



## Prospects and challenges of online pharmacy in post-Covid world: A qualitative study of pharmacists' experiences in Ghana

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### ABSTRACT

**Background:** Online pharmacies continue to grow worldwide, especially in the wake of the COVID-19 pandemic. Ghana is experiencing this growth in an unprecedented way since its government initiated an online pharmacy pilot in December 2021, which was followed by the launch of the National Electronic Pharmacy Platform in July 2022. This pioneering initiative calls for extensive research with pharmacists to gain their perspectives. However, there is a dearth of such studies in the sub-Saharan African countries.

**Objective:** This study sought to understand how pharmacists in Ghana perceive online pharmacies in terms of the larger socio-cultural and policy implications, as well as the challenges they face in its implementation.

**Methods:** Using a qualitative research design, local licensed pharmacists were recruited through purposive sampling and by specifically combining the maximum variation and snowball sample techniques. Semi-structured interviews were conducted virtually with 21 pharmacists over the months of February and March 2022. The data were analyzed by using interpretive thematic analysis.

**Results:** Pharmacists perceived that online pharmacies would transform the pharmaceutical industry in Ghana by making it convenient for people to access medication easily and at a reasonable price, while also offering them privacy. However, concerns were expressed around existing poor infrastructure and inequities, low health literacy, and inadequate regulatory practices that could pose major challenges in the operation of this platform. Engagement of stakeholders was deemed essential for success.

**Conclusion:** Online pharmacy in Ghana and much of the developing world has the potential to transform and advance the pharmaceutical industry to better serve people. However, it could also lead to increased and irrational use of medications, if not properly regulated. Government, policy makers, and leaders in the field of digital health and pharmacy must also address poor infrastructure and inequities in digital access.

### 1. Introduction

Online pharmacies have been growing for decades in the Western world, and in recent times, it has picked up pace globally, with the COVID-19 pandemic acting as a major catalyst.<sup>1</sup> Online pharmacies operate over the Internet to offer clients various pharmaceutical services, including the delivery of medications, and are often preferred by people for its easy access.<sup>2,3</sup> This became most evident during the COVID-19 pandemic when access to health care services was significantly impacted by the rapid spread of the virus and the mitigating measures that were adopted.<sup>1,4</sup> Significant disruptions in supply of pharmaceuticals and the enforced public health measures during the pandemic, such as the stay-at-home order, are known to have

particularly worsened the complexities and load of chronic disease management that required a specific medicine regimen.<sup>4</sup> Furthermore, with store pharmacies limiting the number of patients they could attend to at a time, to follow public health protocols, many clients moved towards the use of online pharmacies to tap on the benefits of its greater accessibility and to protect themselves from the virus.<sup>5</sup>

Online pharmacies take different forms that can range from extension of a physical location to an independent cyberspace with no physical site for clients to visit, or a consolidation of several independent community pharmacies that are brought together on a platform to represent themselves.<sup>2</sup> In the case of Ghana, online pharmacy began as an extension of existing brick-and-mortar pharmacies where medications in the physical pharmacy were listed on an online platform to be

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seen virtually and bought by clients that would be home delivered at a cost. While it started gradually, with just a couple of online pharmacies, the numbers multiplied rapidly in 2021 when several pharmacies joined in to offer pharmaceutical care through online platforms and some through social media platforms such as WhatsApp.<sup>6</sup> Although these practices were not initially endorsed by the Pharmacy Council of Ghana, it later offered to host a common platform, likened to Amazon, for various pharmacies to display their medications and to make it accessible to clients all over the country.<sup>7</sup> The National Electronic Pharmacy Platform (NEPP) was thus designed in December 2021 to serve as a common platform for 45 pharmacies to pilot test the feasibility and effectiveness of this approach to address unmet pharmaceutical care needs in Ghana.<sup>7</sup> This launch of an online pharmacy pilot by the government of Ghana was one of the most significant interventions promoted as an alternative to help people access qualified pharmacists, without having to visit a physical pharmacy, against the backdrop of the pandemic.<sup>7,8</sup>

This initiative was closely followed by the national launch of the NEPP in July 2022 and was deemed as a pioneering innovation that would bring about a significant digital transformation of pharmaceutical care in the entire African region.<sup>7,8</sup> The NEPP is a technological platform commissioned by the Pharmacy Council of Ghana, with multi-sectoral support and partners, as a way to facilitate safe access to medications for the public of Ghana through approved electronic pharmacies, websites, social media and e-commerce platforms.<sup>8,9</sup> Since the nationwide launch of NEPP, the enrolment of pharmacies has swelled from 45 to over 226, although the distribution has not been uniform across all regions of Ghana.<sup>10</sup>

