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Original Article

Ear, Nose and Throat Section

Knowledge, Attitude and Practices of Medical Students Regarding Self-Medication in Sore Throat: A Cross-sectional Study

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ABSTRACT

Introduction: Self-medication is a prevalent problem worldwide. Especially, knowing the pattern among medical students is pertinent as they would be future physicians. It would be interesting to find out their self-medication practices in common ailment such as sore throat.

Aim: To study the patterns of self-medication in sore throat among medical students.

Materials and Methods: This was a cross-sectional, online questionnaire based survey (via google forms) conducted in Muzaffarnagar Medical College from October 2020 to November 2020. Total 450 students from 2nd, 3rd and final year (150 per batch) were enrolled. Out of these, only 213 consented and participated in the study (82 students from 2nd year, 93 from 3rd year and 38 from final year). Results were expressed as counts (n) and percentages (%) statistical analysis was done wherever appropriate.

Results: Out of 213 students (113 were females and 100 were males), who participated in the survey, 190 (89.2%) suffered from sore throat in last 1 year and 111 (58.42%) of these self-medicated for it. Self-medication practices increased with professional year, highest being in final year (27 of 38, 71.05%). Most common class of drug used was antibiotic (consumed by n=95, 85.59%). It was followed by analgesic/antipyretic (n=82, 73.87%) and antihistaminic (n=75, 67.57%). Overall, azithromycin was the most favoured independent drug for sore throat (n=68, 71.58%). More than half of the students who preferred antibiotic other than azithromycin (n=14/27, 51.85%), discontinued it within 3 days. Majority of students (n=126, 59.15%) did not support self-medication whereas 87 students (40.85%) believed self-medication to be good. Almost 1/5th of the students (n=46, 21.60%) confirmed that they will self-medicate in future, 107 (50.23%) were not sure and only 60 (28.17%) refused to practice self-medication. One fifth students (n=42, 19.72%) felt that self-medication is a part of self-care and 30 (14.08%) would recommend it to others also. Prevalence of self-medication in sore throat was in 111 students (58.42%).

Conclusion: A rising trend with progression of professional year was observed. An alarming fact in the present study was the high use of antibiotic in sore throat by our undergraduates. The students need to understand the indications of the medicines they prescribe to themselves or others.

Keywords: Antibiotic, Google forms, Practices, Prevalence, Questionnaire, Undergraduates

INTRODUCTION

Self-medication involves the use of medicinal products by the consumer to treat self-diagnosed disorders or symptoms, or the intermittent/continued use of a medication prescribed by a physician for chronic or recurrent disease or symptoms [1]. It is a prevalent problem worldwide [2-9]. Though cautious self-medication can be helpful in reducing burden over healthcare system in selected cases. At the same time one should be aware of possible harms such as increased resistance of pathogens, adverse drug reactions and drug dependence [10].

There have been several studies worldwide on evaluation of self-medication practices in general population [2-9]. Medical students are the future physicians. It is of importance to know their attitude towards self-medication as they will guide the society in upcoming years. Few studies have been conducted in India and other countries to study the pattern of self-medication among medical undergraduates [11-28]. But the authors didn't find any study accessing self-medication pertaining to single disease or indication.

This study was undertaken to study the knowledge, attitude and practices among medical undergraduates for common Ear Nose Throat (ENT) problem-sore throat. This is usually viral, and requires just symptomatic treatment in most cases. But authors found that this was a common condition where students used to present after inappropriate self-medication. Hence, this study was conducted so as to find out the pattern of self-medication in the present medical undergraduates for sore throat.

MATERIALS AND METHODS

This study was a cross-sectional, online questionnaire based survey conducted in a private medical college among second, third and final year medical students using questionnaire from October 2020 to November 2020. Permission for the survey was granted by Institutional Ethical Committee (ECR/1318/Inst/U/2019).

The questionnaire was pre-tested on 30 students who were asked to fill forms. Later on it was introduced to whole sample size with exclusion of previous 30 results in final data.

