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# Self-Medication Practices [SMP] and Its Prevalence among Adults

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**ABSTRACT:**

The quest for the disease free and wellbeing is at peak after the pandemic era as a new normal. The current research aimed at establishing the prevalence of self-medication practice [SMP] by utilising the non-experimental quantitative approach and descriptive design with multistage stratified random sampling technique. The total of 575 adults were selected from the community areas (stratum) based on the selection criteria of residing in the community area since last 5years. The data collection tool was developed after extensive search of information from research journals, textbooks such as community health nursing, pharmacology and health behaviour, and public health, also magazines and newspapers were searched for the SMP. The interrater method of reliability test showed the appropriateness of use [r=0.77]. Results showed that the last 6 months prevalence of SMP among the adult participants was about 77.4% (445). These findings underscore the importance of addressing SMP in healthcare interventions and public health strategies to promote safe and responsible medication use. The study concluded with an alarming situation in the rise of the prevalence rate of SMP among adults of selected cities of Maharashtra. Despite having higher education people tend to practice self-medication in maximum quantity and the major reason being the saving time spent for physicians consultation. It was proved that higher age helps in experience and experiences lead to an increase in the practice of self-medication. Despite the fact study revealed that 24% have experienced side effects of self-medication, a still higher number 81.3% of adults had responded that they will continue the use of self-medication. Educational campaigns should be carried out to educate the people about the risks and potential benefits of self-medication and awareness about self-medication must be done to decrease the prevalence rate of SMP. From time-to-time health education should be given to public by nurses in the hospitals and community areas to create awareness and increase the knowledge of adults.

**Keywords:** Self-Medication Practices, SMP, Adults, Urban Community, City

## 1. Introduction

Self-medication is the most seen phenomenon specially after the Pandemic has turned every human spice into conscious mode and need for remaining healthy and fit. Every other day, we are practicing SMP in the form of self-care for our health. SMP are an important public health problem.[1] To treat self-diagnosed symptoms with the help of medications without legitimate prescribing by a health care professional is self-medication. Drug resistance, adverse effects, and drug interactions, increase resistance to pathogens, including death, are certain unfavourable health issues that are associated with self-medication.[2,3] For over a decade, SMP are followed worldwide, and in developing countries like India. People are using SMP as they cut down healthcare costs such as being less time-consuming, affordable, and easily available in the markets.[4] Although self-medication can act as a first-aid emergency treatment in certain conditions.[4,5] The prevalence of self-medication in India ranges between 8.3% to 92%. Particularly in developing countries like India, the increase in the knowledge, behaviour, and attitude towards health due to awareness of the health associated with the internet, advertisement, and education are the precipitating factors in the increase of self-medication.[4] Other factors include a positive attitude towards drugs and minor disease conditions. The low-income status of the individuals who cannot afford the high-cost medical expenses as well as the fees of the medical healthcare workers and health insurance services leads to the use of SMP.[6] Now-a-day, self-medication can be seen as "the ability and desire for patients/people to play an independent, important, intelligent, and informed role in the management of those preventive diagnostic and therapeutic procedures which concern them." [7]

Several studies have indicated that inappropriate use of self-medication results in adverse drug reactions, disease masking, inaccurate diagnosis of disease, increased morbidity, drug interaction, antibiotic resistance, and wastage of healthcare resources.[1,2,3,5,7,8] Several studies have found that the wrong use of self-medication can result in the wastage of resources, increase resistance to pathogens, serious health hazards, incorrect diagnosis, incorrect dosage, and many side effects such as drug abuse, drug toxicity, and dependence on drugs.[1-4, 7-9] Another study conducted among youngsters in Karnataka showed that the prevalence of self-medication was 88.6% which is quite high in proportion.[10] In India, a study conducted at All India Institutes of Medical Sciences (AIMS), New Delhi observed that self-medication was significantly increased with more growing medical knowledge among them.[5] Studies on self-medication showed the influence of many factors, such as education, family, socioeconomic status, exposure to advertisements and ready access to drugs, and greater availability of medicinal products.[11] A high level of education and professional status has been mentioned in the literature studies are mild illness, previous experiences of treating similar illnesses, economic considerations, lack of knowledge, and lack of availability of health personnel.[12] The WHO has also pointed out that responsible medication practice can help prevent and treat illnesses that do not require medical consultation and provides and cheaper alternative for treating their common illness. However, it is also recognized that self-medication must be accompanied by appropriate health information.[8,13] In 2000 the WHO publishes "guidelines for the regulatory assessment of medical products for the use in self-medication."[8]