Considering the enormity of these pioneering initiatives in a region where pharmacists have always played a critical role in the provision of health and pharmaceutical services, working closely with people (and sometimes as their go-to “doctors”),<sup>11</sup> it is important to understand their perspectives as they would be directly engaged and responsible for operating these online platforms. However, there is a complete dearth of such studies on online pharmacies in Ghana or even in the context of the sub-Saharan African countries. Given this critical gap in literature, this study was undertaken to explore the role of online pharmacies in Ghana from the pharmacists’ perspective. In particular, it sought to understand how pharmacists perceived online pharmacies in Ghana in terms of their larger socio-cultural, policy, and communication dimensions, as well as challenges that they faced in implementing online pharmacies in the context of the country’s poor resource settings. Given that these pharmacists worked and lived in communities, drawing on their experiences and insights is important to understand the state of public healthcare in Ghana and the potential for expansion of digital health within the local realities of prevailing low health literacy and digital access. This study will help online pharmacy industry stakeholders in Ghana and in other developing countries to understand the industry’s general scope, its benefits, pitfalls, challenges, and the way forward.

## 2. Methods

A qualitative methodology was adopted to explore the opinions and experiences of licensed pharmacists in different regions of Ghana. The study was reported using the Consolidated Criteria for Reporting Qualitative Research (COREQ) (see Appendix A). Ethics approval was sought and received from the Institutional review board (IRB) of the University of Texas at San Antonio, with an IRB approval identification number of FY21–22-93, before the commencement of the research. The first author, who is a pharmacist from Ghana, conducted semi-structured interviews on the Zoom platform. At the time of the data collection, she was a master’s student, having gained proficiency in qualitative research and conducting in-depth interviews.

### 2.1. Research setting and data collection

The duration of data collection lasted from February to March 2022. Participants were recruited using a purposive sampling technique and, specifically, using a combination of the maximum variation and snowballing sample techniques.<sup>12,13</sup> Further, to bring diversity to the study sample, an effort was made to include pharmacists from different regions in Ghana, those with or without experience with the online pharmacy, those working in communities as well as with hospitals, new hires, and those with years of working experiences, as well as pharmacists who are owners or are staff. Having a maximum variation sample, according to Suri (2011),<sup>13</sup> helps to get different perspectives on the topic of interest and brings out holistic, detailed, and nuanced views. For this study, some participants (like pharmacy owners) were recruited using the snowball sampling technique as they were difficult to reach. Most pharmacists in Ghana work as community and hospital pharmacists, with some working as industrial pharmacists, academicians, regulators, or medical representatives. Ghana is divided into ten main geographical regions, namely: Western, Eastern, Central, Northern, Brong-Ahafo, Volta, Ashanti, Upper West, Upper East, and Greater Accra regions. Licensed retail community pharmacists practicing in Ghana are grouped into these ten main groups in accordance with geographical locations that they practice in as a way of regulating the community pharmacist practice. For the purpose of recruitment for this study, practicing licensed retail community pharmacists were drawn from these ten groups to ensure adequate representation. The inclusion criterion for participants was anyone who is a practicing licensed community pharmacist in Ghana. As such, Ghanaian pharmacists who lived abroad or were not practicing in Ghana were excluded from the study.

The leaders of these ten geographical groups were contacted in January 2022, and permission was sought to invite their members to participate in the study. These groups had at least one WhatsApp group that served as a virtual platform for sharing information among these professionals. The study researcher sought approval to be added to all the WhatsApp platforms for two weeks, starting from February 1st to the 14th of March 2022. A short description about the study and the researcher, along with an invitation for pharmacists to participate, was sent out to these platforms. Thirty-nine pharmacists expressed an initial interest, who were then sent a follow-up text message or email, with more details about the study including about the voluntary nature of participation, the consent process and confidentiality, and to check their availability for an online or phone appointment. In all, 26 pharmacists agreed for a virtual interview, however, five interviews could not be completed due to poor internet connectivity. Furthermore, as data saturation was reached, no more recruitment efforts were made.

