

Potential roles of community-based pharmacists in assisting home-quarantined patients with COVID-19 in a resource-challenged setting

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Abstract

Objectives To present the experiences of community-based drug information centre (DIC) pharmacists assisting home-quarantined patients with COVID-19 in Indonesia.

Methods A prospective case study included home-quarantined patients with suspected/confirmed COVID-19 contacting pharmacists at a DIC in Indonesia in July 2021. Patient characteristics, pharmacist interventions and outcomes were reported.

Key findings Fifteen home-quarantined patients were screened for COVID-19 and were provided with follow-up services (i.e. medication review and monitoring). Worsening symptoms and/or reduction in oxygen saturation were reported in seven patients where a referral to medical services was made for them. Most patients recovered at follow-up (4–14 days).

Conclusions Community-based DIC pharmacists potentially contributed to the frontline emergency response, as observed during the COVID-19 crisis in Indonesia.

Keywords: COVID-19; pharmacists; home isolation; roles; Indonesia

Introduction

The COVID-19 pandemic is an ongoing global health crisis.^[1] Developing countries with limited health resources have experienced enormous healthcare pressures. By July 2021, Indonesia's COVID-19 outbreak had rapidly escalated. Daily reported new case numbers reached 56 757 on July 15, and the positive test rate soared to 26%.^[3] As health facilities collapsed, many suspected COVID-19 patients self-isolated at home without assistance or understanding of how to manage their conditions.^[4] The Indonesian pharmacy standards have established drug information as part of a pharmacists' professional role. The national Drug Information Centre (DIC) was launched in 2005, while many local independent DICs, either community-based or hospital-based, have also been initiated.^[5] This study reports the interactions of community-based (DIC) pharmacists assisting home-quarantined patients with COVID-19 in Indonesia.

Methods

This prospective single-centre case study included patients with suspected/confirmed COVID-19 and isolated at home contacting pharmacists at a DIC in Surabaya, Indonesia, during the second COVID-19 wave from 10 to 20 July 2021.

This DIC is one of the oldest community-based DICs, being established in 1999 and the first one located in a university setting. The DIC provides drug information to healthcare providers and consumers, with no role in dispensing/supplying medications or prescribing. The service was promoted via the university website as well as community-related activities/seminars; eight pharmacists are available online (via WhatsApp) from 9 am to 5 pm on weekdays. A patient record form was used by the pharmacist for the documentation of patient data (e.g. demographics and clinical findings), pharmacist intervention and outcomes. The Indonesian guidelines on the management of COVID-19 guided the pharmacist intervention.^[6] The study was approved by the Ethics Committee of the University of Surabaya (Number 221^a/KE/XII/2021).

Results

A total of 15 home-quarantined patients contacted the DIC during the study period. All patients gave informed consent for publishing their clinical data. Patients' characteristics when first contacting the DIC are summarised in Table 1 (details are included in the [Supplementary Material](#)). Most resided in Western regions of Indonesia (13/15), and about half were rural residents. Most were females, and the average

Table 1 Summary of cases of home-quarantined patients with suspected/confirmed COVID-19 ($n = 15$)

