



ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OF ECOPHARMACOLOGY AMONG M.B.B.S STUDENTS AT A TERTIARY CARE TEACHING HOSPITAL IN HYDERABAD – A CROSS SECTIONAL STUDY.

Pharma

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ABSTRACT

Ecopharmacology is science concerned with entry of drugs into environment through any route and at any concentration disturbing balance of ecology. Factors for drug entry into environment are incorrect disposal, effluents from pharmaceutical industry, excreta of consumers. **Methods** : cross sectional pre-validated questionnaire based study was carried out at Osmania medical college and hospital, Hyderabad over 3 months among 250 M.B.B.S students. **Results** : 65 % responded that they heard about ecopharmacology, only 27.3% are aware of correct disposal methods. 97.3% feel that it is their responsibility to protect environment from drug pollution. 86.4% are bothered about what to do with excess medicines. 100% participants are willing to follow safe disposal methods. Majority of participants wanted to store and use unused medicines in future. **Conclusion**: awareness and concern regarding problem is high but due to absence of knowledge of safe disposal methods it is not transforming into safe practices. Participants have a positive attitude and are willing to practice safe disposal methods.

KEYWORDS

Ecopharmacology, Environment, Drug Pollution, Safe Disposal Methods.

INTRODUCTION

Ecopharmacology is science concerned with entry of drugs into the environment through any route and at any concentration, disturbing balance of ecology. Factors for drug entry into environment are incorrect disposal, effluents from pharmaceutical industry, excreta of consumers. Pharmaceuticals from various therapeutic classes have increasingly being detected in environment.[1]

Active pharmaceutical ingredients [API], though present in minute concentrations pose significant ill effects to the environment. Most common drugs found in environment are antibiotics, anticonvulsants and artificial hormones [2].

Improper methods of drug disposal also leads to development of resistance and increased virulence among microorganisms [3]. Disposal of accumulated drugs by hospitals and patients maximise the introduction of active pharmaceutical ingredient to the environment dodging the natural physiological processes that might have reduced their amounts via excretion.[4]. There are guidelines for safe disposal of medicines at individual and industry level (F.D.A and G.M.P guidelines respectively) [5][6]. It is uncertain whether everyone are aware of it. So, before beginning the process of creating awareness it is necessary to assess existing knowledge about this issue. So, this study was planned to assess the knowledge, attitude and practice of ecopharmacology among M.B.B.S students in our institute.

METHODOLOGY

Study Tool : Prevalidated questionnaire on knowledge, attitude and practice of ecopharmacology.

Study Design : cross-sectional study using a prevalidated questionnaire to assess knowledge, attitude and practice of ecopharmacology among M.B.B.S students.

Study Site : Osmania medical college, Hyderabad.

Study Duration : 3 months (February 2023 to April 2023)

Sample Size : 250 M.B.B.S students (both male and female)

Selection Method : study population was drawn from M.B.B.S students of Osmania medical college and were given a questionnaire having 19 questions related to ecopharmacology and were asked what they do with unused medicines. They were asked to give their responses and questionnaires were collected after they have successfully answered the questions.

Inclusion And Exclusion Criteria :

M.B.B.S students who gave consent to participate in the study were

included and M.B.B.S students who were not willing to participate in the study were excluded.

Statistical Analysis: Data from the returned questionnaires is tabulated and percentages are calculated.

RESULTS :

Out of 250 M.B.B.S students, 220 students satisfactorily completed the questionnaire and were included for evaluation. From table 1, in the questions about knowledge, 65 % responded that they heard about ecopharmacology, majority are aware of environmental pollution caused by drugs but only 27.3 % are aware of correct disposal methods. In the questions regarding attitude, majority shown that they have positive attitude towards ecopharmacology. 97.3% feel that it is their responsibility to protect environment from drug pollution. 86.4% are bothered about what to do with excess medicines. In responses regarding practice, 54.5% answered that they buy drugs in bulk for family. 100% participants are willing to follow safe disposal of drugs. The results are similar to the KAP study by Advani M et al. Int J Basic Clin Pharmacology. 2019 Jun [7].

