Assessment of Self-Medication Practices and Associated Factors by Clinical Pharmacists in a Rural Population of Arunachal Pradesh, India

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ABSTRACT

Background: Self-medication is a major concern for health authorities worldwide. The main objective of this study was to determine the prevalence of Self-medication and its associated factors in a rural community of India. **Materials and Methods:** A cross sectional prospective community based unicentric study was designed and conducted for a period of 10 months from July 2022 to May 2023 in a newly established Drug Information and Patient Counseling Centre at a rural setup in India. The data was acquired; compiled and categorized. Continuous data were expressed as mean and standard deviation, while descriptive analysis was expressed as percentage. **Results:** Of the total 312 participants, 237 were found to have practiced Self-medication. Analysis of the data revealed that the prevalence of Self-medication in the region was 67.13%. People with a college degree (52.32%) and middle-class incomes (55.27%) were found to practice Self-medication in higher number. The most frequently used drugs for self-medication in the area were analgesics and antipyretics (24.05%), followed by acid suppressants (17.29%). **Conclusion:** In this study, the prevalence of self-medication was determined to be 67.13%. It was noticed that a higher education did not prevent people from developing the habit of Self-medication; rather, it played a significant role in it. Therefore, in order to encourage the public to understand the serious consequences of Self-medication, the Drug control authorities and health policy makers need to invest some resources in this effort by engaging clinical pharmacists in rural areas.

Keywords: Self-Medication, Clinical Pharmacist, Patient Counseling, Drug Information, India.

INTRODUCTION

Self-Medication (SM), according to the World Health Organization (WHO), is the use of prescription drugs for intermittent or continuous treatment of chronic or recurrent illnesses or symptoms, as well as the use of drugs to treat disorders or symptoms that oneself diagnoses.[1] Based on accessible information, in developing countries, almost 80% of all medications can be purchased without a prescription.[2] SM, as an element of self-care, is the use of medications without a prescription from a medical practitioner to treat self-identified illnesses.[3] This may also include using herbs, sharing medications with friends or family members, storing and reusing or refilling prescription medicines without medical assistance.[4] The practice of SM must be based on a reliable and authentic source of drug information. Failure to do so may result in irrational drug use, wasted resources, an increase in antibiotic resistance cases,

adverse drug reactions and prolonged morbidity.[5] Over-the-Counter (OTC) drug is more common than prescription drug use globally in the context of SM.[6] Despite being widely used safe and effective for SM, OTC medications can have even negative effects if used improperly. This is particularly true for vulnerable populations, such as children and the elderly and occurs when users are unaware of the proper dosage, potential side effects and interactions in pregnancy and other physiological conditions.[7]

In India, the prevalence of SM practice varies from 8.3% to 92%.[8,9] Many people do not seek medical attention when they become ill. They either go to a retail pharmacy to buy it or they approach to a neighbor who might have some medication left over from their past illness and procure it from them.[10] SM is a common practice in India as it offers people a cost-effective alternative for their ailments.[11] In India, OTC medications are not categorized separately and those that do not fall under the schedule of prescription medications are typically marketed as such.[12] On other hand according to International Pharmaceutical Federation (FIP), it is a pharmacist's responsibility to ensure that a patient receives the necessary drug information for the safe and effective use of medications.[13] Therefore, using Over-the-Counter

medications (OTC) without the guidance of a licensed pharmacist or medical professional may have major consequences.

In India, most studies on SM have focused heavily on its prevalence, Perceptions and contributing factors.[14] However, no study has been conducted to educate people about their medications for SM.

So, the main aim of this study was to evaluate SM practice and its influencing factors and to educate the general public about their medications and serious complications of SM through drug-specific patient counseling.

MATERIALS AND METHODS

It was a Cross-sectional prospective community based unicentric study. The study was conducted for a period of 10 months from July 2022 to May 2023 in a newly established Drug Information and Patient Counseling Centre and its Mobile Pharmaceutical Care Unit in Jollang village of Arunachal Pradesh, India.

A total of 312 subjects were interviewed during the study period, of which 237 were found to be eligible for the study and enrolled for final assessment. Ethical clearance was obtained before the initiation of the study. All study objectives, as well as data protection and analysis methods, were explained. All study protocols were approved by the institutional ethics committee of Sanjeevani Cancer Hospital, Chhattisgarh, India.

