WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.045
Volume 3, Issue 4, 726-733. Research Article ISSN 2277 – 7105

SELF MEDICATION OF ANTIMICROBIALS AND EXPLORING AWARENESS OF ADRS TO SELF MEDICATION OF ANTIMICROBIALS IN PUNE, MAHARASHTRA, INDIA

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Article Received on
01 April 2014,

Revised on 22 April 2014,
Accepted on 15 May 2014

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ABSTRACT

Objective: To find out self medication pattern of antimicrobials in Pune. **Methods:** II MBBS students collected the information of names of antimicrobials self medication, dose, frequency of administration, health related problem for use of self medication, source of information of self medication and information about ADRs with the help of semi-structured questionnaire. Students also educated the population about ADRs to antimicrobial with the help of ADR checklist. Medical shopkeeper's knowledge about ADRs and reasons for not providing information of ADRs to population had been explored. **Results:** Macrolides and fluroquinolones were commonly self medicated in Pune and fluroquinolones groups caused ADRs in about 66 %. Drugs like levofloxacin, roxithromycin, ampicillin were taken less than WHO DDD and some antimicrobials were taken less than 3 days period. 70-80% population was ignorant about ADRs to antimicrobials. About 85 % medical shopkeepers did not provided information of ADRs to self medication and lack of time was observed as major reason for this. **Conclusions:** Strict FDA regulations for dispensing of antibiotics strictly with prescription of RMP may help in decreasing hazards of antimicrobial self medications like adverse effects and development of resistance.

KEYWORDS: *Self medication of antibiotics, antibiotic resistance, ADRs to antimicrobial self medication*

INTRODUCTION

Self medication can be defined as the use of drugs to treat self diagnosed disorders or symptoms, or the intermittent or continued use of prescribed drug for chronic or recurrent disease or symptoms.[1] Grigoryan et al.[2] studied the self medication of antimicrobial use in Europe and observed that improper use of antimicrobial self medication leads to adverse drug reactions and development of resistance. In developing countries like India, easy availability of a wide range of drugs coupled with inadequate health services result in increased proportions of drugs used as self medication compared to prescribed drugs thus resulting into impending health problems like irrational use of antimicrobials resulting into antimicrobial resistance, increased load of mortality and morbidity and economic loss.[3] The high prevalence of resistant bacteria seems to be associated with irrational antimicrobial usage: 1) easy availability without prescription at drug stores, 2) injudicious use in hospitals, and 3) uncontrolled use in agriculture, animal husbandry, and fisheries.[4] Many traditional practitioners are using allopathic drugs irrationally.[4] In many developing countries the use of antimicrobial drugs for treating people and animals is unregulated; antibiotics can be purchased in pharmacies, general stores, and even market stalls.[5] Self medication of antibiotics is common problem for both developing as well as developed countries, in which the point prevalence ranges from 3% to 75%.[6] In a study, in India prevalence of self medication was found 18% in Kerala state in year 2000.[7] As such, very few studies have been carried out to study self medication pattern of antimicrobials in India. Hence, this study was planned to find out the pattern of different antimicrobial self medication use in India.

Aims and Objectives

- To find out commonly used antimicrobial as single drug or FDCs as self medication in Pune.
- To find out antimicrobials self medication which cause ADRs.
- To find out common health related problems for the use of self medication of antimicrobials.
- To study the knowledge of adverse effects to antibiotics among the patients and educate them about adverse effects of antibiotics with the help of ADR checklist.

- To find out reasons for not providing information of ADRs to antibiotics self medication by pharmacists
- To find out association of antibiotics self medication with demographic factors.

MATERIALS AND METHODS

For this cross sectional observational study, data was collected by MBBS students of a medical college in Pune by visiting different medical shops where the persons were buying antimicrobials without prescription. Semi-structured questionnaire was used for the data collection.

Information obtained was

1) Name of antimicrobials self medication, duration, doses, frequency of drug administration and health related problem for use of antimicrobials.

2) Sources of information.

3) Adverse drug reactions(ADRs) to antimicrobials observed by self medicating persons. Students asked the participants and chemists and information regarding knowledge of ADRs to antimicrobials. Students also educated the participants about ADRs to antimicrobial with the help of ADR checklist. Whether chemist were providing information regarding ADRs to antimicrobial and reasons if not providing information of ADRs were also noted. Rationality of fixed dose combinations (FDCs) self medication was assessed according to WHO Model List of Essential Drugs, 18th Edition(2013).

