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Research Article

IRRATIONAL USE OF OVER-THE-COUNTER DRUGS: A PILOT STUDY AT COMMUNITY PHARMACIES

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ABSTRACT

Increasing medical expenses in healthcare setup attract economic class public to opt self-care for minor ailments. Public often approach community pharmacist for self-care as they are easily reachable, knowledgeable and dispense drugs in accordance with legal and ethical permission, either on prescription or as over-the-counter. Lack of knowledge of pharmacists on over-the-counter drugs leads to irrational use which may significantly contributes to adverse effects and increases the cost of the therapy. Hence the present study was carried out with an aim to analyse the irrational use of over-the-counter drugs in community pharmacies in and around Bhavani and Komarapalayam town. The study included 103 pharmacists and the result revealed following (a) None of the pharmacist prefer topical formulations containing counter irritant and non steroidal antiinflammatory drug for back pain and join pain which may requires lesser dose, targets the site of action and produce less adverse effects compared to drugs given in oral route (b) Non sedative antihistamines such as Levocetirizine, Fexofenadine and Ebastine were less preferred by the pharmacists for running nose, (c) Pharmacists prefer antibiotics for cough, wound care, throat pain, acute diarrhea and mouth ulcers than the recommended over-the-counter drugs which may leads to irrational use of antibiotics which inturn leads to drug resistance, adverse effects and increases the cost of the therapy. The study concludes that pharmacists in and around Bhavani and Komarapallayam lack adequate knowledge on over-the-counter drugs for some common ailments which may hamper the quality of service in the management of self care. Community pharmacists should upgrade their knowledge in the management of common ailments to provide a better quality service to common public.

Keywords: Over-The-Counter Drugs, Community Pharmacy, OTC, Irrational drug use

INTRODUCTION

Increasing medical expenses in healthcare setup attract economic class public to opt self-care for minor ailments. Public often approach community pharmacist for self-care as they are easily reachable, knowledgeable and dispense drugs in accordance with legal and ethical permission, either on prescription or as Over-The-Counter (OTC)[1]. Drugs other than in schedule H, X and G are generally referred as OTC drugs which are legally allowed to sell without the prescriptions. OTC drugs are essential part of affordable healthcare system which is safe, cost-effective, and convenient. OTC drugs not only treats the symptoms of common ailments, but also helps in preventing number of serious illnesses and provides enhanced quality of life. On the other hand, lack of knowledge of pharmacists on OTC drugs leads to irrational use which significantly contributes to adverse effect and increases the cost of the therapy[2-4, 16].

Hence the present study was carried out with an aim to analyse the irrational use of OTC drugs in community pharmacies in and around Bhavani and Komarapalayam town.

MATERIALS AND METHODS

The study was carried out in community pharmacies in and around Bhavani and Komarapalayam town. Pharmacists working in community pharmacies were included in the study based on inclusion criteria.

Inclusion criteria and exclusion criteria

Inclusion criteria: Male or female pharmacy graduates (D.Pharm/ B.Pharm/ Higher degree in Pharmacy) with at least 1 year experience as pharmacist.

Exclusion criteria: Helpers working in community pharmacies without a pharmacy qualification.

Data collection

Pharmacists included in the study were interviewed using a well-designed 'Interview Questionnaire Form'. The questionnaire was organized under two sections. The first section focused on the general information about the pharmacists and the second section focused on OTC drug treatment. A brief introduction about the study and participant written informed consent section were also included in the questionnaire. Written informed consent was obtained from the participants prior to start of study related interview. Questions unanswered by the participants were left blank and participants denied to answer a question were scored off.

RESULTS AND DISCUSSION

The study included 103 pharmacists who were selected based on inclusion criteria. Pharmacists in the study were interviewed and the collected information were compiled, analyzed and discussed below. None of the participant denied or unanswered a question.