Inclusion criteria: Total of 213, second, third and final year medical undergraduate students of Mujaffarnagar Medical College who gave consent for the participation in this online survey during the study time period were included in the study.

Exclusion criteria: Those second, third and final year students, amongst the 450 enrolled, who did not gave consent for participation in the study during the study time period and those who suffered with high grade fever and severe dysphagia or odynophagia were excluded from the study.

Questionnaire

The questionnaire was formulated with guidance from previous studies [14,15]. Few of the questions were omitted from above mentioned studies such as age consideration, frequency of self-medication, system of medicine followed, indication for self-medication. Some items were added such as practice of warm saline gargles, suspiciousness for Coronavirus Disease-2019

(COVID-19) infection by participants, duration for which illness was experienced, which antibiotic used and its duration and which analgesic was used. The questionnaire consisted of 20 items [Annexure]. The initial 2 items were to enquire demographic profile, next 16 were regarding knowledge and practice pertaining to self-medication in sore throat and last 2 questions were for assessing their attitude towards it. Self-medication was defined as use of over the counter or prescribed drug for self-treatment without consultation of a doctor. Symptoms such as throat irritation or foreign body sensation with or without pain were considered as sore throat.

STATISTICAL ANALYSIS

The results were entered into Microsoft excel sheet, analysed and presented as counts and percentages. The Chi-square (χ^2) test was used to test the difference between proportions to show association between professional year and self-medication practices. A p-value of less than 0.05 was considered significant.

RESULTS

Total 213 completed Google forms were received. Out of these 113 were females and 100 were males. Students' participation year-wise was as follows: 82 from 2nd year, 93 from 3rd year and 38 from final year.

Amongst all participants, 190 students had experienced sore throat in last one year; of which 111 self-medicated themselves (criteria for labelling sore throat and self-medication already described) and 12 consulted physician whereas 67 took no medicine at all. Most of the students with sore throat (n=146, 76.84%) did warm saline gargles; 32 (16.84%) had related their symptom to COVID-19 disease [Table/Fig-1]. Of these 32 students, 16 were relieved by self-medication and 12 went to doctor. None of them was found COVID-19 positive.

It was noted that self-medication practices increased with progressive professional year, with highest (71.05%) in final year students which was statistically significant [Table/Fig-2]. More students in self-medication group had shorter illness (<5 days in 75 students, 59.52%) as compared to those who didn't take any medication (<5 days in 51 students, 40.48%) but the difference was not statistically significant.

Most common class of drug used was antibiotic (consumed by n=95, almost 86% of the students who self-medicated), followed by analgesic/antipyretic (n=82, 73.87%) and antihistaminic (n=75, 67.57%). Overall, azithromycin was the most favoured independent drug for sore throat [Table/Fig-3].

Amongst those who took azithromycin, 5 took it empty stomach; 50 took it for 3 days and 18 consumed it for 5 days. Students who preferred antibiotic other than azithromycin, mostly discontinued it within 3 days (14 of 27 students) [Table/Fig-4].

Prof. year	Number (%)	Gender (%)		Sore throat (%)	Related with COVID-19 (%)	Took medication (%)	Self-medicated (SM) (%)	Warm saline gargles (%)	Duration of illness without medication (%)		Duration of illness with medication (%)	
		Male	Female						<5 d	5-7 d	<5 d	5-7 d
2nd year	82 (38.5%)	37 (45.12%)	45 (54.88%)	73 (89.02%)	9 (12.3%)	41 (56.16%)	36 (43.9%)	58 (70.73%)	24 (75%)	8 (25%)	21 (51.21%)	18 (43.9%)
3rd year	93 (43.66%)	43 (46.24%)	50 (53.76%)	79 (84.94%)	17 (21.51%)	51 (64.5%)	48 (51.61%)	60 (64.5%)	21 (75%)	7 (25%)	32 (62.75%)	12 (23.53%)
Final year	38 (17.84%)	20 (52.63%)	18 (47.37%)	38 (100%)	6 (15.78%)	31 (81.5%)	27 (71.05%)	28 (73.68%)	6 (54.54%)	1 (9.09%)	22 (70.97%)	6 (19.35%)
Total	213 (100%)	100 (46.95%)	113 (53.05%)	190 (89.20%)	32 (16.84%)	123 (64.74%)	111 (58.42%)	146 (76.84%)	51 (76.12%)	16 (23.88%)	75 (67.57%)	36 (32.43%)