The researchers have been witnessing the increase in health awareness and consciousness and its practice followed by COVID-19 pandemic across the county. The preoccupied action leads to self-reliant behaviour which is not a good sign of health awareness at large but an over engaging which is leading to the consequence of harming their health and causing serious adversities. One such harmful action is self-medication for certain types of illness that may include common cold, cough, fever, body pain, headache, diarrhoea, and so on. Hence the

authors identified the need of current study in establishing the prevalence and association of demographic variables of adults in the selected cities of Maharashtra.

## 2. Methods

The current research aimed at establishing the prevalence of SMP by utilising the non-experimental quantitative approach and descriptive design with multistage stratified random sampling technique. The total of 575 adults were selected from the community areas (stratum) based on the criteria of selection such as adults those practiced the self-medication within last 6 months, adults those do not belong to the health professionals and residing in the community area since last 5years as well as they are not psychotropic drug abusers. Number of the participants were calculated based upon the finite population formula. With absolute precision of 0.01, guess of the population (any value<1) = 0.5357, 1-α = confidence level = 0.99, Z = Z value associated with confidence = 2.58.

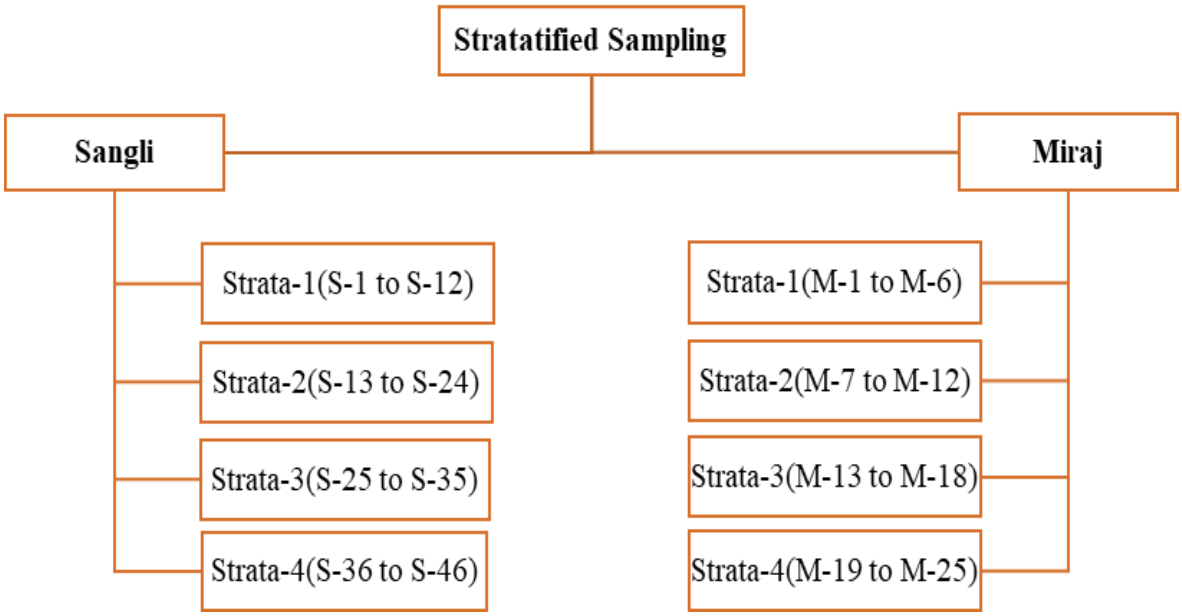


Figure 1. Strata of selected cities

The data collection tool was developed based on the extensive search of information from research journals, textbooks such as community health nursing, pharmacology and health behaviour, and public health, also magazines and newspapers were searched for the SMP. The content validity was done through 20 experts from the field of community medicine, public health, social work, psychologist, and nursing professionals. The reliability was established through interrater method and reliability test was r=0.77 it was reliable to use upon the intended participants. The study was approved through institutional Ethics Committee of IECBVDUCON Sangli. Permission was obtained from the authorities of community areas such health department and corporates of the area and then informed consent was sought from each participant.