Participant's General Information

Study included 68 male and 35 female pharmacists and around 44 % of them were in the age group of 21 - 30 years. Pharmacists in the study either had a D.Pharm (83.50 %) or B.Pharm (16.50 %) as qualification. About 44 % of pharmacists had > 01 year but less than 5 years of experience as pharmacist. Summary of participant's general information are listed in table 1.

Table 1: Summary of participant's general information

General Information	Pharmacists
Gender	
Male	68 (66.02 %)
Female	35 (33.98 %)
Age Group (In Years)	
18 - 20	00 (00.00 %)
21 - 30	45 (43.69 %)
31 - 40	36 (34.95 %)
41 - 50	22 (21.36 %)
Qualification	
D.Pharm	86 (83.50 %)
B.Pharm	17 (16.50 %)
Experience (In Years)	
> 01 - 05	45 (43.69 %)
> 05 - 07	41 (39.81 %)
> 07 - 10	12 (11.65 %)
> 10 - 15	05 (04.85 %)

Prevalence of OTC drug treatment at community pharmacies

On an average about 38 % pharmacists have reported that around 21 - 30 patients would approach them for OTC drug treatment every day. Almost all pharmacists reported that back pain and joint pain are the most prevalent symptoms at community pharmacies for OTC drug treatment. Other symptoms which are encountered by pharmacist are listed in table 2.

Table 2: Prevalence of OTC drug treatment

Prevalence	Pharmacists
Number of OTC cases per day	
01 - 10	015 (014.56 %)
11 - 20	028 (027.18 %)
21 - 30	039 (037.86 %)
31 - 40	019 (018.45 %)
41 - 50	002 (001.94 %)
Symptoms	
Back Pain and Joint Pain	103 (100.00 %)
Runny Nose	094 (091.26 %)
Head Ache	092 (089.32 %)
Cough	089 (086.41 %)
Fever	073 (070.87 %)
Wound Care	050 (048.54 %)
Skin Problem	043 (041.75 %)
Throat infection/ sore throat	034 (033.01 %)
Diarrhea	027 (026.21 %)
Vomiting	022 (021.36 %)
Acidity	018 (017.48 %)
Eye Infection	016 (015.53 %)
Tooth Pain	011 (010.68 %)
Difficult to Breath	010 (009.71 %)
Constipation	010 (009.71 %)
Mouth Ulcer	008 (007.77 %)

Back pain and Joint pain

Around 80 % of the population has been estimated to report low back pain at some point in their life which may be due to heavy physical work load, frequent lifting, extreme sports activities, frequent bending and twisting. Acetaminophen and Non-Steroid Anti-Inflammatory Drugs (NSAIDs) are the first line of drugs for the treatment of back pain and joint pain[5-7]. The most appropriate treatment for back pain and joint pain would be topical formulation containing counter irritant and NSAIDs as it requires lesser dose, targets the site of action and produce less adverse drug reaction compared to oral route but none of the pharmacists preferred the topical formulations. In case of oral drug treatment, Acetaminophen is cost effective and safer drug of choice for back pain and joint pain but the present study has revealed that none of the pharmacists prefer acetaminophen as a mono therapy. However, around 5 % of pharmacists prefer acetaminophen along with Aceclofenac to extract maximum benefit. Around 41 % pharmacists prefer Aceclofenac than other NSAIDs. Administration of oral steroid medication in patients with acute back pain may lead to slightly more rapid improvement in pain and mental well-being[8]. In the study, around 2 % pharmacists preferred prednisolone for the treatment of back pain. However, long term use of oral steroids may result in serious adverse effects. Pharmacist's preferred OTC drug treatment for back pain and joint pain are summarized in table 3.