[Table/Fig-1]: Demographics and practice.
d: Days; Prof: Professional

Professional year	Self-medication Yes (%)	Self-medication No (%)
2nd (n=82)	36 (43.90%)	46 (56.10%)
3rd (n=93)	48 (51.61%)	45 (48.39%)
Final year (n=38)	27 (71.05%)	11 (28.95%)
Total	111	102

[Table/Fig-2]: Association between self-medication vs non self-medication practices according to year (N=213).
Chi-square, 0.05=7.69, p-value=0.021; significant

A good number of the students (n=81, 85.26%) were aware of side-effects of antibiotic they used for self-medication. All the students who self-medicated declared that they were relieved.

Majority of students (59.15%) did not support self-medication whereas 40.85% students supported self-medication. Almost 1/5th of the students (n=46, 21.60%) confirmed that they will do it in future and only 60 (28.17%) refused to practice self-medication [Table/Fig-5]. One fifth students (n=42, 19.72%) felt that self-medication is a part of self-care and 30 (14.08%) would recommend it to others also.

Prof. yr	Took analgesic (%)	Which analgesic n (%)			Which antibiotic n (%)			Took anti-histaminic (%)	Azi-empty stomach (%)	Duration of Azi 3d/5d		Duration of other antibiotic (%)			Knew side-effect (%)	Relieved with SM (%)
		PCM	A	I	Azi	Amoxi	Ceph			3d	5d	3d	5d	7d		
2nd year	29 (80.55%)	26 (89.66%)	0	3 (10.34%)	21 (75%)	6 (21.43%)	1 (3.57%)	26 (72.22%)	2 (9.52%)	17 (80.95%)	4 (19.05%)	4 (57.14%)	3 (42.86%)	0	25 (92.59%)	36 (43.9%)
3rd year	31 (64.58%)	23 (74.19%)	5 (14.7%)	3 (9.68%)	28 (71.79%)	9 (23.08%)	2 (5.12%)	27 (56.25%)	3 (10.71%)	19 (67.86%)	9 (32.14%)	7 (63.64%)	4 (36.36%)	0	33 (84.61%)	48 (51.61%)
Final year	22 (81.48%)	17 (77.27%)	3 (13.64%)	2 (9.09%)	19 (67.86%)	8 (28.57%)	1 (3.7%)	22 (81.48%)	0	14 (73.68%)	5 (26.32%)	3 (33.333%)	4 (44.44%)	2 (22.22%)	23 (85.18%)	27 (71.05%)
Total	82 (73.87%)	66 (80.49%)	8 (9.76%)	8 (9.76%)	68 (71.58%)	23 (24.21%)	4 (4.21%)	75 (67.57%)	5 (7.35%)	50 (73.53%)	18 (26.47%)	14 (51.85%)	11 (40.74%)	2 (7.41%)	81 (85.26%)	111 (100%)

[Table/Fig-3]: Knowledge and practice of medical students.
Prof. Yr: Professional year; PCM: Paracetamol; d: Days; Aceclo/A: Aceclofenac; I: Ibuprofen; Azi: Azithromycin; Amoxi: Amoxiclav; Ceph: Cephalosporins; d: Days; SM: Self medication

Antibiotic	No. of students (n)	Percentage (%)
<3 days	14	51.85%
5 days	11	40.74%
7days	02	07.41%
Total	27	100%

[Table/Fig-4]: Duration for which antibiotic used (other than azithromycin).

