Research Article

Self Medication Use in Urban Population of Pune, Maharashtra, India

Neha Loharkar[1], Dr Yogendra Keche[2*], Dr Radha Yegnanarayan[3], Mukesh Dharma[1], Avanti Bhosale[1], Apoorva Makan[1]

[1]MBBS student, Smt Kashibai Navale Medical College and Hospital, Narhe Ambegaon, Pune, Maharashtra, India-4110411.

[2]Associate Professor, Department of Pharmacology, Smt Kashibai Navale Medical College and Hospital, Narhe Ambegaon, Pune, Maharashtra, India-4110411.

[3]Professor and Head, Department of Pharmacology, Smt Kashibai Navale Medical College and Hospital, Narhe Ambegaon, Pune, Maharashtra, India-4110411.

*Corresponding author

Dr. Yogendra Keche

Email: drynkeche@gmail.com

Abstract: This study analyzes the self medication use in Pune city and also assesses the rationality of self medication. This was a cross sectional study. With the help of semi-structured questionnaire data was collected by II MBBS students for this study. Information about the names of the self medications, diagnosis for the use of self medication, source of information for self medication use and adverse effects reported to self medications was collected. The drugs that are commonly self medicated in Pune city were: analgesics (28.68%), antibiotics (13.18%), vitamins (10.85%) and GIT ailment drugs (14.34). Apart from this, herbal drugs and skin problem drugs are predominantly self medicated in Pune city. Information about the self medication was predominantly obtained from previous prescription of doctors (62.41%) and from chemists (18.99%) and advertisement was 3rd important source of self medication in Pune (9.69%). Antibiotics self medication use was associated 29.41 % ADRs. The adverse effects reported with antibiotic self medications were: vomiting, hyperacidity, diarrhea, headache, confusion. Self medication of antibiotics was taken for less duration of time (average time in this study was less than 3 days.) and in inappropriate doses. 27.03 % adverse effects reported with NSAIDs self medication use. In conclusion, NSAIDs and GIT drugs are commonly self medicated in Pune irrespective of socio-economic / education status. Skin problem and herbal drugs are commonly self medicated in Pune. Self medication of antibiotics is disturbing, as these are liable for drug resistance and ADRs and hence should be taken under supervision only. Strict FDA regulations for dispensing of certain drugs without prescription of RMP may help in decreasing hazards of self medications. Regulation of advertisements may also help in curbing the self medication in urban areas.

Keywords: ADRs to self medication, Antibiotic self medication, NSAIDs self medication

INTRODUCTION

Self medication is "Medication that is taken on patient's own initiative or on advice of a pharmacist or lay person" [1]. Self medication or non prescription drug use is common in developing countries [2, 3]. Various previous studies concluded that self medication of non steroidal anti-inflammatory drugs (NSAIDs) is predominant [2-4]. In one study, it was reported that there was increase in reporting of adverse drug reactions (ADRs) to self medications [3]. Taking self medication without doctor's supervision can be dangerous as it may lead to dangerous drug interactions and adverse effects. Increasing cost of treatment and poor socio-economic status may increase use of self medication [2, 3].

Studies on self-medication patterns and prevalence of non-doctor prescribing in India are lacking. Hence, we undertook this study, to explore self medication pattern of drugs in urban areas of Pune, Maharashtra, India with following aims and objectives:

- To find out common self medications either single drug or fixed dose combinations (FDCs) used in Pune
- To find out the common self medications which cause ADRs (only in previously used same self medication)
- To know the common health related problems for self medication use in Pune
- To find out association of demographic factors for self medication use in Pune
- To assess the rationality of FDCs self medication as per World Health Organization (WHO) Model list of Essential Drugs, April 2013

MATERIALS AND METHODS

Study site

Data collected by II MBBS (Bachelor Medicine and Bachelor of Surgery) students of Smt. Kashibai Navale Medical College and Hospital, Narhe Ambegaon, Pune, Maharashtra, India by visiting medical shops located in urban areas like Kothrud, Pune station and Pimpri-

Chinchwad areas from which people were buying the self medication.

