Review Article

Application of Electronic Dispensing Procedures in Community Pharmacy as a Protective Measure Against Prevalence of COVID-19

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Abstract

Background: The existing techniques of community pharmacy dispensing are not optimal for best pharmacy practices and infection control requirements. Community pharmacists have developed a considerable knowledge not only in monitoring and mitigation of COVID-19 but also in meeting other pharmacy-related needs of the community patient population.

Aim: To introduce the idea using electronic tools to the greatest possible extent to provide a safe dispensing and counseling of medication to avoid face-to-face communication and with a minimal surface contact between the community pharmacist and patients.

Method: The current community pharmacy situation was addressed and a proposed automated dispensing device located in the pharmacy front.

Conclusion: The semi-automated technology that may offer entire patient community pharmacy servicing without patient or community pharmacist interaction, hence ensuring a safe work environment for the pharmacist and assisting with patient tracking and quarantine. This will help to reduce the incidence and prevalence rate of COVID -19.

Keywords: COVID-19; Community Pharmacy; SARS-CoV-2; Patient Counseling; Automated Drug Dispenser

Introduction

The first case of novel coronavirus disease (COVID-19) was discovered in Wuhan City, Hubei Province, China, in December 2019, sparking a global disease outbreak. At this time, confirmed COVID-19 cases have been identified in different continents, including Europe, America, Africa, Oceania, and Asia. SARS-CoV-2 is a newly discovered beta coronavirus with an undisclosed causative agent. At the moment, it is mainly transmitted from person to person through respiratory droplets and close contact. The COVID-19 has an incubation time of 1 to 14 days prior to the onset of symptoms. These COVID-19 characteristics highlight the significance and necessity of avoiding "population disease spread" in pandemic prevention [1].

It was confirmed that fomite transmission of SARS-CoV-2 was possible, with the virus being able to remain infectious on surfaces for up to days, depending on the amount of inoculum shed. Several experiments on the stability and infectivity of SARS-CoV-2 on inert surfaces have been performed in recent months, indicating that SARS-CoV-2 can survive on various surfaces for periods ranging from hours to a few days [2].

Community pharmacies have gained valuable expertise not only in COVID-19 monitoring and mitigation, but also in addressing other pharmacy-related demands of the community patient base. Although pharmacists in community pharmacy are adhering to personal protective measures like wearing face masks, face shields,

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gloves, alcohol-based disinfectants, social distancing, and monitoring client's temperature before they enter the pharmacy, but there is no guarantee that these measures are providing a 100% protection for both the community pharmacist and the patient during the pharmacy visit.

The objective of this review was to make benefit of the technological tools to provide a safe dispensing procedure and patient counseling and bypass face to face communication with a minimal surface contact between the community pharmacist and patients via an electronic dispensing system or machine installed in the pharmacy facade.

The traditional dispensing procedures in community pharmacies

The current community pharmacy traditional dispensing methods are not optimized to the best pharmacy practices, and infection control standards. By taking a look at the traditional scenario of dispensing procedures which mostly follow the following procedures; the patient enter the pharmacy and wait for a some while inside the pharmacy followed ordering the required medications verbally if over the counter ones or through a written prescription. The pharmacist then will start preparing the medication order and provide the patient the required counseling. Finally, the patient will pick-up his/ her medication and leave the pharmacy.

The aforementioned community pharmacy dispensing procedures in the current COVID-19 pandemic situation lacks the known proper infection control standards. First of all, the presence of the patient inside a closed door pharmacy is a potential source of viral transmission to the pharmacist and other serviced patient clients, it is well- known that SARS-CoV-2 is an airborne transmissible virus via droplet aerosols generated by infected individuals [3,4]. Another limitation is the probability of improper social distancing, and noncompliance with protective measures, providing more chance for viral transmission, moreover, the lack of surface sanitation, like for example flours, ceilings, and counters, besides direct contact with those surfaces increases the chances of viral infection incidence and prevalence. Additionally, SARS-CoV-2 can survive on various surfaces for periods varying from hours to days [5].

Proposed electronic system for medication dispensing and counseling

It is worthy to mention that pandemic strategy and response can be supported by digital health technologies in areas that are impossible to do manually [6]. Countries such as South Korea have incorporated emerging technologies into government-coordinated containment and prevention procedures such as monitoring, inspection, touch tracking, and stringent quarantine, which could be linked to the early flattening of their incidence curves [7].

The proposed machinery system aimed to eliminate the direct contact between community pharmacist and patients, at the same time providing the required medication counseling. This system provides a safer work environment for community pharmacist than direct contact. On the other hand, it can provide a database for COVID-19 infected patients and help patient tracking and quarantine.

Hand sanitization and the use of disposable medical gloves before dealing with the machine dispenser are considered the most important components of supportive care for limiting COVID-19 viral illness transmission [8].

The device will be installed in the pharmacy facade, similarly like those of bank ATMs machines. The machine structure will be as follows; square or rectangular shaped window divided in to two sides, the first side will consist of a touch screen based computer system supported with patient card reader, QR code scanner, camera, microphone, and traditional prescription scanner. This part will provide the required tools for patient registration, creation of money wallet, medication order, prescription scanning, and audio/video communication between the patient and community pharmacist. Besides, this computer system will provide an android, and Mac application to allow mobile orders, prescription uploading, and online payments. The second side will consist of a small window for cash money/credit card/NFC payment, and medication bag receiving.

The system will provide a complete patient medication record, allowing the pharmacist to track medication history. For those chronic patients supported by insurance companies, monthly medication list can be added to the patient electronic profile, thus providing a monthly bases medication auto-delivery, supported by automated money transaction. This also will apply for those COVID-19 infected patients under quarantine.

The medication delivery machine operation will be as follow

• The patient place his order outside the pharmacy from the first side window screen or his android system, or via audio/video conversation.

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- The pharmacist inside the pharmacy receive the medication order on his screen and start to prepare the required medication order.

- When the medication order preparation is completed, the pharmacist from his computer screen give a payment notification.

- The patient client choose the suitable payment method, and proceed for payment.

- The pharmacist handle the medication order to the patient client from the second side small window, and the patient leave.

- For Home delivery, the patient can order his medication or upload the prescription from the mobile application.

- Patient counseling can be performed via instant audio/video conversation, or by sending video records/or voice notes through client's e-mail, WHATS APP, telegram, cloud drive, or social media.

Conclusion

The semi-automated system can provide a complete patient community pharmacy servicing, without patient and community pharmacist contact, thus, maintaining a safe work environment for the pharmacist, aiding patient tracking and quarantine. This will lead to minimizing COVID-19 infection spreading and aid in flattening the spreading plateau.

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