



A qualitative exploration of purchasing, stockpiling, and use of drugs during the COVID-19 pandemic in an urban city of Bangladesh

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ABSTRACT

Objectives: This research was conducted to explore the patterns and behavior of panic purchasing, stockpiling, and use of drugs during COVID-19 in the Sylhet city, Bangladesh.

Study design: The study adopted qualitative exploratory research design.

Methods: 25 in-depth interviews with drug sellers and clients and 7 key informant interviews were conducted with pharmacists and medical representatives of pharmaceutical companies in Sylhet city in Bangladesh from October 2020 to March 2021. Thematic analysis was used to evaluate the primary data.

Results: The findings revealed that individuals sought out, purchased, and stockpiled prescription-only drugs for self-medication purposes during the COVID-19 pandemic. News and rumor spread by social media, television, and everyday interactions concerning the severity of infections and the number of deaths caused an increase in self-medication as a preventive measure. The reason for this panic buying of drugs was identified as a fear of drug shortages, price hikes, the rise of infection, and the availability of medicines and home delivery services during the pandemic.

Conclusion: The purchasing, stockpiling and use of drugs by pharmacies varied based on the person dispensing the drugs, the customer, and the COVID-19 pandemic situation. Furthermore, the role of social media in spreading rumor and (dis) misinformation about drug use, a greater tendency to self-medicate, and poor regulation, influenced the individual's use of drugs. Therefore, the drug regulatory authorities and policymakers need to consider the real level of local drug use in order to encourage more rational use of drugs which will help to ensure that there is reliable access to safe, effective, and high-quality medicines and vaccines for all.

1. Introduction

During the COVID-19 pandemic, media highlighted the high transmission and death rates, leading to heightened panic and stress to the population [1]. Countries enforced the World Health Organization (WHO) guidelines with stay-at-home measures, leading individuals to self-help and self-medicate [2,3]. Pharmacists provided essential primary healthcare services, supporting doctors and nurses [4]. A Chinese study reported their crucial role in pharmaceutical care and raising public awareness for infection prevention and disease management [5]. In developed countries with regulated pharmacists, the risk of drug misuse is lower. However, in low-and middle-income countries (LMICs)

with poorly trained drug sellers and regulation, there is a high risk [6]. The COVID-19 pandemic disrupted daily life, and health care access globally, particularly in developing countries like Bangladesh with drug management challenges [7]. Earlier studies showed that in many developing countries, drug purchases lacked sufficient clinical evidence of efficacy, resulting in inappropriate and irrational medications use [8–10]. During the COVID-19 pandemic in Jordan, people panicked and stockpiled drugs at their home which was linked to their medical knowledge and education [11]. However, little is known about the real level of purchase and use of drugs in LMICs during COVID-19.

In Higher Income Countries (HICs) like Germany, fear of a health crisis drove drug behavior, causing panic buying, influenced by the fear

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of price hikes and drug shortages during the COVID-19 [12]. Studies reported increased purchases of psychotropic, neurological, and cardiovascular during the COVID-19 pandemic in Germany [13]. Older people sought antiretroviral, while those employed self-medicated with penicillin as a preventive measure [3]. The Food and Drug Administration (FDA) recommendations for hydroxychloroquine (HCQ) and chloroquine (CQ) led to heightened demand [8]. According to a comprehensive review, common self-medication choices included antibiotics, chloroquine/hydroxychloroquine, acetaminophen, vitamins/supplements, ivermectin, and ibuprofen [14]. Misinformation and rumors concerning high rates of severe infection and death from COVID-19 led to panic buying [15]. Most studies reported that COVID-19 self-medication was fueled by fear, myths about immunity boosters, nutritional supplements, financial hardship, and easy access to non-OTC medications [16]. Drug shortages in pharmacies were reported during the COVID-19 pandemic because of higher demand, increased demand and disrupted supply chains [13,17–19]. In a pandemic like COVID-19, increased demand for medications worsens shortages, impacting public health and treatment [5]. Research revealed in Bangladesh that people purchased and stockpiled medicines along with other daily necessary goods by influenced rumor of lockdown, higher demand, fear of increased price and short supply during the COVID-19 pandemic [20]. The panic buying behavior in Bangladesh was triggered by the unfavorable environmental factors and as prevention measures during the pandemics [21]. Despite the WHO's announcement against self-medication, including antibiotics and herbal medicines and other OTC drugs [22], little is known about the situation in LMICs during COVID-19.

