

## A CROSS-SECTIONAL STUDY TO EVALUATE AND COMPARE KNOWLEDGE, ATTITUDE AND PRACTICE OF SELF-MEDICATION AMONG MEDICAL AND NON-MEDICAL STUDENTS

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### ABSTRACT

The main aim of this study was to evaluate and compare the knowledge, attitude and practice of self-medication by medical and non-medical (engineering) students and to analyse decisions behind self medication, confidence in alternate medicine system, drug information resources and knowledge of antibiotic resistance. A prevalidated questionnaire was administered after explaining the purpose of the study to 145 Medical and 83 engineering students.

Data analysis was done by using SPSS version 15.0 and the results were expressed as counts and percentages, a 2-tailed  $\chi^2$ -test was applied and a p value of  $< 0.05$  was considered significant. The most common factor that led to Self medication was non-serious nature of the disease. The use of analgesics (70.34 % vs. 31.94%), antipyretics (57.71 % vs. 16.66%) was significantly high among the medical students ( $P < 0.001$ , Odds Ratio- 5.98, CI: 3.2-10.8). Knowledge regarding antibiotic resistance was very low among the non-medical students (16.67% vs. 85.62%). Medical students tend to have greater knowledge, as well as a concerned attitude towards self-medication and practice self-medication more often. There is a need to review educational programs especially the teaching of clinical pharmacology to include modules on self- medication and rational use of medicine. This study also shows the need to carry out educational campaigns to alert the population about the use of many medications available in the market. For that, it is imperative to have an active participation of health care professionals, specially physicians and pharmacists, besides help from the pharmaceutical industry, government regulations and competent authorities.

**Keywords:** *self medication; over the counter drugs; medical students; engineering students; antibiotic resistance.*

### INTRODUCTION

English philosopher-physician Sir William Osler (1849-1919) said, "One of the first duties of a physician is to educate the masses when not to take medicines". There were times when a mild fever was easily tackled with a few paracetamol tablets. Today the same must receive the attention of the best specialist in town, perhaps indicating a very high health consciousness among the people. On the contrary, now there is greater access to health related information through the print and visual media.

Self-medication has been defined as self-administration of medication not prescribed or directed by a physician.<sup>1</sup> The public health importance of self-medication has increased since the late 1980s when more drugs were changed from prescription status to be sold over-the counter (OTC) without a prescription.<sup>2, 3, 4</sup> The prevalence rates are high all over the world with 68% in European countries, while much higher rates are seen in the developing countries going as high as 92% in the adolescents.<sup>5, 6</sup>

Inappropriate self medication results in wastage of resources, increases the emergence of drug resistance, and may give rise to serious health hazards such as adverse drug reactions and prolonged morbidity.<sup>7</sup> With the increasing availability and accessibility of doctors, one would expect the practice of self-medication to decrease, but an international study on the practice of self-medication has refuted this hypothesis. It was found that self-medication was prevalent in many parts of the world independent of the doctor to patient ratio.<sup>8</sup>

Self-care of minor illnesses has been encouraged by some governments. Responsible self medication, which is limited to over the counter (OTC) drugs, may generate substantial net benefits to economies through saving in travel and consultation time and the direct financial cost of treatment.<sup>9</sup>

However, if abused it could delay accurate diagnosis, appropriate treatment and could cause toxicity, side-effects, drug interaction and unnecessary expenditure.<sup>10</sup>

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## SELF-MEDICATION AMONG MEDICAL AND NON-MEDICAL STUDENTS

Niveditha G et al

The phenomenon has been investigated in different parts of the world where certain common patterns of behaviour with respect to drug keeping and self-medication.<sup>11</sup> The self-medication of antibiotics was more frequently reported in households with a healthcare professional among the members.<sup>12</sup>

Medical students may differ from the general population because they are exposed to knowledge about diseases and drugs.<sup>13</sup> The present study was undertaken to determine the knowledge, attitude and practice of self-medication among second-year medical students. The selection of the study subjects was dependent on the fact that they were the future prescribers and health educators of the population.

### Objective:

1. To compare the knowledge, attitude and practice of self-medication among second-year medical with non-medical (Engineering) students.
2. To analyse decisions behind self-medication, confidence in alternate medicine system, drug information resources and knowledge of antibiotic resistance.

**Subjects and Methods:** This cross-sectional study was conducted from January 2010 to March 2010 after obtaining ethical clearance from Ethical Review Board. A prevalidated questionnaire, containing 15 close-ended and one open-ended questions was self-administered to the subjects after explaining the purpose of the study and taking informed consent. The participants were divided into two groups,

Group I – 145 Medical students of Phase II MBBS

Group II – 83 Engineering students from 5<sup>th</sup> semester Engineering

The participants were given 30 minutes to complete the questionnaire.

