WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 10, Issue 4, 1343-1364. Research Article ISSN 2277– 7105

IMMENSITY OF SELF TREATMENT AND ITS IMPACT – A QUESTIONNAIRE BASED STUDY

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Article Received on
10 February 2021,

Revised on 02 March 2021,
Accepted on 22 March 2021

DOI: 10.20959/wjpr20214-20153

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ABSTRACT

It is a fact that man today is far more health conscious and careful than they were a decade ago. However, this cannot be denied that they are more prone to adaptation of self-medication when it comes to minor ailments, with limited information sought from here and there. This can be detrimental at times and the common mass needs to be educated more on this aspect. It would be risk-free, if the people who are using it, have sufficient knowledge about its time of intake, dose, side effect on over dose in order to draw the maximum pharmacological benefit from the active ingredient failing which one may lead to serious effects such as skin problem, hypersensitivity and allergy, antibiotic resistance and the likes. This article focuses on probable reasons for self-medication and means to handle and curb the growth of such practices in North Western part of Uttar Pradesh, India and Northern region of Nigeria.

KEYWORDS: Self-medication, illiterate, side effects, medicine, over the counter, gender.

1. INTRODUCTION

Self-medication is the practice of taking medicines from synthetic and herbal origin without consulting a medical practitioner or a care giver. Many a times an individual is prone to adapt this habit based on the acquired information and knowledge, from sources available at hand. It has become a common practice among adults, geriatrics and even gravid women especially in developing and under developed countries around the globe. When it comes to drug safety, this is the most challenging aspect in general public. Self-medication is now one of the

greatest health's, social and economic problems in different societies across the globe.

WHO defines self-medication as the selection and use of medicines by individuals (or a member of the individuals' family) to treat self-recognized or self-diagnosed conditions or symptoms".[1] Traditionally, the term is defined as taking of drugs, herbs or home remedies on one's own initiative, or on the advice of another person, without consulting a doctor or any other health professionals.[2] National Health Surveillance Agency (ANVISA) of Brazil defines self-medication as the use of drugs without prescription, guidance, or follow-up by a physician or dentist. Federation Internationale Pharmaceutique (FIP) defines self-medication as the use of non-prescription medicines by people on their own initiative.[3] Almost all of the regulatory bodies do not encourage self-medication at all, other than the over the counter (OTC) drugs.

Self-medication, though unethical, is usually encouraged by several root system and as a result of some factors that can promote such illegal act. Some of the common source of self-medication within a community setting include local pharmacists, family, friends, neighbors, previous prescribed drug (included or not included in prescription), advertisement in magazines or newspapers.[2] On the contrary, few of the self-medicated drugs are encourage by the governments which are usually referred to as the over the counter drugs (OTC). These OTC drugs are approved by some regulating bodies like the United States Food and Drug Administration, USFDA(USA); Medicines and Healthcare products Regulatory Agency, MHRA(UK); Therapeutic Goods Administration, TGA(Australia); Central Drugs Standard Control Organization, CDSCO(India); Health Canada (Canada), Medicines Control Council, MCC(South Africa); Brazilian Health Regulatory Agency, ANVISA (Brazil); European Medicines Evaluation Agency (EMEA) or European Medicines Agency (EMA) as the respectivegovernment has an indirect advantage of making few drugs (other than the prescribed ones) available to the lower income level citizens within the community as well,[3] According to these regulatory bodies, some of the prime advantages of making the OTC drugs available to the common mass includes cost reduction in the treatment, cutting down the price and time of travelling for patients with low income level and dwelling from remote rural areas in addition to consultation time of the physicians/doctors for minor ailments.[4] It has been revealed in one of the studies performed in Nigeria alone that several healthcare professionals like doctors, pharmacist and other care-givers were found to adapt self-medication without proper diagnosis of themselves or their friends and family members. The

probable reason reported was fear of exhibiting weak mentality of themselves being person from medical background to the common people. In addition, the thought of getting exposed as someone who is lacking medical knowledge, stigmatizing nature of sickness, stringency of time due to the nature of the work would compel these people to go for medicating themselves without consulting a doctor. As a result, this habit of self-medication associated with the medical professionals lead to a greater complication to their health if continued for a very long period of time.[5]

From several reports, it is evident that numerous problems can arise as a result of self-medication, like increased resistance to pathogens (for antibiotics), waste of money (if course of antibiotics is not completed), serious health hazards (adverse reaction) and prolonged suffering, damage of some vital organs (like liver damage if drugs like nimesulide is used for long duration), internal bleeding and ulceration (if analgesic drugs are taken empty stomach)and so on when such illegal use of drugs becomes a habit of a good fraction of the population practicing for a prolong period of time.[2] Self-medication is very common in many of the African and Asian countries like Tanzania,[6] Nigeria, Mali, Ghana, Kenya, Bhutan, Bangladesh, India, Indonesia, South Korea, Nepal, Srilanka, and Thailand.[6] respectively which has become one of the most challenging part of the health care system and also towards the healthcare providers making diagnosis and treatment of certain illness more complicated. It has been evident from several studies that self-medication plays a greater role in causing antibiotic resistance due to misuse and or abuse of this category of drugs without the knowledge of how, when and what to take and when stop the intake of this category of drugs. Self-medication was found to be very common among the educated individuals than the uneducated people. Self- medication was found to be a little bit higher in elderly individuals than the adult category due to the chances of high risk of comorbidity arises mostly at old age.[7] Elderly individuals need to be given proper guidance and attention, especially because of their other medical issues that they may have and also the way the body usually shows minimal responses in many of the cases due to age factor.

However, not all self-care or self-medication are considered to be a negative, based on some guidelines/specifications laid by the FDA and other regulatory bodies when an OTC drug is taken appropriately, that can be referred to as reasonable self- medication,[7] Under such cases, the drugs taken OTC are those kinds of drugs that are allowed to be taken without consulting any doctor/medical practitioner.[9] It has become the normal custom in most

developing countries where self-medication is the first line of treatment among people within the community, to which they only seek for medical assistance only if the self-administered drugs does not alleviate what they are suffering from. And this can make diagnosis and treatment to become more complicated which can result in many adverse drug reactions and drug interactions. It has being shown in one of the studies that most of the teratogenicity and deformities (to the foetus) usually arise as a result of self-medication by some pregnant mothers without consultation of physician or any healthcare professional about the drug.[10] It is intrinsically difficult to study self-medication, as it does not occur in a rhythmic, favourable and controlled manner in a setting of a laboratory or hospital. Hence this study enables to have a glance at the probable reasons and the consequences of a tiny fraction of the world's population while concentrating on the input received from the common mass at North Western region of Uttar Pradesh where the population is approximately 1.1 lakh, India in addition to an even smaller group from Northern part of Nigeria, where the people estimate is around 4 lakhs.