The 2016 national drug policy (NDP) of Bangladesh prioritizes affordable medications while ensuring safety, efficacy, and quality. It encompasses rigorous monitoring and control of the entire medicine lifecycle, from registration and manufacturing to distribution, sales, import, and export. To operate a pharmacy, vendors must possess a minimum 'C' grade pharmacist's certificate obtained through three months of training from the directorate general of drug administration [18]. According to the Pharmacy Council of Bangladesh (PCB), three classes of pharmacist have been recognized since 1976 [23]. These include pharmacists with a bachelor's degrees in pharmacy (A grade), a three-year diploma (B grade), and a three-month basic training certificate in drug dispensing (C grade) from the Pharmacy Council of Bangladesh and Chemist and Druggist Association of Bangladesh [24]. The NDP-2016 added 39 medicines to the OTC drug list, prohibiting the sale or purchase of non-OTCs without licensed doctor's prescription [23]. However, enforcement is lacking, with other levels of pharmacists selling prescription-only drugs without prescriptions [24]. Studies in Bangladesh reported that 92% of the pharmacies are operated by 'C' grade pharmacists with minimal training [25], commonly pharmacy referred to as a 'drug shop' and the pharmacist as the 'drug seller' [24]. Typically, only the owners hold this certification as a prerequisite for obtaining a license of drug store, while other employees lack any training and often dispense various medicines with or without prescriptions [24].

In Bangladesh, the drug seller's role is crucial due to the limited monitoring and regulation of OTC sales, leading to high rates of self-medication [23]. Shortage of trained health care professionals and maladministration are also reported [26,27]. In Bangladesh, village doctors (informal and unqualified healthcare providers) and drug sellers serve to 80% of healthcare seekers [24]. In addition, 66.2% of the drugs dispensed upon customers' request have low safety profiles [28]. This study aims to investigate the patterns and behavior of panic buying, stockpiling, and medicine use among the drug seller, client and pharmacist in a northeastern city in Bangladesh during the COVID-19 pandemic. The results of this study will assist in any upcoming pandemic, infectious diseases threats and public health emergencies as well as the regulatory authorities and policymakers in enhancing safe medication use that is align with the sustainable development goals

(SDG 3.8), for governing access to safe, effective, high-quality medicines and vaccines for all [29].

2. Methods

2.1. Design, and settings

In this study, we employed qualitative research methods. Qualitative study is more suitable for exploring the everyday activities and behaviors of drug sellers and their clients. Data collection was conducted from October 2020 to March 2021, involving three drug stores in Sylhet city, conveniently selected to recruit participants. The type of training received by the seller as well as the type of shop were taken into consideration when selecting the drug stores. Among the three selected drug stores, one was a sole drug store, operated by a 'C' grade pharmacist and a sales assistant without any training. The second store was managed by a seller with RMP (Rural Medical Practitioner) training, offering drugs and primary health care. The third store was operated by untrained personnel without any professional certification. We followed the consolidated criteria for reporting qualitative research (COREQ) for reporting purposes [30].

2.2. Study participants and sampling strategy

Convenience sampling was employed to select the study participants from the three drug stores, including customers purchasing COVID-19-related medicines, 'C' grade pharmacist, sellers with RMP training, untrained sellers, 'A' grade pharmacists, and medical representatives. The study recruited participants from a diverse age, sex, education, and professions (Table 1). Twenty-five individuals in-depth interviews (IDIs), including drug sellers and customers who bought COVID-19-related medicines, to understand their experiences. Seven key informant interviews (KIIs) involved medical representatives and 'A' grade pharmacists from pharmaceutical companies to gather expert opinions, as they had related experience dealing with drug sellers and consumers. Participants were recruited based on volunteer participation, suitable time and medicine-selling-and-purchasing-interactions between seller and clients. Prior to select the drug sellers, pharmacists and medical representatives, a primary consultation was conducted by the researcher to ascertain their professional and educational qualification (grades 'A', 'B', 'C') and experiences. Participants were assured that their experiences will be included in this study not their identity. Similarly, the clients' medicine purchasing interactions and decisions was considered

Table 1
The sociodemographic characteristics of participants' (n = 32).