Study design and sampling

Cross sectional observational study. II MBBS students carried out survey in medical shops located in urban areas of Pune.

Study tools

Data collection: Semi-structured questionnaire prepared by Department of Pharmacology was used for data collection.

Information obtained: Names of self medication, Duration, Dose, Frequency of drug administration, Symptoms for which drugs were used, Sources of information for self medication:Doctor, Chemist, Neighbor, Advertisement on TV/ Newspaper, Internet or telephonic advice of doctor and Adverse effects to self medication

Rationality of FDCs self medication: assessed according to WHO Model List of Essential Drugs, 18th Edition, April 2013 [5].

Statistical analysis: As there is absence of substantial data for self medications , we had taken approximately 300 self medications as sample size. Proportions were compared between the different drug groups of self medication.

RESULTS

Demographic characteristics of self medication in Pune:

Out of total 300 self medications, we had got complete information for 258. There was no significant difference in male and female distribution in self medications. 45% self medication was taken as fixed dose combinations and 15% were rational FDCs (Table1).

Association of Socio-economic status with self medication

33% self medication was observed in income group less than INR 10000/- and 38% was observed in income group INR 10000 – 25000/- (Figure 1).

Anatomical Therapeutic Chemical (ATC) classification and Daily Defined dose (DDD) of self medications and names of ADRs

Only 500 mg-1000 mg /day dose of paracetamol was taken for relief of pain of inflammatory origin. Diclofenac 50 mg single dose or more than 150 mg /day was taken as self medication. Less than recommended doses as well as for less than 3 days antibiotic self medication was taken. Vitamins/minerals self medication are not free from the Adverse Drug Reactions (Table 2 & 3).

Table 1: Demographic characteristics of self medication in Pune

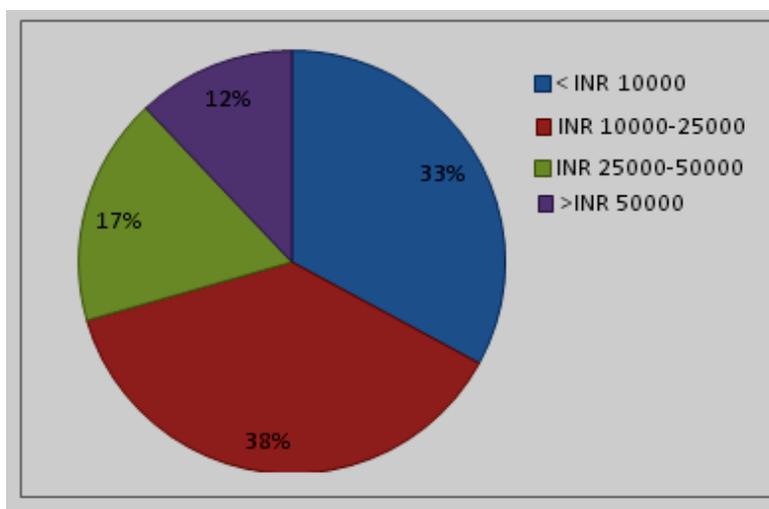| S.No.	No. / (%)
Total self medications	258 (Complete information)
Sex : Male	133 (51.55)
Female	125 (48.45)
Drugs used for self medication	
Single drug	142 (55.04)
Fixed dose combinations	116 (44.96)
Rational Combinations	17 (14.66)