1.1. Drift of prescription drugs to Over the Counter (OTC) Drugs

Many drugs have been switched from a prescription drugs to an over the counter drugs (OTC) over a long period of time, to which sufficient information has been gathered about the drug.[2] Some drugs are switched into OTC drug immediately after the expiration of the patent, to which the manufacturers of that patented drugs are likely to apply for "switching" prior the expiration of the patents so as to securely gain the privilege in expanding OTC market before generic competition started.[8] Whereas, fund providing bodies that usually focus themselves to healthcare system to which they may support some manufacturers applications to switch some drugs in an effort to reduce the growth of prescription costs.[8] It has been seen that OTC drugs in one country might be a prescription drug in another country depending on the regulatory bodies and or government policies in the respective countries.

Evidently, self-medication has its own preference although the challenges associated with self-medication are more than it has befits 'health-wise' in current scenario. Many factors influenced and contributed a lot in encouraging self-medication among the people within a community setting. Some of the reasons like the urge to self-care, sympathy for the family members during illness, lack of health care services, poverty, ignorance, misconceptions about the illness and the associated medication, extensive advertisements on drugs on media and other public domain, and more over availability of drugs in places other than pharmacies

gets associated with the increased rate of self-medication.[9]

1.2. Potential risk associated with self-medication

Studies have revealed that self-medication results in many complications which can even lead to death if the conditions go beyond control owing to lack of taking immediate action.[11] Sometimes, this can lead to waste of public expenditure and brings about many diseases induced by the self-medicated drugs that are used illegally.[2] Habitually, people fail to realize that the risks associated with self-medication (irresponsible one) are mostly greater than the benefits.[11] Many drawbacks are associated with self-medication that they can even make diagnosis more complicated and even prolong hospital stay.[4] If a patient has already self-medicated, it is difficult for the doctors to deal with a good diagnosis. The patient could also develop certain resistance to certain drugs during self-medication at home before coming to hospital[11]. When such happens, even if the physician prescribes another medicine, it will not react efficiently as expected. Complication like failure to recognize that the same active substance is already being taken under a different name; incorrect self-diagnosis, food and drug interaction; failure to seek appropriate medical advice promptly, incorrect choice of therapy; failure to recognize special pharmacological risks; failure to recognize or self‑diagnosis contraindications, interactions, warnings and precautions; excessively prolonged use; failure to report current self‑medication to the prescribing physician (double medication/harmful interaction); failure to recognize or report adverse drug reactions; incorrect route of administration; inadequate or excessive dosage; risk of dependence and abuse; timely recognition of rare but severe adverse effects can usually arise as a result of illegal self-medication.On the flip side, a very good and reasonable self-medication have some potential benefit towards the person administering it similar to saving scarce medical resources from being wasted on minor conditions; reduction of the pressure on medical services where health care personnel are insufficient; lowering the costs of community funded health care programs; increase the availability of health care to populations living in rural or remote areas; reducing absenteeism from work due to minor symptoms.[2] In many countries, the possibility of reporting adverse drug reactions (ADR) to self-medication products is not available since many conventional ADR reporting schemes operate through health care professionals. Only in a small number of countries with highly developed ADR systems, where patients/consumers are able to report ADRs directly to the authorities or through pharmacies.[12] Self-medication is an uncharted area that can be found within working areas at different conditions, among pregnant ladies, lactating mothers, in paediatrics

and also among the geriatrics/elderly individuals in the community. Nowadays it is very difficult to even know the balance of self-medication that is reasonable and the irresponsible use of medications and home remedies among people in communities.

Pharmacist has a greater role in minimizing self-medication both in community and hospital settings through proper communication with the patients, participation in health promotion campaigns to raise awareness of health issues and disease prevention, collaboration of good relationship with other professionals, purchasing of good and quality product from a reputable source or producers, proper distribution and or dispensing of medicines.[2] In some countries like Bhutan, Bangladesh, Indonesia, India, Nepal, South Korea, Srilanka, and Thailand only a fully registered pharmacists are allowed to dispense and sale prescription medicines and over the counter (OTC) medicine, to which this system has contributed a lot in minimizing the challenges associated with self-medication in such countries and other related countries having the same style of health practice.[7] It has being reported in one of the studies that even after diagnosis of a chronic ailment, very often patients seek professional advice, and later consider themselves competent enough to manage and maintain their own health. Hence, many drugs like antibiotics, anti- fungal oral contraceptive, histamine H2-receptor blocker and topical corticosteroid.[13] are now a days being taken without consulting a physician or any health professional.

1.3. Risk of misdiagnosing

Taking medications without consulting a physician may at times lead to misdiagnosis of individuals which may lead to a deleterious result at the end. For example, an elderly person feeling fatigue may either ignore it for long time or take a non-prescribed drug. Later, proper diagnosis, if made, may end up in osteoporosis being the prime reason for the fatigue, and hence it would be deduced that wrong drug was being taken so far. Another evidence would be say a person having anxiety as an issue can understand it as a common condition that can go withtime; but when properly diagnosed, might show an underlying serious medical problem such as heart arrhythmia.[12] The affected person might treat himself as though they have an uncomplicated anxiety problem (e.g., with relaxation exercises) and completely miss the fact that they have a serious medical condition that requires medical treatment. A way to eradicate this type of risk is through professional consultation from a medical practitioner.[14] As a result of self-diagnosis as well, one may end up with wrong treatment as well. For instance, valsartan is an anti-hypertensive drug when used in recommended quantities. The

same drug can lead to hypotension if over used and as a matter of fact, heart failure, hepatic and renal failure can result in the long usage of the drug. Similarly, a common household drug, paracetamol often exploited as an antipyretic and analgesic exhibits renal failure on prolonged and unguided use. Likewise, starving oneself just for targeting weight lose may lead to a worsening condition called bulimia nervosa, to which the chances of getting even more fatter than the initial body structure along with other complication as well. This may lead to a chronic or worsening condition or even death as a result of such illegal and unethical act.[4]

1.4. Risk of adverse drug reaction

The chances or rate of adverse drug reaction (ADR) seems to be high when people are engaged in self-medicating themselves without the consultation of medical health professionals. World Health Organization defines an ADR as any response to a drug which is noxious and unintended, which occurs at doses normally used in man for prophylaxis, diagnosis, or therapy of disease, or for the modification of physiological function.This refers that an ADR is the impairment directly caused by the medicine at normal doses, during normal use.[15] It has being reported in a study that 296 out of 2554 patients in the emergency department (being declared a self-medication behavior) experienced an ADR (9.78 %), of which 52(1.72%) were related to self-medication, like bleeding, coagulopathy, hypotension, dermatological problems, cardiovascular complication etc.[16]