After extensive literature research, a self-structured questionnaire was developed in English. The content of the questionnaire was checked by the team of experts. It was translated into Hindi (local language) by the investigator and the tool was reviewed by a Hindi language expert. Before data collection, the research objective was explained and informed consent was obtained. The study questionnaire was divided into three Parts. Section one contained subjects Sociodemographic details. Section two contained questions about self-medication behavior such as reasons for self-medication, diseases or symptoms for which SM was done, drug used for self-medication, source of information about the drug used, knowledge about the drug and Section three included participants' feedback on clinical pharmacists' advice on medications and awareness of the serious consequences of SM practices. The questionnaire was verbally administered to individuals with impaired vision or illiteracy who were unable to read it by themselves.

The Statistical Package for Social Sciences (SPSS) V26 was used to perform the statistical analysis. The data was acquired; compiled and categorized. Continuous data were expressed as mean standard deviation, while descriptive analysis was expressed as percentage. The results were presented in bar charts and frequency distributions.

Selection Criteria

Inclusion Criteria

i) Age more than or equal to 18 years. **ii)** The study subject must be residents of the study area. **iii)** Mentally healthy. **iv)** He or She is able to communicate in at least one of the following ways: speaking or writing. **v)** The study subjects must have used any drug category without a prescription of a medical practitioner at the time of study or use within the last three months.

Exclusion Criteria

i) Subjects having confirmation or diagnosis of having psychiatric problems or disorders. **ii)** She/he is having confirmation of alcohol or any drug intoxication. **iii)** She/he not willing to provide necessary details

RESULTS

Demographic details of study Participants

Of the total 312 participants, 237 were found to have practiced SM and their average age ranged from 18 to over 60, with a standard deviation of 11.35 and a mean of 31.60. Most respondents had a college degree (52.32%), a high school education (21.94%) and less than a high school education (25.32%). SM was observed to be higher in men (138; 58.23%) than in women (99; 41.77). A review of the participants' monthly income revealed that self-medication was high (131; 55.27%) among those in the 5000-25000 income range (Table 1).

General complaints on self-medication

The SM practice for common health related complains was as follows: Headache (43; 18.14%), Fever (39; 16.14%), Heart Burn (28; 11.81%), Allergy and Skin Infection (26; 10.97%), Cough and Cold (26; 10.97%), Contraceptives (24;10.12%), General weakness (17;7.17%), Sexual Problem (14;5.9%), Menstrual Cramps (8;3.37%), Weight Gain (5;2.1%),Blood Pressure (3;1.26%),Knee Pain (2;0.84%), Diabetes(2;0.84%) (Figure 1).

Pharmacological Categorization of drug used for self-medication

The drugs used for SM were classified according to their pharmacological profiles as follows: Analgesic and antipyretics (57; 24.05%), Acid Suppressants/PPIs (41; 17.29%), Herbal Supplements (29; 16.45%), antibiotics (33; 13.92%), Expectorants/Antitussive (26; 10.97%), Steroids (17; 17.17%), Oral Contraceptives (13; 5.48%), antihistamines (2; 0.84%), vitamin and calcium supplements (9; 3.79%) (Figure 2).

Reasons for seeking self-medication

The rural population cited the following reasons for practicing SM: financial constraints (123; 51.89%), Lack of availability of

Health Practitioner (56; 23.62%), to save time (47; 19.83%), Issue not serious (12; 5.06) (Table 2).

Assessment of drug knowledge of respondents

Upon evaluation, it was found that only 22.36% of respondents knew the correct dosage. 91.40% knew the administration route, less than 10% (7.17%) knew about side effects, a very small percentage (1.27%) knew about possible drug interactions and a mere 12.24% were aware about the drug's indication or contraindication. Furthermore, 18% of the respondents also reported taking prescription drugs in addition to SM (Table 3).

Source of Drug Information for self-medication

Following are found to be the source of drug information for SM: Unauthorized Health Practitioners (132; 55.7%), Pharmacist (42; 17.72%), Nurses (11; 4.64%), Medical Practitioner (9; 3.80%), others (43; 18.14%) which includes friends, family members and old prescriptions (Table 3).