Fig. 1: Association of Socio-economic status with self medication

Table 2: ATC class of self medications and ADRs

ATC class of drug group	Self medications No./ (%)	ADRs reported No./ (%)
R03 Drugs for obstructive airway disease, R05 Cough and cold preparations, R06 Antihistaminics for systemic use	22 (8.53)	4 (13.64)
N02 -Analgesics, M01-Antiinflammatory and antirhematic products, M02-Topical products for joint and muscle pain	79 (28.68)	25 (27.03)
N03 Antiepileptics, N05 Psycholeptics, A10 Drugs used in diabetes	30 (10.08)	15 (61.54)
A11 Vitamins, A12 Mineral supplements	28 (10.85)	3 (7.14)
J01- Antibacterials for systemic use, J02- Antimycotics, J04 Antimycobaterials, P02 Antiparasitics	34 (13.18)	11 (29.41)
A02-Drugs for acid related disorder, A03-Drugs for functional GIT disorder, A07-Antiddiarrhoeals, intestinal antiinflammatory/antiinfective agnets	37 (14.34)	0
Herbal preparations	15 (5.81)	0
D- dermatological preparations for hairfall, ,D10 Antiacne preparations	11(4.26)	1 (9.09)
S01 Opthalmologicals	4 (4.26)	3 (5.45)
Total	258	62 (23.26)

Table 3: ATC classification and DDD of self medications and names of ADRs

ATC code of Drugs	Name of drug	ADR Reported	No. of ADRs	DDD
N02Analgesics				
N02BE01	Paracetamol	Hyperacidity	2	3 G
N03 Antiepileptics				
N03AX12	Gabapentin	Dizziness	2	1.8 GM
N03AA02	Phenobarbitone	Dizziness	1	0.1 GM
N03AB02	Phenytoin	Headache	2	0.3 GM
N05 Psycholeptics				
N05BA12	Alprazoalm	Sedation	2	1 MG
M01 Antiinflammatory and antirheumatic products				
M01AB05	Diclofenac	Hyperacidity	4	0.1 G
M01AX17	Nimesulide	Hyperacidity	1	0.2 G
M01AE51	Ibuprofen + Paracetamol	Hyperacidity	1	3UD
		Dizziness	1	
M01AX	Mefenamic acid + Paracetamol	Hyperacidity	4	3UD
M01AB52	Diclofenac +Chymotrypsin + trypsin	Hyperacidity	2	0.1 G
M01AB55	Diclofenac +seratiopeptidase	Hyperacidity	1	0.1 G
M01AB55	Diclofenac + paracetamol	Hyperacidity	1	0.1G
M01AX	Aceclofenac + Paracetamol	Hyperacidity	1	2 UD
M01AX	Nimesulide + Paracetamol	Nausea	1	2 UD
M01AX21	Diacerin	Hyperacidity	4	-
M02 topical product for joint and muscle pain				
M02AA15	Diclofenac gel	Local burning	1	-
M02AX	Moov cream (herbal preparation)	Local burning	1	-
J01 Antibacterials for systemic use				

J01MA02	Ciprofloxacin	Hyperacidity, headache, confusion	4	1 G
J01DD08	Cefexime	Diarrhea	1	0.4 G
J01XD01	Metronidazole	Hyperacidity	1	1.5 G
J01CR	Ciprofloxacin +Tinidazole	Altered taste	1	2 UD
J01CR02	Amoxycillin + clavulenic acid	Diarrhoea	1	1 G
J02 Antimycotics				
J02AC01	Fluconazole	Pain in abdomen	1	0.2 G
J04 Antimycobaterials				
J04AM02	INH + Rifampcin	Loose motion	1	1 UD
P02 Antiparasitics				
P02CA03	Albendazole	Nausea	1	0.4 G
A10 Drugs used in diabetes				
A10BB12	Glimeperide	Vomiting	2	2 MG
A10BD02	Metformin + Glimeperide	Hyperacidity	2	1 UD
		Giddiness	3	
A10AB01	Inj Insulin	Skin rash	1	40 U
A11 Vitamins, A12 Mineral supplements				
A11EA	Vitamin B complex	Hot sensation	1	2 UD
A12AX	Calcium + vitamin D	Constipation	2	
R03 Drugs for obstructive airway disease, R05 Cough and cold preparations, R06 Antihistaminics for systemic use				
R03DA	Cough syrup	Sedation	3	3 UD
R05FA01	Cough syrup			3 UD
R05X	Cough syrup			3 UD
R06AE07	Cetrizine	Drowsiness	1	10 MG
S01 Opthalmologicals				
S01AE07	Moxifloxacin	Local burning	3	-
D10 Antiacne preparations				
D10AD01	Tretinoin	Local burning	1	-
		Total	60	

