



PATTERN OF DRUG SALES AT COMMUNITY PHARMACIES IN EDO STATE AS EVIDENCE OF SELF-MEDICATION DURING THE COVID-19 PANDEMIC: IMPLICATIONS FOR POLICY IMPLEMENTATION

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ABSTRACT

Background: Inappropriate self-medication, recognized as one of the indirect health effects of the COVID-19 pandemic, is especially worrisome because of reported toxicity and unproven efficacy of various drug combinations touted as cures for the disease. Little scientific documentation exists on the range of drugs being self-medicated during the pandemic in Nigeria. This study assessed the pattern of drug sales at community pharmacies during the COVID-19 pandemic to ascertain the drugs commonly used for self-medication.

Methods: A descriptive cross-sectional study was conducted across community pharmacies in Benin City, Edo state in June, 2020 to assess the pattern of sales of drugs. Data was collected using a self-administered questionnaire and a record review of medication sales carried out to compare sales in the 1st and 2nd quarters of 2020. Data was analyzed using IBM-SPSS version 25.0.

Results: Sixty-two community pharmacies were assessed. Of these, record review showed increase in sales in the 2nd Quarter, compared to the 1st quarter, of Hydroxychloroquine 62 (100.0%), Chloroquine 51 (82.3%), vitamin C 62 (100.0%), immune boosters 61 (98.4%), multivitamins and other supplements 57 (91.9%). Forty-one (66.1%) community pharmacies reported increase in sales of Azithromycin and Zinc respectively and 27(43.5%) reported increase in the sales of Artemisin based combination therapy. Prescription sheets were not mandatory for the sales of these medications in any of the pharmacies.

Conclusion: There was an increase in sales of antimalaria, antibiotics and multivitamins reported to be useful in the management of COVID-19 without prescription. Implementation of drug policies is necessary to guarantee public safety.

Keywords: Self-medication, COVID-19, community pharmacists, Benin City.





INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic which was formally declared on March 11, 2020 has tested the resilience of health systems globally, highlighting and accentuating inherent problems within these systems.¹ Besides the direct number of cases in the magnitude of tens of millions and deaths exceeding 1 million, the pandemic has wrought a barrage of indirect health-related effects which, as witnessed during past infectious disease outbreaks, may cause more devastating impact on the health sector than the outbreak itself.^{2, 3} These indirect effects include disruptions to tuberculosis services, lowered immunization coverage and other impacts on reproductive, maternal and child health services, worsening mental health, increased and new patterns of substance abuse and a rise in inappropriate self-medication.⁴⁻⁷

The World Health Organisation (WHO) defines self-medication as selecting and using medicines to treat self-recognized symptoms without consulting a physician.⁸ Also included in the scope of self-medication are the use or re-use of previously prescribed drugs, direct purchasing of prescription drugs without consultation and irrational use of over the counter (OTC) drugs.⁹ The practice of self-medication is common globally and may even be more common than the use of prescribed medication.¹⁰ The prevalence ranges from 0.1% in countries in Europe to over 90% in developing countries, with a reported prevalence of 81.8% in Nigeria.^{11,12} Although self-medication may facilitate healthcare with reduced drug prescribing costs, its inappropriate use leads

to serious adverse effects, drug interactions, drug dependence and antimicrobial resistance.¹³

Self-medication in the context of the COVID-19 pandemic has emerged as a global problem including among healthcare personnel and may be rampant for several reasons: fear of contact with infected persons in hospitals, fear of stigmatization or discrimination, fear of being quarantined, emergency illness and delay in hospital services.^{14,15} Individuals may also self-medicate when they mistake their symptoms for malaria and common cold since many signs and symptoms of COVID-19 are similar to these common ailments.¹⁵ Others self-medicate in the hopes of preventing severe forms of the disease which has resulted in many hospitalizations and deaths globally. Self-medication has also been promoted by the media touting medicines purported to have activity against COVID-19 and internet use for health information.^{16, 17} As a result, cases of poisoning and death secondary to self-medication have been reported in Nigeria and the United States.¹⁷ The WHO has therefore cautioned against the use of self-medication to treat COVID-19 including irrational use of antibiotics, herbal remedies and other OTC drugs.¹⁸

