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# COVID-19 pandemic: The role of community pharmacists in chronic kidney disease management supportive care

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## ABSTRACT

The COVID-19 pandemic is putting enormous pressure on healthcare systems worldwide and various countries are struggling to flatten the curve to prevent their healthcare system from becoming overwhelmed. Studies have shown that people with chronic kidney disease (CKD) are at increased risk of COVID-19 infection and mortality. However, the interruption of routine care and support due to the current challenges with healthcare providers, facilities, and essential medicines due to this pandemic is adversely affecting people with CKD. This is because poor management of this disease leads to negative health outcomes. In order to maintain good health, this vulnerable group of patients rely heavily on the extended role of the community pharmacists in chronic disease management. This paper highlights the extended role of the community pharmacists in CKD management supportive care during the COVID-19 pandemic.

## Introduction

Chronic kidney disease (CKD) is defined as a reduction in renal function (eGFR <60 mL/min/1.73 m<sup>2</sup>) or the presence of markers of kidney damage (albuminuria ≥3 mg/mmol or abnormalities in urine sediment or renal imaging) for more than three months with implication for health.<sup>1</sup> About 850 million of the world population has been reported to be living with CKD,<sup>2</sup> making it the eleventh leading cause of global death.<sup>3</sup> In 2010, 2.6 million people with end-stage kidney disease (ESKD) received dialysis or transplantation worldwide,<sup>4</sup> a figure projected to increase to 5.4 million by 2030.<sup>5</sup> It is noteworthy that lack of access to dialysis and transplantation among patients with ESKD caused between 2.3–7.1 million premature deaths in 2010.<sup>6</sup> CKD is a rapidly growing public health problem and poses a significant healthcare challenge for governments, especially in LMICs (Murray 2017).<sup>7</sup> In light of this, CKD is now considered a high priority non-communicable disease which requires urgent attention from world leaders.<sup>8</sup> Studies have shown that people with CKD are at increased risk of novel COVID-19 infection and mortality.<sup>9,10</sup> The COVID-19 was first reported in a Chinese city (Wuhan) on 31 December 2019. Since the emergence of this virus in China, it has spread to 188 countries/regions as of July 04, 2020.<sup>11</sup> The global total confirmed cases and deaths as of July 04, 2020 were 11,107,987 and 525,790, respectively.<sup>11</sup> Considering these high figures, it is evident that this unprecedented pandemic is putting enormous stress on healthcare systems worldwide,<sup>12</sup> and countries are

struggling to flatten the curve to prevent healthcare systems from becoming overwhelmed. The main challenge towards achieving this goal is the increasing shortage of qualified healthcare professionals. Pharmacists are currently among the frontline healthcare professionals, providing essential healthcare services during this time of pandemic and health crisis.

## Association of kidney diseases with COVID-19

It has been reported that the two first COVID-19 deaths recorded in the United States of America (USA) were from the CKD population and early hospital-based data also showed that nearly 50% of the COVID-19 patients admitted to the intensive care unit had kidney disease.<sup>13</sup> Again, among cases reported to the Centers for Disease Control and Prevention, 71% of persons with reported CKD were hospitalized.<sup>14</sup> These reports suggest that patients with CKD are more susceptible to COVID-19 than the general population.<sup>9</sup> The COVID-19 infection may worsen the compromised kidney and further lead to rapid deterioration of renal function and even death. The factors responsible for the increased risk of patients with CKD to COVID-19 infection and mortality include:

- (i) Two main target receptors (human angiotensin-converting enzyme-2 [ACE2] and human Dipeptidyl peptidase-4 [DPP4]) of COVID-19 that aid its entry into the human body is highly expressed in the renal tubules.<sup>9,15</sup>