The questionnaire assessed the demographic details of the participants, prevalence, practice, attitudes of students towards self-medication, knowledge about antibiotic resistance and belief in alternate systems of medicine. Data analysis was done by using SPSS version 15.0 and the results were expressed as counts and percentages, a 2-tailed  $\chi^2$ -test was applied and a p value of < 0.05 was considered significant.

### RESULTS

Around 145 from group I and 83 from group II were provided the questionnaire. Among these 95.86% of group I and 86.74% of group II reported self-medication in last one year. (Odds Ratio- 3.53, CI: 1.25-9.96). The respondents (n = 228) had a mean age of  $20.24 \pm 1.5$  years. The male: female ratio was 1.26:1 and 1.07:1 in group I and group II respectively. [Table 1] There was significantly high use of Analgesics (73.38% vs. 31.94%), Antipyretics (57.71% vs. 16.66%)

among the group I when compared to group II. (P < 0.001, Odds Ratio- 5.98, CI: 3.2-10.8). [Table 2] Most common symptoms that led the students to indulge in self-medication were fever (71.22%), cold/cough (68.34%), headache (50.35%) in group I and fever (55.55%), cold/cough (50%), headache (9.72%) in group II. [Table 3] The most common factor that led to Self-medication was disease which was not serious (64.02% vs. 58.33%). Incidence of self-medication practiced by the members of the family was 59.71% vs. 45.83% in group I and group II respectively. [Table 4] Regarding the source of information most of the group I and group II depended on doctors (64.02% & 44.44%), friends (33.09% & 36.11%), pharmacists (19.42% & 27.77%). [Table 5] The participants in both groups mostly obtained these drugs from pharmacy (75.53% & 77.77%). [Table 6]. Only 2.16% of group I and 1.89% of group II experienced adverse effects during the course of self-medication [Table 7]. Awareness about antibiotic resistance was 85.62% and 16.67% respectively in group I and group II [Table 8].

**Table 1: Socio-demographic variables**

Characteristics	Medical group (I)		Engineering group (II)		
	Number	Percentage	Number	Percentage	
Gender	M	81	55.86	43	51.81
	F	64	44.14	40	48.19
Socio economic status	Upper	11	07.6	10	12
	Middle	134	92.4	73	88
Chronic illness	Yes	10	06.89	5	6.02
	No	135	93.10	78	93.97
Self-medication*	Yes	139	95.86	72	86.74
	No	06	04.13	11	13.25

**Table 2: List of commonly used medications**

Types of medication	Number reported- n (%)†	
	Medical (n=139)	Engineering (n=72)
Analgesics†	102(73.38)	23(31.94)
Antipyretics+	83(57.71)	12(16.66)
Antacids	48(34.53)	4(5.55)
Cough/cold remedy	86(61.87)	18(25)
Laxatives	5(3.59)	2(2.77)
Antidiarrheal	16(15.51)	6(8.33)
Antibiotic	49(35.25)	10(13.88)
Iron preparation	15(10.79)	3(4.16)
Skin cream	64(46.04)	9(12.5)
Vitamins/minerals	64(46.04)	5(6.94)
Antiemetic	8(5.75)	1(1.38)
Sedative	2(1.43)	1(1.38)
Miscellaneous	1(0.71)	1(1.38)
Total	543	95

\* Majority of students reported more than one medications being used

† Odds Ratio- 5.98, (CI: 3.2-10.8, p < 0.001)

**SELF-MEDICATION AMONG MEDICAL AND NON-MEDICAL STUDENTS**

Niveditha G et al

**Table 3: Symptoms for which self medication was practiced**

Symptoms	Number reported-n (%)*	
	Group I Medical(n=139)	Group II Engineering(n=72)
Gastric pain	40(20.77)	3(04.16)
Constipation	13(09.35)	3(04.16)
Diarrhoea	35(25.17)	5(06.94)
Fever	99(71.22)	40(55.55)
Cold/cough	95(68.34)	36(50.00)
Backache	26(18.70)	6(08.33)
Joint pain	23(16.54)	1(01.38)
Gen. Weakness	17(12.23)	5(06.94)
Headache	70(50.35)	7(09.72)
Eye disease	29(01.43)	1(01.38)
Insomnia	5(03.59)	2(02.77)
Muscle pain	30(21.58)	4(05.55)
Itching	3(02.15)	1(01.38)
Nausea/vomiting	19(13.66)	1(01.38)
Tooth ache	7(05.03)	-
Sore throat	22(15.82)	-
Burning micturition	3(02.15)	-
Miscellaneous	8(05.75)	1(01.38)
<b>Total</b>	<b>517</b>	<b>116</b>

\* Majority of students reported medications being used for more than one symptom

