

## Prevalence and Practices of Self-Medication in Urban Population: A Cross Sectional Study in South India

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### Abstract

*Background:* Self-medication is a major global public health problem including India. High consultation fee and burden of avoidable investigation are the main causes of self-medication. Self-medication has advantages of being economical, convenient, time saving and reduces the burden on health care system for minor illnesses. However, there are certain side-effects of self-medication i.e. inappropriate usage of antibiotics leading to drug resistance, wastage of resources and adverse drug reactions.

*Methods:* Present study was a cross sectional study among the selected population in urban in urban field practice area of AJIMS & RC, Mangaluru. Face to face interviews were conducted using the validated questionnaire.

*Results:* A total of 472 heads of families were included in the study. High prevalence (62.7%) of self-medication was observed among the study subjects. Self-medication was mainly used for common minor problems (72.4%), while antipyretics were the commonest (71.4%) drug used. Self-medication was found to be more among professionals, those who had higher educational qualification and belonged to higher socio-economic strata. Pharmacies were the most common source of procurement of drugs.

*Conclusion:* The study brought out high prevalence of self-medication.

**Keywords:** Self-medication; Pharmacy; Professionals; Socio-economic strata.

### Introduction

Self-medication (SM) is use of any drug, substance or any exogenous influence without prior medical consultation regarding its indication, dosage or duration for the treatment of one's own physical or psychological ailments [1]. The World Health Organization (WHO) defines SM as "use of pharmaceutical or medicinal products by a consumer to treat self-recognized disorders or symptoms, the intermittent or continued use of medication previously prescribed by a physician for chronic or recurring disease or symptom, or use of medication recommended by lay sources or health workers not entitled to prescribe medicine" [2]. Further, SM has been considered a quick and convenient method of comfort to an individual. Besides, it also reduces the load on the medical services, decreases the waiting time and saves expenditure on consultation to the individuals. However, SM is not free from the risks of side effects and other complications which include seeking of delayed medical advice, increased drug resistance, drug interactions and adverse health outcomes [3].

Self-medication patterns are influenced by educational status, family background, socio-economic status, profession etc. Further, the easy availability but uncertain scientific validity of information on the electronic media has had both beneficial and detrimental effects [4]. Practiced globally, SM is global health problem, with a prevalence of 0.1% in northern and Western Europe to 27% in USA. However, the developing world shows much higher prevalence i.e. 67% in Nigeria and 79% in India [5]. Analgesics and Antibiotics are the most commonly SM drugs worldwide, nearly 50% procured without a prescription which resulting in widely prevalent antibiotic resistance [6]. In India, important causes of SM are poor accessibility to healthcare services; especially in rural areas, illiteracy, poverty, and influence of advertisements in print and electronic media.

In India, Schedule H (prescription drugs) and Schedule H1 (antibiotics and other restricted medications) can be sold by a legally qualified registered pharmacist upon presentation of valid prescription as per Drug and Cosmetics Act of 1940 [6]. A majority of the population when they fall ill not consult with the healthcare professionals especially in rural or small cities In India. However, they do consult directly to the pharmacy and/or retail drug store and can easily get medications for oneself.

Though in India, from 01 March 2014, Central Drugs Standard Control Organization (CDSCO) has imposed to control the rampant sale of over-the-counter (OTC) drugs in India and makes it mandatory for the pharmacists to maintain a separate register and record the details of the patient, prescribing doctor and the sold quantity and names of the drugs [8].

Review of literature reveals limited studies on SM practices in Karnataka, especially in Mangaluru. In the backdrop of above, a study was undertaken in urban part of Mangaluru with the following objectives.

#### *Research Objectives*

1. To determine the prevalence, practices and determinants of self-medication among the residents of the urban field practice area of AJIMS & RC, Mangaluru.
2. To determine association between self-medication practices with selected demographic variables i.e. education, occupation and socio-economic status.

## **Material and Methods**

Present study was undertaken in the urban field practice area of A. J. Institute of Medical Sciences & Research Centre, Mangaluru. All heads of families (including males as well as females) who were empowered to make decisions in the family matters comprised the study population. In case of their absence, another family member who was also involved in decision-making as interviewed to obtain the desired information.

