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Study of Usage of Over the Counter Medications among Pharmacy, Nursing, Dental and Medical Students

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ABSTRACT
Over the Counter drugs are medicines taken by consumer without a prescription from health care professionals. And the incidence of usage of Over the Counter drugs is drastically increasing day by day.Self-Medication has traditionally has been defined as 'The taking of drugs, Herbs or home remedies on one's own initiative, or on the advice of another person, without consulting a doctor". In India, it is very common to see self –medication practice and which is an emerging challenge to health care providers.

Objective:

Primary objective:

- Study of Usage of Over the Counter Medications Among Pharmacy, Nursing, Dental and Medical Students.

Secondary objective:

- To find out most commonly used OTC medications.
- To assess the Drug Related Problems (DRPs) with OTC medications.
- To assess the most effective commonly used route of administration taken in OTC medications

Materials and Methods:
A cross sectional study conducted in students among S J M Institution chitradurga. Out of 257 participants, 137 were pharmacy students, 90 were medical, 25 were nursing and remaining 5 were dental students. Samples are randomly selected and self-designed questionnaire has been filled for providing awareness and we analysed filled questionnaire.

Results:
A total 257 participants most of them are consuming over the counter medications even though they have knowledge about merits and demerits of OTC medications intake and they have knowledge about drug related problems but they are using OTC medications regularly and more often they recommend to others also.

Conclusion: Due to lower costs in terms of time and money, urge of self-care, feeling of sympathy towards family members in sickness, lack of health services, poverty, misbelieves, ignorance, extensive advertisement and availability of drugs in other than drug shops are responsible for growing trend of self-medication . And the patients with common ailments like cough, cold, allergies, pain, fever, skin rashes, and diarrhea and acidity conditions usually depend on OTC medication instead of visiting doctor.

Key words: OTC medications, Drug related problems.

I. INTRODUCTION

Over the Counter drugs are medicines taken by consumer without a prescription from health care professionals. And the incidence of usage of Over the Counter drugs is drastically increasing day by day.[1]

Self-Medication has traditionally has been defined as 'The taking of drugs, Herbs or home remedies on one's own initiative, or on the advice of another person, without consulting a doctor". In India, it is very common to see self –medication practice and which is an emerging challenge to health care providers.[2]

Self-medication is very commonly practiced worldwide. It is defined as the use of drugs by the patients on his own without consulting a medical practitioner. It is helpful especially in the encounter of common health problems. Self-medication is not only prevalent in general population but it is also common among the health care providers. Because

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the exposed to the knowledge of drugs, the pattern and incidence may however be different as compared to general population.[3]

The phrase OTC has no legal recognition in India, but all those drugs not included in the list of "Prescription only" are considered to be non-prescription drugs. At present, there is no OTC schedule in Drugs and Cosmetics Rules 1945. Hence, any drug outside schedule H, G, and X is considered to be an OTC drug.[4]
In developing countries like India, self-medication is a common practice because of costly clinical service and easily availability of medicines from pharmacies. There is an increased trend of self-medication among different health professional students apart from general people.[5]

Self-medication is very common and a number of reasons could be enumerated like lower costs in terms of time and money, urge of self-care, feeling of sympathy towards family members in sickness, lack of health services, poverty, misbelieves, ignorance, extensive advertisement and availability of drugs in other than drug shops are responsible for growing trend of self-medication . And the patients with common ailments like cough, cold, allergies, pain, fever, skin rashes, and diarrhea and acidity conditions usually depend on OTC medication instead of visiting doctor. [6]

The non-prescribed drugs are the drugs that can purchased without any prescription. The list of OTC drugs in the modern society is increasing now a day with new formulations and increasing tendency of using OTC medications are also expanding.[7]

The most commonly used OTC drugs are Non-steroidal anti-inflammatory drugs(NSAIDS), Gastrointestinal drugs, cough remedies, Anti allergic, Anti histamines, Eye drops like Dexamethasone and Ear drops like Ciprofloxacin and Anti-microbial .[8]

Only a few studies have evaluated Drug Related Problems (DRPs) with OTC medicines .A direct pharmacist–patient interaction about self-medication revealed relevant DRPs in nearly 1 out of 5 encounters. The most frequent DRPs were inappropriate self-medication, inappropriate requested drug, too long duration of OTC drug use (including abuse), and wrong dosage. [9]