Characteristics	IDI (n = 25)		KII (n = 7)	
Age (Mean ± SD)	40 ± 10		45 ± 9	
Sex				
Male	20		-	07
Female	05		-	-
Education				
0-5	05		6-10	
6-10	03		11-12	
11-12	05		13+	03
13+	12		-	04
Profession				
Drug seller ('C' grade, seller with RMP training and seller without training)	03			
Day labor	04			
Rickshaw puller	03		Medical representative	04
NGO worker	02		Pharmacist	03
Govt. service holder	03			
Teacher	05			
Homemaker	05			

to recruit the clients for interviews. Research objective and participants rights were read out before conduct each interview. The interview process ended based on data saturation, where no new unique data or insights were revealed related to the research objective [31]. Consensus among the study team confirmed data saturation after 20 IDIs and 5 KIIs. To ensure compliance with data saturation principles, five additional IDIs and two KIIs were conducted.

2.3. Data collection tools and procedures

Interviews were conducted with participants at convenient places like homes, parks, and medicine shops using semi-structured interview guidelines. Interview guidelines were developed in a daylong workshop with team members and pre-tested in the study area. In addition, participants were asked about their health problem and seeking behavior with the underlying factors of panic buying, stockpiling and use of medicine during the COVID-19. An observation checklist was used to explore non-verbal behavior and interactions between drug sellers and consumers. The lead researcher and two others conducted the interviews, ensuring that there was no influence or bias in the interview response. The interviewers were trained in qualitative research with expertise in qualitative data collection and conducted interviews in Bengali. The interviewers had no prior relationship with the participants. All interviews were digitally recorded lasting 45 min to 1 h on average. Two participants declined recording due to privacy and job security concerns. Handwritten notes and memo-writing tools were used to transcribe the non-recorded interviews [32].

2.4. Data analysis

All the interviews were transcribed verbatim and translated into English by the lead researcher. Transcripts and translations were cross-checked with the audio files by two other researchers to ensure data consistency. Observation data gave a new insights. Two researchers generated an open code list ensuring relevance to the study objectives. The coding process involved manual segmentation into different clusters based on code nature. The code list remained flexible, accommodating new relevant codes. Two researchers independently coded all transcripts. The codes were then merged under different sub-themes based on the similarities. Themes were then developed from sub-themes following the inductive thematic analysis used to analyze the textual data [33]. During the analysis, several meetings among the study team was performed to reach a consensus about sub-themes and themes. Heterogeneous participants (sellers, representatives, clients) served as data source, different educational backgrounds investigators (public health, medical anthropology, sociology) involved in the analyze of the data, different methods (IDI, KIIs data with observation) were the types and veracity of triangulation used in this study.

2.5. Trustworthiness

As recommended by Lincoln and Guba (1985), many measures were adopted in this study, including triangulation, peer debriefing, and member-checking to achieve integrity [34]. A large number of data sources, investigators, and analytical methodologies were used to accomplish triangulation. The study team held regular debriefing meetings at which the interpretations of the findings were discussed and finalized. Potential sub-themes and major themes of the findings after data analysis were shared with three conveniently selected participants for data validation although approached five interviewed participants. Two participants declined to listen, due to their little interests. All the three participants carefully listened and provided their consent about the data.

2.6. Ethical considerations

Ethical approval for this study was obtained from the Mahidol University Central Institutional Review Board (MU-CIRB), bearing the protocol number MU-CIRB 2020/237.3108. Written informed consent was obtained voluntarily from all participants. The participants were informed that they had the right to withdraw from the study at any point. However, no such issues were experienced.

3. Results

The sociodemographic characteristics of the participants are shown in Table 1. A total of thirty two interviews were conducted and 25 were males and 7 females. Women were less likely to go outside of the home, due to patriarchal culture and Muslim religious restrictions. Participants' mean age was 40 (SD \pm 10) for IDIs and 45 (SD \pm 9) for the KIIs. Around 16 participants attended higher secondary education and only 5 participants attended primary-level-education. All the seven KIIs participants completed secondary school and above. Different occupational participants for IDIs were three from each drug-sellers, rickshaw pullers and Government service holder, four day labors, two NGO workers, five individuals from each teacher and homemaker, whereas four medical representatives and three pharmacists were recruited for KIIs. All the IDIs participants have experienced panic buying, and stockpiling medicines, whereas the KIIs participants were directly engaged with providing health information and selling medicines, mostly COVID-19 related drugs.