## 3. Results

The statistical data analysed were organized in 3 sections and the section wise findings are as follows.

**Section I: - Demographic Variables**

Table No. 1: Frequency and percentage of adults included in the study with selected demographic variables N=575

| SN | Variables | Groups | *f* | % |
|---|---|---|---|---|
| 1 | Age (in years) | 18 to 28 | 137 | 23.8 |
| | | 29 to 38 | 212 | 36.9 |
| | | 38 and above | 226 | 39.3 |
| 2 | Gender | Male | 313 | 54.4 |
| | | Female | 262 | 45.6 |
| 3 | Marital status | Married | 432 | 75.1 |
| | | Unmarried | 125 | 21.7 |
| | | Widow | 13 | 2.3 |
| | | Divorced | 5 | 0.9 |
| 4 | Level of education | No formal education | 30 | 5.2 |
| | | Up to the primary level | 118 | 20.5 |
| | | Up to high school | 113 | 19.7 |
| | | College level | 203 | 35.3 |
| | | Graduation and above | 111 | 19.3 |
| 5 | Occupation | Employee to organization | 127 | 22.1 |
| | | Self-employed | 192 | 55.5 |
| | | Housewife | 181 | 31.5 |
| | | Unemployed | 72 | 13 |

Above table represents the description of demographic data; the age distribution showed that, most of the adults were from the age group of 39 and above i.e., 226 (39.3%) and a group of 29 to 38 with 212 (36.9%) and 137 (23.8%) were from the age group of 18 and above. The gender wise distribution revealed that 54.4% (313) were males and females were 45.6% (262). Most of the adults ie. 75.10% (432) were married and 21.70% (125) were unmarried; also 2.3% (13) were widow and 0.9% (05) were divorced. The participants level of education was 35.30% (203) collegiate level, 20.5% (118) were educated up to the primary level, 19.7% (113) took the education up to high school level and 5.20% (30) adults were not attended the formal education at all. The information related to occupation of participants showed, 55.5% (192) of adults were self-employed which holds major space, 31.5% (181) were housewives, 22.10% (127) were employees of the organization and 13% (72) were unemployed.

**SECTION II: - A. Prevalence of Self-medication practices**

The pie chart reveals most prominent findings of the study identified that the last 6 months prevalence of SMP among the adult participants was about 77.4% (445);

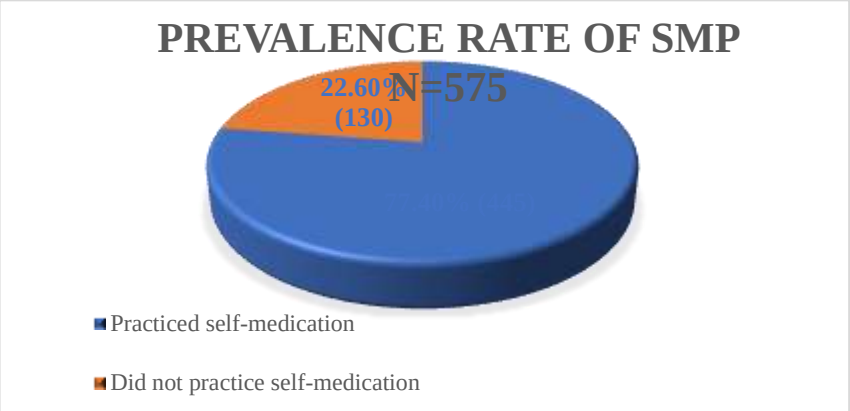


Chart 2. Prevalence of SMP among adults

**SECTION II: - B. DETAILS RELATED TO SMP.**

The participants those had practiced the self-medication practice were subjected to detailed information of the following aspects.