The Drug Related Problems (DRPs) and harms associated with OTC medicines are convulsions and acidosis due to codeine and anti-histamines and tachycardia, hypertension and lethargy due to cough and cold tablets (Dextromethorphan and chlorphenamine) and gastrointestinal disturbances with laxatives, chronic rebound headache associated with repeated use of analgesics.[10]

II. MATERIALS AND METHODS

Study Design:
This was a questionnaire based prospective observational study.
Study Site:
This study was conducted among students of selected SJM Institutes (Medical, Pharmacy, Dental, Nursing) in Chitradurga, Karnataka.
Study Period:
Study was conducted for a period of six months.
Study Subject:
Healthcare students from selected SJM Institutes (Medical, Pharmacy, Dental, Nursing) Chitradurga, Karnataka who met the following criteria:
Inclusion Criteria:

- Random healthcare students from Medical Pharmacy, Dental, Nursing courses of SJM Institutes.
- Both male and female students.

Exclusion Criteria:

- Students who were drop out from the study.

Ethical Approval:
The study was approved by the Institutional Ethical Committee of SJM College of Pharmacy, Chitradurga.
Ref. No: SJMCP/683/2021-2022

Sources of Data:

- Data was collected using questionnaire based on online survey.

Study Procedure:

- The study commenced after getting approval from the Institutional Ethics Committee.
- Participants are college students randomly selected, pertaining to four different courses (Pharmacy, Medical, Nursing and Dental) at selected SJM Institute in Chitradurga.
- The study was conducted to investigate the commonly used OTC medications, drug related problems of these OTC medication and

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to find out most commonly used and effective route of OTC medications administration.

- All participants were asked to complete an online questionnaire.
- Before filling the online survey, participants provided with information and consent regarding the purpose of the study.
- Data is collected and entered in **Microsoft Excel** sheet which is analyzed using latest version of SPSS.

Development of questionnaire:

- The development of questionnaire was carried out systemically by review of related literatures, using search engines like Google Scholar and PubMed. The articles were selected to provide a wider view of existing evidence on study of usage of OTC medication among nursing, dental, medical and pharmacy students. A total of 10 articles were selected and found to be relevant. Questions were identified from these relevant articles and 17 items were generated under the final questionnaire was plotted as a document among 257 participants. The questionnaire consists of questions which include personal and demographic questions such as Age, Gender and Educational qualifications. The questionnaire was categorized as most commonly used OTC medications, the Drug Related Problems (DRPs) with OTC medications and the most effective commonly used route of administration taken in OTC medications. The online data collection form was prepared by using Google Form and distributed among participants with the help of social media platforms like WhatsApp, Facebook and Instagram.

Statistical Evaluation of Data:

Descriptive statistical analysis has been carried out in the present study. Data are presented as mean± standard deviation (SD) and as frequency distribution. The statistical analysis was performed using the IBM SPSS Data Analysis Version 22.0 for windows and Graph Pad Prism 9 (La Jolla, CA, USA) has been used to generate graphs and Microsoft Excel for tables.

III. RESULTS

A total of 257 responses were recorded in the study and they are analysed for the usage of over the counter medication in their lifestyle practice. The questionnaire was designed to analyse the usage and approach of over the counter medications in their lifestyle. Over the counter drugs are medications taken by consumer without a prescription from health care professionals and the incidence of usage of over the counter drugs is drastically increasing day by day. So the most commonly used OTC medication with the drug related problems is assessed from the responses. The most effective route of administration of OTC medication is also assessed from the responses.

DEMOGRAPHICS

3.1 Age wise Distribution

The mean age of the study population was Mean±SD= 21.7±2.3

. The results are graphically represented in Figure no.3.1

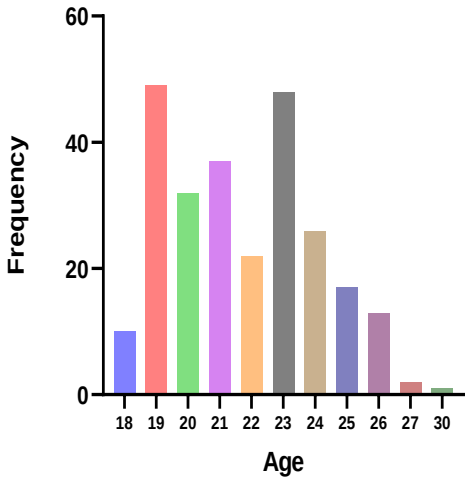

Figure no. 3.1 Details of Age Distribution

3.2 Gender wise Distribution

Among 257 participants (n=257), 157(61.1%) participants were male and 100 (38.9%) participants were females as shown in table no 3.2 and graphically represented in fig no 3.2.