Twenty-one interviews were successfully conducted (in English) using the Zoom platform. The consent form was reviewed with the participants prior to the start of each interview, any concerns were clarified, and permission was sought to record the interviews. On average, the interviews lasted for 50 min, with the longest time being 78 min and the least being 45 min. An interview guide was used to conduct the interviews that included open-ended questions on how pharmacists perceived online pharmacies, the socio-cultural dimensions involved, the issues around online pharmacy interactions, advertising, privacy, regulation, and medication usage. The interviews were transcribed verbatim and fieldnotes jotted during the interview were typed out in detail as soon as possible after the interview. To ensure the anonymity of participants, number codes were initially assigned to identify each participant which was then replaced with a pseudonym (as shared in this paper) that did not link participants’ information to them. The researcher offered to share the interview transcript with each participant, if they so desired, but none of the participants showed an interest in the same.

2.2. Data analysis

The interview data were analyzed using an interpretive thematic analysis technique.<sup>12,14</sup> First, the research team, comprising of a graduate student and a PhD prepared professor/researcher, familiarized themselves with the data by repeated reading of a set of interview transcripts. An initial list of codes was generated that reflected on the emerging themes in the interviews such as the perceived benefits and challenges related to communication, politics and ethical issues associated with online pharmacy in Ghana. Following this process, individual codes were meaningfully grouped to refine and further develop the themes reflected in the interview data and were finetuned over several readings of the transcripts.<sup>14</sup>

2.3. Study rigor

The trustworthiness of a study lies in the research process followed before, during, and after data analysis.<sup>12</sup> It was ensured that a journal was kept throughout the duration of this study, and the researcher's reflection on the process, the interviews, and the analysis were documented. Also, a thick description of the process of conducting this research was maintained. To ensure the transferability of the research, a purposive variation sampling was done where pharmacists from different geographical locations and practices in Ghana were sampled, helping to yield diverse perspectives on the topic under investigation.

3. Results

Of the 21 pharmacists interviewed, nine were females and 12 were males in the age group of 25 to 55 years old, with a mean age of 40 years. They belonged to different regions in Ghana, with majority (38.1%) from the Greater Accra region, followed by the Volta Region (19.1%) and most (N = 17) worked in the urban centers, while eight of them practiced in the community. Table 1 provides further details about the demographic characteristics of these participants. Findings indicate that while online pharmacies were in a nascent stage in Ghana, most pharmacists in the study perceived them as beneficial, offering convenience and enhanced accessibility to medications. Also, online pharmacies were perceived to bridge the gap in care between the hospitals and the community pharmacies and in addressing some of the cultural barriers that have long impeded clients from accessing care. On the other hand, some respondents pointed to the lack of adequate infrastructure such as internet connectivity, loss of face-to-face communication with clients, and a host of other problems that could arise from poor regulatory practices and be a hindrance to Ghana's online pharmacy.

3.1. Online pharmacy as an inevitable outcome in Ghana

Acknowledging the reality of digital and networked age, the online pharmacy was described in various ways by participants, ranging from "a wonderful initiative" and "a good idea" to a "game-changer":

*Looking at the way everything is normally online...the e-pharmacy is certainly going to be the game-changer; not just that, but it is going to cause a serious disruption in space because this whole brick-and-mortar kind of pharmacy practice is gradually going to become a thing of the past.*

[Pharm Dan, 32 years old, managing director of an online pharmacy].

A similar tone was reflected by another participant who felt that the transition to online pharmacy is an inevitable one that should turn out to be seamless as well:

*Now, Ghana is becoming... very, very online...People just stay at home, and they are ordering...It has become a norm. So, I don't think when pharmacy ventures into the online space, it will be any different to the consumers. It would literally be like, oh, okay, so pharmacy; we can now*