1.5. High chance of addiction

Another major risks associated with self-medication is drug addiction. Addiction usually arise when a person or group of individuals always self-medicate themselves whenever they have mild or chronic illness either at home or even within the hospital settings, especially if associated with a non-medical professional where knowing about the drug in details is not possible. Some drugs like opioids, antihistamines, antidepressants, stimulants etc. induces addiction when taking for a long time.[17] It is also being reported that topical corticosteroid addiction usually occurs as a results from prolonged use of topical corticosteroids (TCS) resulting in spreading of an acne form eruptions, scaling, and erythematous rash with an attempts of abrupt discontinuation.[18]

1.6. High chance of drug interactions

The chances of drug-drug interactions are expected to increase exponentially with the number of drugs taken simultaneously by a patient or the drug user. At times, a patient may be under

prescribed medication for different health issues, and self-medicating may lead to adverse reactions. Elderly people are more prone of having such interactions, if they indulged themselves into self-medication. This is because one drug may react differently when consumed with another drug, sometimes, though rarely, even leading to death. Hence, consulting a doctor or healthcare professionals like pharmacist is essential if he is not aware of issues like when to take the medicine, that is pre or post meal, possibilities of food drug interactions, chances of addiction, or any other restrictions pertaining to a particular drug.[12] Polypharmacy World Health Organization defines Poly-pharmacy as administration of more than one drug at the same time or the administration of an excessive number of drugs. More often, poly-pharmacy is the regular use of at least five medications at a time.[19] It has been reported that elderly people are the categories of patients at highest risk involved in poly-pharmacy due to comorbidity that usually arises at old-age.[20] Factors chronic mental health conditions, multiple medical conditions managed by multiple sub-specialist physicians, automated refill services, residing in a long-term care facility, poorly updated medical records can lead to self-medication for most geriatric patients.[18] Many other demerits of this system includes high chances of disabilities, increased probability of frailty, inappropriate medication, long-term care placement, medication non-adherence,[18] to name a few. As a result, geriatric patients are the ones at highest risk of poly-pharmacy.

1.7. High chance of over and under dosage

One of the enormous problems with self-medication is that most of the peoples embroiled in this unethical act do not know about the dosage of the drug they are taking. This means most of the people indulged in self-medication often underestimate the strength of the active ingredient with absolutely no knowledge of how the drug is to be taken, its side-effects and even reactions that might occur post intake of the medicament. Usually people in under-developed or developing countries get addicted to self- medication due to poor health system and regulation apart from the fact that it is instant and there is no consultation fee for the doctor. When self-medication becomes a habit for long, it leads to suffering from severe health issues, increases medical expenses almost two-fold or even beyond if the health problem situation aggravates, sometimes causing disabilities and even premature death.[21]

The trend of self-medication over time is basically influenced and triggered by many factors, such as exposure to advertisements, influence of the family, educational level, societal life style and custom, law, poorly availability of drugs and its distribution.[22] A high level of

education and professional status has been mentioned as predictive factors for self-medication. The reasons for self-medication mostly reported in different studies are as a result of some mild illnesses, previous experience of treating similar illnesses, financial status and a poor healthcare system.[1] Governments, health authorities and other regulatory bodies need to ensure that distribution and dispensing of drugs is done in a standard manner, ensuring that safe drugs are made available over the counter and the consumer is given adequate information about the use of drugs and when to consult a doctor.[23]

This study was made to categorize the factors that persuade the present practice of common man when treating self or immediate family members with self-medication surpassing doctor's meeting in two different countries wide apart in two continents.

2. METHODOLOGY

A cross-sectional study was conducted between two different continental countries, specifically Nigeria and India to which both male & female candidates, of different age groups were involved and studied. Prior to the study, attempt was made to reach out to the pharmacies and the medical shops nearby so as to understand the type of people approaching these retailers with one or more different types of physical discomfort, in addition to collection of the so called patient's phone number or email with their consent. Care was also taken to make them understand that their identity would not be disclosed during the study and that they can speak the truth when surveyed. The subjects in this survey were all randomly selected patients who visited the pharmacy physically or voluntarily agreed to participate in this while purchasing medicines online without prescription. This study was done by the use of google form (well understandable, short and precise questionnaire was designed) via a set of general questions, called the questionnaire and the data generated from the respondent was received in *gmail* in the spread sheets via internet. This questionnaire was randomly distributed among young adults, fully matured adults and elderly citizenry of both genders who are known and are able to read, write and handle google form and *gmail* efficiently. The collection of the data from a countable sample size of respondents were done for their use of medication in between the period September 2020 to December 2020. In all, data from 2793 respondents were collected which were further transferred/copied to MS-Excel for interpretation and analysis of the data being obtained from the respondents. Strictly our study was restricted to the participants who were adults and were 18 years of age or more.

A thorough literature survey was done prior to the start of data collection, manually via some

of the vital scientific research data base incorporating specific key words. More specifically, PubMed, Scopus, Google Scholar, Science Direct and the likes were the depots from which many related journals of interest have been extracted out. The respondents were categorized into both male and female and also the Information related to type of medication used during the cause, illness for which the medication was used, switching of one medicine to another and also reason for not consulting a physician/doctor was collected for both self-medication and the prescription-based medication. The percentage or proportion of patients engage in self-medication and non-doctor prescribed medications between male and female respondents irrespective of their ages were also being analyzed, thematically.

3. RESULT

Common source of drugs used in self-medication were procured from sources, such as pharmacies, leftover drugs, hospitals, and from friends and family. Nevertheless, the ratio of males to female subjects were quite large as shown in figure 1 (a). Whereas, figure 1(b) indicated that they were more inclined to go for medication without prescription than the counterpart.