Table No. 3.2

Sl. No	Gender	Frequency	Percent
1	Male	157	61.1
2	Female	100	38.9
Total		**257**	**100**

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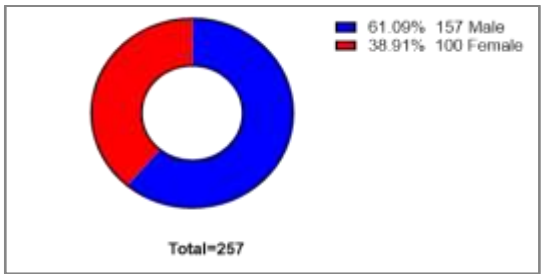

Figure no.3.2 Details of Gender Distribution

3.3 Course wise Distribution

Among 257 participants (n=257), 137(53.3%) participants were Pharmacy students, 90(35.0%) participants are Medical students, 25(9.7%) are Nursing students and 5(1.9%) are Dental students. The results are graphically represented in Figure no.3.3

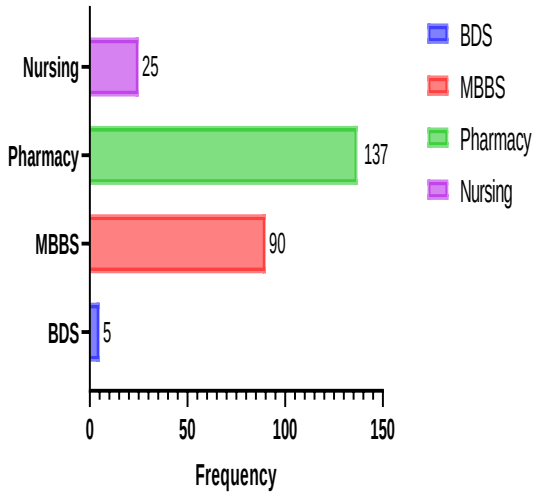

Figure no.3.3 Details of Course Distribution

3.4 ASSESSMENT OF USAGE OF OVER THE COUNTER MEDICATIONS

3.41 Responses of the participants about the question whether they are taking any OTC Medications

Among 257 participants (n=257), 149(58%) participants were taking over the counter medication and remaining 108(42%) participants were not taking over the counter medication. So majority of participants are taking over the counter medications which is represented graphically in figure no: 3.41

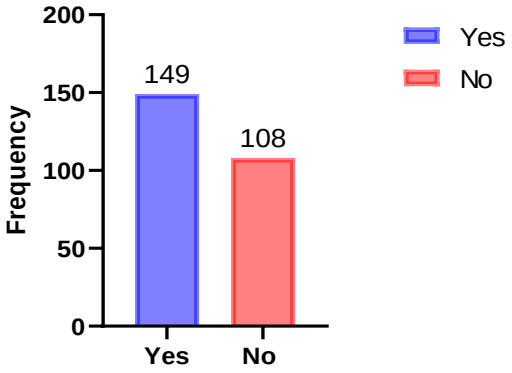

Figure no: 3.41

3.42. Responses given by the participants regarding frequent usage of OTC Medications.

Among the 257 participants (n=257) , 32 (12.5%) participants were always taking over the counter medications , 135(52.5%) participants were taking over the counter medication sometimes only and 90(35.0%) participants are not taking over the counter medication. Total 167(64.9%) participants are taking over the counter medications usually as mentioned in table 3.42 and graphically represented in figure 3.42.

Responses	Frequency	Percent	Cumulative Percent
No, I'm not taking	90	35.0	35.0
Yes, Always	32	12.5	47.5
Yes, sometimes	135	52.5	100.0
Total	257	100.0	

Table no: 3.42

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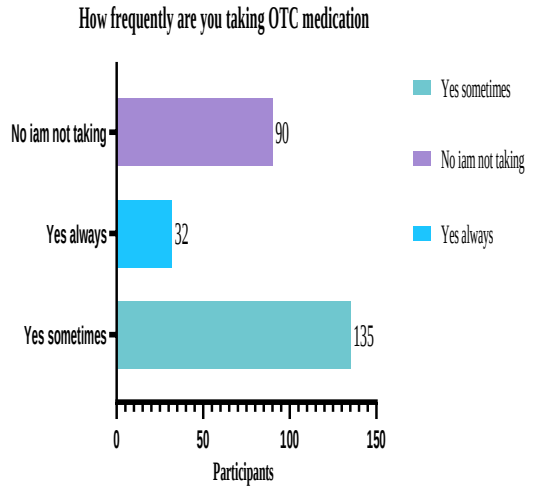

Figure no: 3.42

3.43. Responses of the participants about which over the counter medicine they used the most.

Among 257 participants , 169 participants are using over the counter medication of pain relievers with or without other over the counter drugs as mentioned in table 3.43 and graphically represented in figure no 3.43.