Table No. 2: Frequency and percentage distribution of Reason For Self-Medication.
N=445

| SN | Reason For Self-Medication | f | % |
|---|---|---|---|
| **1** | Less money needed to be spent | 247 | 55.5 |
| **2** | The prior experience known benefits of the same medication | 211 | 47.4 |
| **3** | The mild intensity of signs and symptom | 184 | 41.3 |
| **4** | Saving Time | 257 | 57.8 |
| **5** | Had an old prescription | 98 | 22 |
| **6** | Friend's advice | 120 | 27 |
| **7** | The urgency to manage symptom | 112 | 25.2 |
| **8** | Other | 12 | 2.7 |

Over half of the participants 55.5% (247) cited financial considerations as a significant motivator for self-medication. With the rising costs of healthcare, many individuals opt for self-treatment to minimize expenditure on medical expenses. The 47.4% (211) participants indicated that their decision to self-medicate stemmed from previous positive outcomes with the same medication. A substantial portion 41.3% (184) noted that the mild nature of their symptoms played a pivotal role in choosing self-medication. A majority 57.8% (257) highlighted the convenience of saving time as a driving factor. A notable percentage 22% (98) reported resorting to self-medication due to the availability of old prescriptions. Familiarity with previous medications often leads individuals to use them without seeking professional advice. A significant proportion 27% (120) acknowledged the influence of friends' advice in

their decision to self-medicate. 25.2% (112) participants quoted the urgency to manage symptoms as a key motivator. This insightful analysis provides valuable insights into the complex interplay of factors driving self-medication behaviours, highlighting the need for informed decision-making and greater awareness of potential risks associated with self-treatment.

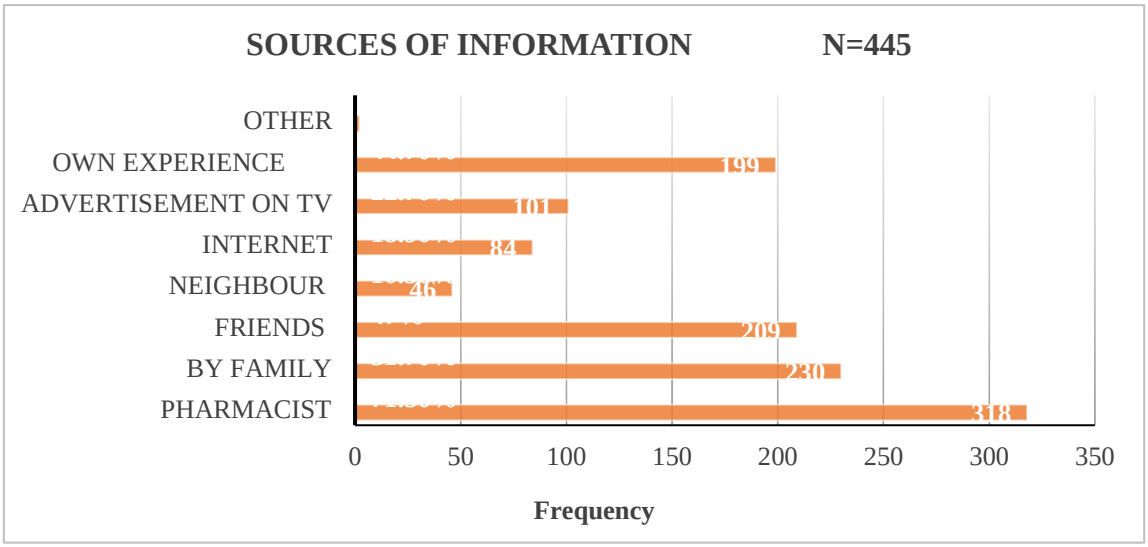


Chart No. 3: Sources of information related to SMP.