**Table 1**  
Demographic characteristics of study participants.

Demographics	Frequency	Percentage (%)
<b>Gender</b>		
Female	9	42.9
Male	12	57.1
<b>Age (in years)</b>		
25–30	8	38.1
31–35	5	23.8
36–40	5	23.8
41–45	1	4.8
46–50	1	4.8
51–55	1	4.8
<b>Location</b>		
Ashanti region	1	4.8
Brong Ahafo	1	4.8
Central	3	14.3
Greater Accra	8	38.1
Northern	3	14.3
Volta	4	19.1
Western	1	4.8
<b>Years of Practice</b>		
1 to 5 years	10	47.6
5 to 10 years	6	28.6
11–15 years	3	14.3
16 to 20 years	1	4.8
21 to 25 years	1	4.76
<b>Experience with online pharmacy</b>		
No	6	28.6
Yes	14	66.7
Not stated	1	4.8
<b>Education</b>		
Bachelor's degree	14	66.7
Master's degree	5	23.8
Other	2	9.5
<b>Area of Practice</b>		
Hospital Pharmacy	5	23.8
Community Pharmacy	8	38.1
Hospital and community	4	19.0
Community and Academia	2	9.5
Regulatory Pharmacist	1	4.8
Community and Pharmaceutical Representative	1	4.8
<b>Positions</b>		
Pharmacist	12	57.1
Pharmacy owners	4	19.0
Specialist Pharmacist	2	9.5
Sales Manager	1	4.8
Lecturer	1	4.8
Regulatory Lead	1	4.8

*get drugs, also the same way. It will be seamless, I think.* [Pharm Yaa, 30 years old, community pharmacist].

Several pharmacists recognized that the proliferation of online services in Ghana could be translated to pharmacies as well, which particularly gained traction during the COVID-19 pandemic, "After COVID came, we realized that we need to have other means that people can get their medicine, without having to necessarily come to the pharmacy"(-Pharm Yaa). The increasing presence of digital technology and social media in people's lives further served as major motivating factors for online pharmacy pioneers in Ghana to make the shift:

*What we realized is that...the internet has changed a lot of things...People sit down in their homes, try to browse, look at what is available- convenience, comparing prices...as a company for us to have a future, for us to have a continuous flow of customers- it is an area we need to invest in.* [Pharm Lord, a 48-year-old, pharmacy owner].

Most online pharmacy owners saw the need to present their businesses in a way that their clients will appreciate by moving with the trend, staying relevant, and offering convenience to their clients in order to stay in business and be profitable. The relative advantage of engaging in online pharmacy was especially felt during the pandemic and it made

sense to these pharmacists to conform to the trend of online commerce to sustain their business. However, a few of them cautioned that the shift from traditional face-to-face commerce to virtual will have to be a gradual process to include several required transformations in Ghana's pharmaceutical industry.

### 3.2. Perceived benefits of Online pharmacy

#### 3.2.1. Convenience: "Pharmacy at your doorstep!"

One of the major ideas conveyed by the research participants was that online pharmacy offered many benefits to their clients. For example, participants felt that online pharmacies made the process of getting medications much easier and faster, particularly for those clients living in areas without any pharmacy stores nearby. As noted by Pharm Jesse (a 26-year-old pharmacist), "not everybody wants to walk to pharmacy, and having the pharmacy at your doorstep! I think it's a very good idea." In Ghana, it is common to find people walk to do their errands, especially at market centers where vehicular and human traffic makes it difficult to use any other form of transportation. So, for someone to be spared walking, often in the sun at a high temperature, is a big relief. This convenience became vital in the case of elderly clients and/or those with chronic conditions, particularly in pandemic times when this group was deemed to be the most vulnerable to the virus.

*I realized that certain groups of patients really do not need to come to the pharmacy. For instance, patients who have chronic conditions and are coming for a refill...why would I want like a 60 or 70-year-old client to walk through the sun, come to the pharmacy for one month (supply)...when all this [medications] can be sent to the person...and things can be done online. [Pharm Yaa].*

The shift towards online pharmacy was thus much appreciated by clients who were able to avoid both an arduous trip to the pharmacy as well as exposure to the virus. It also meant that the pharmacy owners could continue with their business with less efforts involved in managing people inside the store, particularly with stringent public health measures during the COVID-19 pandemic.

#### 3.2.2. Better pricing and ease of access to medications

Participants outlined other advantages of online pharmacies, such as easy access to medication, better communication with pharmacists and comparative pricing of medications. Some emphasized the importance of accessibility of medications (a major challenge in Ghana) as a huge potential benefit of online pharmacies. Pharm Sally concisely summarized the issue of lack of adequate physical pharmacy stores and of pharmacists in rural areas:

*For people like us in less privileged areas, medications can be more accessible [with online pharmacy] because I've seen villages where there are no pharmacists around...[also] some people make themselves pharmacists, while they haven't gone to school...I think with online pharmacies, at least getting access to pharmacists will become more possible. [Pharm Sally, 27 years old pharmacist practicing in a rural community].*