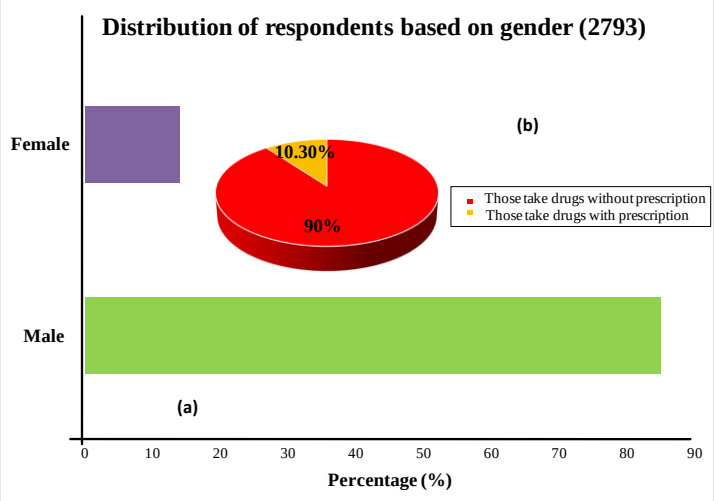

Figure 1: Variation of participants in the survey; 1(a): Gender Variation; 1(b): Variation in prescription and non-prescription procurement of drug.

Table 1: Distribution of respondents ages involved in the studies.

Ages of the respondents (2793)	Percentage (%)
18 -20yrs	164 (5.87%)
20 -30yrs	287 (10.30%)
30 -40yrs	1314 (47.05%)
40 -50yrs	751 (26.89%)
> 50yrs	277 (9.92%)

A clear picture from figure 2 gives a view on the exact age group engrossed in self-medication. Result as presented in table-1 clearly revealed that the people of an age range of about 20 - 30 years comprising of 10.3 % of the total respondent involved in this studies while those of age range of 30 – 40 years of age which are within the adult range are the ones mostly engage themselves in self- medication with highest percentage of 47.05 %, and that of age range of 40 – 50 years are of 26.89 %. The geriatrics (>50yrs) are of least percentage out of the total respondent, which is only 9.92%. It is evident from the study that patients falling in the age of 18 – 20 years are rarely engaged in self-medicating themselves to which they covered for almost 5.87 % of the total members studied. It is of utmost concern that almost all the people responding to this survey are engaged in one way or the other in self-medication to which they cover for about 90 % of the total representative population while those using only prescription drug covers for only 10 % as illustrated in figure 1 (b). This study reported that owing to some self-convincing reason the group under study was totally engaged in self-medication because of convenience which covered almost 96 % while mere 4% of the population did not want to engross themselves in such activities as depicted in table 2. As visible from figure 3, the chief categories of drug used during self-treatment are the common ones for pain management, infection, allergic reaction, decongestants and anti-tussives to name a few. Furthermore, it is clear from the study that 46 % of the respondents select their drugs based on the previous experience, be it from their memory (27 %) or by referring an old prescription (19 %). In addition, a certain fraction (15 %) rested on their acquaintances that had a relation with the healthcare fraternity for the selection of a medicament for their sufferings.

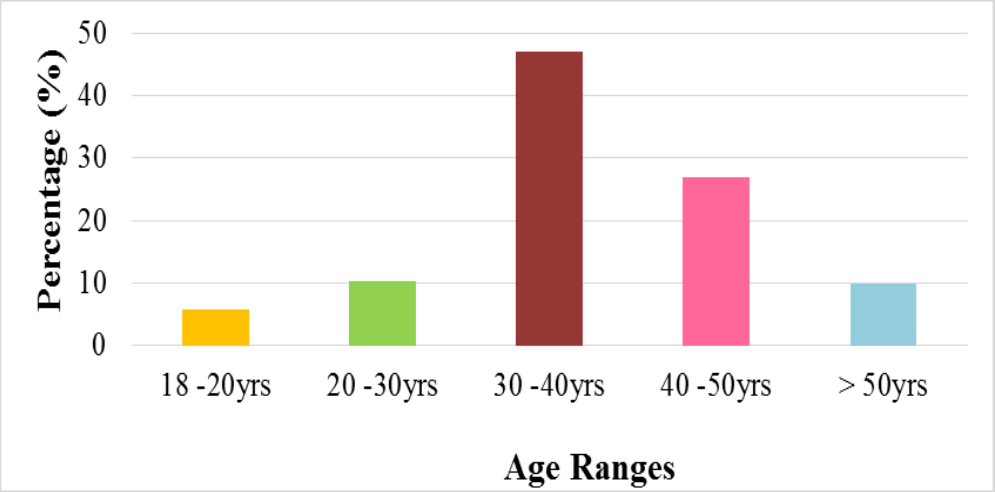

Figure 2: Distribution of respondent ages.

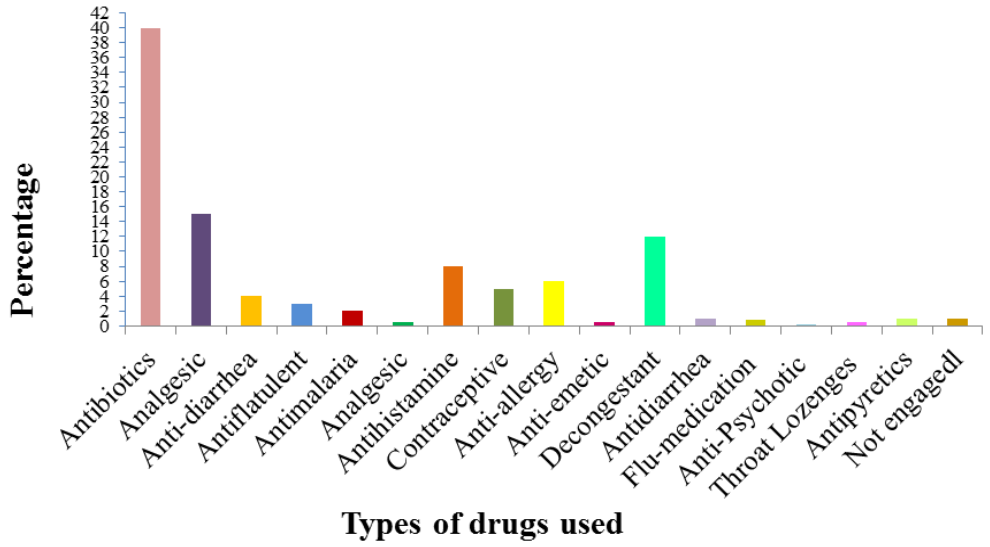

Figure 3: Types of Drugs used during self-treatment.

Tables 2: Reason for self-medication by the respondents.