Table 3: OTC drug treatment of back pain and joint pain

OTC Drug Treatment	Pharmacist
Aceclofenac 100 mg Tablets	42 (40.78 %)
Diclofenac Sodium 50 mg /100 mg Tablets	22 (21.36 %)
Nimesulide 100 mg Tablets	12 (11.65 %)
Ibuprofen 200 mg / 400 mg Tablets	18 (17.48 %)
Indomethacin 25 mg / 50 mg Tablets	02 (01.94 %)
Acetaminophen 500 mg + Aceclofenac 100 mg Tablets	05 (04.85 %)
Prednisone 5 mg Tablets	02 (01.94 %)

Runny Nose

Runny nose is most prevalent symptom of common cold (caused by viral infectious disease caused mostly by rhinoviruses and corona viruses) and influenza (caused by influenza virus type A, B and C). Chlorpheniramine maleate, Diphenhydramine and Cetitrizine are used to reduce sneezing, runny nose and watery eyes[9]. The present study has revealed that around 77 % pharmacists prefer Cetrizine hydrochloride than other antihistamines which are listed in table 4. The major concern with Cetrizine hydrochloride is sedative effect which limits the use of drug in day time. Non-sedative antihistamines such as Levocetirizine, Fexofenadine and Ebastine were less preferred by the pharmacists.

Table 4: OTC drug treatment of runny nose

OTC drug treatment	Pharmacist
Cetirizine hydrochloride 5 mg tablets	81 (76.70 %)
Chlorpheniramine maleate 4 mg tablets	10 (09.71 %)
Diphenhydramine 25 mg/ 50 mg tablets	07 (06.80 %)
Levocetirizine 5 mg tablets	03 (02.91 %)
Fexofenadine 120 mg tablets	02 (01.94 %)
Ebastine 10 mg/ 20 mg tablets	02 (01.94 %)

Headache

Headache is as diffuse pain in various parts of the head, with the pain not confined to the area of distribution of a nerve[10]. Risk factor of headache are stress**,** certain fruits (avocado, papaya, pineapple, raspberries, strawberries), certain vegetables (raw garlic, lentils, mushrooms, olives, onions), certain dairy products (sour cream, yogurt, cheese), red wine and certain food additives (tyrosine, tyramine, monosodium glutamate are also responsible for triggering a headache, seasonal changes, sleep deprivation, sex, poor posture, dehydrated or have not received proper nutrition, hormonal changes, cold foods, medication and smoking. Acetaminophen and NSAIDs are the first line of therapy for headache. The present study has revealed that around 48 % pharmacists prefer Acetaminophen and 41 % pharmacists prefer Ibuprofen than other NSAIDs. List of drugs preferred by pharmacists for headache are listed in table 5.

Table 5: OTC drug treatment of head ache

OTC drug treatment	Pharmacist
Acetaminophen 500 mg Tablets	49 (47.57 %)
Ibuprofen 100 Mg/ 200 mg Tablets	42 (40.78 %)
Aspirin Tab 325 Mg/ 650 mg Tablets	07 (06.80 %)
Naproxen 250 Mg/ 500 mg Tablets	03 (02.91 %)
Mefanamic Acid 250 mg Tablets	02 (01.94 %)

Cough

Coughing is a reflex that keeps your throat and airways clear. Coughs can be acute (less than 3 weeks), sub acute (between 3 to 8 weeks) or chronic (more than 3 weeks). The most common causes of an acute cough include common cold, acute sinusitis, whooping cough, allergic rhinitis. Conventional OTC cough medicines include antitussive, mucolytic, antihistamines, antihistamine with decongest[11]. The present study has revealed that almost all pharmacists prefer antibiotics (which are listed in table 6) than the recommended OTC drugs which may leads to irrational use of antibiotics which inturn leads to drug resistance, adverse effects and increases the cost of the therapy.

Table 6: OTC drug treatment of cough

OTC drug treatment	Pharmacist
Amoxicillin 250 mg capsules	13 (12.62 %)
Ciprofloxacin 250 mg/ 500 mg tablets	12 (11.65 %)
Doxycycline 100 mg/ 200 mg capsules	12 (11.65 %)
Diphenhydramine hydrochloride 25 mg tablets	11 (10.68 %)
Ampicillin 125 mg + cloxacillin 125 mg capsules	10 (09.71 %)
Roxithromycin 150 mg/ 300 mg tablets	10 (09.71 %)
Ofloxacin 400 mg tablets	08 (07.77 %)
Cefpodoxime 400 mg tablets	08 (07.77 %)
Ambroxol 30 mg tablets	07 (06.80 %)
Dextromethorphan 10 mg tablets	07 (06.80 %)
Codeine phosphate 30 mg tablets	05 (04.85 %)

