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RESEARCH ARTICLE

The impact of COVID-19 on the management of medicines at a public health centre: A showcase of pharmacist resilience

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Abstract

Background: The COVID-19 pandemic has had an impact on the management of medicines at public health centres in Indonesia. Travel restrictions and shortages of certain medicines have put pharmacists in difficult situations and made ensuring the uninterrupted supply of medicines to patients more challenging. **Objective:** This study aims to identify the impact of COVID-19 on the management of medicines at Indonesian public health centres, and highlight the pharmacist's resilience in community practice. **Method:** Four focus group discussions (FGDs) were conducted in May 2021 involving 40 pharmacists at public health centres in Surabaya, Indonesia. Each group was asked about the professional practice of pharmacists during the 2020 and 2021 pandemic, including the obstacles and strategies for maintaining practice. The FGDs were audio-recorded, transcribed verbatim, and analysed thematically. **Result:** The participants agreed that the COVID-19 pandemic presented a significant challenge in the planning and use of medicines, and pushed pharmacist to change their procurement methods. Travel restrictions has resulted in a significant drop in patient visits. The situation have caused several drugs, particularly antibiotics, to go unused and expire, whilst there was an increased demand for COVID-19 medicines. Pharmacists were eventually able to cope with the problems by developing adaptability skills and by collaborating with others. **Conclusion:** COVID-19 presented a series of challenges in the management of medicines at public health centres in Indonesia. Pharmacists have a strategic role in overcoming these challenges, this study highlights resilience as key for successful pharmacy practice.

Introduction

The Corona Virus Disease 2019 (COVID-19) has affected global health and social and economic systems (Shadiqi *et al.*, 2020). In response to the pandemic situation, governments across the globe have imposed restrictions on community activities which impacted the distribution of essential services and goods, including medicines (Billore & Anisimova, 2021; Sarasnita, Raharjo, & Rosyad, 2021). As a result, there were shortages of vital medicines in pharmacies, which put pharmacists in a difficult position in trying to ensure patient access to medication (Djalante *et al*., 2020).

Pharmacists were expected to deliver uninterrupted supplies of medicines despite the restrictions and pandemic situation (Pangoempia *et al.,* 2021). Therefore, pharmacists have a vital role in managing their inventories effectively and efficiently in pandemic situations. Mismanagement may lead to serious negative impacts both clinically and economically (Malinggas *et al*., 2015). Given the evolving situation, pharmacists need to be adaptive and develop resilience for managing medicines during pandemic crises (Visacri, Figueiredo, & Lima, 2020).

Public health centres (PHCs) in Indonesia are the front line for handling COVID-19 cases (Hermansyah Sainsbury, & Krass, 2018; Hermansyah *et al.*, 2020). It is vital to ensure that essential medication, and essential COVID-19 medication, remains available to patients during the pandemic. However, travel restrictions and lockdowns have made patients with comorbidities and chronic conditions unable to and fearful of visiting their local PHCs. These conditions have forced pharmacists

to adapt rapidly to the changing needs of their patients. Therefore, this study aims to identify the impact of COVID-19 on the management of medicines at PHCs in Indonesia and to shed light on pharmacist resilience in such situations.

Methods

This study used a qualitative approach by analysing the opinions of pharmacists through a series of focus group discussions (FGDs). The sampling technique used in the FGD was purposive sampling; the recruited participants were pharmacists working in PHCs in Surabaya, Indonesia (the second largest city in Indonesia with a population of almost 3.5 million). The participants represented five different regions in Surabaya, namely the: northern region, southern region, western region, eastern region, and central region.

The FGDs were conducted online using ZOOM in May 2021. Of the 65 pharmacists working in PHCs that applied, 40 were invited for the FGDs. Four FGDs were carried out, with ten participants in each of the groups. The researchers acted as facilitators and moderators for the FGDs.

Each group was asked about the obstacles that pharmacists encountered when managing medicines during the pandemic, the strategies used to cope with the challenges and personality traits that were instrumental to working effectively during the pandemic situation. The interview questions were tested for validity and reliability according to the principle of trustworthiness in qualitative research. Each of the FGDs lasted approximately one hour.

The FGDs were audio recorded and transcribed verbatim in Indonesian before being translated into English and analysed thematically. Data analysis was carried out using the Interpretative Phenomenological Analysis (IPA) method, focusing on the phenomenon of the pharmacist cohort and how they were adaptive to changes. The final themes were determined after saturation had been achieved from data analysis.

Results

The themes were categorised into three main subject areas, namely: the challenges faced by pharmacists during COVID-19, the pharmacist's strategies to cope with the challenges, and the pharmacist's personality traits. Each theme was supplied with a relevant quote to illustrate the phenomenon as presented in a subsequent section.