Above Chart showed the source of information for SMP; the majority participants 71.5% (318) rely on pharmacists as a primary source of health information. Over half of the participants 51.7% (230) seek health advice from family members. The participants 47% (209) consult friends for health-related information. 10.3% (46) participants turn to neighbours for health advice. Despite its prevalence, a modest proportion 18.9% (84) rely on the internet for health information. A significant portion 22.7% (101) acknowledge television advertisements as a source of health information. The participants 44.7% (199) draw from their own experiences when making health-related decisions. This analysis underscores the importance of understanding the varied sources from which individuals derive health information, emphasizing the need for critical evaluation and informed decision-making in healthcare practices.

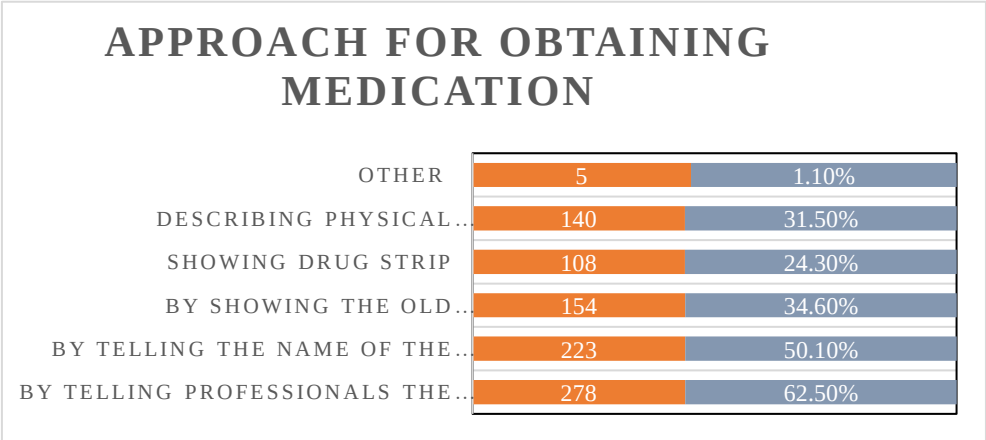


Chart No. 4: Frequency percentage related to approach for obtaining medication.

A majority 62.5% (278) opt to describe their symptoms when seeking medication. The 50.1% (223) of participants preferred to directly mention the name of the drug they require. A considerable proportion 34.6% (154) present old prescriptions when acquiring medication. 24.3% (108) participants choose to show the drug packaging when obtaining medication. A notable percentage 31.5% (140) describe the physical characteristics of the drug. This analysis offers valuable insights into the diverse strategies individuals employ when obtaining medication, highlighting the importance of effective communication and collaboration between patients and healthcare professionals in the healthcare process.

Table No. 3: Frequency and percentage distribution of major chief complaints for SMP N=445

| SN | Major chief complaints for self-medication practice | f | % |
|---|---|---|---|
| **1** | Headache | 401 | 90.1 |
| **2** | Body Ache | 324 | 72.8 |
| **3** | Fever | 310 | 69.7 |
| **4** | Mouth ulcer | 42 | 9.4 |
| **5** | Cold | 297 | 66.7 |
| **6** | Cough | 180 | 40.4 |
| **7** | Vitamins deficiency | 93 | 20.9 |
| **8** | Dental pain | 105 | 23.6 |
| **9** | Sore throat | 73 | 16.4 |
| **10** | Diarrhoea | 143 | 32.4 |
| **11** | Conjunctivitis | 20 | 4.5 |
| **12** | Vomiting | 173 | 38.9 |
| **13** | Ear pain | 61 | 13.7 |
| **14** | B. P | 73 | 16.4 |
| **15** | Diabetes | 36 | 8.1 |
| **16** | Skin allergy | 35 | 7.9 |
| **17** | Itching | 116 | 26.1 |
| **18** | Dehydration | 05 | 1.1 |
| **19** | Sleeplessness | 06 | 1.3 |
| **20** | Acne | 02 | 0.4 |
| **21** | skin disease | 21 | 4.7 |

| | | | |
|---|---|---|---|
| **22** | Menstrual problems | 48 | 10.8 |
| **23** | Birth control | 02 | 0.4 |