Families who used only Allopathic system of medicine for Self-medication were included in the study while families who practiced self-medication with alternate systems of medicine and families having any member qualified in the allopathic system, pharmacy, nursing, or any other paramedic stream were excluded from the study.

For the purpose of this study, Self -medication (SM) was defined as use of any Allopathic drug (s) to treat self-diagnosed disorders or symptoms or the intermittent or continued use of prescribed drug(s) for chronic or recurrent disease or symptoms during past six months without consultation with a qualified allopathic doctor (possessing minimum MBBS degree) at least on one occasion.

As the “urban field practice area” of AJIMS & RC, Mangaluru is divided into nine sub-sectors, multi-stage sampling was adopted to select the houses and to select the number of houses in each area, Probability Proportional to Size (PPS) method was followed.

Within each area, houses were selected using Simple Random Sampling till a total sample size of 472 was achieved out of the 1035 families residing in the urban field practice area. The study was conducted over period of one year, i.e., from 01 Jun 2017 to 31 May 2018.

Ethical clearance as obtained before the conduct of the study. All selected households were visited and the heads of the families were interviewed after explaining the purpose of the study in their local language and taking an informed written consent. A semi-structured questionnaire was used to record the socio-demographic characteristics of the family and the pattern and practices of self-medication.

#### *Operational Definitions*

1. *Self-medication*: Use of any drug, substance or any exogenous influence without prior medical consultation regarding

its indication, dosage or duration for the treatment of one's own physical or psychological ailments.

2. *Head of the family*: is the member of the family who has the authority to make important decisions for the family.
3. *Routine illness*: An illness which does not affect a person's day-to-day activities.
4. *Moderate illness*: An illness which affects a person's day-to-day activities and compels him/her to stay away from work.
5. *Severe illness*: An illness that warrants an immediate consultation with a doctor, hospitalisation or absence from work and continued supervision of a doctor.
6. *Over-the-counter (OTC) drugs*: Are medicines sold directly to a consumer without a prescription from a healthcare professional, as opposed to prescription drugs, which may be sold only to consumers possessing a valid prescription.

### Statistical Analysis

The data obtained was analyzed for both descriptive, as well as inferential statistics on basis of the objectives of the study, using Microsoft Excel 2010 and IBM SPSS Statistics 21.0 trial version. For descriptive Statistics, Frequencies, Percentages, Means, Standard deviation have been used. For inferential statistics used to determine the association between various characteristics, Pearson Chi square test has been employed.

### Results

Table 1 brings out that most (72.8%) of the study subjects were males and majority of them (50.63%) belonged to the age group of 31 to 50 years, while their mean age was found to be 53 years (SD  $\pm$  13 years). There were no heads of families under the age of 20 years. Majority (69.9%) of respondents were married, (24.1%) had finished primary education and nearly one-fourth (24.3%) of them were skilled workers. Further, most (70%) of the families were of nuclear type, average family size was four (SD  $\pm$  1), most (76.6%) of them were Hindu by religion and nearly half (43.4%) of the families belonged to Social class III, i.e., Lower middle class according to the revised *Kuppuswamy* socio-economic classification.

**Table 1:** Socio-demographic characteristics of study subjects. (n=472)

Variable	Frequency	Percentage
<i>Age group (in completed years)</i>		
21 to 30 years	05	1.05
31 to 40 years	104	22.03
41 to 50 years	135	28.6
51 to 60 years	101	21.39
61 to 70 years	59	12.5
Above 70 years	68	14.4
<i>Gender</i>		
Male	344	72.88
Female	128	27.11
<i>Marital status</i>		
Married	330	69.91
Separated/Divorced	04	0.84
Widowed	138	29.23
<i>Religion</i>		
Hindu	362	76.69
Christian	29	6.14
Muslim	69	14.61
Others	12	2.54
<i>Educational status</i>		
Illiterate	42	8.89
Primary school	114	24.15
Middle school	71	15.04
High school	105	22.24
PUC or diploma	52	11.01
Graduate/postgraduate	65	13.77
Professional/ Honors	23	4.87
<i>Occupation</i>		
Unemployed	105	22.24
Unskilled	89	18.85
Semiskilled worker	56	11.86
Skilled worker / Homemaker	115	24.36
Clerical / shop-owner / farmer / businessman	73	15.46
Semi-professional	27	5.72
Professional	07	1.48

\*based on Revised Kuppuswamy classification of Socio-economic status

Figure 1, brings out prevalence that 63.77% of the study subjects practiced self-medication on at least one occasion during last six months, while remaining 36.23% did not practice any self-medication and took medication only after the advice of a qualified MBBS doctor.