Reason for Drug Selection (2793)	Percentage (%)
Self-opinion for selecting the drug	559 (20%)
Friend's opinion	56 (2%)
Family member's opinion	167 (6%)
Previous experience	754 (27%)
Advertisement	196 (7%)
Previous doctor's prescription	531 (19%)
Not engage at all	111 (4%)
Pharmacist's advice	83 (3%)
Self-knowledge of drugs	112 (4%)
Family member as a Doctor	141 (5%)
Knowledge of health management	55 (2%)
Themselves being a health professional	28 (1%)

The study uncovered the fact that majority of the population go for self-medication either to have a convenience of procuring in terms of time and ease or to save money, especially in the countries under study. More evident reasons are highlighted in table 3. The predominating category of drugs that were used by the individuals during self-medication is quantified in table 4, with medicines to alleviate infection followed by analgesic drugs.

Table 3: Reason for selection of drugs.

Reason for self-medication (2793)	Percentage (%)
Cost saving	419 (15%)
Convenience	1927 (69.4%)
Lack of trust in prescribing Doctor	83 (3%)
Because no pharmacy available at that time	55(2%)
Not engage at all	56 (2%)
I felt I could handle it	14 (0.5%)
I'm a health worker	16 (0.5%)
Necessity	15(0.5%)
Believe in my self	15(0.5%)
I was aware about the drug	15 (0.5%)
Just to arrest the situation immediately	16 (0.5%)
Knowledge of what was wrong with me	17 (0.5%)
I don't like going hospitals	14(0.5%)
Distance to hospital to access medication	16 (0.5%)
I am a pharmacist	15(0.5%)
Use it as a first aid	14 (0.5%)
I felt it was the best cure for sore throat	16 (0.5%)
Media advertisement of drugs	17 (0.5%)
Rebound/Repeated illness	14(0.5%)
Outbreak of COVID19	16 (0.5%)
Availability of drugs	15 (0.5%)
Medical knowledge	15 (0.5%)
My choice and decision	14 (0.5%)
Thought that is just a fever	15 (0.5%)
I'm not use to	16 (0.5%)

Table 4: Category of drugs used during self-medication.

Category of Drug	Percentage (%)
Antibiotics	1117 (40%)
Analgesic	419 (15%)
Anti-diarrhea	113 (4%)
Antiflatulent	168 (3%)
Antimalaria	57 (2%)
Analgesic	15 (0.5%)
Antihistamine	224 (8%)
Contraceptive	139 (5%)
Anti-allergy	1 (6%)
Any drug available	1 (0.5%)
Antitussive, Decongestant	1 (12%)
Antidiarrhea	1 (1%)
Flu-medication (antibiotics)	1 (0.8%)
Anti-Psychotic (CPZ)	1 (0.25%)
Throat Lozenges (Strepsils/Vicks)	1 (0.5%)
Antipyretics	2 (1%)
Not engage in self-medication at all	2 (1%)

Most devastating act associated with self-medication based on this cross-sectional study is the involvement of antibiotics in such illegal act. It is seen in this our cross sectional studies that out of all the drugs being used by the respondent during the course of self-medication, the use of antibiotics has the highest number of people using it on any kind of, out which 53.2 % mostly switched the use of antibiotics due to reason of their choice, whereas another fraction terminated its use immediately after the symptoms disappeared as evident from table 4. The exact division of the population that toggled from one antibiotic to another while trying to cure the infection and the probable reason for this kind of daring, yet ignorant step is delineated in table 5. This study exposed that most of the drugs used by the respondents for self-medication were procured from community pharmacy practitioner, some from left over prescription, others from traditional herbalist and e- pharmacy. Figure 4 gives an overall reason for the individuals choosing self-medication for the fraction of the population under study.

Table 5: Change in Antibiotic during infection with the reasons for switching of the antibiotics.

Switching of antibiotic during Self Medication	**Percentage (%)**
Always	176 (6.3%)
Sometimes	1310 (46.9%)
Never	1311 (46.9%)
Reason for switching antibiotics	**Percentage (%)**
Previous antibiotics did not work	1312 (47%)
The one in use has finished	698 (25%)
The letter one was very cheap	113 (4.2%)
To reduce adverse drug reaction or side effect	702 (26.4%)
I never take any antibiotic without consultation	195 (0.7%)
Trial with several antibiotics without completing the course	193 (0.7%)
Prescribed by doctors	194 (0.7%)
None of the above	194 (0.7%)
Not engage at all	234 (2.1%)
Never taken any antibiotics (knowingly)	665 (4.9%)

The study also gave a clear cut idea that most of the populations that were involved in self-medication were educated. We found that 38.2 % of them were students of colleges of sciences, 31.2 % belonging to medical colleges, 11.6 % were pupil from school of engineering, 11 % from business school, 4 % dwelling from school of art and design, 2.9 % of the study mass belonged to school of journalism and mass communication and the rest 1.2 % from college of liberal art as clarified in figure 4. This undoubtedly pointed out that most of these survey respondents were educated.

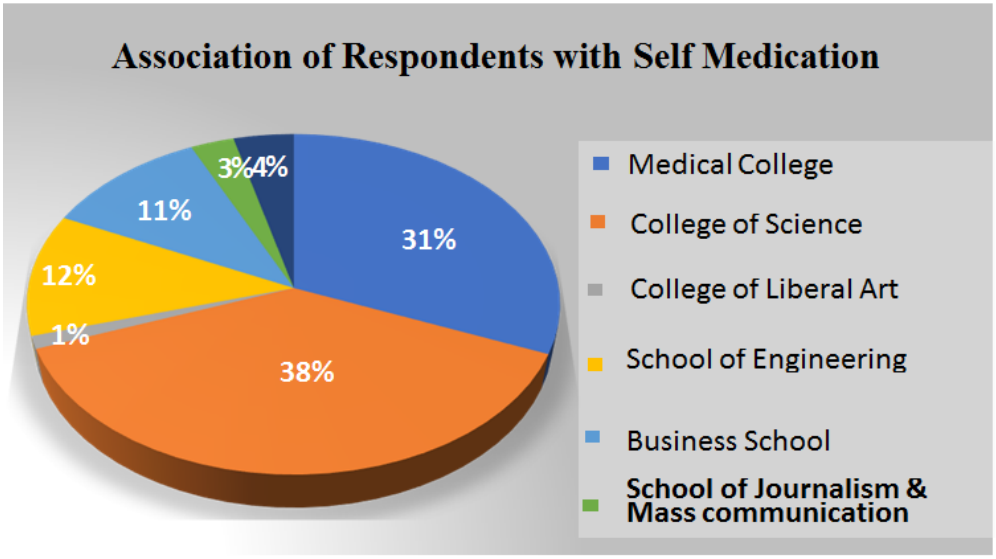

Figure 4: Respondent's academic association with self – medication.

