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Review Article

A REVIEW ON CONSEQUENCES OF SELF MEDICATION

V.K.Thamanna*[1], K. Sreejith[2], Subanthu Arya[3], M.Salim Asna[4], Paul Kiran Mary[5], Sabnam Maziya[6]

[1,2,3,4,5,6] **Department of Pharmacy Practice, College of Pharmaceutical Sciences, Govt. Medical College, Kozhikode, Kerala, India**

Address for Correspondence: V.K.Thamanna, Department of Pharmacy Practice, College of Pharmaceutical Sciences, Govt. Medical College, Kozhikode, Kerala, India

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Abstract:
Use of drugs without medical guidance may lead to problems like inappropriate, incorrect, or undue therapy, missed diagnosis, delays in appropriate treatment, pathogen resistance and increased morbidity. Studies shows that self medication practice is common for disease conditions like headache, common cold, fever, cogh and respiratory infections. Self medication should be considered as an emerging problem because there are occurances of a lot of risks. dispensing modes of OTC drugs needs to be improved through proper education, strict managerial and regulatory strategies.

Keywords: OTC drugs, SMP (self medication practice), antibiotic resistance, OTC drug abuse

Introduction:

Self medication is the practice of using drugs without doctor's prescription. Nowadays this behavior is growing widely among people and the prevalence is high. Use of drugs without medical guidance may lead to problems like inappropriate, incorrect, or undue therapy, missed diagnosis, delays in appropriate treatment, pathogen resistance and increased morbidity. Promoting judicious and safe use of drugs is necessary to avoid the emerging microbial resistance issues. If a patient is taking number of drugs simultaneously, then the probability of prejudicial drug-drug interaction expected to increase exponentially[1].

Incase of developing countries like India, consequences of self medication is high because even antibiotics are available without a doctor's prescription[2]. Otc taking behavior is currently emerging among adults also due to easy access to internet, ready access to drug, knowledge of drugs , low perception of risk associated with the use of drugs and level of education. Self medication practice (SMP) causes problems like drug resistance, drug side effects, wastage of resources, serious health hazards and even death[3].

Studies shows that self medication practice is common for disease conditions like headache, common cold , fever, cogh and respiratory infections. Reasons which leads to SMP are due to previous experience, mildness of disease, lack of time to consult health professionals and cost effectiveness of drug therapy[4]. However in India, availability of reliable information about proper handling and utilization of self medication is inadequate. There are many factors that affect SMP like sociodemographic factors like sex, age, monthly income, religion, marital status, years and field of study etc. Main sources of OTC drugs are from community pharmacies, drug stores, unused drugs stored at home, friend and relatives and literatures[5].

COMMONLY USED OTC DRUGS

Commonly list of drugs used for self medication mainly includes cough and cold preparations, analgesics, antipyretics, antibiotics, antacids, antiseptics, multivitamins and other complimentary medicines. But these may cause potential risks such as incorrect diagnosis and choice of therapy, failure to recognize pharmacological risks, causing adverse effects, interactions and dependence, incorrect route of administration, risk of abuse and incorrect storage of drugs[6][7].

CONSEQUENCES OF SELF MEDICATION

Non responsible practice of self medication may leads to incorrect self diagnosis, delays in seeking medical advice when needed, infrequent but severe adverse reactions, dangerous drug interactions, incorrect manner of administration, incorrect dosage, incorrect choice of therapy, masking of severe disease and risk of dependence and abuse. SMP is greater risk among elderly patients due to ploypharmacy and concurrent disease conditions.so greater care and monitoring should be given to special population patients[8][9].

COUGH AND COLD PREPARATIONS

Mainly cough and cold preparations include antihistamines (sedating and less sedating), decongestants, cough suppressants, expectorants and combinations of expectorants and suppressants[10]. They potentially causes pharmacodynamic and pharmacokinetic interactions with other prescription drugs. Examples of pharmacodynamic interactions include:

- OTC decongestants with SSRIs causes irritability, insomnia, blood pressure effects
- Sedative antihistamines with SSRIs causes sedation,drowsiness and blood pressure effects
- Pseudoephedrine with TCAs causes irritability, insomnia , blood pressure effects, pseudoephedrine opposes the effects of TCA on sleep
- Phenylephrine with TCA causes blood pressure effects
- Sedating antihistamines with TCA causes sedation, drowsiness,drymouth , blurred vision and constipation
- Decongestants with antihypertensives causes blood pressure effects
- Decongestants with antiepileptics causes lowers seizure threshold.
- Antihistamine with antipsychotics causes sedative and blood pressure effects.