Table 2, brings out that 65.67% of the respondents were awareness and had knowledge that medicines should be consumed only after consultation with a doctor and 45.33% of them felt that it is not safe to continue medication even in chronic illnesses. Further, 87.71% were aware that medicines must be discarded after expiry date, while nearly every respondent (94.27%) refrained from self-medication practices when it came to treating their own children.

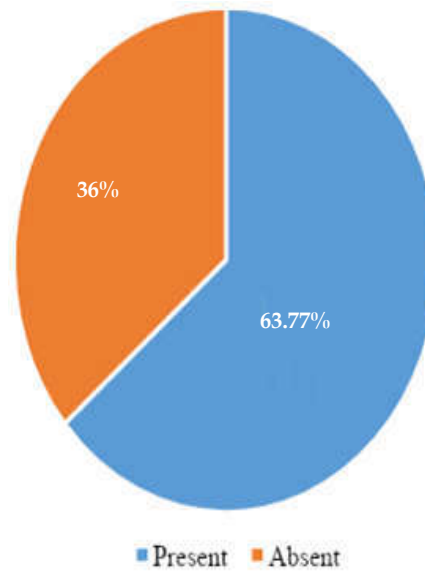


Fig. 1: Self-medication practices among study subjects (n=472)

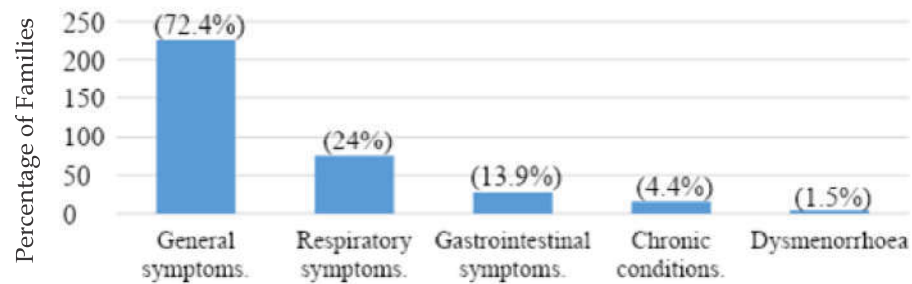


Fig. 2: Common symptoms for which SM was practiced by study subjects (n=472)

Table 2: Attitude and practices on self-medication (n=472)

	Knowledge	Frequency	Percentage
<i>Medicines should be consumed only after consulting a doctor.</i>			
	Present	310	65.67
	Absent	162	34.32
<i>Is it safe to continue medicines for chronic conditions without a follow up?</i>			
	Yes	258	54.66
	No	214	45.33
<i>Concept of "expiry date"</i>			
	Present	414	87.71
	Absent	58	12.28
<i>Self-medication must not be practiced for children.</i>			
	Agree	445	94.27
	Disagree	27	5.72
	Total	472	100

\*For the purpose of this study, "children" were considered to be of less than 14 years of age.

Figure 2 brings out common symptoms for which SM was practiced among study subjects. The study reveals that majority of the respondents (72.4%) used SM for general symptoms like headache, body ache, mild sprains etc., followed by respiratory symptoms (24.0%), diarrheal diseases and gastric -acidity related disorders, while 4.4% of them practiced SM for chronic conditions like osteoarthritis, low back ache etc. A small percentage of women (1.5%) also used anti-spasmodic drugs for dysmenorrhea.

Figure 3 brings out commonly used drugs for self-medication. The study reveals that antipyretics are the most commonly used drugs (71.4%), followed by analgesic group of drugs(49.5%), cough syrups (19.2%), anti-histaminics (14.2%), anti-hypertensives (10.9%) ant-acids (10.6%) and oral hypoglycemic agents (7.6%). A very small percentage of respondents used antispasmodic agents and antiemetic drugs also, i.e.1.3% and 0.6% respectively.