#### 3.2.3. Privacy

Some pharmacists talked about certain situations under which it became convenient for clients to use online pharmacies. For example, many of them said it offered clients, who were reluctant to go to a pharmacy store, an opportunity to make their orders for certain health problems from the comfort of their homes. Pharm Mina described it in this way:

*I think it's a great initiative... it helped people, those that couldn't come all the way with their issues. Those that were too shy to come when concerning sexually related issues. And those that, you know, just needed something quick...It helps save time; it helps people to freely discuss*

*whatever issue that they can't discuss face to face with other community pharmacists. [Pharm Mina, 25-year-old community pharmacist].*

Pharm Mina brought up a sensitive and an important issue that sometimes limits some Ghanaians from accessing care. Sexuality is one area that is frequently not discussed in public spaces, especially in a conservative society like Ghana. Sexual discussions are usually done in private, and so it is common to find people struggling to disclose such issues at a pharmacy when there are other customers present. The idea that one can have conversations about their sexual health, and other issues they may consider embarrassing, on a medium that may protect their identities or just prevent a face-to-face interaction is hugely advantageous and it also helps to break the cultural norms that engulf the people.

### 3.3. Challenges in operation of online pharmacy

#### 3.3.1. Communication issues: Digital/information literacy

Those pharmacists who were operating online pharmacies talked about the layout of their website or App that offered clients the opportunity to look at the products displayed with their prices and to choose what they wanted. Clients also had an option to talk to the pharmacy staff or pharmacist regarding their order. As outlined by Pharm Mina:

*It was everything; there was a place you could upload a prescription, a place you can ask a question, a place you can request the drug. And then we had the drugs that you can just select, and then you know if you want to purchase, you purchase them...So, it had everything.*

Some acknowledged that given the restrictions on medication advertisement in Ghana, the online pharmacy offers them the opportunity to advertise their pharmacies and medications without any breach of laws. However, Pharm Laura had concerns about the effects that these advertisements may have on patients.

*In our country, we see that, especially over-the-counter medicines, those ones that are advertised. You see that people come in, and then they ask for it readily.... So, for sure, once medication is advertised, it creates awareness and sometimes people come in for it sometimes without needing it. [Pharm Laura, 42 years old pharmacist].*

This became a highlight during the COVID-19 pandemic when a lot of misinformation about prevention and treatment of the virus was rampant causing many to experiment with drugs and often resulting in serious health consequences. In the context of Ghana, this is particularly relevant as the levels of digital and health literacy are still quite low, more so in rural areas where the need for online pharmacy is also high. Pharm Dan emphasized the need for clients to engage with pharmacists and to seek expert advice regarding their medications rather than to navigate the website or App on their own. He stressed that by engaging the pharmacist, clients get the chance to understand their health needs and how to take the prescribed medications as it's one thing to read the health content and another to understand it. However, if the online pharmacy in Ghana gets set up that makes talking to a pharmacist optional in purchase of medications, then it can result in inappropriate use of drugs (intentional or unintentional) and could cause serious health consequences.

Pharm Yaa, further reiterated the importance of pharmacists to communicate with clients, even post-delivery of medications, highlighting the gap in skills of people to understand and navigate information online, even if they have digital access:

*I observed it when I was working in a community pharmacy...we could deliver to patients, so patients could just send their drug request through WhatsApp. And then we chat and come up with what you are going to prescribe...But then you realize that even after delivery, the person still needs to understand how to take the drugs... So, I think the online pharmacy design shouldn't deviate from this...[otherwise]in my opinion, it is not at a pharmacy but a shopping mall.*



Another communication challenge pointed out by some pharmacists was the difficulty to track nonverbal cues of clients online as compared to face-to-face interaction. Some pharmacists stated that nonverbal cues were instrumental to the discharge of their duties since these cues inform pharmacists about their clients and the lack thereof in case with online pharmacy would make them feel they are missing out on some vital information on clients. According to Pharm Jesse, “*there’s a limitation when we don’t get to ... actually see the client, because sometimes what the person may be saying is not really the whole story until you actually see the person.*” Some participants felt that the inclusion of certain features online like videos could mimic face-to-face interaction making it easier to identify certain nonverbal cues. Pharm Yaa shared:

*The design of an online pharmacy should factor in these kinds of interactions that happen in the pharmacy, like a physical pharmacy, because these interactions and communication are important for the service we render. ...in pharmacy practice we interact with patients, we need to know why they are taking this so that we can counsel.*