In the quest to find a cure for the dreaded COVID-19, several drugs were repurposed as potential treatment options, notable amongst which are chloroquine, hydroxychloroquine (HCQ), azithromycin and zinc.¹⁷ However, randomized control trials evaluating the efficacy of some of these drugs have refuted their value in treating



COVID-19 and to date, no effective cure has been found.¹⁹⁻²¹ Randomised trials of HCQ as both pre- and post-exposure prophylaxis among close contacts and healthcare workers have also been conducted without satisfactory results.^{22, 23} Recently, a couple of vaccines have proven effective in preventing COVID-19 but the demand for these vaccines is unprecedented and they may not be readily available in developing countries for some time to come.²⁴ The tendency to self-medicate thus remains a looming threat to be taken seriously even as many countries experience a second wave of the pandemic.

Current global evidence on the rise in self-medication during the COVID-19 pandemic has been captured via population surveys.²⁵⁻²⁷ Studies have shown an overall prevalence of self-medication to prevent and treat COVID-19 of 34.2%, 41% and 88.3% in Togo, Nigeria and India, respectively.²⁵⁻²⁷ These studies also provide a snapshot of the commonly self-medicated drugs. In the Nigerian study, pharmacies and patent medicine dealers were identified as significant source of drugs and substances used for self-medication among participants.²⁶ However, no study has assessed the range of drugs being self-medicated during the COVID-19 pandemic from the perspective of pharmacy sales records. This study was therefore conducted to assess the pattern of sales of selected drugs used in the symptomatic and anecdotal management of COVID-19 as an indicator of drugs being self-medicated in the community with a view to making recommendations to the appropriate authorities on the need to strengthen drug regulatory policies in Nigeria.

METHODOLOGY

This descriptive cross-sectional study was part of a larger study which assessed the readiness of private healthcare facilities, laboratories and pharmacies to screen clients for COVID-19 in Edo State.²⁸ The study was carried out in the metropolitan city of Benin, the state capital. Benin City is made up of three Local Government Areas (of the 18 LGA's in the state) namely, Egor, Oredo and Ikpoba-Okha.³¹ The projected population of Benin City as at 2019 was 4,592,961 with a male/female ratio of nearly 1:1.²⁹ Benin City has 89 registered pharmacies about 50% of which are located within the vicinity of government hospitals while the remaining are scattered in no definite pattern across the rest of the city.³⁰

This study was conducted in June, 2020, 16 weeks into the pandemic in Nigeria. The index case of COVID-19 in the state was detected on March 23rd 2020 and the number of cases had risen to 620 cases by mid-June (June 15th 2020) making Edo the state with the 4th highest number of cases in Nigeria.^{31,32} During this period, the state government had instituted measures to restrict movement, prohibit mass gatherings and observe curfew. Many healthcare facilities also discouraged non-emergency cases presenting in hospitals.

All pharmacies selected in the parent study were enlisted for this study and the unit of enquiry was the resident pharmacists or their representatives. Data on pattern of sales of selected medications was collected using a questionnaire which captured demographic data and a record review of

sales of selected medication used in the symptomatic and anecdotal management of COVID-19 in the first quarter and second quarter of 2020 in Benin City. Data obtained were analysed using IBM SPSS Statistics for Windows, Version 25.0.

Ethical clearance to conduct the study was obtained from the Ethics and Research Committee, University of Benin Teaching Hospital, Benin City. Permission was also obtained from the state Ministry of Health. Informed consent was obtained from the owners of pharmacies or their representatives before administering questionnaires. In order to maintain anonymity, serial numbers rather than names were used to identify the facilities and confidentiality was assured. Pharmacy owners or their representatives were informed that they had the right to decline participation or to withdraw from the study at any time they wished. All data were kept secure and made available only to members of the research team. Results are presented using prose, and frequency tables.