Patient case presentation (at first contact with DIC)		
Demographics		
Age [mean (range)]		47.4 years (27–79 years)
Sex (n)	Female	10
	Male	5
Comorbidities (n)	None	6 (patients 1, 8, 10, 13, 14 and 15)
	Hypertension	1 (patient 2)
	GI problems	2 (patients 3 & 9)
	Autoimmune	2 (patients 4 & 6)
	Hyperthyroidism	1 (patient 5)
	DM & hypertension	1 (patient 7)
	Obese	1 (patient 11)
	OA (mild)	1 (patient 12)
Area of residence (n)	Western part – rural	4 (patients 1, 2, 7 and 8)
	Western part – urban	9 (patients 3, 5, 9, 10, 11, 12, 13, 14 and 15)
	Eastern part – urban	1 (patient 4)
	Central part – urban	1 (patient 6)
Close contact of a positive case (n)	Don't know	6 (patients 1, 3, 4, 9, 10 and 11)
	Yes	9 (patients 2, 5–8 and 12–15)
Clinical findings		
COVID-19 testing (n)	No	3 (patients 1, 4 and 6)
	Yes (antigen test – positive)	9 (patients 2, 5, 7, 8, 10, 11, 13, 14 and 15)
	Yes (PCR – positive)	3 (patients 3, 9 and 12)
COVID-19 vaccination (n)	No	8 (patients 1, 2, 7, 10, 11, 13, 14 and 15)
	Yes (first dose)	6 (patients 3, 4, 5, 6, 8 and 9)
	Yes (two doses)	1 (patient 12)
Symptoms (n)	Flu-like symptoms (headache/runny nose/cough/sore throat)	15 (all)
	Nausea/vomiting	3 (patients 3, 7 and 8)
	Anosmia/dysgeusia/loss of appetite	9 (patients 3, 5, 7, 8, 9, 10, 11, 13 and 14)
	Fatigue/myalgia	1 (patient 7)
	Palpitation	2 (patients 3 and 8)
Duration (range)		1–7 days
O ₂ saturation (n)	NI	8 (patients 1, 3, 4, 5, 6, 11, 14 and 15)
	93–99%	7 (patients 2, 7, 8, 9, 10, 12 and 13)
Pharmacist intervention		
(a) Screening patient for COVID-19		
Medical referral (was it followed by the patient?) (n)	Yes (Yes – consult to PHC/private clinic/online GP)	9 (patients 1, 2, 4, 5, 7, 8, 11, 12 and 14)
	N/A (had previous medical contact)	6 (patients 3, 6, 9, 10, 13 and 15)
OTC recommendations (n)	Paracetamol	2 (patients 1 and 5)
	Vitamin	7 (patients 1, 7, 8, 9, 11, 12 and 14)
	Cough and cold products	4 (patients 1, 4, 7 and 8)
(b) Follow-up (after medical contact/confirmed COVID-19)		
Medication review		
Antiviral treatment (n)	No	2 (patients 1 and 3)
	Favipiravir	7 (patients 2, 7, 8 and 9; patients 6, 13 and 15 + <i>Ivermectin</i>)
	Oseltamivir	1 (patient 4)
	Ivermectin	4 (patients 5, 11, 12 and 14)
	Isoprinosine	1 (patient 10)
Vitamin (n)	VitaminB/C/D/multivitamins ¹	15 (all)
Antibiotic (n)	No	8 (patients 1, 4, 5, 8, 11, 12, 13 and 15)

Table 1. Continued

Pharmacist intervention		
Corticosteroid (<i>n</i>)	Azithromycin	6 (patients 2, 3, 6, 9, 10 and 14)
	Levofloxacin	1 (patient 7)
	No	10 (patients 1–4, 7–9, 12, 14 and 15)
	Dexamethasone/prednisone	5 (patients 5 and 6 were prescribed before the pharmacist's review; patients 10, 11 and 13 were added later during the review ²)
Symptomatic treatment (<i>n</i>)	Analgesics/cough and cold products/GI products/probiotics	14 (patients 1–5 and 7–15)
Monitoring Worsening symptoms (<i>n</i>)	No	9 (patients 1, 3, 4, 5, 6, 8, 9, 12 and 14)
	Yes	6 (patient 7 – severe nausea/vomiting, after the first dose of Favipiravir, Ondansetron was added ² ; patient 2 – SOB; patients 10, 11 and 13 – SOB – Dexamethasone was added ² ; patient 15 – severe cough, no SOB)
O ₂ saturation (<i>n</i>)	NI	9 (patients 1, 3, 4, 5, 8, 9, 11, 14 and 15)
	>90%	3 (patient 6 – chest X-ray suggestive pneumonia ² – referred to the hospital; patient 12 – home oxygen therapy ² ; patient 13 – self-admitted to hospital because of fear)
	≤90%	3 (patients 2, 7 and 10 – referred to hospital ² but no access, later improved)
Adherence to medications (<i>n</i>)	Yes	13 (patients 1, 3 and 5–15)
	No (fear of side effects)	1 (patient 4)
	NI (out of contact)	1 (patient 2)
Duration of follow-up (range)		4–14 days
Outcome		
Outcome (<i>n</i>)	Cured	2 (symptoms relieved – patients 1 and 7) 4 (antigen test negative – patients 2, 8, 9 and 11) 7 (PCR negative – patients 3, 4, 5, 10, 12, 14 and 15)
	Admitted to hospital	2 (patient 6; patient 13 – self-admitted)

Abbreviation: CTM, chlorpheniramine maleate; DIC, Drug Information Centre; DM, diabetes mellitus; GP, General Practitioner; GI, gastrointestinal; N/A, not applicable; NI, no information; O₂, oxygen; PCR, polymerase chain reaction; PHC, primary health centre; SOB, shortness of breath; TCM, traditional Chinese medicine; OA, osteoarthritis; OTC, over the counter.

¹Multivitamins – containing at least Vitamin C and Zinc.