Three major themes arose from the participants' stories concerning the purchasing, stockpiling, and use of COVID-19 drugs (Table 2). First, information sources on drugs related to COVID-19 included social media, experiences of COVID-19 positive or suspected patients, and neighboring drug sellers. Second, drug purchase and consumption included the type of COVID-19 drugs purchased, method of purchase, stock, consumption, and awareness about the medicines and their usage. Third, triggering factors such as fear of drug shortages, fear of drug price hikes, and the availability of drugs and home delivery services. The field data revealed that both drug sellers and customers were unaware of the potential risks and side effects of the COVID-19 medicines they sold, bought, and took as preventive measures during the COVID-19 pandemic.

3.1. Information sources on drugs related to COVID-19

3.1.1. Social media: facebook, twitter, and online news sharing

According to the study data, during the COVID-19 pandemic, online health, drug sellers, and drug-related information became a driving factor in the decision to buy prescription-only medicines for self-medication. Participants in the study who could read and write said that social media, Facebook, Twitter, and online news sharing were unconventional sources for learning about and, influencing the decision to purchase medicines. The study findings revealed that eHealth such as the internet, online news, printed media, television, and mobile messaging also influenced study participants to buy, stock, and consume COVID-19-related medicines. One client explained during the IDI:

"I saw a friend's Facebook post showing a prescription for COVID-19 patients. The following day, I went to the drug-store and bought the drugs listed. Meanwhile, I also asked the drug seller about the use and efficacy of the medicine." (IDI 4, Male, Aged 40, Consumer)

3.1.2. Stockpiling known COVID-19 treatments, experiences and knowledge from friends and family who have had COVID-19

The majority of clients reported that they exchanged information about their experiences of using medication with COVID-19-positive individuals who had recovered or were symptomatic but undiagnosed. The study participants asked their friends, and relatives who had

Table 2

Emergent themes and sub-themes of the COVID-19 drug purchase, stock and consumption.

Table. Emerging themes and subthemes			
Broad themes			
	Information sources on drugs related to COVID-19	Drug purchase and consumption behavior	Triggering factors
Subthemes and verbatims of study participants	<p>Social media: Facebook, Twitter, and online news sharing</p> <p>"I felt happy to see the prescription from a physician on the health page of the newspaper. I thought the prescribed medicine with suggested home remedies could prevent the infection of coronavirus". IDI-School teacher.</p> <p>Stockpiling known COVID-19 treatments, experiences and knowledge from friends and family who have had COVID-19</p> <p>"I got a fever, sneezing, and severe headache for two days. Hearing my symptoms, my relatives told me, of course, I got coronavirus. Then he shared the medicine names what consumed and get well." IDI-Client</p> <p>Neighboring drug seller</p> <p>"Pharmacy doctors (drug sellers) are our nearest health services and drug outlet. Whatever my family member and I got unwell, we seek care from this medicine shop." IDI-Client</p>	<p>Types of COVID-19 drugs purchased</p> <p>"My friend is a physician. He asked me to buy and stock Ivermectine, doxycilin, cef-3, vitamins, and hand sanitizer for regular and future use." IDI-Client</p> <p>Being prepared for the future: prophylactic use and stockpiling</p> <p>"Most people in our country seek care and buy medicines from us. We can prescribe drugs like the doctor, and people are getting well. We do not charge for consultation; the patient can avoid the doctor visit fee." IDI-Drug seller</p> <p>Awareness about drugs and usage</p> <p>"Yes, some community people shared their unwell feeling about the coronavirus preventive medicines. Some drugs are very powerful, but people do not worry about the side effects." KII-Pharmacist</p>	<p>Stockpiling driven by fear treatment being unavailable when needed</p> <p>"Since I heard about the drug shortage in the market, I went to a drug store and asked the seller to give me all the necessary medicines." IDI-Client</p> <p>Stockpiling driven by fear of drug price hikes</p> <p>"Due to the coronavirus lockdown, the price of all goods and services is increased. If we do not want stock medicines, we have to pay higher costs for medicine purposes when we need it." IDI-Client</p> <p>Stockpiling driven by the availability of drugs and home delivery services</p> <p>"We two (husband and wife) live in our family, and nobody is here to take care of us. I called the dakter (drug seller), and he knows the medicine list. Sales assistant deliver all our necessary drugs at my home." IDI-Client.</p>