**Table 4: Reasons for self medication**

Reasons	Number reported-n (%)*	
	Group I Medical(n=139)	Group II Engineering(n=72)
Disease not serious	89(64.02)	42(58.33)
Familial remedy	83(59.71)	33(45.83)
Practiced in family	13(09.35)	3(04.16)
Time factor	35(25.17)	9(12.50)
Lack of trust in physician	5(03.59)	2(02.77)
Cost	5(03.59)	4(05.55)
<b>Total</b>	<b>230</b>	<b>93</b>

\*Majority of students gave more than one reason

**Table 5: Source of information regarding medicines**

Source of information	Number reported-n (%)*	
	Group I Medical(n=139)	Group II Engineering(n=72)
Friends	46(33.09)	26(36.11)
Doctor	89(64.02)	32(44.44)
Pharmacist	27(19.42)	20(27.77)
Drug advertisements	27(19.42)	12(16.66)
Internet	15(10.79)	3(04.16)
Relatives/Friends	7(05.03)	2(02.77)
Text books	36(25.89)	1(01.38)
<b>Total</b>	<b>247</b>	<b>96</b>

\*Majority of students mentioned more than one source information

**Table 6: Source of medicines**

Source of medicines	Number reported-n (%)*	
	Group I Medical(n=139)	Group II Engineering(n=72)
Purchased from pharmacy	105(75.53)	56(77.77)
Stock at home	55(39.56)	13(18.05)
Left over	24(17.26)	10(13.88)
Relative or a friend	15(10.79)	4(05.55)
<b>Total</b>	<b>199</b>	<b>83</b>

\*Majority of the students mentioned more than one source of medicine

**Table 7: Adverse events as a result of self medication**

Adverse events	Group I Medical(n=139)		Group II Engineering(n=72)	
	Number	percentage	Number	Percentage
Yes	3	2.16	1	1.39
No	135	97.12	70	97.22
No response	1	0.72	1	1.39
<b>Total</b>	<b>139</b>	<b>100</b>	<b>72</b>	<b>100</b>

**Table 8: Other factors related to self medication**

Other factors related to self medication	Group I Medical(n=139)		Group II Engineering(n=72)		
	Number	Percentage	Number	Percentage	
Believe in Ayurvedic/Homeopathic systems of medicine	Yes	84	60.43	50	69.45
	No	52	37.42	21	29.17
	No response	03	02.15	01	01.38
Knowledge about safety of Ayurvedic/Homeopathic systems of medicine	Yes	72	51.79	56	77.77
	No	60	43.16	15	20.85
	No response	07	05.03	01	01.38
Happy with present healthcare facility	Yes	99	71.23	62	86.11
	No	36	25.89	08	11.11
	No response	04	02.88	02	02.78
Aware of harmful effects of self medication	Yes	136	97.84	65	90.28
	No	03	02.15	05	06.94
	No response	00	00.00	02	02.78
Aware of antibiotic resistance	Yes	119	85.62	12	16.67
	No	15	11.51	60	83.33
	No response	04	02.87	00	00.00
Necessity to consult a doctor	Yes	129	92.80	63	87.50
	No	08	05.75	08	11.11
	No response	02	01.44	01	01.38

**DISCUSSION**

WHO is promoting practice of self-medication for effective and quick relief of symptoms without medical consultations to reduce burden on health care services, which are often understaffed and inaccessible in rural and remote areas of the developing world.<sup>14</sup> The utilization of a health care system depends on socio-demographic factors, social structures, level of education, cultural beliefs and practices, disease pattern and the health care system itself. In a study conducted in different provinces of Pakistan, considerable difference in health-seeking behaviour and extent of self-medication was observed amidst members of the rural and urban areas. It was influenced by the impact of fragile law and order situation and also terrorist attacks on public health care facilities.<sup>15</sup>

In the present study, participants are from a South Indian city, considered to be one of the best cities to live in. The study subjects were selected from a campus which houses a medical college, with a high-tech hospital, an engineering college and many other educational institutions managed by the same educational trust.

Participants from group I (medical students) were in the second phase of their course and were exposed to clinical cases. They were aware of the medicines used for the management of these diseases. On the other hand group II (engineering students) were unaware of disease processes and the medicines used to treat the same. A study conducted by the Pharmacology

## SELF-MEDICATION AMONG MEDICAL AND NON-MEDICAL STUDENTS

Niveditha G et al

Department of the All India Institute of Medical Sciences (AIIMS) has revealed that self-medication is high among undergraduate medical and paramedical students in India. The study concluded that a large number of trainee doctors are involved in self-medication and is directly proportional to the increase of knowledge in medical sciences. This is evident in the present study where self-medication practice was significantly more common among the medical students.