Sources of information of self medications

Initial doctor's prescription, chemist and advertisement were major sources of information for self medication use in this study (Figure 2).

Health related problems responsible for self medication use

Myalgia, joint pain, hyperacidity, wound infection, fungal infection, weakness, joint pain,acne and hairfall were common problems for which self medication had been taken (Table 4).

Adverse effects to self medications and nature of adverse effects

Total 62 ADRs to self medication in Pune area were reported in this study. Among the ADRs, least number of ADRs were reported to Paracetamol. 62.5 % self medication of Ciprofloxacin was associated with ADRs like hyperacidity, headache and confusion.

Analgesics and antimicrobial FDCs as self medication and ADRs

Analgesics FDCs accounts for 50% ADRs and antimicrobial FDCs accounts for 30 % ADRs of their respective groups (Table 5).
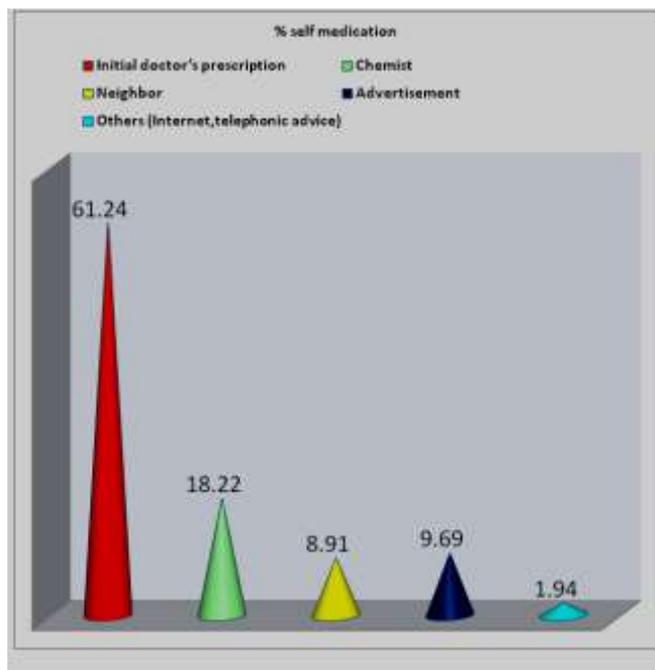
Fig. 2: Sources of information of self medications

Table 4: Diagnosis for the self medication use

Sl. No.	Diagnosis for self medication use	No. of times self medications
1	Pain symptoms/signs: Fever, myalgia, swelling, fracture pain, pain in abdomen, joint pain, neck pain, headache, dysmenorrhoea, osteoarthritis, migraine	74
2	GIT ailment Diarrhea Hyperacidity Vomiting Constipation	 13 26 2 4
3	Epilepsy	8
4	Infections :wound infection, ear infection, cellulites, urinary tract infection	10
5	Fungal infection Tinea cruris, tinea corporis	3
6	RS Common cold, throat pain, allergic rhinitis, cough	31
7	Diabetes	12
8	Hypertension	13
9	Insomnia	2
10	Anxiety	1
11	Prophylactic use: Pregnancy,Osteoarthritis,Anemia	31
12	Other TB Skin Problems- (Acne, cracks, hairfall, dandruff) Eye problem -redness, watering, glaucoma,Conjuctivitis Dyslipidemia Urinary incontinence Weakness Ear infection Motion sickness Mouth ulcer	 3 11 6 2 1 1 1 1 2