become infected and recovered about their experiences (positive or negative) and self-medication use. Three clients perceived that the medicines used by recovered COVID-19 positive or suspected patients had been examined, were effective and saved lives. Therefore, clients purchased, consumed, and stockpiled COVID-19 medicines bought from drug-stores. One client stated in the IDI:

"My relative was diagnosed as coronavirus positive. The physician telephoned and recommended medicines. He recovered following the doctor's advice. Then, I talked to him about his medicines and picked these up for our future needs." (IDI 9, Female, Aged 40, Consumer)

3.1.3. Neighborhood drug seller

Participants reported that they consulted the nearest drug seller when choosing medication for COVID-19. The data revealed that participants generally purchased medication recommended by the nearest known drug seller to avoid the physician's visiting fee and transport cost while saving on travel and waiting time. One drug seller stated in the IDI:

"Poor people cannot visit the doctor. They depend mostly on us. During the coronavirus pandemic, people purchased drugs from me. They wanted to recover quickly. Thus, I have to dispense antibiotics in all cases." (IDI 5, Male, Aged42, Drug seller with RMP training)

The field data revealed that the study participants considered the nearest drug-store as the place to seek care and purchase medicines. However, families with elderly members or children were reported to be more likely to purchase preventive medicines. Most clients shared that the drug seller insisted them to buy medicines during their visit. One client shared in the IDI her experience of the drug seller influencing drug purchase:

"The drug sellers are very clever. During the coronavirus, they always recommended more medicines than were actually needed, saying that the medicine was essential to prevent coronavirus. This was not common behavior before the pandemic situation." (IDI 6, Female, Aged38, Consumer)

3.2. Drug purchase and consumption behavior

3.2.1. Type of COVID-19 drugs purchased

Medicines such as antibiotics (Azithromycin, Zimax, Cef3), Ivermectin, Doxycycline, Cetirizine, Dexpotent, and Fexofenadine were more likely to be purchased during the COVID-19 pandemic. In addition, other medicines, including vitamins and general medicines were consumed and stocked accordingly, while most of the participants also purchased protective items like hexisol, savlon, face masks, and rubber gloves. According to data, drug sellers made up/prepared drug packages for COVID-19 clients following previous dispensary experience, social media prescriptions, suggestions about a medical representative, and exchanging information and experiences on the effectiveness of drugs given to infected patients. One medical representative stated in the KII that he learned about a package from Facebook and disseminated information to drug sellers and even physicians during drug promotion:

"There was a package of COVID-19 drugs containing Azithromycin 5 pcs, Cetirizine 5 pcs, A-Mectin (10 Ivermectine+10 Doxycycline) 20 pcs, Paracetamol 15 pcs; Gastric tablets 10 pcs, and Civit 30 pcs. I recommend it to all the drug sellers and some of the doctors when promoting medicines." (KII 4, Male, Aged 45, Medical Representative)

Moreover, drug sellers recommended antibiotics to customers even for common symptoms like fevers and coughs. The participants disclosed that drug sellers stock and sell antibiotics at higher than the retail price, simply to maximize profit. Customers with typical symptoms looked for, purchased, and took antibiotics as well. They also stocked these medicines at home as well as other general medicines such as inhalers and cold and cough medicines.