RESULTS

85 % antibotics self medication taken as single drug formulation and 58 % self medication of antibiotics was seen in higher educated population(Table1). Self medication practices in this study was observed more (67%) in persons having monthly income less than INR 10000. Macrolides (34 %) and fluroquinolones (24 %) are commonly self medicated in Pune and fluroquinolones self medication had caused ADRs in 66.67 % (Figure 1). Upper respiratory tract infection (66 %) was common health problem for which self medication of antimicrobials was taken. Upper respiratory tract infection (URTI), urinary tract infection (UTI), diarrhea, worms, fungal infections, skin infections, eye infections, fever, tuberculosis (TB), genital infections were other diagnoses for which self medication of antimicrobials was taken. Initial doctor's prescription (73.33 %) and chemists (18.89 %) are major sources of information of self medication of antimicrobials. None of self medication of antimicrobial

was taken from advertisement. After inquiry of study participants and chemists about ADRs to antimicrobials, 79 % study population was ignorant about ADRs to antimicrobial self medication and 85 % medical shopkeepers do not provide information about ADRs to self medication. Lack of time was major reason for not providing information of ADRs. (Figure 2). Table 2 shows ATC (Anatomical Therapeutic Classification) and DDD (Daily Defined Dose) as per WHO index[8]. Different codes to different drugs and different had been assigned. The tables shows ADRs like nausea, diarrhea and anorexia had been reported commonly. Drug like levofloxacin, roxithromycin, ampicillin were taken less than WHO DDD whereas azithromycin and albendazole were taken more than WHO DDD. Some antimicrobial were taken for less than 3 days (Table 2).

Tables And Figures

Table 1: Demographic characteristics antimicrobial self medications

S.No.	**No. / (%)**
Total number of self medications	90
Sex : Male Female	50 (55.56) 40 (44.44)
Drugs used for self medication Single drug Fixed dose combinations Rational Combinations	 73(81.11) 17 (18.89) 11(64.71)
Education levels Illiterate Primary school Secondary school Higher secondary University degree & postgraduate	 2(2.22) 3 (3.33) 9 (10) 24 (26.67) 52. (57.59)

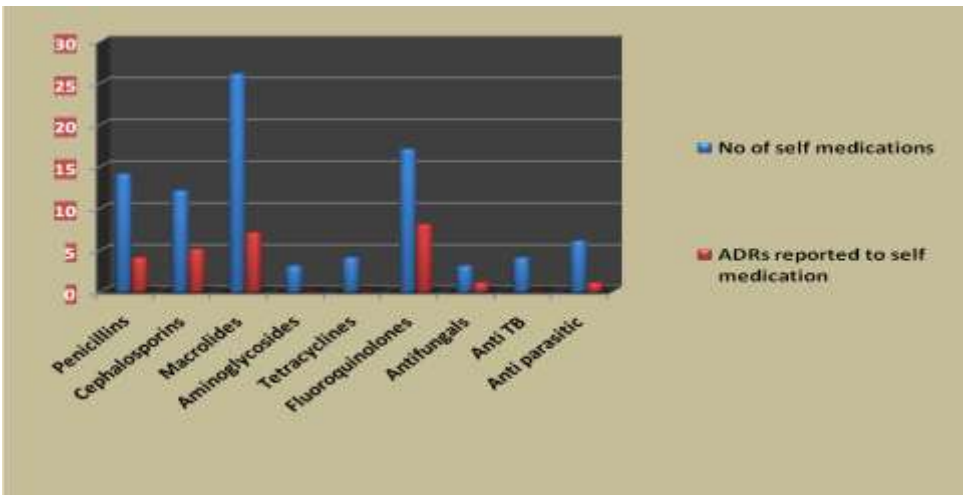


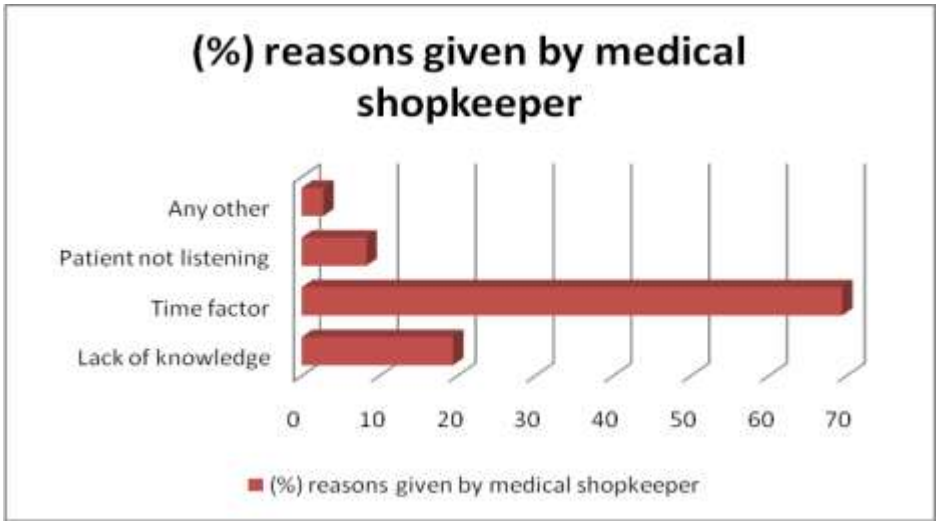
Figure 1: Drug groups of antimicrobial and ADRs reported to self medications

Table 2: Diagnosis for self medication use and ADRs to antimicrobial self medication.