Sl. No	Class of drugs	Frequency
1	Antacid	61
2	Proton pump inhibitor	69
3	Anti-diarrheal	59
4	Anti-histamines	48
5	Anti-emetics	24
6	Pain reliever	169
7	Vitamin supplements	57

Table no: 3.43

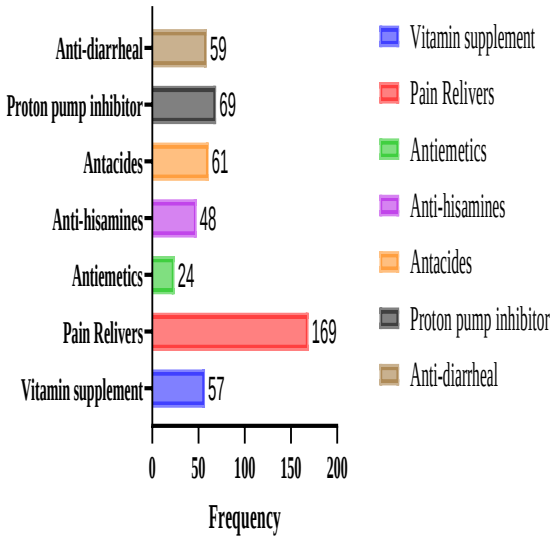

Figure no: 3.43

3.5. ATTITUDE BASED ON STUDENTS PERSPECTIVE

3.51. Responses of the participants about their opinion on usage of OTC Medications.

Among 257 participants (n=257), 79(30.7%) participants selected over the counter medication as effective, 75(29.2%) participants selected over the counter medications as safe, 46(17.9%) participants selected over the counter medications are not safe and 57(22.2%) participants mentioned no knowledge on usage of over the counter medications as mentioned in table no 3.51 and graphically represented in figure no 3.51.

Sl. No	Opinion	Frequency	Percent
1	**I don't know**	**57**	**22.2**
2	**It is effective**	**79**	**30.7**
3	**It is safe**	**75**	**29.2**
4	**Not safe**	**46**	**17.9**
Total		**257**	**100**

Table no: 3.51

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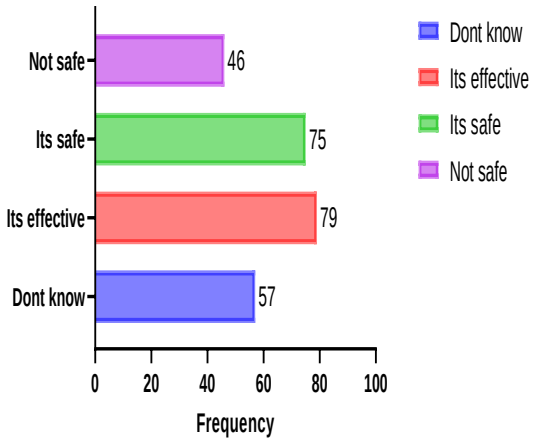

Figure no: 3.51

3.52. Responses of the participants about whether they recommend OTC Medications for their Family, Friends and Parents

Among 257 participants (n=257), 169(65.8%) participants used to recommend over the counter medications in emergency conditions , 73(28.4%) participants didn't recommend over the counter medications and 15(5.8%) participants always recommend over the counter medications as mentioned in table no 3.53 and graphically represented in figure no 3.52

Sl. No	Options	Frequency	Percent
1	No, I don't recommend	73	28.4
2	Yes, Always	15	5.8
3	Yes, I used to recommend in emergency conditions	169	65.8
	Total	257	100.0