### 3.3.2. Lack of effective regulations and the unintended consequences

Some participants were worried if online pharmacies will be well regulated and expressed concern about the implications of having unregulated ones. Pharm Sophie aptly summarized the concerns:

*Aah...I don’t know... Because for the kind, the kind of country we find ourselves (in), where people like to self-medicate. I don’t think the e-pharmacy will do us a lot of good... I think it is going to bring a lot of issues...because I don’t think the regulation will be done properly. I really doubt.*

Pharm Sophie worried that online pharmacy, instead of discouraging self-medication, may worsen the situation already at hand. The issue of self-medication is a major problem in Ghana, where there is a low medical practitioner-to-patient ratio creating long waiting times at hospitals and other healthcare facilities. In addition, with the extensive use of Google in everyday lives, including for assessing one’s health and related medications for it, an unregulated online pharmacy could potentially cause major harm in a country like Ghana where health literacy rates are low. In a similar vein, Pharm Ellie narrated how a colleague of hers easily managed to get a restricted medicine online without a prescription:

*I think ...medicines are not just commodities, that can be used anyhow by anybody... there is this pharmacy online... someone just ordered Tramadol without a prescription...they just messaged the pharmacy...and within an hour the medicine was delivered to them, no questions asked! [Pharm Ellie, 37-year-old community pharmacist and academician].*

Pharm Ellie worried if the safety of clients could be compromised when they patronize online pharmacy, despite its convenience, and was not sure if she would recommend online pharmacy to her clients. Tramadol, over the years has caused a lot of addiction in the country<sup>15</sup> and to Ellie, the notion that it could be obtained easily was a bit unsettling.

With no regulations set up yet (for the pilot venture), pharmacies, going for online business, have needed to create their own code of conduct and ethics on how they operate. For some participants, this raised the question whether some pharmacists would sacrifice code of ethics in favor of a profitable business. Pharm Sally argued:

*It comes down to the pharmacists, because they would have to decide, is it ethics? Or is it money? Because I think with this (online) form, a lot of people would... their abuse will be more... It is the pharmacists who will have to say that oh, no, this one, I can’t give without a doctor’s prescription for this one is a controlled drug so I can’t give it to you.*

The urgent need for proper regulation of online pharmacies in Ghana and the anticipated inadequacies and challenges echoed through the narratives of most pharmacist participants of this study. While they saw online pharmacy as a future of pharmaceutical care industry, the lack of

efforts on the part of the government to regulate and engage pharmacists in the regulatory process, raised some serious concerns for them, at a time when people needed it the most.

## 4. Discussion

This research sought to explore the experiences of pharmacists pertaining to online pharmacies in the wake of the Ghanaian government’s e-pharmacy pilot program in early 2022.<sup>7</sup> This qualitative study, to the best of our knowledge, is among the first to be conducted in Ghana and contributes to research on online pharmacy in a developing country based on perspectives of the pharmacists, instead of only client/patient’s perspective. The narratives shared by the participants in this study revealed several interesting views on the growth of online pharmacy in the background of the social context of Ghanaian lives. While most felt the inevitability of online pharmacy in Ghana and noted its several advantages, including easy access to medicines, they also expressed concerns about inappropriate use of medications, if it is poorly regulated. Many Ghanaians draw on pharmacies for quick access to medications for several reasons; for some, it is less expensive as compared to seeking medical attention at a hospital, while others may get deterred by the long waiting time at the doctor’s office or just lack of availability of health care facilities near them.<sup>11</sup> With pharmacy often being the first port of call for most Ghanaians with non-urgent medical conditions, it places a huge responsibility on the shoulders of pharmacists as their role becomes critical in provision of healthcare.

The surge in digital networking, online commerce and the fast-changing consumer culture in Ghana has prompted the need for pharmacies to adopt e-pharmacy to keep their businesses running and profitable for future. With the increase in use of social media by pharmacists, there is likelihood that it may pave the way for other people to also engage in the medication trade on other social media platforms.<sup>16</sup> A study by Awari and Suryawanshi (2020)<sup>17</sup> discussed how in the case of India, the lack of proper regulation of telemedicine and e-pharmacy results in fraud, unethical practices, and inappropriate use of medications and with potential for this issue to grow with the increased use of e-pharmacy by people during the COVID-19 pandemic. In a similar tone, pharmacists in our study noted how it would be more profitable to run an online pharmacy (rather than a store pharmacy) in the future and how the COVID-19 pandemic has hastened this process, especially in the urban areas. For some participants, the pandemic made it necessary for them to find new ways of reaching out to their customers amidst the lockdown, birthing the e-pharmacy initiative of offering pharmaceutical services on social media platforms.