DISCUSSION

This was a cross-sectional, questionnaire based study conducted in October 2020 in a private medical college. Total 213 medical undergraduates participated. Out of these, 190 experienced sore

Prof. Year	Is self-medication good? n (%)		Would you self-medicate in future? n (%)			Tick whichever appropriate n (%) (A/B/C/D)			
	Yes	No	Yes	No	Maybe	A	B	C	D
2nd yr (n=82)	34 (41.46%)	48 (58.54%)	16 (19.51%)	23 (28.05%)	43 (52.44%)	13 (15.85%)	2 (2.44%)	15 (18.29%)	52 (63.41%)
3rd yr (n=93)	34 (36.56%)	59 (63.44%)	21 (22.58%)	29 (31.18%)	43 (46.24%)	18 (19.35%)	1 (1.08%)	13 (13.98%)	61 (65.59%)
Final yr (n=38)	19 (50%)	19 (50%)	9 (15.52%)	8 (21.05%)	21 (55.26%)	11 (28.95%)	1 (2.63%)	2 (5.26%)	24 (63.16%)
Total	87 (40.85%)	126 (59.15%)	46 (21.60%)	60 (28.17%)	107 (50.23%)	42 (19.72%)	4 (1.88%)	30 (14.08%)	137 (64.32%)

[Table/Fig-5]: Attitude of Medical Students.
Prof.: Professional; yr: Year; A: Self-Medication (SM) is part of self-care, B: Would advice and recommend SM, C: Both, D: None

throat in last one year and 111 self-medicated (58.42%). In a study conducted by Kanwal ZG et al., they found 46.3% had practiced self-medication several times in last 6 months [16]. Similar results were reported by Banerjee I and Bhadury T, in West Bengal with 57.05% prevalence, Sarraf DP et al., of Nepal stated prevalence of 48.3% [17,18]. El Ezz NF and Ez-Elarab HS had reported 55% medical students practicing self-medication [19]. Higher prevalence was reported by Indian studies conducted in Karnataka by Patil SB et al., (88.18%) and by Kasulkar AA and Gupta M, (71.7%) [15,20]. Another Indian study by Badiger S et al., in Mangalore mentioned prevalence to be as high as 92% [14]. Various studies in other countries also reported high percentage- 75.2% by Ibrahim NK et al., in Saudi Arabia, 76.6% by Khadka A and Kafle KK, in Kathmandu, 79.9% by Lukovic JA et al., in Serbia, 81.35% by Banerjee I et al., in Pohkra Nepal [21-24]. An overwhelming prevalence of 97.8% was reported by Al-Hussaini M et al., in Kuwait [25]. The higher percentages in most studies may be due to local regulations regarding over the counter medicines. Moreover, all the above studies have incorporated self-medication practices irrespective of the indication, whereas, in this study authors enquired about self-medication in sore throat specifically.

In this study, the prevalence of self-medication was on rising trend with professional year, with the highest prevalence (71.05%) in final year students. Similar results were published by Kasulkar AA and Gupta M, who also reported highest prevalence in final year students [20]. Patil SB et al., and Pandya RN et al., also found highest prevalence in final year students, which were 91.75% and 90%, respectively [15,26]. Rising trend with progressive year of study was stated by Pandya RN et al., and Kumar N et al., [26,27]. This pattern observed in this study is well explainable by the fact that with increasing year of study, there comes more knowledge and confidence for self-medication.

Most commonly used class of drug in sore throat was antibiotic (85.59%), followed by analgesic and lastly antihistaminic. These findings are in congruence with studies conducted by Patil SB et al., Banerjee I and Bhadury T, and El-Ezz NF and Ez-Elarab HS, [15,17,19]. In contrast, most studies have reported antipyretic/analgesics to be mostly used for self-medication [14,18,21,23, 27,28]. The reason for NSAIDs for being most common implicated drug may be because all above studies have included fever, pain and headache also in indication of self-medication. It is noteworthy that this study has evolved with such high percentage of antibiotic use in condition as trivial as sore throat. Azithromycin was the most preferred antibiotic, may be due to its easy dosage schedule. Another point of concern is that more than half of the students who took antibiotic other than azithromycin, didn't complete their course. Banerjee I and Bhadury T, also found that majority of students didn't complete course of antibiotics [17]. A systemic review by Batista AD et al., in 2020 included 85 papers. It concluded that practice of antibiotic self-medication is high in low and middle income countries [9]. Such attitude of future doctors is extremely hazardous for themselves as well as society as it increases the risk of antibiotic resistance and emergence of most dreaded-multiple drug resistance.