Table no: 3.52

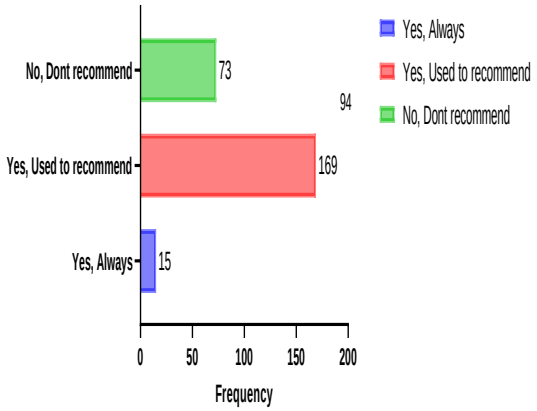

Figure no: 3.52

3.6. DRUG RELATED PROBLEMS ASSOSIATED WITH OVER THE COUNTER MEDICATIONS

3.61. Responses of the participants about the ADR associated with their usage of OTC Medications.

Among 257 participants (n=257), 73(28.4%) participants are having gastric problems with over the counter medications, 46(17.9%) participants are having allergic reactions with over the counter medications, 39(15.2%) participants having skin problems with over the counter medications and 99(38.5%) participants are having other problems with over the counter medication, which is mentioned in table no 3.61 and graphically represented in figure no 3.61.

SI. No	Reactions/problems	Frequency	Percent
1	Allergic Reactions	46	17.9
2	Gastric Problems	73	28.4
3	Other Problems	99	38.5
4	Skin Problems	39	15.2
	Total	257	100.0

Table no: 3.61

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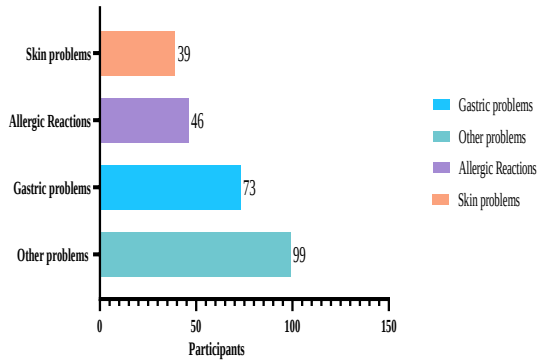

Figure no: 3.61

3.62. Responses of the participants about the Drug Interactions associated with the usage of OTC Medications.

Among 257 participants (n=257), 240(93.3%) participants didn't experience any kind of drug-drug/drug-food interactions and only 17(6.6%) participants experienced drug-drug/drug-food interaction while usage of over the counter medications but the participants didn't specify the interactions caused by over the counter medications. Which is graphically represented in figure no 3.62.

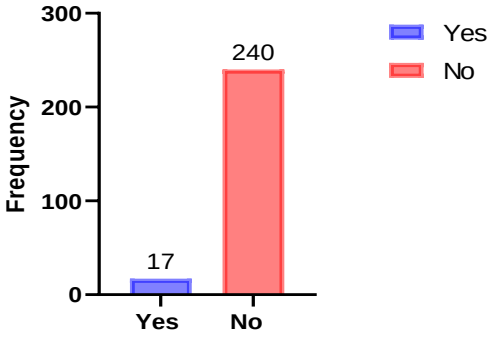

Figure no: 3.62

3.7. MOST COMMONLY USED ROUTE FOR OVER THE COUNTER MEDICATION

3.71. Responses of the participants about their usually practicing route for OTC Medications.

Among 257 participants (n=257), 66(25.7%) participants use over the counter medication in oral route, 20(7.8%) participants use over the counter medications in topical route, 23(8.9%) participants use over the counter medication in both oral and topical route, 27(10.5%) participants use over the counter medication as eye/nose/ear drops and 121 participants didn't respond on this query. Majority of participants use over the counter medications through oral route as mentioned in table no 3.71 and figure no 3.71.

Sl. No	Options	Frequency	Percent
1	No response	121	47.1
2	eye nose ear drops	27	10.5
3	Oral	66	25.7
4	oral / topical	23	8.9
5	Topical	20	7.8
	Total	257	100.0

Table no: 3.71

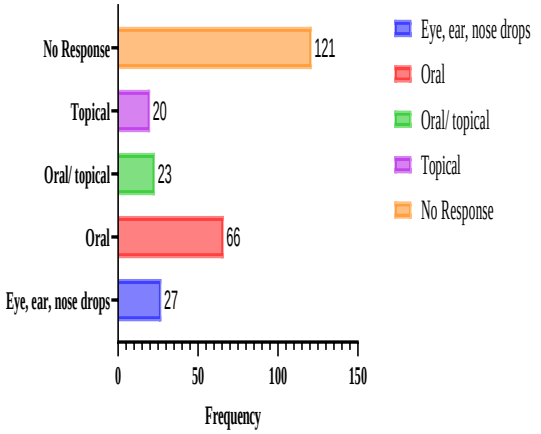

Figure no: 3.71

IV. DISCUSSION

The term over the counter medication (OTC) refers to a medication that can be purchased without a medical prescription from a healthcare professional. In many countries, OTC drugs are selected by a regulatory agency to ensure that they contain ingredients that are safe and effective when used without a physician's care.