Topping the list, headaches are a common complaint prompting self-medication, with 90.1% (401) of respondents citing them as a reason. Body aches are another prevalent concern, with 72.8% (324) of individuals resorting to self-medication to alleviate discomfort. Fever ranks high among chief complaints, with 69.7% (310) of participants opting for self-treatment to manage elevated temperatures. Respiratory issues such as colds and coughs are significant drivers of self-medication, with 66.7% (297) and 40.4% (180) of individuals respectively seeking relief independently. Gastrointestinal complaints like diarrhoea and vomiting prompt SMP in 32.4% (143) and 38.9% (173) of cases respectively. Dental pain, though less prevalent, still prompts 23.6% (105) of individuals to self-medicate to address oral discomfort. Dermatological concerns such as skin allergies and itching lead to self-medication in 7.9% (35) and 26.1% (116) of cases respectively. Menstrual issues prompted self-medication in 10.8% (48) of respondents, highlighting the need for accessible remedies for women's health concern. A range of other complaints, from high blood pressure 16.4% (73) to sleeplessness 1.3% (6), also drive SMP, albeit to varying degrees. This analysis underscores the importance of understanding the prevalent health issues motivating self-care behaviours, emphasizing the need for accessible and reliable remedies for common ailments.

Table No. 4: Frequency and percentage distribution of medications used for SMP N=445

| **SN** | **Self-Medication/S Used** | **f** | **%** |
|---|---|---|---|
| **1** | Paracetamol | 318 | 71.5 |
| **2** | Aceclofenac | 100 | 22.5 |
| **3** | Ondem | 42 | 9.4 |
| **4** | Cetirizine | 214 | 48.1 |
| **5** | Diclofenac | 40 | 09 |
| **6** | Sumo | 141 | 31.7 |
| **7** | Roco | 09 | 02 |
| **8** | O2 | 24 | 5.4 |
| **9** | Imodium | 15 | 3.4 |
| **10** | Azee | 131 | 29.4 |
| **11** | vitamin supplements | 40 | 09 |
| **12** | Combiflam | 150 | 33.7 |
| **13** | Digene | 18 | 04 |
| **14** | Rantac | 52 | 11.7 |
| **15** | Omee | 173 | 38.9 |

| | | | |
|---|---|---|---|
| **16** | Panta | 37 | 8.3 |
| **17** | Amlodipine | 28 | 6.3 |
| **18** | Glycomet | 16 | 3.6 |
| **19** | Benzodiazepines | 01 | 0.2 |
| **20** | Telmisartan | 18 | 04 |
| **21** | Glimepiride | 04 | 0.9 |
| **22** | Metformin | 07 | 1.6 |
| **23** | Itraconazole | 02 | 0.4 |
| **24** | Iron and folic acid | 01 | 0.2 |

The table reveals that, Paracetamol leads the list, favoured by 71.5% (318) for various ailments. Cetirizine follows closely at 48.1% (214), predominantly for managing allergies. Combiflam, a combination of paracetamol and ibuprofen, is chosen by 33.7% (150) for its analgesic and anti-inflammatory effects. Sumo 31.7% (141) is popular for pain relief, while Omee 38.9% (173) addresses gastrointestinal issues. Azee 29.4% (131) is an antibiotic for bacterial infections, while Aceclofenac 22.5% (100) tackles pain and swelling. Rantac 11.7% (52) manages gastric acidity. Other medications mentioned include Ondem for nausea 9.4% (42) and Metformin for diabetes 1.6% (07).

Table No. 5: Frequency and percentage distribution of behaviours related to SMP N=445

| **SN** | **Details related to Self-Medication** | **f** | **%** |
|---|---|---|---|
| **1.** | **Side effects experienced after using medications** | | |
| | Yes | 107 | 24 |
| | No | 338 | 76 |
| **2.** | **Awareness about the side effects of self-medication** | | |
| | Yes | 360 | 80.9 |
| | No | 85 | 19.1 |
| **3.** | **Usual duration of self-use of the medication/ s** | | |
| | Less than 1 week | 369 | 82.9 |
| | More than 1 week | 76 | 17.1 |
| **4.** | **Continuation of self-medication practice** | | |
| | Yes | 362 | 81.3 |
| | No | 83 | 18.7 |

Most participants, comprising 82.9%, (369) typically self-use medication for less than one week, while 17.1% (76) continue usage for more than one week. Among participants, 80.9% (360) are aware of the potential side effects of self-medication, while 19.1% (85) are not familiar with them. After using medications, 24% (107) of participants reported experiencing side effects, while 76% (338) did not encounter any adverse reactions. Following the survey, 81.3% (362) of participants express intentions to continue the practice of self-medication, while 18.7% (83) indicate they will not continue.