A greater percentage of them were however undergraduates, comprising of 48 %, 41.4 % having a post graduate degree and the remaining 7.5 % were PhD scholars as illustrated in figure 5. It has been found that most of the participants of this survey experienced some adverse drug reactions (ADR) and or side effects as a result of use of some antibiotics, without consulting a physician. Some of the reported ADRs by the people were rashes or eruptions 22.8 %, nausea The study uncovered the fact that majority of the population go for self-medication either to have a convenience of procuring in terms of time and ease or to save money, 21.3 %, vomiting 13.2 %, Vaginal thrush in females 2.2 %, diarrhea 8.1 %, metallic taste 0.7 %, myalgia or headache 0.7 %, dizziness 2.9 % fever 0.7 %, dry mouth and weakness 0.7% along with 0.7 % reporting gastric problem. Based on this cross-sectional studies it has being shown that most of the people involved in self-medication seek for medical assistance from medical professionals (as evident from table 6) only when they started experiencing agonizing ADR or the condition went off-hand. With this the situation became hard to control and they ended up at hospitals for medical assistance. It seen in these cross-sectional studies that the most common antibiotics used by the respondent are amoxicillin 16.4%, metronidazole 10.9%, ampiclox 10.2%, ciprofloxacin 9.6%, augmentin 6.2%, azithromycin 4.8%, ampicillin 2.7%, septrin 2.7% and other antibiotics as being represented in Figure 6.

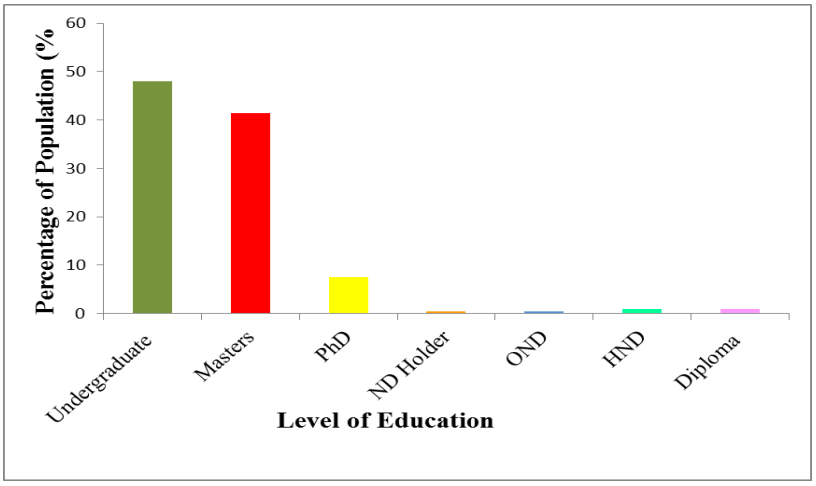

Figure 5: Level of education of the respondents involved in self-medication.

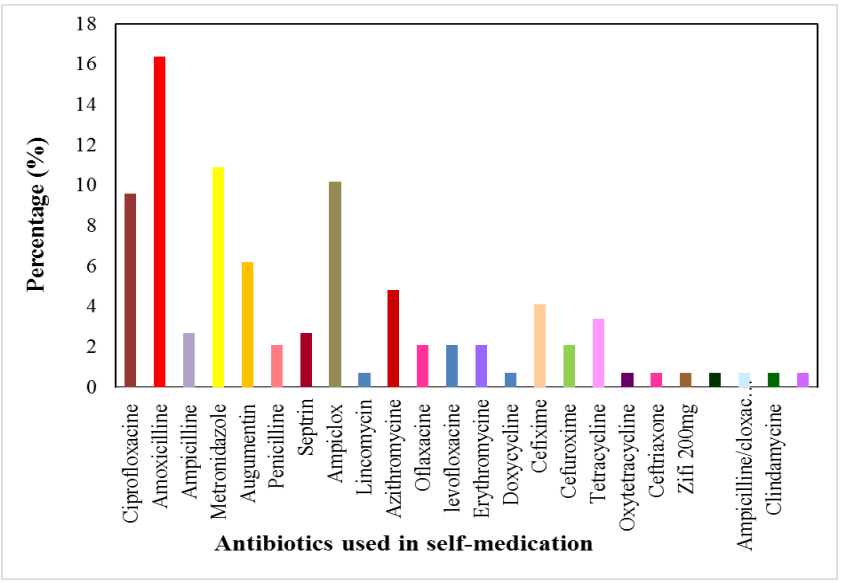

Figure 6: Common antibiotics used during self-medication.

Table 6: Action taking by the respondents when things go off their hands.

Actions towards ADR experienced	Percentage (%)
Stop taking the antibiotics	782 (28%)
Switch to another drug	196 (7%)
Consulted a pharmacist or a doctor	1508 (54%)
Consulted family members	56 (2%)
Not engage at all	29 (1%)
Not experience any ADR	222 (8%)

DISCUSSION

According to the World Health Organization, self-medication is selection and use of medicines by individuals (or a member of the individuals' family) to treat self- recognized or self-diagnosed conditions or symptoms.[4] Usually, leftover drugs kept at houses are handy

for future use or for sharing the medicine with others experiencing similar symptoms.[24,25,26] This study revealed that 85.8 % of the respondents were male, indicating that men are more engaged in self-medication than female in both the countries, Nigeria and India, relevant to figure 1(a). On the other hand, mere 10 % of the study volunteers wait to consult a physician to obtain a prescription and the rest 90 % take medication straight away without opting a prescribed one, as noted from Figure 1 (b). Table 1 illustrates that almost half the population under study were of age group 30 to 40 years and were desperate enough to go for self-treatment. This is perhaps due to the dynamic nature and impudence of this sector in the study supported by figure 2.

Based on the previous experience and or repeating former prescription, it is likely that such outcome would result, exemplified by table 2. Very high percentages of the people under study were prone to self-medication, rather than consulting a physician as illustrated in figure 1(b). This is more evident that almost 90 % of the total mass under study were inclined towards own medication whereas mere 10 % of them opted for consulting a doctor or a health professional, prior to intake of medicines with a recent prescription. The prevalence of self-medication seems to increase geometrically in these two countries predominantly due to easy availability of some drugs like antibiotics, antihistamines, analgesics, antipyretic, antipsychotics, steroids, anti-depressant without prescription from the domestic or easily accessible pharmacy, medicine vendors, chemists, and e-pharmacy. The age group of 30–40 years is more prone to opt for self-dealing with medicaments probably because of their desperation and also due to their sense of responsibility towards their family when it comes to the money matters. However, on a deeper thought, this is more an irresponsible act pertaining to health aspect.[1] In support to this, most of the respondents in our study followed this trend and their desperation in such an act was evident. Since the participants disclosed that they obtained their drugs for self-handling from nearby pharmacy, it was evident that the drug related regulations were quite loose there and hence no prescriptions were required from the physician/doctors to dispense medicines to people within the community.[27] This study revealed that above 15 % and 69 % of the subjects involved chose their preferred source for procuring medicines owing to the fact that it was cost saving and convenient respectively. This finding according to table 3 is in accordance with another study being performed by Halli-tierney and his team.[21] It is also apparent from this study that poor health services discourage the patient from seeking medical assistance from the health professionals because of inconvenience to reaching the hospitals in such impaired health situation. Our study also