Fever

Fever is a sign characterized by an elevation of temperature above the normal range of 36.5 - 37.5 °C (98 - 100 °F). Acetaminophen and NSAIDs such as Ibuprofen are the first line of drugs for the treatment of fever[12]. The present study has revealed that around 74 % pharmacists prefer Acetaminophen. NSAIDs preference for the treatment of fever is less than 11 %. Summary of drugs preferred by pharmacists for fever are listed in table 7.

Table 7: OTC drug treatment of fever

OTC drug treatment	Pharmacist
Acetaminophen 500 mg/ 650 mg tablets	76 (73.79 %)
Ibuprofen 100 mg/ 200 mg tablets	11 (10.68 %)
Ketoprofen 100 mg/ 200 mg tablets	08 (07.77 %)
Naproxen 250 mg, 500 mg tablets	06 (05.83 %)
Mefanamic acid 250 mg/ 500 mg tablets	02 (01.94 %)

Wound care

Skin protects the body from infection however; Wound (breaks in the skin) which occurs through punctures, abrasions and lacerations leads to infection[13]. In general, antiseptics and antibiotics prevent the growth of microorganism at the site of wound and enhance the natural healing process. All most pharmacists prefer oral antibiotics rather than topical preparations and wound dressing which may leads to irrational use of antibiotics which inturn leads to drug resistance, adverse effects and increases the cost of the therapy. Summary of drugs preferred by pharmacists for wound care are listed in table 8.

Table 8: OTC drug treatment of wound care

OTC drug treatment	Pharmacist
Ciprofloxacin 250 mg/ 500 mg tablets	41 (39.81 %)
Amoxicillin 250 mg/ 500 mg capsules	18 (17.48 %)
Ofloxacin 400 mg tablets	11 (10.68 %)
Penicillin v potassium 250 mg tablets	10 (09.71 %)
Chloramphenicol 250 mg capsules	10 (09.71 %)
Ampicillin 250 mg capsules	07 (06.80 %)
Amoxicillin 250 mg + Clavulanic acid 125 mg tablets	06 (05.83 %)

Throat infection/ Sore throat

Sore throat is caused by an infection of the pharynx. Some of the common causes are common cold, breathing through the mouth continually, influenza, viral pharyngitis, strep throat infection, draining from sinuses and inhalation of irritating chemical fumes or smoke. Lozenges are the most commonly used OTC products for the treatment of sore throat pain. There are 3 main types: lozenges with a weak topical anaesthetic, lozenges with menthol, and unmedicated lozenges. However, most pharmacists prefer antibiotics than lozenges. None of the pharmacists prefer lozenges and all pharmacists prefer oral antibiotics which may leads to irrational use of antibiotics which inturn leads to drug resistance, adverse effects and increases the cost of the therapy. Summary of drugs preferred by pharmacists for throat pain are lis ted in table 9.

Table 9: OTC drug treatment of throat pain

OTC drug treatment	Pharmacist
Erythromycin 250 mg/ 500 mg tablets	51 (49.51 %)
Roxithromycin 250 mg/ 500 mg tablets	20 (19.42 %)
Azithromycin 250 mg/ 500 mg tablets	13 (12.62 %)
Clarithromycin 250 mg tablets	11 (10.68 %)
Tetracycline 250 mg tablets	08 (07.77 %)

Diarrhea

In general, acute diarrhea can be treated by OTC antidiarrheal products such as loperamide or bismuth salicylate in combination with oral rehydration therapy. The present study shows that about 40 % pharmacists prefer loperamide. However, few pharmacists also prefer antibiotics for acute diarrhea which may be irrational[14]. Summary of drugs preferred by pharmacists for diarrhea are listed in table 10.