Figure 4 brings out common sources of drug procurement for self-medication. The study reveals that the commonest source of procurement of drugs for self-medication has been the pharmacies (92.3%) where the drugs are readily available over the counter (OTC), without any prescription from the doctor in our country, followed by clinics (73.2%), friends/relatives (5.7%), neighbors (3.3%) and other miscellaneous sources.

Figure 5, brings out that Allopathic system of medicine was the most preferred system as out of the 472 families 63.77% of them practiced it. However, out of 472 families there were 126 (26.6%) families who utilized alternate system of medicine for SM, during last six months. The analysis further revealed that most of these 126 families i.e. 66.6% of them practiced Ayurveda, followed by Homoeopathy (28.5%), and Yoga & Naturopathy (13.4%). However, none of the families were found using Siddha or Unani.

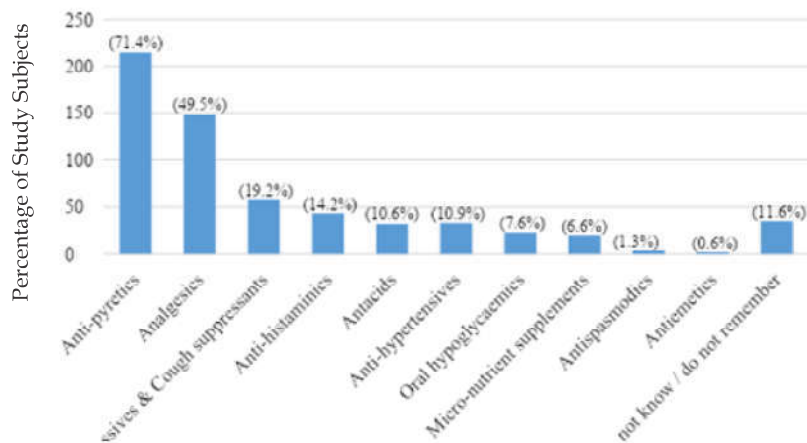


Fig. 3: Commonly used drugs for self-medication among (n=472)

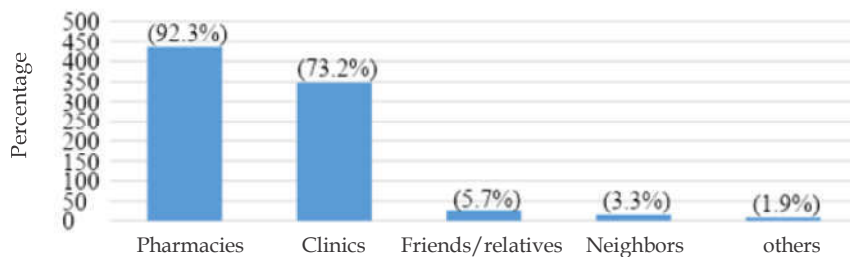


Fig. 4: Common sources of drug procurement for self-medication (n=472)

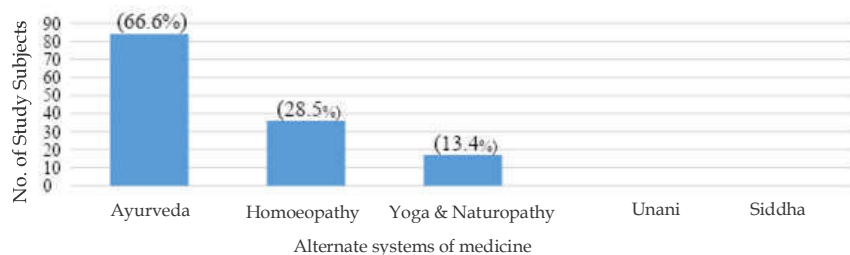


Fig. 5: Pattern of alternate systems of medicine practised by study subjects. (n=126)