underlined the fact that the tendency to opt for self-medicines after being watchful about the symptoms for illness is more prevalent in educated sect of the society than their counterpart. We could relate this attribute that this group tried to tally their symptoms with certain established findings or documents either in digital library or from personal interaction and that they are educated made them more confident in trying the readily available medicaments at their own responsibility. This in contrast with one study being performed previously where the group found that less educated people are more engaged in self-medication than the educated ones.[20] A closer study of table 4 and figure 3 made us come to a point that during infections like common flu and allergic rhinitis, these individuals used antibiotics that were easily available without prescription, followed by medicines for pain management. There were also instances where appreciable number of people took anti allergic medicines in addition to alleviate cough, probably due to seasonal changes. However, table 5 clearly delineated that these subjects were not patient enough to continue with one antibiotic and complete the course, but a random switch over to subsequent antibiotics. There were also evidence, according to table 5 where more than 53 % stopped taking the antibiotic once the pain and or related discomfort were gone. This laid a heavy risk on their health and also the health of the community wherein discontinuity of antibiotics was observed. The authors relate this fact to the low income of the citizens of two such developing countries. One of the chief observations in this study was that majority of the respondents (58.3 %) change their medicines whenever they feel like the symptoms of their illness started disappearing (36 %) or the improvement of the general physiology (58.3%) without the consultation of their medical professionals. With no doubt such abrupt change of drugs like antibiotics leads to the most current challenging tragedy, antibiotic resistance. Scientists are of fear that this can further direct to drug induced diseases and death if timely care is not taken. This is not only a threat to the citizen's health but also can affect the economy of a certain region and country when the prevalence is so high. This is in agreement with one of the surveys made by Ebrahimi and group.[11] Yet another sect of our study enlightened that more of the science educated members,[28] turned for own medicine taking, underlining that they better understood the observable symptoms and the over the counter drugs or easily available drug with limited knowledge in science, as captured in figure 4. From figure 5, this was further confirmed that education and level of learning and age factor that were in the under-graduate stage. Among the antibiotics often fetched for, amoxicillin was the most coveted one perhaps used to treat dental abscesses, bacterial infections, such as chest infections (including pneumonia), and urinary tract infections (UTIs) being the common ones. Figure 6 further

illustrated that metronidazole was the next antibiotic of choice for treating giardiasis, and amebiasis, until now another common infection in these two countries in particular. It can further be said that metronidazole is a drug of choice for rosacea and mouth infections (including infected gums and dental abscesses) and skin infections, more frequently occurring infections, and hence its widespread use without a prescription. Ciprofloxacin and ampiclox were a comparable choice when it came to self-dealing of infections, most likely because procuring such medicines were easier without prescriptions. However, more than 50 % of the subjects under study took physician's opinion when they faced any side effects and or adverse drug reactions, evident from table 6. One of the notable factors was lack of knowledge and skills of the pharmacy staff,[29] while providing bare minimum verbal self-medication consultations to the patient at the counter, without a prescription.[30,31]

CONCLUSION

Self-medication, though found to be a common practice in developing countries across two continents, has a lot of potential risks and can later lead to some drug-induced disease and or disorder that can further show way to loss of life if prompt action is not taken right from initiation. There is deep inter-relation between the factors associated with prolonged practice of self-treatment, the major being ignorant towards medicines and its potential post effects, illiteracy, and poverty. Antibiotics and analgesics were found to be the common drugs used by the respondents involved in the study, which is an alarming signal towards increase in chances of antibiotic resistance in communities. These days, antibiotic resistance is not only bordering the health care companies, but can seriously affect a country's economic growth related to health status of the citizens. The main challenge here is the lack of new drug development for new antibiotics to treat bacterial infections that are resistant to some available drugs. Since the practice of self-treatment is quite complicated, the strategies to be adopted to combat this are not much elucidated. Nevertheless, the practice of self-medication can be drastically reduced in communities when proper health education and awareness on the deleterious effect that self-medication can lead to. Here pharmacists and healthcare workers play a valuable role to identify, solve and prevent drug-related problems, thereby helping achieve optimal patient outcomes uplifting the quality of life. Guidance programs and counseling session in hospital and communities, improvement of the government's policy and hospital facilities in addition to services to which the general people have access to, proper enactment & implementation of government policies towards manufacturing and distribution of drugs in a certain state or country can put a check to this practice of self-medication.

Appropriate health education should be given to the patients and next to kins. By regularly adopting an educational attitude an impact can be made on large sectors of the population and also on people who, in turn, may directly influence their friends and family. This phase is of particular importance with respect to the self-treatment of pediatric and geriatric patients by their parents or their care takers. While delivering medicines without a prescription or proper medical counseling, care must be taken to address the condition of the patient appropriately whereby a pharmacist must ask the patient key questions and pass on relevant information to him or her like how to take the medicines, storing of the unused medicine for future use, side effect or ADRs, if at all and how to deal with safety issues.

As an alternative to this practice of self-medication with synthetic drugs, educating the common people to switch to better practice of herbal drug intake, though for longer duration to have a pronounced effect can be one of the ways to handle self-treatment, be it for infection or many other ailments.[32]

Conflict of Interest

The authors do not hold any conflict of interest.

ACKNOWLEDGMENT

This review did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author's Contribution

Isa Hassan Abubakar: Drafting of the manuscript.

Dr. Aparna Datta: Designing and approval of final version of the manuscript.

REFERENCE

1. Oyediran OO, Ayandiran EO, Olatubi MI. Olabode O. (Awareness of risks associated with Self-medication among Patients attending General Out-patient Department of a Tertiary Hospital in South Western Nigeria). Int J Africa Nurs Sci, 2019; 10(1): 110-115.
2. Bennadi D. (Self-medication: A current challenge). J Basic Clin Pharm, 2014; 5(1)**:** 19-23.
3. Kanwal ZG, Fatima N, Azhar S, Chohan O, Jabeen M, Yameen MA. (Implications of self-medication among medical students-A dilemma). J Pak Med Assoc, 2018; 68(1): 1363-1367.
4. Kayalvizhi S. (Evaluation of the Perception, Attitude and Practice of Self Medication Among Business Students in 3 Select Cities, South India). Int J Enterp Innov Manag Stud, 2010; 1(1): 40-44.