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- (ii) Glucocorticoids and immunosuppressants therapy for patients with CKD secondary to glomerular disease with attendant consequence of an impaired immune system and increased susceptibility to COVID-19.<sup>9</sup>
- (iii) Possible damage to several small arteries and capillaries in the kidney by COVID-19.<sup>9,16</sup>
- (iv) Kidney damage by COVID-19 and the inflammatory cytokines as blood pass through the kidney.<sup>9,17</sup>
- (v) Dialysis patients with CKD constitute a more susceptible population because they are frequently exposed to a possible contaminated environment due to multiple dialysis sessions per week.<sup>18</sup>

### The pharmacist's role in the management of CKD

The renal population is expanding due to increasing incidence worldwide. Therefore, more pharmacists with renal specialist knowledge are required to match the renal disease burden. Increased likelihood of medication-related problems in CKD population necessitates this need. Pharmacists are highly trained healthcare professionals licensed to give advice on health issues and medications to ensure rational medication use by the general public. The management of both predialysis and dialysis CKD involves complex and highly variable medications. This highlights the need for pharmaceutical care for this vulnerable group of patients. Some pharmacy services have been found effective in optimizing patients' health outcomes for chronic diseases, including CKD.<sup>19,20</sup> These services include the provision of appropriate medication information and counseling, making essential medications used in the management of CKD steadily available, identifying and preventing potential medication-related problems and resolving actual ones, assessing patient's medication need, promoting medication adherence, enhancing self-management practices, controlling of comorbidities and other risk factors, frequent therapeutic drug monitoring and follow-up services to ensure optimal pharmacotherapy.<sup>19,21–26</sup>

### Challenges to CKD care during COVID-19 pandemic

Following the suspension of non-emergency in-person healthcare visits in many countries affected by this pandemic, patients with chronic diseases, including CKD, could not receive usual care but only emergency ones when the need arose.<sup>27,28</sup> This interruption of care and support due to the current challenges with healthcare providers, facilities and essential medications are taking its toll on individuals with chronic diseases, especially CKD. Even as many countries are easing off the lockdown gradually, the fear of contracting COVID-19 may keep many patients with CKD away from hospitals for their routine usual care.

### Community pharmacies and pharmaceutical care for patients with CKD amidst COVID-19 pandemic

The role of the community pharmacist has extended beyond dispensing and supply of medications to more clinical roles (pharmaceutical care). In providing pharmaceutical care during this pandemic, the focus of community pharmacists is on the identification, prevention and resolution of medication therapy problems for clients/patients, especially those with CKD. Among healthcare professionals, community pharmacists are ideally placed for this role due to their easy accessibility to community members during this pandemic. They help to address enormous medication issues and promote rational medication use for the teeming community members, including those with chronic conditions, such as CKD.<sup>29,30</sup> Despite the key roles pharmacists play in epidemic and pandemic responses, there is a lack of inclusion of pharmacists in pandemic preparedness coordinated by government of various nations.<sup>31,32</sup> Nevertheless, the International Pharmaceutical

Federation (FIP) released COVID-19 outbreak guidance for pharmacists and the pharmacy workforce, providing information and guidance on the roles and responsibilities of pharmacists working in different settings (community, hospital and public health) to contain the spread of the virus.<sup>33</sup> Many important aspects were covered, including preventative measures, pharmacy as an information source, appropriate referral and isolation. In an attempt to safeguard public health, many countries imposed lockdown and restrictions in the movement of people and mobilized essential healthcare providers to the frontline to combat COVID-19 infection. Patients with chronic diseases requiring non-emergency health services such as revisits, check-ups, follow-ups and prescription refills were worst hit due to limited or no access to the hospital facilities and workforce. Thus, the pandemic poses a huge challenge to patients with CKD because they require frequent care and support, and these needs are still required during the pandemic. This vulnerable patient population was left with nowhere to go for continuity of care apart from community pharmacies. Community pharmacies offer a wide range of support services to help patients with chronic diseases, including CKD, especially during this pandemic period that many patients may have various medication-related issues.<sup>27</sup> Community pharmacists' extended role in chronic disease management supports patients with CKD to manage and cope with their illness, and remain healthy during this pandemic and even beyond. The services community pharmacists provide during this COVID-19 pandemic include:

**Supply of medications and critical protective items:** Despite the disruption in the supply chain of essential commodities worldwide due to lockdown, community pharmacists ensured uninterrupted supply of essential medications and protective items (hand sanitizers and face-masks) to meet the demands of patients with chronic diseases.<sup>34,35</sup> Patients with CKD, most of who are taking a high number of medications to manage their medical conditions were assured of constant supply of their medications by community pharmacists and were advised appropriately against panic buying.<sup>36</sup>

**Provision of reliable and timely medication information:** Reliability of information is an important concern during pandemic and health crisis. Community pharmacists offered reliable and timely advice to patients with CKD to continue taking all their medications, especially ACEIs and ARBs. This became necessary due to an assumption that ACEIs and ARBs can increase the risk and severity of developing COVID-19, though no clinical data or basic scientific evidence supports this assumption to date. Therefore, healthcare providers, including community pharmacists played a critical role in advising patients with CKD, including those who have symptoms of COVID-19 taking these medications not to change or stop taking them.<sup>37</sup>

**Home delivery services:** This service was aimed at keeping patients at increased risk of COVID-19 infection, such as those with CKD at home. Again, it helps to keep other patients and clients away from the pharmacy, who may potentially spread the virus to pharmacy staff.<sup>36,38,39</sup> Many community pharmacies around the world offer daily home delivery of medications, critical items, and dialysis consumables in accordance with the international COVID-19 guidance for pharmacists and pharmacy workforce,<sup>33</sup> and country-specific COVID-19 guidelines. Individual with CKD, who recently returned from overseas with or without COVID-19 symptoms were also beneficiaries of these home delivery services.

**Telepharmacy services:** In order to minimize direct patient-provider contact, community pharmacists especially those in developed countries (United States, Spain, Denmark, France, Canada, Italy, Scotland, Netherlands, and Germany) leveraged on information communication technology to deliver essential remote education, counseling, monitoring and follow-up.<sup>38,40</sup> Though, those in LMICs are constrained using this technology due to poor communication network and coverage, and poverty among the rural dwellers that constitute a majority of the population they serve.<sup>41</sup> Despite these challenges, Egypt and Pakistan have since been delivering pharmaceutical care through telepharmacy.<sup>39,40</sup> This innovative strategy helps to ensure continuity of

pharmaceutical care for chronic diseases, including CKD during this time of pandemic and even beyond. Keeping patients at home and telepharmacy have the capacity to protect those living with CKD or ESRD now and optimize their health outcomes at a realistic economic expenditure.

**Adherence support:** The stress and anxiety are normal human reactions during difficult times,<sup>42</sup> the adverse effect of COVID-19 pandemic may result in poor adherence to medications and self-management practices among patients with chronic diseases. This is a direct consequence of patients not getting their refills or not filling new prescriptions due to this pandemic. Again, with so much focus on the pandemic, people tend to forget about the chronic disease situations. For patients who prior to the pandemic struggled with adherence to medications and self-management practices, deterioration as a result of limited or no access to healthcare providers is imminent. Community pharmacists offer continued and extended support to patients with chronic diseases, including CKD during this pandemic to ensure better adherence to their medications and self-management practices in order to achieve better wellbeing.<sup>38</sup>

## Conclusion

Patients with CKD are among the most challenged by COVID-19 pandemic due to adverse health outcomes that are associated with poor management of the disease which may be occasioned by the COVID-19 pandemic. This underscores the need to highlight the contributions of pharmacists, especially community pharmacists in managing CKD, promoting safety, rational use of medication and adherence among this vulnerable group of patients during this pandemic. Finally, COVID-19 experience has the potential to reshape pharmacist's extended roles in chronic disease management globally for long-term in preparedness for future pandemic and health crisis.

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The author declared no potential conflicts of interest with respect to the study, authorship, and/or publication of this article.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.sapharm.2020.07.008>.

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