Table 10: OTC treatment of diarrhea

OTC drug treatment	Pharmacist
Loperamide 2 mg tablets	41 (39.81 %)
Tinidazole 300 mg tablets	18 (17.48 %)
Diphenoxylate 2.5 mg + atropine 0.025 mg tablets	11 (10.68 %)
Metronidazole 100 mg + norfloxacin 100 mg tablets	10 (09.71 %)
Bismuth subsalicylate 262 mg tablets	10 (09.71 %)
Attapulgite 350 mg , 150 mg powder	07 (06.80 %)
Ciprofloxacin 500 mg tablets	06 (05.83 %)

Vomiting

Emesis is thought to be a complicated defence response secondary to a variety of different mechanisms. Primary cause of nausea and vomiting are mechanical obstruction, motility disorders, peritoneal irritation, infection, topical gastrointestinal irritants, cardiac disease, urologic disease etc[4]. In the present study, around 50% pharmacists prefer Domperidone for vomiting. Summary of drugs preferred by pharmacists for vomiting are listed in table 11.

Table 11: OTC drug treatment of vomiting

OTC drug treatment	Pharmacist
Domperidone 10 mg tablets	51 (49.51 %)
Ondansetron 4 mg tablets	33 (32.03 %)
Doxylamine succinate 10 mg tablets	05 (04.85 %)
Promethazine 10 mg tablets	05 (04.85 %)
Metoclopramide 12 mg tablets	05 (04.85 %)
Chlorpromazine 25 mg tablets	04 (03.88 %)

Mouth ulcer

Prevalence of mouth ulcers (aphthous ulcers) is common and estimated to about 20 %. The primary cause of mouth ulcers is unknown however, genetic predisposition play a significant role. About 40 % of people with recurrent mouth ulcers have a family history of oral ulceration. Treatments available for mouth ulcers are topical anti-inflammatory such as hydrocortisone sodium succinate, triamcinolone acetonide 0.1 %, Benzydamine hydrochloride and preparations containing combinations of anaesthetic, analgesic, antimicrobial and astringent ingredients[15]. The present study shows that pharmacists prefer antibiotic (around 18 - 41 %) than the appropriate OTC drug treatment. Antibiotics for mouth ulcers may be irrational. Summary of drugs preferred by pharmacists for mouth ulcers are listed in table 12.

Table 12: OTC drug treatment of mouth ulcer

OTC drug treatment	Pharmacist
Ciprofloxacin 250 mg/ 500 mg tablets	42 (40.78 %)
Ofloxacin 400 mg tablets	28 (27.18 %)
Erythromycin 250 mg/ 500 mg tablets	19 (18.45 %)
Thiamine hydrochloride100 mg tablets	05 (04.85 %)
Niacinamide 100 mg tablets	03 (02.91 %)
Clotrimazole gel	03 (02.91 %)
Chlorhexidine gluconate mouth wash	03 (02.91 %)

CONCLUSION

The study was carried out in community pharmacies in and around Bhavani and Komarapalayam town which included 103 pharmacists. The study result revealed following (a) The most appropriate treatment for back pain and joint pain would be topical formulation containing counter irritant and NSAIDs as it requires lesser dose, target the site of action and very less adverse drug reaction compared to oral route but none of the pharmacists preferred the topical formulations, (b) Non sedative antihistamines such as Levocetirizine, Fexofenadine and Ebastine were less preferred by the pharmacists for running nose, (c) Pharmacists prefer antibiotics for cough, wound care, throat pain, acute diarrhea and mouth ulcers than the recommended OTC drugs which may leads to irrational use of antibiotics which inturn leads to antibiotic drug resistance, adverse effects and increases the cost of the therapy. The study concludes that pharmacists in and around Bhavani and

Komarapallayam lack adequate knowledge on over-the-counter drugs for some common ailments which may hamper the quality of service in the management of self care. Community pharmacists should upgrade their knowledge in the management of common ailments to provide a better quality service to common public.

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