**Table 4:** Association of socio-demographic characteristics with prevalence of self-medication (n=472).

Variables	Prevalence of Self-medication				Total	$\chi^2$	p value
	Present	%	Absent	%			
<i>Educational status of Head of family</i>							
Professional / Honors	20	87	3	13	23	12.76	0.04
Graduate / Postgraduate	47	72.3	18	27.7	65		
PUC / Diploma	35	67.3	17	32.7	52		
High school	67	63.8	38	36.2	105		
Middle school	38	53.5	33	46.5	71		
Primary school & below	94	60.25	62	39.75	156		
<i>Occupation of Head of family</i>							
Professional	07	100	0	0	07	33.87	0.000
Semi-professional	13	48.1	14	51.9	27		
Clerical / Shop owner / Farmer / Businessman	46	63	27	36.9	73		
Skilled / Homemaker	62	53.9	53	46.1	114		
Semi-skilled	32	57.1	24	42.9	56		
Unskilled & Unemployed	142	72.8	53	27.1	195		
<i>Socio-economic status*</i>							
Class I	3	100	0	0	3	9.72	0.02
Class II	119	71.7	47	28.3	166		
Class III	118	57.6	87	42.4	205		
Class IV	61	62.2	37	37.8	98		

Table 4, brings out association between prevalence and practice of SM with selected demographic variable i.e. educational level, occupation and socio-economic status. The occupation of the head of the family was found to be significantly associated with SM i.e. professionals had higher prevalence and practice of SM as compared to semi-skilled/unskilled workers ( $p=0.00$ ). Higher prevalence of SM was also found among those respondents who possessed higher educational qualification or belonged to higher socio-economic strata and these associations were also found to be statistically significant with p values being ( $p<0.04$ ) and ( $p < 0.02$ ) respectively.

## Discussion

Self-medication (SM) is a human behavior. High consultation fee and fear of being subjected to unnecessary investigations, convenience of self-medication and time constraints are primarily responsible for high prevalence of SM in the Indian population. In a survey conducted by a web portal that interviewed 20,000 people in 10 cities in India, brought out nearly 52% of the people indulged in self-medication [9]. Families, friends, neighbors, pharmacist, old prescriptions, suggestions from an advertisement in newspapers or popular magazines are common sources of information for drugs for SM.

In present study (72.8%) of the study subjects

were males, nearly half of them of them (50.63%) belonged to 31 to 50 years the age group, their mean age was 53 years ( $SD \pm 13$  years), majority (69.9%) of them were married, 24.1% had finished primary education and nearly one-fourth (24.3%) of them were skilled workers and nearly half (43.4%) of the families belonged to Social class III. Similar results were reported by Akram Ahmad, et al., in their study in North India who reported mean age of their participants to be  $28.28 \pm 4.02$ , while majority of the participants were male (58.4%) [10].

Present study brings out overall prevalence of 63.77% of SM among study subjects. Similar prevalence (51.7%) of SM was reported by Vinithra Varadarajan, et al., in their study in urban population in Chennai while Akram Ahmad, et al., observed in their study 100% prevalence of SM. In another study by T Aqeel, et al., in Islamabad, a prevalence of self-medication was observed to be 61.2%; while in a study among college students by Dipan Uppal, et al., in Delhi University a prevalence of SM was reported to be 93%. However, it may not be prudent to compare the findings of various studies as study subjects in different studies belonged to different geographical regions and different socio-cultural patterns [11-13].

In present study 65.67% of the respondents agreed that medicine should be consumed only after consulting a doctor, 54.66% of them felt that it was safe to continue medicine for chronic illnesses even without a follow up and 87.71% of the study subjects had concept of expiry date. However,

nearly all the respondents (94.27%) felt that for children it was not safe to indulge in SM and they should be given medication only after consulting a qualified doctor. Dipan Uppal, *et al.*, in their study reported that almost all (96.5%) the respondents were conscious about the expiry date of drugs and used them only after checking it. Further, 47.5% of them chose SM for any illness initially while 40% of medical students disagreed as they were aware of adverse effects of the drugs [13].

Present study reveals that majority of the respondents (72.4%) used SM for general symptoms while (24.0%) of the respondents used SM for respiratory and Gastro-intestinal disorders while 4.4% of them used SM for chronic conditions like osteoarthritis and low back ache etc. Similar findings have been reported by Vinithra Varadarajan who in their study observed that SM was used mainly for common cold (73.02%), aches and pains (51.97), and fever (32.2%). In a similar study by Akram Ahmad, *et al.*, it was observed that use of non-prescription drugs for fever was higher in urban population (23%) as compared to rural subjects (9%), while SM was highest for skin diseases among rural respondents (10%) [10-11].