From chart 1, regarding unused drugs, 1. 45.5% of participants wanted to store and use the unused drugs in future, 2. 31.8% wanted to share it with others, 3. 13.6 % wanted to throw in garbage after expiry date and 4. 9.1% wanted to throw in garbage before expiry date.

WHAT DO YO DO WITH UNUSED MEDICINES ?

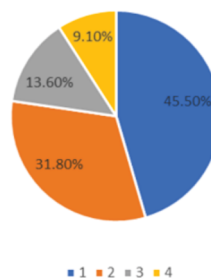


Chart : 1, Fate Of Unused Drugs

Table – 1 Questionnaire :

S.NO	KNOWLEDGE QUESTIONS	YES%	NO%
1.	Heard of term “ecopharmacology” ?	65	35
2.	Do you know drugs you consume can cause environmental pollution ?	80	20
3.	Do you know that environmental pollution by drugs can be a reason for antibiotic resistance ?	75	25

4.	Have you read any media reports regarding effect of drugs pollution on environment ?	72.7	27.3
5.	Do you know that expired or unused medicines which are not properly disposed, pose hazards to public safety ?	70.9	29.1
6.	Do you know F.D.A recommended methods of disposal of drugs at individual or household level ?	27.3	72.7
7.	Do you know what are the various pharmaceutical waste disposal methods followed by pharmaceutical industries ?	22.7	77.3
	ATTITUDE QUESTIONS	agree %	Disagree %
8.	Agree that if drugs are not disposed properly can cause environmental pollution ?	84.5	15.5
9.	Ever bothered you , what to do with excess medicines ?	86.4	13.6
10.	There should be guidelines for public for safe disposal of drugs ?	95.5	4.5
11.	Do you think there should be safe medicine disposal locations(e.g.collection boxes for unused drugs in hospitals, pharmacies)?	96.4	3.6
12.	Manufacturers and pharmacies should have drug take back schemes ?	96.8	3.2
13.	Do you feel it is your responsibility to protect environment from pharmaceutical waste ?	97.3	2.7
14.	Will you participate in activities like campaign for this issue ?	97.3	2.7
	PRACTICE QUESTIONS	Yes%	No%
15.	Do you remove the drug from its container before throwing in garbage ?	13.6	86.4
16.	Do you dilute leftover syrup or lotion with water before pouring in the wash basin ?	18.2	81.8
17.	Do you buy drugs in bulk for the family ?	54.5	45.5
18.	Attended any seminar on ecopharmacology or safe disposal of drugs ?	18.2	81.8
19.	Are you willing to follow safe disposal of drugs ?	100	0

DISCUSSION :

This present study shows that most of the participants have good knowledge about ecopharmacology and they are aware of the fact that drugs can cause environmental pollution and antibiotic resistance. Results and findings are similar to other studies conducted on same subject [7][8][9]. 72.7 % of participants have read media reports regarding effects of drug pollution on environment.70.9% of participants know that drugs if not disposed properly are hazardous to public health but majority are not aware of F.D.A recommended methods of disposal of drugs.

Majority of the participants have positive attitude towards ecopharmacology.95.5% of participants agree that there should be guidelines for public for safe disposal of drugs.96.4% of participants agree that there should be safe medicine disposal locations.96.8% of participants think that manufacturers and pharmacies should have drug take back schemes and 97.3 % of participants are willing to participate in campaign for this issue.

Regarding practice only 13.6% of participants are removing drug from its container before throwing it in garbage and only 18.2 % of participants are diluting left over syrup or lotion before pouring it in wash basin.18.2% participants have attended a seminar on ecopharmacology and safe disposal of drugs. 100% participants are willing to follow safe disposal of drugs.

Majority of participants are storing the unused medicines and using them in future or sharing them with others.

CONCLUSION:

The presence of pharmaceuticals in the environment is a globally emerging issue [10]. Our study concludes that awareness and concern regarding the problem in M.B.B.S students is high but due to lack of knowledge of safe disposal methods of drugs it is not transforming into safe disposal practices. Participants have a positive attitude towards the problem and are willing to learn and practice safe disposal of drugs. Drug take back programs should be initiated and people should be educated about safe disposal of drugs.

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