Much of the anticipated challenges in the future of online pharmacy in Ghana seem to be in the ability of government to regulate these pharmacies. Pharmacy in Ghana is regulated by laws, however, there were no existing laws regulating online pharmacy in Ghana at the time of online pilot policy initiative. The pharmacist is supposed to be the first line mandated to self-regulate its online pharmacy. The pharmacist oversees how medications are transferred from the pharmacy to the client. Even as the pharmacist plays this self-regulatory role, there is the Pharmacy Council of Ghana that is commissioned to ensure that only qualified pharmacists operate each online pharmacy and that online pharmacies conform to the standards.<sup>8,9</sup> The recently launched NEPP is promoted as a platform that only includes “approved electronic pharmacies and pharmacy providers who meet the standards of safety” but beyond that there are no specific regulatory frameworks outlined.<sup>18</sup> While standards for pharmaceutical care have been laid out by the Pharmacy Council of Ghana and other regulatory bodies like the Food and Drugs Authority, more work needs to be done for these regulations to be effective and duly enforced. Other developing countries, like Kenya, India and Nigeria, are also at similar stages of adapting their regulating bodies to the expansion of online pharmacy.<sup>1,17</sup> In the context of Ghana, the Pharmacy Council of Ghana would need to work closely with pharmacists, incorporating their suggestions in the e-pharmacy

guidelines, to ensure a smooth transition from traditional to online pharmacy and for maintenance of strict safety standards. Further, with engagement of pharmacists, they may then act as opinion leaders who speak favorably about the online pharmacy innovation and are able to influence others to join, given that the growth of online pharmacy has been slow and uneven.<sup>10</sup>

Globally, the COVID-19 pandemic has resulted in many pharmacy organizations outlining guidelines to support pharmacists in carrying out their core responsibilities (like patient education, referral to other health care providers, provision of vaccinations, and medication dispensing at a time of increased prescription volumes), yet in many cases the pharmacists found these guidelines to be inadequate and ambiguous where they would be directed to other websites for information, without any clear and specific guidelines.<sup>19</sup> While this was primarily the case with the developed world where online pharmacies have been in action for a while, in case of developing countries, the overall lack of proper regulation, despite a growing need for online pharmacies, left pharmacists grappling in dark and often resulting in inappropriate use of medications.<sup>20</sup> This study highlights the potential of online pharmacy and the urgent need for regulatory bodies to engage pharmacists in outlining clear and adequate guidelines for the smooth functioning of online pharmacies in a country like Ghana.

This study is not without its limitation. First, there was a lack of in-person face-to-face interaction with participants since interviews were done virtually. In-person interviews would have offered the opportunity to observe more social cues; however, given the nature of the study, virtual interviews also helped assess the relevance of the phenomenon under investigation as well as added diversity to the study sample. Second, it was an exploratory study designed to examine the perspectives of pharmacists on the evolving situation of pharmaceutical care in Ghana. While the study is first of its kind and yielded rich data, more in-depth research is needed in this area to capture the development of pharmaceutical care in Ghana (and the African region) with increased digital networking and expansion of the NEPP.

## 5. Conclusion

Online pharmacy in Ghana has the potential to transform existing structures and to enable the advancement of the pharmaceutical industry to better serve the people. On the other hand, it could also lead to irrational use of medication, if not properly regulated, given the prevailing low levels of digital and health literacy as well as digital access. Although limited and exploratory in nature, this qualitative study is among the first on online pharmacy in Ghana that particularly explores the experiment and policy initiatives from the point of view of pharmacists. This new wave of introduction to online pharmacy and its benefits and challenges will help other pharmacists better understand the new dimensions in pharmacy.

## CRedit authorship contribution statement

**Naessiamba Eab-Aggrey:** Conceptualization, Data curation, Investigation, Methodology, Writing – original draft. **Shamshad Khan:** Conceptualization, Data curation, Formal analysis, Methodology, Supervision, Writing – original draft, Writing – review & editing.

## Declaration of Competing Interest

The authors declare that they have no known competing financial

interests or personal relationships that could have appeared to influence the work reported in this paper.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.rcsop.2023.100395>.

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