Our study showed that male students self-medicated more often than their female counterparts. The participants reported that for the first episode of a specific illness they had sought medical care from a physician. Thus self-medication seemed appropriate because they were relying on previous experience with similar symptoms. Overall, they had a fair knowledge about benefits and risks of self-medication. Self-medication was perceived to be time-saving, providing quick relief in common illnesses, a learning experience, economical and convenient. Predictive factors for self-medication seem to be, a high level of education, professional status and waiting time for a medical consultation.<sup>16, 17</sup>

The participants from both groups used analgesics and antipyretics more often which is in accordance with a cross sectional study conducted in Nagpur and also in a study conducted among first-year medical students of the Arabian Gulf University, Bahrain.<sup>10,13,18</sup> The present study has also shown that self-medication with antibiotics is common among medical (35.25%) compared to their non-medical counterparts (13.88%) and this was also shown in a study conducted in Northern Nigeria among the medical students.

In a study conducted among the female medical students from College of Medicine in South-Western Nigeria, only 15.9% of the study group consulted a medical doctor for dysmenorrhoea and self-medication was the norm in majority of the students.<sup>19</sup> In our study, participants in both groups mostly obtained the drugs from pharmacy, often without a prescription. There should be an active involvement of the pharmacist in drug dispensing at community pharmacies, since most consumers at the surveyed pharmacies use medications without proper knowledge of treatment method and duration.<sup>20, 21</sup>

To identify the associated sociodemographic factors and undesirable effects of self-medication, a cross-sectional study was carried out in adults older than 16 years of age in Spain.<sup>22</sup> The prevalence of self-medication in the sample was 12.7% and was higher among those with higher educational levels. Amongst University students it has been found to be up to 45% in Turkey, 88% in Croatia and 94% in Hong Kong.<sup>15</sup> The prevalence discovered by our study (95.86% & 86.74%) is also quite high and needs to be taken seriously. It is also worthy to note here that our participants belonged to the well educated category of

society and if the prevalence of self-medication is so high in people who are aware of its dangers, then the prevalence in the rest of the population may be an even more serious cause for concern. But it can be argued that exposure of rest of the population to internet and a text book is not much to acquire knowledge.

There is a certain amount of hesitation in consulting professional colleagues when they need medical help due to complex reasons including ego and a busy professional work pattern.<sup>23</sup> An exploratory survey on drug prescription and self-medication undertaken in India concluded that a rational drug policy and/or an essential drugs list will be useless, unless accompanied by intensive efforts to improve the education and updating the knowledge of doctors and pharmacists and to reduce the commercial pressures on doctors to prescribe unnecessary drugs.<sup>24</sup> A similar research in the Arabian Gulf concluded that the prevalence of self-medication was higher in the senior medical students. Yet another study in Dhaka, Bangladesh revealed that the storage of leftover antibiotics at home constitutes an alternative potential source of self-medication that can have untoward consequences.<sup>25</sup> In a survey conducted in 3rd year medical and pharmacy students at the Zagreb University, Croatia, certain common patterns of behaviour with respect to drug keeping and self-medication was noticed.<sup>12</sup>

Self-treatment is strongly embedded within the culture of both physicians and medical students as an accepted way to enhance work performance and these complex self-directed care behaviours could be regarded as an occupational hazard for the medical profession.<sup>26</sup> In the present study, awareness about the harmful effects of self-medication was above ninety percent in both groups, but experiencing adverse drug reactions (ADR) as a result of self-medication was negligible. In a comparative study conducted among first and third year medical students in Nagpur, ADRs were considered as main disadvantage.<sup>10</sup> The knowledge regarding antibiotic resistance was very low among the non-medical students (16.67% Vs 85.62%). Many medical students opined that resistance can lead to an increased usage of more strong and expensive antibiotics which in turn will result in increased cost. Though 92.80% of medical and 87.50% of engineering students expressed the need to consult a doctor for any illness, it was not practiced by majority of them.

## CONCLUSION

The practice of self-medication is alarmingly higher among the educated youth despite majority of them knowing that it is incorrect. A holistic approach must be taken to prevent this problem from escalating. Medical students tend to practice self-medication more often and have greater knowledge, as well as concerned attitude towards self-medication. There is a need for a review of educational programs especially

## SELF-MEDICATION AMONG MEDICAL AND NON-MEDICAL STUDENTS

Niveditha G et al

the teaching of clinical pharmacology to include modules on self-medication and rational use of medicines.

This study shows the need to carry out educational campaigns to alert the population about the use of many medications available in the market. For that, it is imperative to have an active participation of health care professionals, specially physicians and pharmacists, besides help from the pharmaceutical industry, government regulations and competent authorities. Although self medication is difficult to eliminate, intervention can be made to discourage this practice and ensure safer usage of drugs. Strict legislation regarding accessibility of these drugs may also be warranted.

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**SELF-MEDICATION AMONG MEDICAL AND NON-MEDICAL STUDENTS****Niveditha G et al**

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