The phrase OTC has no legal recognition in India, but all the drugs not included in the list of prescription-only drugs are considered to be non-prescription drugs or over the counter medications (OTC). It is used primarily for symptomatic relief and not as substitutes for prescription drugs.

"Study of usage of over the counter medications among pharmacy, nursing, dental and medical students '' is a cross sectional study conducted in subjects of students of S J M Institute Chitradurga, to assess the most commonly used

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OTC medications and also to find out drug related problems (DRPs) with OTC medications and also to assess the most effective route of administration taken in OTC medications.

Among 257 participants or students (n=257), 137(53.3%) participants are Pharmacy students, 90(35.0%) participants are Medical students, 25(9.7%) are Nursing students and 5(1.9%) are Dental students.

In our study we found that the most commonly used over the counter medication are pain relievers. This reason was supported by 169 participants out of 257 as mentioned in table 5 (II) and graphically represented in figure no 5 (II).Our finding is similar to **R Srinivasan et al., among** 774 participants, the most commonly used drugs as self-medication was paracetamol (66.10%), cetirizine (6.55%), anti-pyretic/pain relievers (37.41%) and **Divya G et al.,** among 112 students, 59.05% were taking paracetamol, 39.05% were taking analgesics 26.67% were using antibiotics, anti-histamines and cough suppressants.

We found that the most commonly reported adverse drug reactions in drug related problem with OTC is gastric problems is 73(28.4%) Which is mentioned in table no 1(IV) and graphically represented in figure no 1 (IV) and 17(6.6%) participants experienced drug-drug/drug-food interaction while usage of over the counter medications but the participants didn't specify the interactions caused by over the counter medications. Which is mentioned in table no 2(IV) and graphically represented in figure no 2 (IV) and our finding is similar to **Frokjaer B et al.,** in this study theDRPs were identified for 21% of OTC customers and 20% of all OTC request. On average, a customer with DRPs is 1.5%.In the German study, DRPs were identified 17.6% of all self-medications request in 18.3% of all patients.

In our study we found that the most commonly used and most effective route of administration of over the counter medication is oral route 66(25.7%) as mentioned in table no 1(v) and figure no 1 as mentioned in table no 1 and figure no 1(v).

In our study we found that the most common condition for the usage of OTC medication, among 257 participants, 89(34.6%) participants are taking over the counter medication for cold and cough, 65(25.3%) participants are taking over the counter medications for fever, 42(16.3%) participants are taking over the counter medications for pain,14(5.4%) participants are taking over the counter medications for diarrhoea / vomiting, 12(4.7%) participants are taking over the counter medications for general weakness and 35(13.6%) participants are taking over the counter medication for other reasons as mentioned in table number 3(II) and graphically represented in figure no 3(II).

Our findings are similar to **R Srinivasan et al.,** Fever (31.55%), Headache (30%), and sore throat/cough/common cold (17.93%). And also similar to **Bollu B et al,** self-medication was practiced include the fever (89%), Body pains (83%), cold (65.3%), cough (74%), headache (67.8%), diarrhea (42.7%), vomiting (38 %), stomach pain (28.2%), gastric problems (49.5%), Nutritional deficiencies (76%), allergic conditions(10.1%),minor cuts/wounds(8.3%) and constipation (15.3%).

When we made questionnaire regarding drug interaction and adverse effects which is belongs to drug related problems (DRPs) while taking over the counter medications, most of the respondents are aware and having knowledge about this drug related problems then also they are not taking it seriously and continuing the practice of OTC medications. In our study we included 257 participants or a student belongs to Health care professionals and they are aware about the merits and demerits of the usage of over the counter medications.

V. CONCLUSION

In the present study, following conclusions were made:

- We found that most of the participants are using over the counter (OTC) medications frequently.
- Among these 257 participants majority of the participants are using pain relievers or analgesics followed by antipyretics or paracetamol, proton pump inhibitors, antacids.
- Most of the subjects or participants included in the study were experienced unwanted reactions like adverse drug reactions like gastric problems followed by allergic reactions, skin problems and also some of them experienced some other minor side effects but they are not ready to reveal.
- After our interventions, we found that we could able to improve knowledge regarding appropriate use of OTC medications. Whereas in case of drug related problems we found that they are careless about the issues and they are not willing to improve their knowledge regarding DRPs on over the counter medications.

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