Feedback from respondents after counseling on self-medication

Feedback question one asked, "Did you fully comprehend the drug's information that was provided? After analysis, it was discovered that the majority of respondents (200, 84.39%) fully understood the information provided by the CP, despite the fact that half of the respondents (30; 12.66%) tended to somewhat agree that they had understood the information provided. Six people were indifferent about whether or not the information was clearly understood, while one person disagreed.

The assessment of the second question asked, "Whether respondents would be interested in using this type of service again?" It was found that (205; 86.50%) of the respondents strongly supported for the future use of service, while (20; 8.44%) tended to agree with future provision of the service and twelve remained neutral in their opinion

Analysis of the third question, "Do you find the level of service satisfactory?" showed that 191 respondents (80.59%) strongly agreed that the service was effective, while 29 respondents (12.24%), thought it was somewhat good, 15 respondents (6.33%) remained neutral and 2 respondents (0.84%) disagreed that the service was good.

Upon assessing the fourth feedback question, "Is it necessary to seek advice from a healthcare professional before self-medication?" it was discovered that 180 respondents (75.95%) strongly agreed to consult a Health care professional, 50 respondents (21.10%) were somewhat agreed to consult, six (2.53%) remained neutral and one was somewhat disagreed to consult a health care professional (Table 4).

DISCUSSION

Gaining understanding of SM practice and related factors in the rural population was the primary goal of this study. The aspects that have been the subject of a thorough discussion are listed below.

Socio-demographic Analysis of the data obtained revealed that the prevalence of SM in the area was found to be 67.13%. This is lower than various studies conducted in rural populations in other parts of India.[15,16] The present study shows that SM is high in men than in women. This result was not consistent with the results of other studies where the number of women was high.[17,18] It was discovered that more people with higher education but

Table 1: Association between demographic variables and SM practices.

Variables	n	%
Gender		
Male	138	58.23
Female	99	41.77
Qualification		
Below high school	60	25.32
High school	52	21.94
Graduate	124	52.32
Age		
18-40	196	82.70
41-60	40	16.88
Above 60	6	2.53
Mean±SD	31.60±11.35	
Monthly Income		
No Income	84	35.44
<5,000	0	0.00
5,001-25,000	131	55.27
25,001-45,000	19	8.02
Above 45,000	3	1.27
Mean±SD	18615.58±10071.83	

Table 2: Reasons for self-medication.

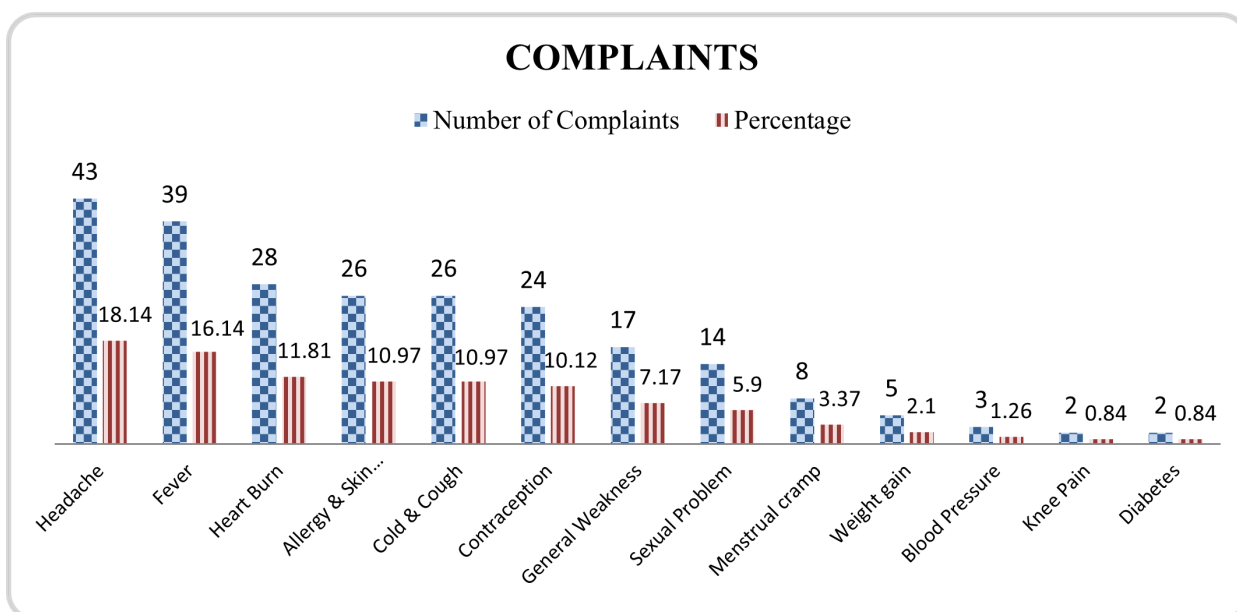| Sl. No.	Reasons for self-medication	n	Percentage
1.	Financial Issue.	123	51.89
2.	Lack of availability of Health Practitioner.	56	23.62
3.	To save time.	47	19.83
4.	Problem is not Serious.	12	5.06