3.2.2. Being prepared for the future: prophylactic use and stockpiling

Self-medication was commonly reported as the reason for purchasing

drugs for COVID-19 and stockpiling them at home for future needs. Many participants reported that financial issues were not a concern when buying drugs. In addition, they stocked medicines at home like other necessary daily goods and off-the-shelf foods. One pharmacist explained in the KII:

“The majority of the people bought extra medicines and may stockpile them at home. Many customers who store medicines ask about fever and sneezing. Moreover, people perceive that these medicines might help in recovering from coronavirus symptoms. They immediately bought more medicines out of fear and to help recover from coronavirus symptoms.” (KII 3, Male, Aged 48 , ‘A’ Grade Pharmacist)

Furthermore, sales assistants were also consulted about buying, taking, and stocking medicines from the drug store as a preventive measure. One participant described:

“The first time, I was very scared about the coronavirus. I used to buy medicines from a drug shop, and the seller recommended to buy some drugs if I have coronavirus symptoms. Then he (the drug seller) suggested some antibiotics and other drugs and I bought them accordingly. I had no income but managed to pay. I bought these drugs for myself, my wife and my mother.” (IDI 22, Male, Aged 45, NGO worker)

Similarly, another participant shared in the IDI:

“I took a course of Zimax (azithromycin) tablets for five days on several occasions although I did not have any common symptoms. I took the medication as a preventive measure. First, I took it when I heard about my neighbor’s positive infection, then during the first wave, and again with the second wave due to the higher infection rate.” (IDI 15, Male, Aged 48 , Consumer)

3.2.3. Awareness about drugs and usage

Most of the clients recognized that they did not know about the potential side effects of COVID-19-related medicines and even asked drug sellers or their family physicians. The clients explained that they did not follow the advice provided by medicine sources and drug sellers. The high rates of infection and deaths reported in the news influenced the purchase and consumption of prescription-only drugs without consulting a physician. The data revealed that the study participants perceived that consuming medicines might prevent infection and save their lives. Besides, the study participants did not know about the possible side effects reported. A family with an older member was more afraid of infection and likely to take prescription-only drugs without a prescription. One participant stated in the IDI:

“I was worried about my elderly parents. I talked with the neighborhood/local drug seller, and he suggested antibiotics, vitamins, and many medicines for my parents and the whole family. We all took them for seven consecutive days.” (IDI 6, Male, Aged 38, Consumer)

According to the data, customers did not receive any direction on taking the drugs, the correct dose, or potential side effects. A drug purchase process was observed between the seller and client:

“Give me some powerful medicine that can reduce body pain and fever. I have to go to work tomorrow,” said the client. The seller dispensed “Clofenac (NSAIDs), antacid, and Zimax (azithromycin) for five days.” (IDI 24, Male, Aged 45, Consumer)

Having taken powerful prescription-only drugs without consulting a physician, participants reported some adverse reactions including vomiting, diarrhea, headache, and exhaustion. Moreover, all participants reported that they experienced breathing problems, perhaps because of more frequent use of hand sanitizer and liquid chlorine spray inside and outside their rooms. As a result, the inappropriate use of

drugs might lead to drug resistance because individuals purchased and took drugs without consulting a physician. Drug use might have a different effect depending on the context and patient. One medical representative stated:

“People believed that the same medicines would work for everyone in the treatment of coronavirus. They bought COVID-19-related medicines prescribed for coronavirus positive or symptomatic patients. In the long run, this could be harmful to their health.” (KII 5, Male, Aged 52 , Medical Representative)

3.3. Triggering factors

3.4.1. Stockpiling driven by fear of treatment being unavailable when needed

The field data revealed that rumors and fear of COVID-19 drug shortages influenced people toward purchasing drugs like other daily goods. All clients revealed a fear of drug shortages at the drug-stores since many people were stocking up on medicines like kitchen products. One drug seller shared his views in the IDI:

“Clients were purchasing more coronavirus preventive drugs than they needed. It was a rush for us to place the orders with drug companies. Many of the customers returned empty-handed due to the unavailability of drugs and visited other drug stores to buy the required medicines.” (IDI 7, Male, Aged 45, Drug Seller)

Similarly, another client explained:

“The news about coronavirus makes us anxious about whether or not we would be able to survive. The hospital, clinic, and doctors are not allowing any patients in for treatment. Hence, my spouse asked his brother, a physician, about a list of all the urgent medicines to protect us from the virus. I bought antibiotics, antihistamine, an inhaler, and hand rubs in advance, and that cost around five thousand takas.” (IDI 6, Female, Aged 38, Consumer)

3.4.2. Stockpiling driven by fear of drug price hikes

Price hiking was also revealed as motivating factor in buying and stocking medicines at home. All the participants reported that they believed artificial shortages might be created by drug sellers or manufacturers. As one drug seller stated in the IDI:

“From the very beginning of the coronavirus, there has been a huge demand for ivermectin, doxycycline, and antibiotics, and medicines to relieve fever and coughing. Hundreds of people came to buy these medicines, and my supplies were drastically depleting. Since the supplier would not provide me with these medicines at the usual rate , I had to sell them at twice the usual price.” (IDI 8, Male, Aged 44 , Drug Seller without training)

A similar experience was reported by another customer in the IDI:

“I bought some medicine from the nearby drug shop as I was told about a shortage of coronavirus drugs in my locality. I know the shopkeeper and he saved some drugs for me. I took these drugs for my safety.” (IDI 10, Male, Aged 47, Consumer)

3.4.3. Stockpiling driven by the availability of drugs and home delivery services

The availability of prescription-only drugs without a prescription and home delivery options were two of the underlying factors in the purchase of drugs for COVID-19. Participants revealed that they could buy all kinds of medicines, including prescription-only drugs, without a prescription or consulting a physician. As one pharmacist explained in the KII:

“There is competition among the drug sellers to build up a good reputation for treating the patient immediately. Due to the availability and popularity of antibiotics, we choose a-z medicines in every case because they are effective for all kinds of illnesses. Also, customers even preferred antibiotics and wanted to recover quickly.” (KII 2, Male, Aged 50, ‘A’ Grade Pharmacist)

Attempting to receive care and medicines over the phone and the availability of home delivery services also influenced the purchase of COVID-19 medicine from the drug store. Besides, lockdown and the risk of infection increased the volume of orders and the demand for home delivery services. Participants revealed that households headed by women and the elderly frequently requested medicines for home delivery. One regular customer stated in the IDI:

“My son lives overseas and he asked our neighborhood drug seller over the phone to deliver COVID-19-related medicine to my home. So, the seller delivered the medicine to our house and my son made payment directly from abroad.” (IDI 15, Male, Aged 48, Consumer)

4. Discussion

This study explored patterns and behaviors pertaining to panic buying, stockpiling, and medicine utilization among drug sellers, clients, and pharmacists in the context of the pandemic situation in Bangladesh. To our knowledge, this is the first qualitative study to explore the realities of COVID-19 drug buying and selling practices during the pandemic. Despite differences in sellers’ training and licensing status among the selected drug stores, participants demonstrated similar patterns of prescription and non-prescription, including prescription-only COVID-19 medicines without prescriptions in Bangladesh.

In Bangladesh, unrestricted access to medicines, including antibiotics, without prescriptions is well-known. This study reveals that individuals procured and stockpiled prescription-only drugs for preventive and curative purposes without medical consultation, including antibiotics, vitamins, available drugs, safety kits, and sanitizers. Panic buying was influenced by information shared on social media about COVID-19 drugs. The participants’ fears centered around contracting COVID-19, inadequate treatment, and inability to care for family members. Participants belonging to the low-income client groups exhibited a strong inclination towards powerful drugs, prioritizing rapid recovery to promptly resume work, disregarding potential side effects. Participants believed the drugs as essential, leading them to take medications prophylactically, even in the absence of COVID-19 symptoms, demonstrating minimal concern about potential adverse effects despite financial constraints, and inflated price. Information shared by COVID-19 positive or symptomatic individuals and consultation with local drug sellers influenced drug-purchasing behavior, highlighting a lack of concern about potential side effects for preventing infections and quick recovery from COVID-19. Triggering factors included fear of drug shortages, price hikes, easy access to medicines, and limited healthcare access. Non-prescribed antibiotics and unproven COVID-19 drugs were taken preventively, possibly unnecessarily, without clinical trials or approval for COVID-19 use.

Previous study revealed that lockdown strategy during pandemic triggered panic buying of medicines for treatment and precautionary measure [11]. This study shows that pandemic situation hampers drug supply channels, causing shortages and price hikes. Similar findings in Rwanda highlighted continuous unnecessary buying and stocking at home, leading to drug shortages and price increases [14,15] the fear of shortages and price hikes drove individuals to stockpile medicines at home, akin to reported behavior in Germany [12].