Examples of pharmacokinetic drug interactions include

- Antihistamine (sedating phenothiazine or loratadine) with SSRI/TCA;clarithromycin/erythromycin;metoclopramide;diphenhydramine causes toxicity; significantly increased plasma levels of OTC antihistamine through CYP3A4 inhibition
- Codeine with diltiazem causes toxicity; significantly increased plasma levels of opioid (codeine and active metabolite/morphine) through CYP3A4 inhibition.
- Codeine with SSRI causesdecreasd efficacy of codeine; blocks conversion of codeine to morphine through CYP 2D6[11][12]

ANALGESICS

Analgesics are widely self medicated drugs for conditions like headache, fever, and all types of pain.OTC analgesics include acetaminophen and NSAIDs. NSAIDs include aspirin, ibuprofen, ketoprofen , naproxen , and less frequently used salicylates. There are also combinations available like combination of aspirin and acetaminophen[13][14].

Chronic high doses of acetaminophen cause hepatotoxicity by depleting glutathione reserves in the liver. Risk of developing hepatotoxicity among children is less due to an age related difference in the way the drug is metabolized. Dose dependent acute renal failure may also occur in patients with liver dysfunction. Also chronic analgesic nephropathy, interstitial nephritis and papillary necrosis may occur due to prolonged use of acetaminophen. Acetaminophen and salicylates combination for prolonged periods of time can lead to analgesic nephropathy.other than this acetaminophen also causes skin reactions like uricaria , erythema , generalized pruritus and rashes but these are rare.concurrent use of acetaminophen with alcohol may also increase hepatotoxicity. Drugs which increase hepatotoxicity with acetaminophen include carbamazepine, oxcarbazepine, barbiturates, phenytoin, fosphenytoin, isoniazid, rifampin and rifabutin[15][16].

NSAIDs may causes anorexia, nausea, vomiting, epigastric pain, dyspepsia, constipation, diarrhoea, gastritis, dark tarry stools and flatulence. Gastric ulcer may also occur and has high risk in patients with poor health. Risk factors for upper GI adverse events in patients taking NSAIDs include age above 65years, comorbid medical conditions, concomitant use of anticoagulants or oral glucocorticoids, history of peptic ulcer disease , smoking and excessive

alcohol consumption. patients taking NSAIDs are prone to exacerbation of congestive heart failure or hypertension and increase the risk of cardiovascular thrombotic events, myocardial infarction and stroke. NSAID therapy in asthmatic patients may cause bronchospasm, dyspnoea, and wheezing .drug interactions of NSAIDs occur with ethanol, tobacco, ketorolac, corticosteroids, bisphosphonates etc. Use of NSAIDs reduces the effectiveness of antihypertensives. Concurrent use of NSAIDs along with other nephrotoxic agents may lead to additive nephrotoxicity[17].

ANTIBIOTICS

Nowadays antibiotics are accessible without a prescription. As they are available without medical guidance they cause irrational and misuse of antibiotics and thereby emerging bacterial resistance. Self medication practice of antibiotics may causes from using leftover antibiotics from previous treatments or getting antibiotics at the pharmacy without a prescription. Antibiotics are mainly used for ear infection, sore throat, common cold, flu, runny nose , sinus infection and cough.SMP is associated with risks of masking symptoms of underlying disease , inappropriate drug use which may lead to drug interactions and development of microbial resistance[18].

The most self medicated antibiotics are amoxicillin, ciprofloxacin, metronidazole and pencillin. Local antibiotics like trimethoprim, gentamicin and tetracycline are used in small number.

Amoxicillin: using amoxicillin without a prescription should be with caution:

- One should not take this drug if they are allergic to pencillin.
- Avoid in case of kidney disease
- Avoid if you ever had mononucleosis, food and drug allergies.

It can make birthcontrol pills less effective and is not safe to use during breast feeding time. Side effects like severe stomach ache, diarrhea , nausea , vomiting and rashes[19].

Ciprofloxacin: taking ciprofloxacin without medical guidance may leads to tendonitis, cause changes in sensation and nerve damage. Caution should be given for patients with seizures. Nausea, diarrhea, dizziness, headache, or trouble sleeping .Using ciprofloxacin without prescription may lead to interactions. Examples include are with amiodarone causes changes in heart rhythm. Effect of caffeine is prolonged by ciprofloxacin. Overdose of ciprofloxacin may leads to trouble breathing[20].