Table No. 6: Frequency and percentage distribution of expectations from nurses
N=445

| SN | Expectations from nurses about Self-Medication | f | % |
|---|---|---|---|
| 1 | To counsel them about side effects | 346 | 77.8 |
| 2 | To help them select the drug | 260 | 58.4 |
| 3 | To counsel them about the disease | 221 | 49.7 |
| 4 | To monitor the effectiveness of the drug and ensure safety. | 51 | 11.5 |

When consulting nurses regarding self-medication, respondents expect various forms of assistance. The majority, 77.8% (346), anticipate receiving counselling about potential side effects. Additionally, 58.4% (260) seek guidance in selecting the appropriate drug, while 49.7% (221) expect counselling about the specific disease. A smaller portion, 11.5% (51), anticipate nurses to monitor the effectiveness of the chosen drug and ensure its safety.

## 4. Discussion

The prevalence of SMP revealed a rate of 77.4%. Male respondents were found to be highly engaged, with a significant proportion of participants being married, well-educated, and self-employed. Associations between SMP and demographic variables such as age, education level, and occupation were identified. Comparative studies from various regions, including Delhi, Africa, and Saudi Arabia, reported similar trends, with prevalence rates ranging from 89.4% to 92.8%. Despite ongoing awareness efforts, self-medication remains prevalent, as evidenced by a meta-analysis study conducted by Muhamed Rashid (2019), which reported a rate of 53.57%.

The association between SMP and demographic variables. Studies from the Morang district of Miklajung rural municipality and Gondar, Ethiopia, revealed prevalence rates of 61.5% and 50.2%, respectively. Associations were observed with demographic factors such as occupation, marital status, and access to pharmacies, mirroring findings from the present study.

Overall, the study highlights the widespread prevalence of SMP among adults in the study area, with significant associations identified with demographic variables. These findings underscore the importance of addressing SMP in healthcare interventions and public health strategies to promote safe and responsible medication use.

## 5. Conclusion

The study concluded with an alarming situation in the rise of the prevalence rate of SMP among adults of Selected cities of Maharashtra. Even after having higher education people tend to practice self-medication in maximum quantity and the practitioners had practiced self-medication to save time. It was proved that higher age helps in experience and experiences lead to an increase in the practice of self-medication.
It was also shown that education was the triggering factor for such practices. Despite the fact study revealed that 24% have experienced side effects of self-medication, a still higher number 81.3% of adults had responded that they will continue the use of self-medication.
Educational campaigns should be carried out to educate the people about the risks and potential benefits of self-medication and awareness about self-medication must be done to decrease the prevalence rate of SMP. From time-to-time health education should be given

to people from nurses visiting hospitals and community areas to create awareness and increase the knowledge of adults.