5. Albert SM, Bix L, Bridgeman MM, Carstensen LL, Dyer-Chamberlain M, Neafsey PJ, et al. (Promoting safe and effective use of OTC medications: CHPA-GSA National Summit). Gerontologist, 2014; 54(1): 909-18.
6. Hertza JT, Madutb DB, Teshac RA, Williamd G, Simmonse RA, Galsona SW, Marod VP, Crumpf JA, Rubach MP. (Self medication with non-prescribed pharmaceutical agents in an area of low malarial transmission in northern Tanzania: a community-based survey. Transactions of the Royal Society of Tropical Medicine and Hygiene). Trans R Soc Trop Med Hyg, 2019; 113(1): 183–188.
7. Nepal G, Bhatta S. (Self-Medication with Antibiotics in WHO Southeast Asian Region: A Systematic Review). Cureus, 2018; 10(1): 1-17.
8. Fawibe AE, Odeigah LO, Akande TM, Salaudeen AG, Olanrewaju I. (Self- reported medical care seeking behaviour of doctors in Nigeria). Alexandria J Med, 2017; 53(1): 117–122.
9. Mortazavi SS, Shati M, Khankeh HR, Ahmadi F, Mehravaran S, Malakouti SK. (Self-medication among the elderly in Iran: A content analysis study). BMC Geriatr, 2017; 17(1): 1–12.
10. Cohen JP, Paquette C, Cairns CP. (Switching prescription drugs to over the counter). Br Med J, 2005; 330(1): 39–41.
11. Ebrahimi H, Atashsokhan G, Amanpour F, Hamidzadeh A. (Self-medication and its risk factors among women before and during pregnancy). Pan Afr Med J., 2017; 27(1)**:** 1–8.
12. Rather IA, Kim BC, Bajpai VK, Park Y H. (Self-medication and antibiotic resistance: Crisis, current challenges, and prevention). Saudi J Biol Sci, 2017; 24(1)**:** 808–812.
13. Meranius MS, Hammar LM. (How does the healthcare system affect medication self-management among older adults with multimorbidity?). Scand J Caring Sci, 2016; 30(1): 91–8.
14. Ruiz M. Risks of Self-Medication Practices. Curr. Drug Saf, 2010; 5: 315–323.
15. Mehmood A, Ur-Rehman A, Zaman M, Iqbal J, Ul-Hassan S. (Self-medication; An Emerging Trend). Br J Pharm Res, 2016; 14(1): 1–8.
16. Oehme AK, Asia NR, Barbara H, Ian CK, Wong WR, Antje N. (Adverse Drug Reactions in Hospitalised Children in Germany Are Decreasing: Results of a Nine Year Cohort-Based Comparison). PLoS One, 2012; 7(1): 1–11.
17. Asseray N, Ballereau F, Trombert-Paviot B, Bouget J, Foucher N, Renaud B. (Frequency and severity of adverse drug reactions due to self- medication: A cross-sectional multicentre survey in emergency departments). Drug Saf, 2013; 36(1): 1159–1168.
18. World Health Organization. Neuroscience of Psychoactive Substance Use and Dependence. Addiction, 2004; 99(1): 1361– 1362.

19. Hodge BD, Huynh TN, Brodell RT. "Folly" à deux: (Topical corticosteroid addiction in mother and son). JAAD Case Reports, 2019; 5(1)**:** 82–85.
20. Halli-Tierney AD, Scarbrough C, Carroll D. (Polypharmacy: Evaluating Risks and Deprescribing). Am Fam Physician, 2019; 100(1): 32-38.
21. Monégat M, Sermet C, Perronnin M, Rococo E. (Polypharmacy: definitions, measurement and stakes involved. Review of the literature and measurement tests). Inst Rech Doc En Économie La Santé, 2014; 204(1): 1–8.
22. Wadembere I. Factors Associated with Self Medication in Mukono District (Uganda) [dissertation]. Kampala, Uganda: Makerere University, 2016.
23. Carpenter DM, Geryk LL, Chen AT, Nagler RH, Dieckmann NF, Han PKJ. (Conflicting health information: a critical research need). Heal Expect, 2016; 19(1): 1173–1182.
24. Ocan M, Bwanga F, Bbosa GS, Bagenda D, Waako P, Okeng JO, Obua C. (Patterns and Predictors of Self-Medication in Northern Uganda). PLoS One, 2014; 9(1)**:** e92323.
25. Wieczorkiewicz SM, Kassamali Z, Danziger LH. (Behind closed doors: medication storage and disposal in the home). Ann Pharmacother, 2013; 47(1): 482-9.
26. Musa Y, Awosan KJ, Ibrahim MTO, Abdullahi Z, Jafaar MM, Peter G.(Knowledge and Practice of Self-Medication among Undergraduate Students of Usmanu Danfodiyo University). Sokoto. AIMDR, 2013; 2(1): 83–88.
27. ALBashtawy M, Batiha AM, Tawalbeh L, Tubaishat A, AlAzzam M. Self- Medication Among School Students. J Sch Nurs, 2015; 31(1): 110–116.
28. Bekele SA, Argaw MD, Yalew AW. (Magnitude and Factors Associated with Self-Medication Practices among University Students: The Case of Arsi University, College of Health Science, Asella, Ethiopia: Cross-Sectional Survey Based Study). Open Access Lib J, 2016; 3(1): 1-15.
29. (Kroeger A, Ochoa H, Arana B, Diaz A, Rizzo N, Flores W. Inadequate drug advice in the pharmacies of Guatemala and Mexico: the scale of the problem and explanatory factors). Ann Trop Med Parasitol, 2001; 95(1): 605–16.
30. Da Rocha CE, Bispo ML, Alcantara TS, Brito GC, Vieira MJ, Lyra DP. (What do Brazilian community pharmacists know about self-medication for minor illnesses? A pilot study in the northeast of Brazil). J App Pharm Sci, 2014; 45(1): 12–20.
31. Thang DX. An investigation of non-prescription medicine supply in community pharmacies in Hanoi, Vietnam. [PhD Thesis]. Nottingham: University of Nottingham, 2013.
32. Yau AA, Mahalwal VS, Datta A. (Evidence Based Validation of Curcumin: From Scullery to Apothecary). Eur J Pharm Med Res, 2020; 7(1): 306-314.