ATC Code of the drug	Names of the drug	Diagnosis for self medication use	DDD	ADRs reported to self medication
J 01 Antibacterial for systemic use				
J01CAD4	Amoxycillin	URTI	1 gm	Nausea
J01CA01	Ampicillin		2 gm	Diarrhea, epigasrtic pain
J01CR02	Amoxycillin + clavulenic acid	URTI	1 gm	Diarrhea
J01DD08	Cefexime	URTI	0.4 gm	Diarrhea-2, nausea
	Cefexime+ Pot Clavulenate	URTI		Nausea
J01DD13	Cepfodoxime	URTI	0.4 gm	Abdominal pain
JO1FA 10	Azithromycin	Sinusitis URTI Skin infection	0.3 gm	Anorexia dizziness
J01FA06	Roxithromycin	URTI	0.3 gm	Nausea-2
J01FA01	Erythromycin	URTI	1 gm	Nausea-2 Abdominal discomfort
J01MA12	Levofloxacin	URTI	0.5 gm	Dizziness, nausea
J01MA06	Norfloxacin	Diarrhea UTI	0.8 gm	Anorexia
J01MA02	Ciprofloxacin	UTI	1 gm	Nausea
J01MA51	Ofloxacin + Tindazole	Diarrhea	2 UD	
J01MA52	Ciprofloxacin + Tinidazole	URTI	2 UD	Bad taste, nausea Dry mouth Headache
J01EE01	Co-trimoxazole	Diarrhea	2 UD	Rash
J01AA07	Tetracycline	Skin infection	1 gm	nausea
S01A Antinfectives for opthlalogical use				
S01AA12	Tobramycin	Eye infection		-
D 01 Antifungals for topical use				
D01AC08	Ketoconazole	Fungal infection		-
DA01AC52	Miconazole + Gentamicin	Fungal infection		Local irritation
P02 Anti parasitics for systemic use				
P 02CA03	Albendazole	Worms	0.4 gm	-

URTI- upper respiratory tract infection, UTI- urinary tract infection

Figure 2: Different reasons given by shopkeepers for not providing information of ADRs to self medication



DISCUSSION

Why self medication of antimicrobials? The common reasons for acquiring self medication of antimicrobials in different studies observed were:1) less expensive as compared to medical care[2] 2) long delay in hospital care 3) previous successful use of antimicrobial self medication and 4) least given reason was inaccessibility of hospitals.[2,9]

The most common reasons for self-medication were colds and upper respiratory tract symptoms which are self-limiting and mostly caused by viruses. This inappropriate use may contribute to antibiotic resistance.[2] In Indonesia like countries, implementation of program known as Monitoring, Training and Planning (MTP) for improving rational prescription for upper respiratory tract infection (URTI) decreased antibiotics prescription for URTI.[6] Pharmacy personnel tend to be businessman rather than professionals as they are dispensing antimicrobials to patients without any question and not refusing antimicrobial dispensing without prescription. As all these are Schedule 'H' drugs, these should not be accessible to general public easily and should only be accessible to health workers only.[10] In Chile, Chilean Ministry of Health has strictly restricted the purchase of antibiotics without prescription of medical practitioners since 1999, resulted in 43% decrease in antibiotics use in outpatient settings.[11] Strict regulatory requirements is necessary developing countries like India for control of self medication of antimicrobials. 79 % Study population was ignorant about the ADRs to antimicrobial and 85 % shopkeepers are not telling about ADRs, mostly due to the time factor. In a study in Ghana[9],41% respondents were not aware of adverse health problem like antimicrobial resistance with repeated use of antimicrobial as self

medication. Population education and using leaflets in bold letters giving information about adverse health effect like antimicrobial resistance and can help in curbing self medication of antimicrobials.[9,12,13] Initiative like Indonesia to provide adequate information related to self medication including antimicrobials by pharmacists should be taken in developing countries like India, this may be helpful to improve quality of health care service in India.[6]

It was observed in this study, that most of the respondents had taken antimicrobials less than WHO DDD[8], for less duration and inadequate frequency which may lead to increased drug resistance. Donkar et al.[9] in their study also observed that 49 % respondents had not taken full course of antimicrobials. Population education about the importance of dose, duration and frequency of drug administration to be given to persons who are taking self medication of antimicrobials. Pharmacy personnel could play crucial role in controlling the problem of irrational use of antimicrobials.[9] limitation of this study is that as we had specifically selected antimicrobial self medicating study participants, we could not get many more participants for this study.

CONCLUSIONS

Macrolides and fluroquinolones are commonly self medicated in Pune and URTI is common problem for self medication of antimicrobials. Pharmacists should provide information about adverse effects of antibiotics. Legal steps should be taken for providing information of ADRs to self medicated drugs. Educational interventions like flow charts, newsletters, bulletins to prescriber and educational campaign for patients on antibiotic use, their uses and limitations may have crucial role in preventing antibiotic self medication. Strict FDA regulations for dispensing of antibiotics strictly with prescription of RMP may help in decreasing hazards of antimicrobial self medications.

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