Figure 1: Graph representing various complains for which SM was done.
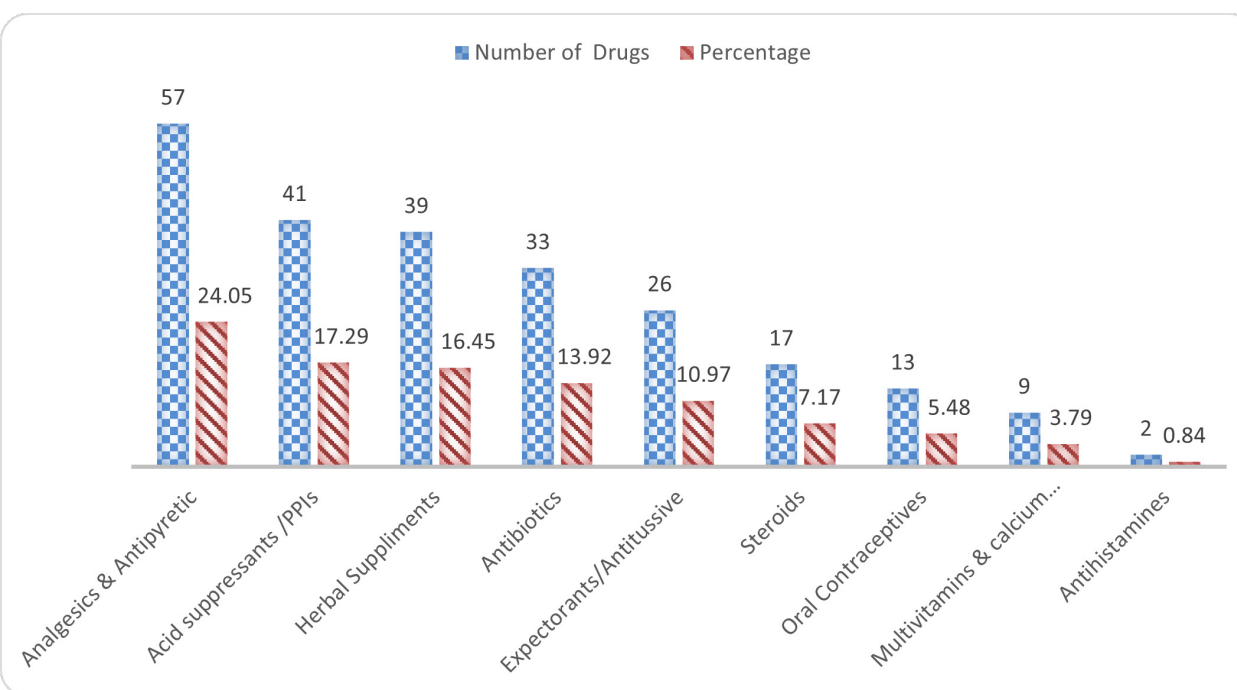

Figure 2: Graph representing various Pharmacological categories of drugs used for SM.

middle-class incomes practiced SM, which is consistent with a study carried out in Indian scenario.[19] The reason could be: Due to the poor economic situation, people may not be able to afford the branded drugs and the cost of laboratory tests prescribed by medical practitioners.