Table 5: Analgesics and antimicrobial Fixed Dose Combinations (FDCs) as self medication and ADRs

Parameters	Analgesics -No (%)	Antimicrobials -No (%)
No of different groups of FDCs taken as self medication	8	3
Total number of ADRs	20	10
ADRs reported to FDCs	12 (60)	3 (30)

DISCUSSION

Association of demographic factors for self medication use

About 71 % of self medication was observed in lower socio-economic status i.e. monthly income less than INR 25000 in urban areas. In our previous study of self medication use in rural areas of Pune [6], it was observed that 50 % self medication was found in monthly income group less than INR 10000.In developing countries like India, the poor socio-economic status, high cost of modern medicine and non availability of doctors in rural areas create problem for access for the healthcare services and may lead to increased self medication use [2].

Common health related problems leading to self medication use in Pune

Pain signs/ symptoms, hyperacidity, infections mainly wound infection and fungal infection, skin problems like acne and hairfall were common for self medication use. In our study of self medication use in rural areas, dermatological problems like acne and hairfall were not associated with self medication use [6].

Self Medication of FDCs

45 % of self medications in this study were fixed dose combinations (FDCs) and only 15 % of these were rational according WHO Model List for Essential Drugs, 2013 [5]. CIMS [7] and DRUG TODAY [8] indices of marketed drugs have listed various irrational FDC preparations in the class of analgesics, antibiotics, vitamins and minerals, GIT ailment drugs and respiratory tract drugs that are available in the Indian market [7, 8].

Relation of doctor's prescription with self medication of FDCs

In our one study [9], we found that doctors in Pune are prescribing FDCs from drug group A02- Acid related disorder, A11-vitamins, A12- mineral supplements and M01-anti-inflammatory and anti-rheumatic products.As observed in this study, initial doctor's prescription is major source of information for self medication. This is why self medication use has been increased in the form of FDCs.

Analgesic Self Medications

Analgesic fixed dose combinations accounts for 60% ADRs of analgesic self medication. All analgesics FDCs that were self medicated in this study were irrational according to WHO Model List for Essential Drugs [5].

Antimicrobials Self Medication

It was observed that self medication of antibiotics was taken for less duration of time (average time in this study was less than 3 days.) and in inappropriate doses i.e less than or more than WHO DDD. In our previous study [6] of self medication use in rural areas of Pune, similar kind of pattern was observed for antimicrobials self medication suggests no difference in use of antibiotic self medication of antimicrobial whether in urban or rural area. It was noted previously that self medication of antibiotics is associated with high resistance level [10]. We can curb self medication practice of antibiotics if it is given only on advice of prescriber, trained pharmacists and also by educating general population about self medication of antibiotics and making them aware about antibiotic resistance [10].

Vitamins / minerals Self Medication

Vitamins/ minerals fixed dose combination easily available for self medication, should not be taken unnecessarily. Self medication of vitamins / minerals only add to the expenditure bill of the patient without giving any potential benefit [11]. Misconception in the community about power booster property of vitamins need to be removed. Regulation of advertisement are needed for preventing unnecessary use of vitamins/minerals as self medication. WHO Model List for Essential Drugs includes ascorbic acid, calcium, ferrous salts, folic acid, nicotinamide, pyridoxine, retinol, riboflavin, and thiamine like vitamins and minerals as single drug formulation. The only fixed dose combination that has got place in WHO Essential Medicine List in vitamin/mineral category is of ferrous salt and folic acid [5].

Self medication drug for GIT ailments

GIT disorder drugs are commonly self medicated irrespective of urban or rural population as observed in previous studies [6, 12, 13]. 95 % persons get relief of GIT problems with self medication use [13]. Similar kind of self medication practice for analgesics, antimicrobials, respiratory tract ailment and GIT ailment drugs had been observed in variuos previous studies [2, 3, 6, 12, 14].