Aminoglycosides: aminoglycosides include amikacin, gentamicin, tobramycin etc.

Avoid use if you

- Have Kidney or hearing problems
- Are allergic sulfites
- Having myasthenia gravis
- Are 65 years of age or above

The main adverse effects of aminoglycosides include ototoxicity, nephrotoxicity and neuromuscular blockade. Side effects like nausea, vomiting, diarrhea, decreased appetite, headache etc[21].

TOPICAL OTC DRUGS

Examples of topical preparations that are used for self medication include antifungals, antipruritic, antibiotics, astringents, analgesics and others. Using topical preparations without proper directions may leads to burning, stinging, irritation, drying or redness at the application site. There are also chances of risks of acne, unusual hair growth, skin thinning, or stretching. Their properties may give quick symptomatic relief to the patient, but they serve as an important cause of persistence and spread in the community.OTC topical acne products may cause symptoms of serious hypersensitivity reactions such as skin and mucosal changes[22].

ANTACIDS

Self medication of antacids may cause dose dependent rebound hyperacidity and milk-alkali syndrome. Those which contain aluminium hydroxide may cause constipation, aluminium intoxication [23], osteomalacia and hypophosphatemia. Antacid preparations may react with other medications including digoxin, iron, tetracycline antibiotics, quinolone antibiotics, preventing them from being fully absorbed by your body.

- Antacids often contain a lot of sodium content, so people with heart failure may have sodium restrictions to help decrease fluid buildup.
- In patients with kidney failure, use of antacids leads to aliminium toxicity.
- Patients with kidney failure also have electrolyte problems which may get worsened by antacids.
- Overdose of Calcium containing antacids may cause nausea, vomiting, kidney stones , mental status changes , alkalosis[24]

MULTIVITAMINS

Many people take multivitamin tablets as OTC drugs. They can cause serious or life threatening side effects if taken in large doses. Commonly used multivitamin tablets include vitamin A,D,E,K; vitamin B complex, vitamin C, Vitamin B6 ,folate suppliments , folic acid and antioxidants etc [25].

- They can interact with antacids, tretinoin, antibiotic, diuretics and NSAIDs
- Common side effects include upset stomach, headache, unusual or unpleasant taste in mouth.
- Overdose of multivitamins may cause stomach ache, vomiting, diarrhoea, constipation, loss of appetite, hair loss, peeling skin, severe headache, severe back pain and pale skin.
- Problems arise when taking more than one multivitamin product at the same time[26].

OTC DRUG ABUSE

Some of the OTC drugs to self medicate for mental illness like anxiety and depression are abused which may give high euphoria and hallucinations. Commonly abused OTC drugs include cough medicines (dextromethorphan), cold medicines (pseudoephedrine), motion sickness pills (dimenhydrinate)

Dextromethorphan: The maximum recommended daily dose of dextromethorphan is 120mg. above this range, intoxication and dangerous side effects like euphoria, hallucination, loss of motor coordination, visual distortions occur. High doses of DXM causes breathing problems, blacking out, muscle twitching, extreme drowsiness, heart palpitations, elevated body temperature, rapid heart rate and brain damage[27].

Pseudephedrine: it is used as a stimulant in many cold medicines to relieve nasal and sinus congestion. This active ingredient also causes hallucinations. Pseudoephedrine abuse may leads to irregular heartbeat, shortness of breath, high blood pressure, dizziness , and seizures.

Dimenhydrinate: it is the drug used to treat motion sickness and vertigo. At high doses, this drug causes hallucinations, ringing in the ears, nausea, irregular heartbeat, seizures, coma and even death. The drug is abused for its delirium effect at high doses (>1200mg)[28][29][30].

CONCLUSION

Self medication should be considered as an emerging problem because there are occurance of a lot of risks. People have easy accessibility of every OTC drugs and have less knowledge about its consequence which may eventually leads to drug abuse and drug addiction. People should be aware about dose, time of intake, side effects on overdose of OTC drugs. Otherwise despite their benefits, dangerous problems like antibiotic resistance, skin problems, hypersensitivity and allergy may occur[3]. In developing countries like India, people have less knowledge about self medication practices because of poor economic statuses, education statuses as well as poor healthcare facilities. So dispensing modes of OTC drugs needs to be improved through proper education, strict managerial and regulatory strategies which will make healthcare easily accessible and cost effective[4].

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