The major complaints for which SM was done were headache (18.14%) and fever (16.14%). Similar results were found in other studies conducted in India.[20,21] Additionally, In our study people did SM for other complaints also which are as follows: Heart Burn (28; 11.81%), Allergy and Skin Infection (26; 10.97%), Cough

and Cold (26; 10.97%), Contraceptives (24; 10.12%), General weakness (17; 7.17%), Sexual Problem (14; 5.9%), Menstrual Cramps (8; 3.37%), Weight Gain (5;2.1%), Blood Pressure (3; 1.26%), Knee Pain (2; 0.84%) and Diabetes(2; 0.84%). This is more or less similar in other studies conducted in India and Nigeria.[22]

On analysis of Pharmacological categorization of SM drugs, it is observed that analgesics and antipyretics were commonly used for SM, which is similar to the other studies conducted in India.[23] The other commonly used drug categories was acid inhibitors/ PPIs, which is similar to the results of international study.[24] As in

Table 3: Assessment of respondent's SM practice pattern and drug knowledge.

SM Practice Pattern and Drug Knowledge	n	%
Whether She/He is taking/Usually takes any Drug/Product for their ailments without Prescription of a Medical Practitioner.		
YES	237	67.13
NO	75	21.03
Total Sample	312	
If yes then, to whom She/He seeks advice before taking such medication Like: -		
Others (Internet, Friends and Family, Advertisement)	132	55.7
Unauthorized Health Practitioners	43	18.14
Pharmacist	42	17.72
Nurse	11	4.64
Medical Practitioner	9	3.80
Whether She/He properly knows about the drugs for SM under the aspects mentioned?		
Proper Dose		
YES	53	22.36
NO	184	77.64
Route of Administration		
YES	216	91.14
NO	21	8.86
Side effects		
YES	17	7.17
NO	220	92.83
Any possible Drug -Drug or Food Drug Interaction?		
YES	3	1.27
NO	234	98.73
Indications/Contraindications		
YES	29	12.24
NO	208	87.76
Any other drugs currently prescribed to patient by a Medical Practitioner?		
YES	43	18.14
NO	194	81.86

India, these are Over-the-Counter (OTC) medications that are considered safe and useful for treating minor ailments. Although useful, using it in inappropriate doses also poses some risks. Next to PPIs antibiotics were widely used without a prescription which is similar to the other studies conducted in developing nations.[25] Although schedule H1 in India restricts the sale of antibiotics without a doctor's prescription, but they are easily available locally without a prescription.[26] Herbal supplements were also used next to antibiotics for their basic ailments which are similar to the findings of other studies.[27] The reason could be their belief in traditional medicines as herbal medicines are believed to have no side effects. Expectorants/Antitussive, antihistaminic, oral contraceptives were also used for SM by respondents in this study. This is similar to other study as well.[28]

In our study the major source of drug information for SM was found to be other which includes internet, advertisement, friend and family. Which is in contrast with a study conducted in Jordan were pharmacist was found to be the major source.[29] The reason could be the widespread use of internet sources and social media by the general public these days. Next to the other source Unauthorized Health Practitioners (UHP) were also involved in higher number 43 (18.14%). As in rural areas availability of qualified health practitioners is a big challenge in India.[30] So, people are frequently visiting UHP for their common ailments.

On evaluation of drug knowledge of the respondents, it was found that only 22.36% of the respondents knew the correct dosage. 91.40% knew the administration route, less than 10% (7.17%) knew about side effects, a very small percentage (1.27%) knew about possible drug interactions and a mere 12.24% were aware

Table 4: Feedback from respondents after the counseling.

Respondents' feedback after counseling	n	%
Did you fully comprehend the drug's information that was provided?		
Strongly Disagree	0	0.00
Somewhat Disagree	1	0.42
Neutral/No Comment	6	2.53
Somewhat Agree	30	12.66
Strongly Agree	200	84.39
Are you interested in using this type of service again?		
Strongly Disagree	0	0.00
Somewhat Disagree	0	0.00
Neutral/No Comment	12	5.06
Somewhat Agree	20	8.44
Strongly Agree	205	86.50
Do you find the level of service satisfactory?		
Strongly Disagree	0	0.00
Somewhat Disagree	2	0.84
Neutral/No Comment	15	6.33
Somewhat Agree	29	12.24
Strongly Agree	191	80.59
Is it necessary to seek advice from a healthcare professional before self-medication?		
Strongly Disagree	0	0.00
Somewhat Disagree	1	0.42
Neutral/No Comment	6	2.53
Somewhat Agree	50	21.10
Strongly Agree	180	75.95

about the drug's indication or contraindication. Furthermore, 18% of the respondents also reported taking prescription drugs in addition to SM.