Role of pharmacists in self medication practices

Pharmacists can play key role by providing the patients information of warning symptoms needing

urgent medical aids and about the adverse effects [11, 13].

Sources of information for self medication

A part from previous doctor's prescription and chemists, in urban areas, advertisement is another source of information for self medications. Similar findings were observed in previous studies [11, 12]. Previous doctor's prescription and chemists are major sources of information for self medication use in rural areas [6]. Doctors are not available in time in rural areas, this might have tempted the rural population to use initial doctor's prescription for self medication [6].

CONCLUSION AND RECOMMENDATIONS

Easy availability of drugs from pharmacist, decreased cost of therapy by using self medication are major factors for increased use of self medication. NSAIDs and GIT drugs are commonly self medicated irrespective of socio-economic status. Dermatological problem and herbal drugs are also commonly self medicated in urban population of Pune. The self medication of antibiotics is disturbing, as these are liable for drug resistance and ADRs and hence should be taken under supervision only. Pharmacists should provide information about adverse effects of NSAIDs and antibiotics. Legal steps should be taken for providing information of ADRs to self medicated drugs. Strict FDA regulations for dispensing of certain drugs like antibiotics without prescription of Registered Medical Practitioners (RMP) may help in decreasing hazards of self medications. FDA should not permit manufacturing new FDCs which are outside of Essential Drug List. Regulation of advertisements may also help in curbing the self medication.

REFERENCES
1. Phalke VD, Phalke DB, Durgawale PM; Self-medication practices in rural Maharashtra. Indian J Community Med., 2006; 31(1): 34-35.
2. Shankar RR, 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.
3. Sharma R, Verma U, Sharma CL, Kapoor B; Self medication among urban population of Jammu City. Ind J Pharmacol., 2005; 37(1): 40-43.
4. Habeeb GE, Gearhart JG; Common patient symptoms: patterns of self treatment and prevention. J Miss State Med Assoc., 1993; 34(6): 179-181.
5. WHO; Model List of Essential Medicines (Adults), 18th edition, 2013.
6. Keche Y, Yegnanarayan R, Bhoyar S, Agrawal R, Chavan R, Mahendrakar P; Self medication patterns in rural areas in Pune, India. International Journal of Medicine and Public Health, 2012; 2(4): 7-11.
7. Current Index of Medical Speciality, CIMS, CMP Medica India Private Limited, Bangalore, July-Oct 2011.
8. Drug Today, volume 1 & 2, July- Sept 2011.
9. Pillay A, Keche Y, Yegnanarayan R, Patil V, Patil G, Dangare R; Evaluation of prescribing patterns of teaching and non teaching hospitals by undergraduate medical students in Pune, India. Int J Basic Clin Pharmacol., 2013; 2(1): 61-68.
10. Grigoryan L, Haaijer-Ruskamp FM, Burgerhof JGM, Mechtler R, Deschepper R, Tambic-Adrasevic A *et al.*; Self medication with Antimicrobial Drugs in Europe. Emerging Infectious Diseases, 2006; 12(3): 452-459.
11. Greenhalgh T; Drug prescription and self – medication in India : An exploratory survey. Social Science and Medicine, 1987; 25(3): 307-318.
12. Keche Y, Patil D; Self Medication Use in Nagpur City, Central India. Inventi Impact: Pharmacy Practice, 2010; 1(1): 22-24.
13. Mehuys ELs, Bortel LV, Bolle LD, Tongrlen IV, Remon JP, Loos DD; Self-Medication of Upper Gastointestinal Symptoms: A Community Pharmacy Study. The Annals of pharmacotherapy, 2009; 43(5): 890-898.
14. Balbuena FR, Aranda AB, Figueras A; Self medication in older urban Mexicans : an observational, descriptive, cross sectional study. Drugs Aging, 2009; 26(1): 51-60.