RESULTS

The demographic characteristics of the sixty-two community pharmacies assessed are shown in Table 1. A higher proportion of the pharmacies, 32 (51.6%), were located in Oredo local government area and owned by limited liability companies. Less than half 28 (45.2%) had 1 – 5 staff members in their organization.

Table 1: Socio-Demographic Characteristics of Community Pharmacies

Variable	Frequency (n=62)	Percent
Location of Pharmacy		
Oredo	32	51.6
Egor	16	25.8
Ikpoba-okha	14	22.6
Ownership of Pharmacy		
Limited liability company	32	51.6
Sole/Joint ownership	26	41.9
Entrepreneur	3	4.8
NGO	1	1.6
Number of staff		
1 – 5	28	45.2
6 – 10	22	35.5
11 – 15	7	11.3
16 – 20	3	4.8
21 – 25	1	1.6
≥26	1	1.6

Table 2 shows the sale patterns of the pharmacies. All 62 (100.0%), community pharmacies surveyed reported increased sales of vitamin C and HCQ while immune boosters, multivitamins, and other supplements and chloroquine had increased sales in 61 (98.4%), 57 (91.9%), and 51 (82.3%) pharmacies respectively. Forty-one pharmacies (66.1%) reported an increase in the sales of azithromycin and zinc, respectively and 35 (56.5%) reported increases in the purchase of anti-pyretic agents and antibiotics other than Azithromycin. Only 8(8.1%)of the pharmacies reported a decrease in the sales of artemisinin-based combination (ACT) therapy. All 62 (100.0%) of the pharmacies reported that there was no mandatory use of prescriptions to purchase anti-malaria and antibiotics.

Table 2: Observations on Sales of Medications and Consumables of 2nd quarter 2020, compared to 1st Quarter 2020

Variable	Increase Freq (%)	Decrease Freq (%)	No Change Freq (%)
Anti-Malaria			
Hydroxy Chloroquine	62 (100.0)	0 (0.0)	0 (0.0)
Chloroquine	51 (82.3)	3 (4.8)	8 (12.9)
Artemisinin Combination Therapy (ACT)	27 (43.5)	5 (8.1)	30 (48.4)
Antibiotics			
Azithromycin	41 (66.1)	1 (1.6)	20 (32.3)
Antibiotics (General)	35 (56.5)	1 (1.6)	26 (41.9)
Anti-Pyretics	35 (56.5)	1 (1.6)	26 (41.9)
Vitamins			
Vitamin C	62 (100.0)	0 (0.0)	0 (0.0)
Immune boosters*	61 (98.4)	0 (0.0)	1 (1.6)
Multivitamins and other supplements	57 (91.9)	0 (0.0)	5 (8.1)
Zinc	41 (66.1)	0 (0.0)	21 (33.9)
Hygiene and PPE			
Hand sanitizers	60 (96.8)	2 (3.2)	0 (0.0)
Face mask	59 (95.2)	1 (1.6)	2 (3.2)
Disposable gloves	59 (95.2)	1 (1.6)	2 (3.2)

*Selenium based

DISCUSSION

Self-medication during the COVID-19 pandemic has become a source of global health concern but there is little objective evidence of the phenomenon in the Nigerian literature.¹⁴ This study conducted during the first wave of the COVID-19 pandemic in Nigeria provides first hand evidence of increased sales of both prescription and OTC medications reported to be effective in the management of COVID-19 including HCQ, chloroquine, azithromycin and multivitamins as well as immune boosting supplements. Majority of these sales did not require prescriptions from health practitioners and this implies increased practice of inappropriate self-medication among inhabitants of Benin City metropolis. In a survey conducted in Togo, vitamin C was the commonest self-medicated drug.²⁵ Similarly, in a population-based survey assessing Nigerians during the pandemic, Wegbom *et al* reported that most respondents self-medicated with vitamin C