About 41% students who showed positive response for self-medication about one fifth would continue self-medication. About 20% believed it to be part of self-care and 14% will even advise it to others. Similar findings with higher percentage were noted by Kanwal ZG et al., (95%) [16]. Khadka A and Kafle KK, reported 68.4% students had positive feedback for self-medication [22]. In other studies by Patil SB et al., 40% students, Sarraf DP et al., 53.8% students and Kumar N et al., 47% considered self-medication to be part of self-care [15,18,27].

Self-medication is a necessary evil. It can be both beneficial (if used cautiously) and hazardous (when used indiscriminately). The need of the hour is to teach our undergraduates about the pros and cons of self-medication. Most importantly, they should be educated about the indication of antibiotics and if used, the importance of completing the course.

Limitation(s)

The present study was limited of being a small sample size and lack of confirmatory diagnosis. The study could not be conducted in presence of an investigator who could guide them in case they had any query about any question. Further studies need to be undertaken to find out about self-medication in several medical colleges simultaneously to get a broader view of the picture.

CONCLUSION(S)

In this study, authors found prevalence of self-medication to be 58.42% and significant association of practice to self-medicate with progressive professional year. This attitude also needs to be addressed and kept under check as by the time they get into practice, they might develop a habit of not taking expert-opinion for the disease. This may be troublesome for the public. A rather alarming and worrisome fact in the results was the high use of antibiotic in sore throat by these undergraduates (85.59%). It is unbecoming that students don't realise the sore throat is mostly viral in origin where only supportive therapy would suffice. Another pertinent finding is that almost half of students who consumed antibiotic other than azithromycin didn't complete their course. The undergraduates need to understand the indications of the medicines they prescribed to themselves or others. The knowledge about antibiotic resistance needs to be inculcated into them firmly. There should be application of educational and regulatory strategies to prevent sale of antibiotics as over the counter drugs.

Further studies are recommended and need to be undertaken to find out about self-medication in several medical colleges simultaneously to get a broader view of the picture.

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ANNEXURE

Questionnaire:

1. Which year MBBS student are you?
   2nd/3rd/final year
2. Your gender?
   Male/Female
3. Did you experience sore throat in last 1 year?
   Yes/No
4. Did you relate it to COVID-19?
   Yes/No/Maybe/Not applicable
5. If had sore throat, did you take any medicine for it?
   Yes/No/Not applicable
6. Did you self-medicate?
   Yes/No/Not applicable
7. Did you gargle with warm saline?
   Yes, with medication/Yes, without medication/No/Not applicable

8. If didn't take any medication, what was the duration of illness?
<5 days/5 to 7 days/>7 days/Took medicine/Not applicable
9. With self-medication, duration of illness?
<5 days/5 to 7 days/>7 days/Didn't self-medicate/Not applicable
10 Did you take analgesic/antipyretic? If yes, which?
Paracetamol/Aceclofenac or diclofenac/Ibuprofen/None/Not applicable
11. Did you take antihistaminic?
Yes/No/Not applicable
12. Did you take antibiotic? If yes, which?
Azithromycin/Amoxycillin-clavulanic acid/Cephalosporin/None/Other/Not applicable
13. Did you take azithromycin empty stomach?
Yes/No/Not applicable
14. How long did you take azithromycin?
3 days/5 days/Not applicable
15. How long did you take antibiotic other than azithromycin?
<3 days/5 days/7 days/Not applicable
16. Do you know the side-effects of the antibiotic you consumed?
Yes/No/Not applicable
17. Were you relieved on self-medication?
Yes/No/Not applicable
18. Do you think self-medication is good?
Yes/No
19. Would you self-medicate in future?
Yes/No/Maybe
20. Tick whichever you feel appropriate?
Self-medication is a part of self-care/You would advice and recommend self-medication to others/None/Both