Present study brings out antipyretics as the most commonly used drugs (71.4%), followed by analgesics (49.5%) and cough syrups (19.2%). A very small percentage of study subjects used antispasmodic agents and antiemetic drugs as well i.e. 1.3% and 0.6% respectively. Dipan Uppal, *et al.*, in a similar study reported that most commonly used medicines were cold remedies among non-medical and analgesics among medical students. Cold remedies, analgesics, antipyretics and antibiotics have been reported as the most commonly used drugs for SM by many other studies as published in many studies. Present study further brings out pharmacies as the most common source (92.3%) of drug procurement for SM, followed by clinics (73.2%), friends/relatives (5.7%) and neighbors (3.3%). However, Dipan Uppal, *et al.*, in their study reported most common source of self-medication was the available first aid kit in 46.5% of subjects, followed by chemists (38%). Chemists as a source were significantly more in non-medical students ( $p=0.002$ ) [13].

Present study brings out that Ayurveda system of medicine was the most preferred alternative system of medicine as out of 126 families who utilized alternate system of medicine, 66.6% of them practiced Ayurveda, followed by Homoeopathy (28.5%), Yoga & Naturopathy (13.4%). Similar findings have been brought out by Shyam Sunder Keshari, *et al.*, in

their study in Uttar Pradesh (India) who found that majority of the respondents were taking Allopathic drugs (69.6%) followed by Ayurveda drugs (13.1%) and Homeopathic drugs (10.7%) [14].

In present study the occupation, educational qualification and socio-economic strata of the head of the family were found to be significantly associated with SM i.e. professionals, respondents who possessed higher educational qualification or belonged to higher socio-economic strata had higher prevalence of SM. In a similar study by Dnyanesh Limaye, *et al.*, prevalence of self-medication was found to be highest among participants who were post graduate educate ( $p \leq 0.000$ ), having chronic disease (109/259; 42%;  $\chi^2 = 25.3$ ;  $p \leq 0.000$ ; OR = 2.01; CI 95% = 1.5-2.6) and those having monthly income of ₹50,000 Indian rupees ( $p \leq 0.000$ ) [15].

#### Limitations

Present study had the limitation which are inherent to cross sectional studies as they do not provide conclusive temporal association. In present study six months recall period was used, which may have had a recall bias. Further, many respondents may not have liked to disclose the drugs used by them for personal reasons. As this study was conducted in southern part of India which has its own socio-cultural pattern and morbidity profile and pattern of using home remedies, findings of this study may not be generalised to other parts of India.

#### Conclusion

Studies across the country suggest a rising trend in self-medication and indicate nearly half of the population in the country practices self-medication. Present study also brings out a high prevalence of SM among the study subjects. Further a higher trend of SM was observed among those who belonged to higher socio-economic strata, had higher educational status and were professionals by occupation. Further, the drugs, (including schedule-H and H1 drugs) have been easily available over the counter without any check, resistance or demand for a prescriptions. Studies further indicate that high costs of consultation and investigations are the most important factors responsible for self-medication. Needless to say that there is an urgent requirement to make basic health care facilities available in all areas and strengthen and enforce existing regulations regarding OTC drugs most stringently to stop in discriminate use of drugs, which is perhaps one of the main causes of

emerging drug resistance to common anti-biotics in our country.

#### *Recommendations*

The study brings out that self-medication is common practice amongst urban communities. However, there are no health education programmes to create awareness among the masses about possible adverse effects of self-medication and the pre-cautions needed for in Self-medication.

Our pharmacies are also required to be educated about the regulations on schedule-H and H-1 drugs which are not permitted for sale over the counter and maintenance of records of all medicines sold with and without prescriptions. The pharmacists may be further advised to educate, as well as counsel the patients on the usages of medications, their doses and possible adverse reactions while dispensing the drugs.

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*Conflict of Interest:* None.

*Ethical Approval:* The study was approved by the Institutional Ethics Committee.

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