**Conflict of Interest:** No conflict of interest

## 6. Reference


1. Dyanesh Limaye, Vaidehi Limaye, Gerhard Fortwengel, Gerard Krause. A systematic review of the literature to assess self-medication practices. Analysis of medical and health sciences research. September 2017. Volume 7 (1): 1-15. https://www.researchgate.net/publication/320591985.
2. Veerakumar Arumugam Mariappan, Velmurugan Anbu Ananthan. Self-medication practices in a rural population in Tamil Nādu. International Journal of Community Medicine and Public Health. December 2020. Volume 7(12): 5021-5026.https://dx.doi.org/10.18203/2394-6040.ijcmph20205179.
3. Sharat Gupta, Manjindre Singh. Self-medication among north Indian first-year undergraduate healthcare students: a questionnaire-based study. 03rd August 2016. https://www.researchgate.net/publication/304815518.
4. Muhammed Rashid, Manik Chhabra, Ananth Kashyap, Krishna Undela, Sai Krishna Gudi. Prevalence and predictors of self-medication practices in India. A systematic literature review and meta-analysis. Current Clinical Pharmacology. 22nd November 2011. Volume 15 (2): 90-101. https://www.researchgate.net/publication/337519413
5. Nithin Kumar, Tanuj Kanchan, Baskaran Unnikrishnan, T. Rekha, Prasanna Mithra, Vaman Kulkarni, Mohan Kumar Papanna, Ramesh Holla, Surabhi Uppal. Perception and practice of self-medication among medical students in coastal south India. 28 August 2013. PLOS ONE 8(8): e72247. https://doi.org/10.1371/journal.pone.0072247.
6. Makonnen Sisay, Getnet Mengistu, Dumessa Edessa. Epidemiology of self-medication in Ethiopia: a systemic review and meta-analysis of observational studies. BMC pharmacology and toxicology. 10th September 2018. https://doi.org/10.1186/s40360-018-0248-8
7. Kandavalli Sridevi, M. Venkata Subbiah, M. Surekha, J. Harini, D. Sujana, A. Ravi Sankar. Assessment of self-medication practices among community people. IOSR Journal Dental and Medicine Sciences. May 2017. Volume 16(5): 75-82. https://www.researchgate.net/publication/316866076.
8. Darshana Bennadi. Self-medication: a current challenge. Journal Of Basic and Clinical Pharmacy. December 2013. Volume 5(1): 19-23. https://www.researchgate.net/publication/262149819.
9. Marwa Al Flaiti, Khaloud Al Badi, Wefaq Othman Hakimi, Shah Alam Khan. Evaluation of self-medication practices in acute diseases among university students in Oman. Journal of acute disease. 20th November 2014. Volume 3(3): 249-252. https://www.researchgate.net/publication/270664256
10. Arti A Kasulkar, Monish Gupta. Self-Medication Practice Among Medical Students of a Private Institute. Indian Journal of Pharmaceutical Sciences. 1st March 2015. Volume 77 (2): 178-182. PubMed Publication. https://www.researchgate.net/publication/277251704
11. Geddugol BJ, Berigeri A. Phenomenological Study: Lived Experiences of Caregivers' of Chronically Schizophrenic Patients. Turkish Online Journal of Qualitative Inquiry. 2021 July; 12(7): 7756-7769.

12. J. Sujit Ralin Daniel, Prasanand S, Suba Joice, Priscilla Jeba Rani. Prevalence and practice of self-medication among undergraduate medical students and non-medical students in south India. Indian Journal of Basic and Clinical Pharmacology. 23rd February 2019. Volume 8 (3): 388-393. http://dx.doi.org/10.18203/23192003.ijbcp20190649
13. Weldegebreal F, Teklemariam Z, Mitiku H, Tesfaye T, Roba AA, Tebeje F, Asfaw A, Naganuri M, Geddugol BJ, Mesfin F, Abdulahi IM. Treatment outcome of pediatric tuberculosis in eastern Ethiopia. Frontiers in Pediatrics. 2022;10.
14. Dasa TT, Roba AA, Weldegebreal F, Mesfin F, Asfaw A, Mitiku H, Teklemariam Z, Geddugol BJ, Naganuri M, Befikadu H, Tesfaye E. Prevalence and associated factors of depression among tuberculosis patients in Eastern Ethiopia. BMC psychiatry. 2019 Dec;19(1):1-7.
15. Dasa TT, Roba AA, Weldegebreal F, Mesfin F, Asfaw A, Mitiku H, Teklemariam Z, Geddugol BJ, Naganuri M, Befikadu H, Tesfaye E. Prevalence and associated factors of depression among tuberculosis patients in Eastern Ethiopia. BMC psychiatry. 2019 Dec;19(1):1-7.
16. Savardekar S, Geddugol BJ. Self-stigmatization among patients diagnosed with selected psychiatric disorders. Journal of Critical Reviews. 2020 August; 07(15): 4331-4337.