The challenges faced by pharmacists during COVID-19

Unused and expired medicines

'Before the pandemic, medicine inventory was determined using records of past consumption. In PHC, we only procure once a year and we submit the planning (via procurement system) by the end of 2019. However, this (inventory model) became irrelevant since the number of patients has dropped to the lowest making some medicines such as antibiotics and drugs for minor ailments were unused and eventually expired' – Female

Medicine shortage

'At the beginning (of the pandemic), we gave patients (with chronic diseases) medicines for one month supply. We prevent patients to come often (due to their comorbidities). However, such decision has provoked a backlash to our inventory. Medicine shortage was evident approaching the end of year (2020) including Glimepiride, Glibenclamide, and Metformin. Sadly speaking, even our central pharmacy warehouse run out of Metformin.' – Male

Difficult to actively communicate with patients

'Major obstacle is when we wear a mask and had plastic barriers in the desk, it was difficult to talk to patients, thus consultation was challenging' – Female

Pharmacist Strategy to cope with challenges

Importance of decision-making for medicine planning

'We don't know the actual need for COVID medicines since we don't have estimate how many patients would receive Azithromycin or Oseltamivir. (I adopted) planning (method) was challenging as I am concerned of overstock or understock (of medicines) occurred again in (year) 2021. After consulting with the head of PHC, I decided to apply unregulated procurement using petty cash funds because the demand for COVID medicines was varying each time' – Female

Supply chain coordination

'I usually work together with other PHCs to avoid stockout by relocating medicines from one to another PHC … I also have a list of medicines that I can substitute if stockout was happened.' – Female

Digital Pharmaceutical Care

'(I do) counselling via WhatsApp chat…In fact, patients might have better understanding via chat because it is written clearly. This was different to face-to-face communication as I need to repeat the message couple

of time (to make patient understand). I sent the medicines via courier under telemedicine services' – Female

Pharmacist successful characters

Adaptability skills

'Formerly, procurement (of medicine) was based on past consumption data, now it is not. It is not working to use the same method. We need to adapt with the situation' – Female

Collaboration between pharmacists

'We share (items and medicines) with other PHC particularly for the chronic medicines. Which (PHC) might be lacking (of medicines) and which (PHC) has medicine overstock' – Female

Discussion

This study discusses the instrumental role of pharmacists in PHCs during the COVID-19 pandemic. The pandemic, undoubtedly, has burdened healthcare services, including PHCs, and impacted the supply of medicines and pharmacy services.

A conservative policy in terms of lockdown and travel restrictions has contributed to the decrease in patient visits to PHCs (Hugelius, Harada, & Marutani, 2021). Patients, and healthcare providers, were concerned that onsite consultations and services would facilitate the spread of the infection. This study found that a drop in patient visits resulted in low demand for antibiotics and minor ailment medicines. Some of these medications remained unused and expired in the pharmacies. Such a phenomenon was also found in countries struggling with COVID-19 infection spread for common medication and even for COVID-19 vaccines and medications.

The COVID-19 pandemic also dramatically altered the delivery of outpatient care, particularly for patients with comorbidities such as diabetes mellitus, hypertension and asthma who prefer to stay at home (Baum, Kaboli, & Schwartz, 2021). Pharmacists in this study were encouraged to supply more medicines for these patients during the pandemic to minimise in-person visits to clinics. As a result, the pharmacies suffered medication shortages by the end of the year. The combination of a lack of flexibility in the procurement model, dramatic changes in the demand for medicines and the restrictions imposed during the pandemic have forced pharmacists to develop strategies in inventory procurement and delivery of services. A study by Cameron and Bushell (2020) highlighted that medication shortages were also evident in the Australian and American markets before and during the pandemic crisis. In fact, drug shortages increased by 300% in Australia, representing the considerable impact of COVID-19 on the health system (Cameron & Bushell, 2020).

This study highlighted that decision-making planning was critical during the pandemic. Pharmacists were unable to procure medicines based on the records of past consumption, particularly for COVID-19 therapies, due to uncertainty of information relating to COVID-19 cases. Uncertainties and sudden changes were common, which necessitated pharmacists deliver timely and adaptive responses (Johnston *et al*., 2021). Therefore, measures were taken on the basis of the limited available data, including for the purchasing of medicines. Pharmacists were also encouraged to actively communicate with other stakeholders to minimise stockout or overstock.

The period since the start of the pandemic has witnessed the increased use of telemedicine services in PHCs in Indonesia. PHCs, which act as safety-net primary care providers, are responsible for serving the nation's populations, particularly low-income and medically underserved communities. This was especially challenging during times of movement restrictions. As a result, telemedicine was implemented to provide broader access to services for patients. Consultations and pharmacy services were also carried out using telemedicine services. Pharmacists in this study highlighted the potential for telemedicine to educate patients. This finding was similar to many studies reflecting that telemedicine (interchangeably described as telepharmacy) is the next avenue for delivering quality pharmacy services post-pandemic (Al Meslamani *et al.*, 2022; Elson *et al.*, 2020; Elbeddini & Yeats, 2020).

The complexities of care and management of medicines during the pandemic have encouraged pharmacists to be adaptive and resilient in practice. This study highlighted two fundamental characteristics of practising pharmacists for survival during the pandemic situation, namely adaptability and collaboration skills. These two traits have long been part of a pharmacist's soft skill set, which is nurtured during pharmacy education (Ismail *et al.*, 2022). Yet, the pandemic situation has strengthened these adaptive and resilient personalities. This study supports previous findings that resilience is a characteristic and quality that patients and health systems seek from their pharmacists (Hermansyah, Setiawan, & Riansyah, 2021).

This study highlights the values pharmacists showcased and practised during the pandemic situation. Some notable limitations to this study include the selection

bias in the process of recruiting participants for FGDs and how the themes were developed from the findings may have led to some information being either over-represented or under-represented. However, the fact that the COVID-19 pandemic has distorted the health system and delivery of healthcare inevitably illustrates that resilience in pharmacy practice is fundamental to all practising pharmacists.

Conclusion

COVID-19 has presented challenges in the management of medicines at PHCs in Indonesia. The drop in patient visits has made several medicines unused and expired. Strategies to overcome the challenges have been devised, ranging from adjusting the procurement model to using of digital platform. Adaptability skills and collaboration highlight pharmacist resilience towards changes.

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