²After consulting with the doctor.

age was 47.4 years. All contacted the DIC within the first week of having symptoms, and six had previous medical contact. The presenting symptoms were generally mild (i.e. flu-like symptoms), and nine patients reported anosmia and/or dysgeusia and/or loss of appetite; only seven patients measured oxygen saturation (all ≥93% using a fingertip pulse oximeter). Approximately, half had been vaccinated at least with the first dose.

Pharmacists' interventions are presented in Table 1. In cases with no previous medical contact (9/15), pharmacists screened suspected COVID-19 cases for referral based on the Indonesian guidelines^[6] to the nearest public health centre, or an online general practitioner (GP) if they feared attending a public health centre, due to catching COVID, or were unable to access one. Pharmacists also recommended vitamins and symptomatic treatments. Following medical consultation and confirmed COVID-19, DIC pharmacists conducted patient follow-up via WhatsApp based on patient needs. The follow-up could be as frequent as daily (see Table 1);

however, there was one case where the patient did not respond when contacted (patient 2). The follow-up included medication review as most patients were medically prescribed antiviral treatments: favipiravir (7/15), oseltamivir (1/15) and isoprinosine (1/15). Ivermectin was used by seven patients – either prescribed by the doctor, purchased from a marketplace, or given by a family member. Seven patients were prescribed antibiotics, and two with comorbidities were medically prescribed corticosteroids before the pharmacists' review (patients 5 and 6).

DIC pharmacists conducted monitoring for medication adherence as well as worsening symptoms and/or oxygen saturation based on patient self-monitoring data. Three patients reported a reduction in oxygen saturation ≤90%, but could not be admitted to hospital due to bed shortages; the DIC pharmacist contacted an online GP – one was added a corticosteroid for shortness of breath (SOB) (patient 10) and another received ondansetron to treat severe nausea/vomiting (patient 7). Two patients reported reduced oxygen saturation to 93%

and were consulted by an online GP – one improved with home oxygen therapy (patient 12) and one was prescribed a corticosteroid but later self-admitted to hospital (patient 13). Another patient reported worsening SOB but had no oxygen saturation measurements and was consulted by an online GP – a corticosteroid was added (patient 11). One patient did not report worsening conditions but a chest x-ray suggestive of pneumonia which after consulting with a doctor was immediately referred to the hospital (patient 6). Most patients recovered, becoming symptom free or testing negative for COVID-19. The duration of follow-up was 4 to 14 days (Table 1).

Discussion

This case study has demonstrated a potential new role for community-based DIC pharmacists in responding to the COVID-19 emergency, particularly in the area of screening and monitoring. While the generalisability of this study is limited, a larger study is required to confirm the findings. Most cases in this study reported no previous medical contact; hence, the DIC pharmacists could be considered as the first entry point for patients with suspected COVID-19. This is an important finding since, during a pandemic, some patients may be unable to access normal health facilities.^[4] DIC pharmacists played a major role in screening suspected patients and facilitated access to necessary medical care. Networking with online doctor services was an option for an effective referral.^[7] As the first contact, community-based pharmacists, such as DIC pharmacists, would be well positioned to provide prompt education on isolation procedures and other measures to minimise transmission.^[4, 8, 9] It is important to recognise some patients' ability to meet minimum standards for home isolation, as overcrowded housing exists, particularly in low-income or urban areas.^[10]

While patients in this case study generally reported mild symptoms at the first contact, sudden worsening of conditions occurred in some cases; hence, regular monitoring by the DIC pharmacists was important. Forced shifts to the online practice of GPs enabled DIC and other community pharmacists to deliver their services to patients as a resource-effective model.^[11] However, the case study indicated the importance of face-to-face contacts in some cases; for example, when the patient could not be contacted or required close monitoring due to their worsened conditions. A national network connecting pharmacists across regions could be established, thus allowing referral to local community pharmacists when face-to-face services were feasible.

As part of medication review, the DIC and community pharmacists have a potential role in antimicrobial stewardship to advise on guideline-adherent use of medicines, particularly antivirals. The majority of patients were prescribed antiviral treatment, as stated in the Indonesian guidelines on the management of COVID-19.^[6] However, some patients received no antiviral treatment, which raises concerns if this reflected the unavailability of essential medications due to supply chain disruption, especially during the outbreak.^[12] Ivermectin for COVID-19 in Indonesia was restricted to clinical trials or under a doctor's supervision.^[13] The Indonesian guidelines recommended the use of corticosteroids for patients with severe COVID-19 on oxygen therapy or invasive mechanical ventilation, while antibiotics could be given in the presence of bacterial co-infection.^[6]

Conclusion

This case study has shown the potential for the utilisation of community-based DIC pharmacists during a public health emergency, as observed in the COVID-19 crisis in Indonesia. Expansion and formalisation of this role for pharmacists should be considered to optimise the utilisation of all community-based pharmacists in providing primary care during emergency situations.