and multivitamins.²⁶ It is therefore not surprising that our data showed universal increase in sales of vitamin C across all the pharmacies surveyed. Our survey also showed that a little under half of pharmacies recorded increased sales of ACT with close to 10% actually reporting a decline in sales. However, the online survey in Nigeria reported antimalarials other than HCQ and chloroquine as being commonly self-medicated.²⁶ Interestingly, only 2% of surveyed respondents in Togo used chloroquine/hydroxychloroquine while our survey showed that HCQ sales increased in all the pharmacies and four-fifth of them recorded increased sales of CQ.²⁵

Several clinical trials have reported inefficacy of HCQ and azithromycin in the management of COVID-19.^{19, 20} Although both drugs are prescription only medicines in Nigeria, they have been implicated in self-medication for COVID-19 by the index study. Both HCQ and azithromycin cause gastrointestinal upset and cardiac abnormalities including prolonged QT intervals and cardiomyopathy; and retinal damage is notorious following long term use of HCQ.³³ The use of these drugs can also compound liver and renal impairment which can reportedly complicate COVID-19. Recent research also highlighted a significantly increased risk of adverse cardiovascular events such as heart failure and chest pain when HCQ and azithromycin are used in combination.³³ Apart from the toxic effects, another implication of inappropriate self-medication with hydroxychloroquine is that there may be shortages of the drug for patients who actually need them, for instance



rheumatoid arthritis and systemic lupus erythematosus patients.³⁴

The observation that prescription-only medicines such as azithromycin and HCQ were indiscriminately dispensed at registered community pharmacies in this study was worrisome though not completely surprising. In many communities, pharmacies are the most accessible healthcare providers and may often be the first point of patient contact with the healthcare system. Their roles can therefore not be overemphasized. These roles include drug dispensing, advising on potential adverse drug events and directing patient care. Ideally, they also play a significant role in discouraging irrational use of medications which can occur with the use of both prescription and OTC medication.³⁵ During the current pandemic, it is recognized that community pharmacies will often cater to individuals with COVID-19 related health concerns or who require reliable information and advice given that health care facilities are overstretched.³⁵ To this end, pharmacists have featured prominently in the response to COVID-19 in some countries. For instance, Ahmad et al report that pharmacists in Saudi Arabia participated in health education and health promotion, dispensing of medication, medication reconciliation, patient counselling and training for self-management, all of which reduce unnecessary hospital visits.³⁶ Furthermore, pharmacists provided timely referral for suspicious cases, thereby limiting spread of the disease. These reportedly boosted the response of the country to the pandemic.³⁶ Where properly harnessed, community

pharmacies can contribute significantly to meeting the health needs of the populace as well as ensuring that OTC medications are used safely and appropriately and medicines that are prescription-only are dispensed accordingly.

To curb the untoward effects of self-medication during this pandemic, policy implementation through strict pharmaceutical regulation on public advertising and drug use is required. The roles of community pharmacists must be properly delineated and strict enforcement of policies enacted to ensure that prescription only medications are dispensed only on receipt of a prescription. This will ensure that medications are not abused with the attendant morbidity and possible mortality. Public education programs should use mass media to enlighten the masses on proper medication usage and the harmful consequences of inappropriate self-medication.^{1,3} Mechanisms for pharmacovigilance should be put in place for surveillance of untoward effects of prescription only medicines.

CONCLUSION

In conclusion, pattern of drug sales from community pharmacies in Benin City revealed self-medication with several OTC drugs but also prescription only medications like hydroxychloroquine and azithromycin. Implementation of extant laws on drug regulation is required to lessen the untoward effects of inappropriate self-medication especially as a second wave of the pandemic appears imminent.



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