A study conducted in Iran assessed participants' overall knowledge of common medications, including prescription, over-the-counter and herbal medications and their probable ADRs.[31] However, our study evaluated individual drug under self-medication and provided appropriate counseling about the drug and consequences of SM to prevent the general public from drug related harms.

In our study the reasons for SM were as follows: financial crisis and lack of availably of health practitioner, Problem is not serious and to save time. These results are almost similar with the studies conducted in Sudan.[32] These explanations, however, depend on the surroundings and study populations in the areas where the research were conducted.

When analyzing the respondents' feedback after the consultation, it was found that the majority of respondents understood the information provided about the drug, they were using for SM.

80% of respondents were strongly agreed to use the service in the future. Most of the respondents (80.59%) strongly agreed that the service delivered was effective and more than 75% agreed to see a Pharmacist or Doctor before SM. This type of study has not been done in India where people have been educated about the drug they are using for SM.

CONCLUSION

In the current study, the prevalence of self-medication was determined to be 67.13%. Male gender has been found to be linked to a higher probability of taking medications without a doctor's prescription. Furthermore, it was found that a higher education did not prevent people from developing the habit of self-medication; rather, it played a significant role in it. Hence, to encourage the public to understand the serious consequences of SM, the Drug Control Agency and healthcare policymakers need to invest some resources in this effort by engaging clinical pharmacists. This will help change the general public's attitude towards SM practices and may protect the general public from drug-related harm.

ACKNOWLEDGEMENT

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

SM: Self-Medication; **WHO:** World Health Organization; **FIP:** International Pharmaceutical Federation; **OTC:** Over the Counter; **UHP:** Unauthorized Health Practitioners; **PPIs:** Proton Pump Inhibitors.

ETHICAL STATEMENT

This study was approved by the institutional ethics committee of Sanjeevani Cancer Hospital, Chhattisgarh, India. Vide Ethical Approval No. IEC/2021/108