Supplementary Material

Supplementary data are available at *International Journal of Pharmacy Practice* online.

Author Contributions

Conceptualisation and methodology: A.P.S. and Y.I.W. Investigation: A.P.S., S.I., E.S. and S.V.H. Project administration: S.I., E.S. and S.V.H. Formal analysis: Y.I.W. Supervision: A.P.S. and B.S. Writing – original draft: Y.I.W. and S.I. Writing – review and editing: A.P.S. and B.S.

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Conflict of Interest

None declared.

Data Availability

All authors had a complete access to the data that supported the findings of this study, and the data are available from the corresponding author (Y.I.W.) upon reasonable request.

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

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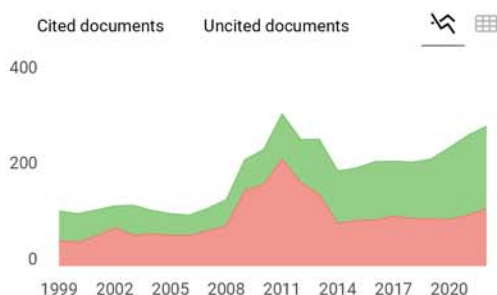
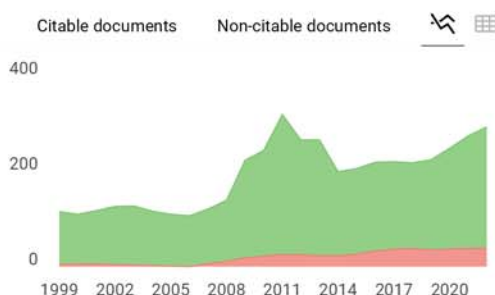
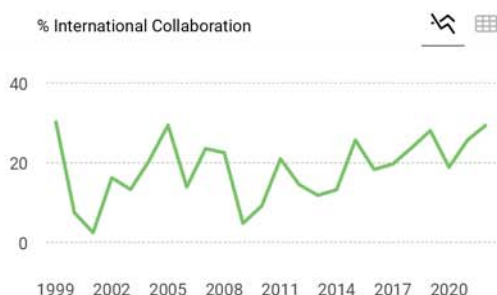
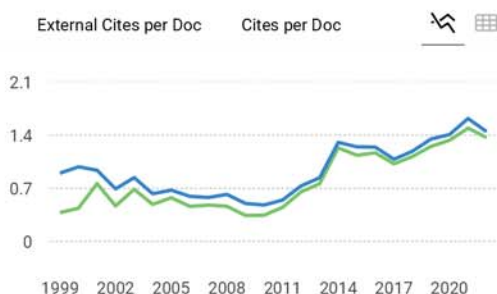
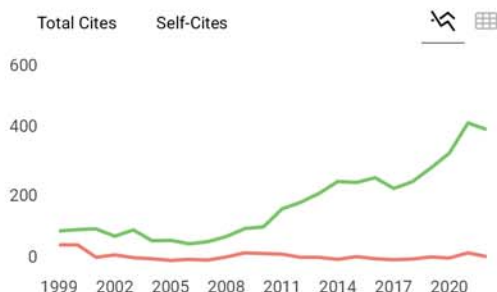
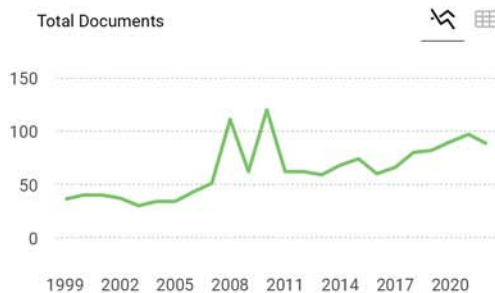
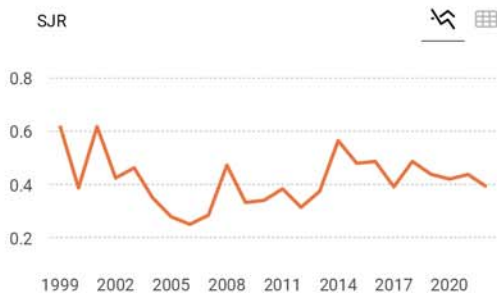
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