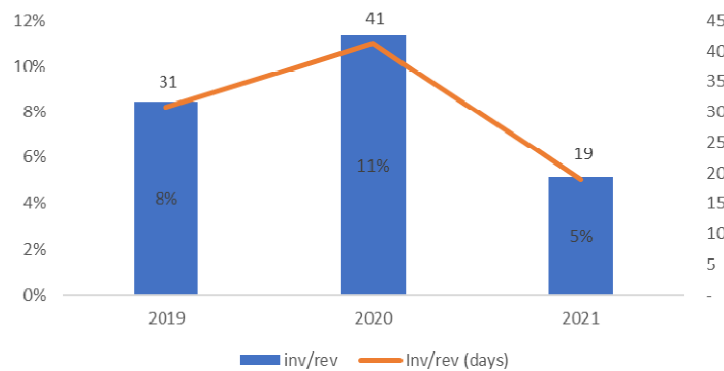


Figure 4: Inventory/Revenue MMC Hospital (2019-2021)



Inventory Turnover Ratio with revenue versus inventory formula is one of the performance measurements to assess the effectiveness of inventory management by measuring how many times the company can sell inventory within a certain period (Rao & Rao, 2009). In the transition from 2019 to 2020 there was a decrease in the value of inventory turnover (revenue or revenue compared to inventory or inventory in a period of time), while this decrease indicates a declining inventory turnover due to the Covid-19 pandemic conditions, services are dominated by Covid-19 patients or the symptoms are similar so that the supply of pharmaceuticals needed is not evenly distributed. In 2021, there will be an increase in the turnover value, indicating that the hospital has been able to adjust inventory management to conditions such as excessive inventory efficiency. The comparison value of inventory with revenue when multiplied in units of days (365 days) means that in 2019 it is 31 days, in 2020 it is 41 days, in 2021 it is 19 days. and a decrease in days illustrates the drug turnover is getting faster (fast moving).

In an effort to increase the value of inventory turnover, hospitals need to do things such as arranging scheduled orders (scheduled purchasing) to apply the method of determining stock levels (Indarti et al., 2019) besides that, it is also necessary to determine drug priorities, improve forecasting and planning mechanisms in order to avoid the accumulation of drug supplies, and develop policies according to certain conditions experienced by hospitals (Gilang, 2016).

3. Conclusion

This study shows that hospital inventory conditions are not ideal in terms of inventory fulfillment to inventory turnover due to the influence of the Covid-19 Pandemic situation which began in 2020 and will continue until 2021. The number of inventory fulfillment for unit requests to warehouses has decreased, especially At the beginning of the pandemic, besides that, the inventory turnover rate also decreased, indicating that there were supplies that were not being used because the majority of the supplies needed were centered on the Covid-19 disease with a fairly high number of visits during pandemic conditions. Therefore, hospitals need to make various efforts such as improving forecasting and planning mechanisms, arranging scheduled purchasing (scheduled purchasing), determining drug priorities, and formulating policies according to certain conditions experienced by hospitals.

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