Our findings highlighted that drug-stores offer services and drugs despite limited or no training of the drug seller that is consistent with earlier study in Bangladesh [17]. Clients could order medicines from home or overseas for home delivery over phone was the new dimension

of medicine purchase during the COVID-19 situation. Easy access to medicines, primary healthcare and drug services came with a risk of drug misuse [28]. This study revealed a common practice of self-medicating COVID-19 drugs without seeking consultation or prescriptions. Earlier studies found that self-medication was a common practice in Bangladesh [18,21,24]. Studies in Bangladesh and Thailand reported common occurrences of dispensing drugs without prescriptions, and increased sales of OTCs, including antibiotics [10,18,24]. Data from this study indicated customers experiencing adverse reactions like vomiting, diarrhea, headache, and exhaustion after such self-medication. Prior studies also highlighted the risk serious health hazards, including adverse reactions, antibiotic resistance, and drug dependence due to self-medication practice [8,9].

As stated elsewhere, the higher rates of infection and death due to COVID-19 created panic in the community. A lack of proper guidelines and maladministration in the healthcare system, health facilities, and the services provided by hospitals in Bangladesh were also evident [18]. Households with elderly members and children were more inclined to buy medicines as a preventive measure. Social media, the internet, person-to-person communication, and electronic media intensified the fear, leading to increased medicine purchases, consistent with other studies [1–3,9,12]. Limited access to healthcare centers and providers, especially, at the beginning of pandemic, compelled individuals to seek care any buy medicines from drug stores [5]. Both drug sellers and customers lacked awareness of potential risks and side effects, highlighting increased risks and medicine misuse in low- and middle-income countries like Bangladesh, primarily due to poorly trained drug sellers.

5. Future research scope and policy implications

This study reveals a significant surge in drug buying, selling, and consumption during the COVID-19 pandemic in the local context. According to the Bangladesh NDP 2016, in terms of OTC drugs, there is a lack of practical monitoring and evaluation [24]. However, drug sellers and customers preferred to rely on antibiotics purchased without a physician’s prescription. This study is important to understand the purchasing, stockpiling and medication use behavior in any upcoming pandemic and public health emergencies. The drug regulatory authorities and policymakers need to consider the panic way drugs were sold, stored and consumed during pandemic that will help to improve drug distribution and the rational use of medicines. The drug administrators can engage the professional pharmacist in dispensing and prescribing for primary health care. Research on public awareness campaigns need to be launched and the findings can be advertised on social media, in print, and via electronic media, encouraging people to consult a physician and raising awareness of the possible adverse effects of taking unprescribed drugs and unnecessary use medicine. The findings from this study offer valuable insights about the local context of medicine behavior during the COVID-19 pandemic. Policymakers can adopt these learnings in any local outbreak or upcoming future pandemic for their health system resilient.

6. Strengths and limitations

Methodological triangulation was used to establish data validity and reliability since the aim of the study was help to understand the drug-purchasing behavior of individuals during a pandemic. Despite the sensitivity and complexity of the drug recommendation, and dispensing behavior issue, the lead researcher (M.S.M.), as an outsider, was allowed into the professional space and services of the drug-store, which helped to explore the real-world data. We need to reschedule some interviews in order to accommodate participants convenience. In addition, due to the business and pandemic crises of the participants from the drug administration and physicians, we could not recruit them, which has limited the possibility of triangulating participants.

7. Conclusion

Informal channels of drug selling are common in Bangladesh due to the lack of formal healthcare services and a shortage of professional healthcare providers. Drug-stores are run by drug sellers with little training in providing primary health care along with sales assistants. In particular, drug sellers often prescribe and dispense unnecessary medicines since they have no other source of income except for the profits gained from the sale of medicines. There is also a lack of monitoring and regulation. In addition, customers are not concerned about the overuse, misuse, and adverse effects of drugs and appear to be more interested in recovering quickly by taking unnecessary medicines, even antibiotics. Thus, prescription-only drugs are purchased, stockpiled, and used for self-medication more frequently, especially during an emergency or pandemic, thus contributing to their irrational use. The drug regulatory authority of Bangladesh can ensure the monitoring of registration issues, drug dispensing, and consumer behavior to improve the safety and rationality of drug purchase and consumption for all. Policymakers could look at the way drugs are purchased in the local context of city in Bangladesh to consider what actions should be taken to improve their safety, quality, and rational use.

Declaration

The authors declared that we have no financial or personal conflict of interest.

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