REFERENCES

1. World Health Organization: Guidelines for the regulatory assessment of medicinal products for use in self-medication. WHO/EDM/QSM/00.1.
2. Z. Fereidouni and M. Najafi Kalyani. A model to explain self-medication by Iranian people: a qualitative grounded theory study. BMC Public Health. 2019;19(1):1609.
3. World Health Organization. Self-care intervention for health. Available from: https://www.who.int/news-room/fact-sheets/detail/self-care-health-interventions
4. Alghanim SA. Self-medication practice among patients in a public health care system. East Mediterr Health J. 2011;17(5):409-16. Erratum in: East Mediterr Health J. 2011;17(7):598.
5. Hughes CM, McElnay JC, Fleming GF. Benefits and risks of self-medication. Drug Saf. 2001;24(14):1027-37.
6. World Health Organization. The role of the pharmacist in self - care and self-medication. Report of the 4th WHO Consultative Group on the Role of the Pharmacist. The Hague, 1998. Available from: http://www.who.int/medicines/library/dap/who-dap-98-13/who-dap-98-13.pdf .
7. Murray MD, Callahan CM. Improving medication use for older adults: an integrated research agenda. Ann Intern Med. 2003; 139(5pt2):425-9.
8. Badiger S, Kundapur R, Jain A, et al. Self-medication patterns among medical students in South India. Australas Med J. 2012;5(4):217-20.
9. Lal V., Goswami A., Anand K. Self-medication among residents of urban resettlement colony, New Delhi. Indian J. Public Health. 2007;51(4):249-51.
10. Barar FS. Dangers of self-medication, 2005. Available from: http://www.boloji.com
11. Roopa B, Chandra LJ, Amarendar S. Comparison of pattern of self-medication among urban and rural population of Telangana state. Int J Basic Clin Pharmacol. 2017;6:2723-6
12. Thomas L, Jayakrishnan SS, Joseph S, Varghese N, Dileep C, Rasheed A. Assessment of OTC drug labels for patient information in community pharmacies in Thiruvananthapuram city. Int J Innov Pharm Sci Res. 2014;2:1034-41.
13. International Pharmaceutical Federation (FIP) 2011, "Joint FIP/WHO guidelines on good pharmacy practice: standards for quality of pharmacy services," https://www.fip.org/www/uploads/databasefile.php?id=331andtableid
14. Bhambhani G, Saxena V, Bhambal A, Saxena S, Pandya P, Kothari S. Self-medication practice amongst patients visiting a tertiary-care dental hospital in Central India. Oral Health Prev Dent. 2015;13(5):411-6.
15. Samuel SS, Prakasam KC, Nandhakumar N. Assessment of self-medication among patients attending community pharmacises in Erode, India. Int J Pharm Pharm Sci. 2011;3:258-62.
16. Balamurugan E, Ganesh K. Prevalence and pattern of self-medication use in coastal regions of South India. Br J Med Pract. 2011;4:a428.
17. Kumar CA, Revannasiddaiah N. Assessment of self-medication patterns in a rural area of south India: A questionnaire-based study. Int J Community Med Public Health. 2018;5:354-60.
18. Shankar PR, Partha P, Shenoy N. Self-medication and non-doctor prescription practices in Pokhara valley, Western Nepal: A questionnaire-based study. BMC Fam Pract. 2002;3:17.
19. Malik B, Hasan Farooqui H, Bhattacharyya S. Disparity in socio-economic status explains the pattern of self-medication of antibiotics in India: understanding from game-theoretic perspective. R Soc Open Sci. 2022;9(2):211872.
20. Gayathri S, Selvaraj K, Satyajith P, Mithunkumar GH. Estimation of self-medication practices among rural Kanchipuram, India. Int Arch Integr Med. 2017;4:87-92.
21. Phalke VD, Phalke DB, Durgawale PM. Self-medication practices in rural Maharashtra. Indian J Com Med. 2006;31:34-5.
22. Deborah T, et al. Assessment of Self-Medication Practices and Its Associated factors among Undergraduates of a Private University in Nigeria. Journal of Environmental and Public Health. 2018;5439079:1-7.
23. Ahmad A, Patel I, Mohanta G. Evaluation of self-medication practices in rural area of town Sahaswan at Northern India. Ann Med Health Sci Res. 2014;4:73-8.
24. Ladd AM, Panagopoulos G, Cohen J, Mar N, Graham R. Potential costs of inappropriate use of proton pump inhibitors. Am J Med Sci. 2014;347(6):446-51.
25. Zafar SN, Syed R, Waqar S, et al. Self-medication amongst university students of Karachi: prevalence, knowledge and attitudes. J Pak Med Assoc. 2008;58(4):214-7.
26. Chadalavada V, Babu SM, Balamurugan K. Nonprescription sale of schedule H1 antibiotics in a city of South India. Indian J Pharmacol. 2020;52(6):482-7.
27. Hassen G, Belete G, Carrera KG, Iriowen RO, Araya H, Alemu T, et al. Clinical Implications of Herbal Supplements in Conventional Medical Practice: A US Perspective. Cureus. 2022;14(7):e26893.
28. Ammerdorffer A, Laws M, Narasimhan M, Lucido B, Kijo A, Say L, et al. Reclassifying contraceptives as over-the-counter medicines to improve access. Bull World Health Organ. 2022;100(8):503-10.
29. Al-Qerem W, Bargooth A, Jarab A, Akour A, Abu Heshmeh S. Information sources, attitudes and practices of Self-Medication by Jordanian patients: A cross-sectional study. Saudi Pharm J. 2023;31(4):482-91.
30. Das J, Daniels B, Ashok M, Shim EY, Muralidharan K. Two Indias: The structure of primary health care markets in rural Indian villages with implications for policy. Soc Sci Med. 2022;301:112799.
31. Hashemzaei M, Afshari M, Koohkan Z, Bazi A, Rezaee R, Tabrizian K. Knowledge, attitude and practice of pharmacy and medical students regarding self-medication, a study in Zabol University of Medical Sciences; Sistan and Baluchestan province in south-east of Iran. BMC Med Educ. 2021;21(1):1-0
32. Awad A, Eltayeb I, Matowe L, Thalib L. Self-medication with antibiotics and antimalarials in the community of Khartoum State, Sudan J Pharm Pharm Sci. 2005;8:326-31.