

Longitudinal study of self-medication practices in 2nd year MBBS students through their internship

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ABSTRACT

Background: Self-medication is common in medical students but few studies address the concern regarding knowledge of adverse drug reactions (ADRs) among them. None of the study compares the practice of self-medication among the same medical students as their level of education increases. Hence the study was planned to compare the pattern, source, reason of self-medication and assess the level of awareness about potential ADRs to the consumed drugs in medical students during second year through their internship.

Methods: It was a longitudinal cross sectional questionnaire-based study conducted among under graduate second year MBBS students of a medical college and repeated during their internship few years later in order to avoid variability in questionnaire. Chi-square and Fischer's exact test were used for testing statistical significance. p value less than 0.05 was considered to be statistically significant.

Results: 80 students were present on the day of study during their IInd MBBS and 73 students during their internship. Comparatively more students self-medicated during their internship than during their IInd MBBS (68% vs 55%). Analgesics (56.8% and 80%) were most commonly used. 35(70%) of interns were aware of potential ADRs and was statistically very significant in comparison to their awareness during IInd MBBS [9(20.45%)]. Interns rely more on themselves (96%) for self-medication.

Conclusions: The practice of self-medication begins early in the career of medical students and is carried forward into their future. Hence it is imperative to educate students regarding responsible self-medication very early in their curriculum.

Keywords: Adverse drug reactions, Medical students, Self-medication

INTRODUCTION

Selection and use of medicines to treat self-recognized illness is called self-medication.¹ The practice of self-medication must be based on authentic medical information otherwise irrational use of drugs can cause wastage of resources, increased resistance of pathogens, and can lead to serious health hazards such as adverse drug reaction and prolonged morbidity.¹

Self-medication assumes a special significance among medical students since they are exposed to the knowledge

about diseases and drugs and as future medical practitioners will have a potential role in counselling patients about the advantages and disadvantages of self-medication.

Self-prescribing among doctors is reported to be prevalent. Self-medication with antibiotics was reported by 53% of doctors in Karnataka, India.² Montgomery et.al in a meta-analysis have reported variation in prevalence of self-medication among medical students and healthcare professionals from different countries ranging from 12 to 99%.³ In a study of self-medication in young Norwegian

doctors, 90% of hospital physicians and the general practitioners reported self-medication during the previous year.⁴

Self-medication is also reported to be prevalent among Indian medical students.^{5,6} The practice of self-medication among doctors develops during their training period as is obvious from some studies of self-medication among medical students. These studies have reported high prevalence ranging from 44.8% to 82.3%.⁷⁻¹⁰

Though many cross sectional studies highlight the prevalence and pattern of self medication among medical students from India very few studies address the concern regarding knowledge of adverse drug reactions in self-medicating students. Also no study compares the practice of self medication among the same medical students as their level of education increases. It is important to understand the self-medicating behavior of medical students over a longitudinal period because then accordingly corrective measures can be taken early in their career. Hence this study was planned to compare the pattern, source, reason of self- medication and assess the level of awareness about potential adverse drug reactions to the consumed drugs in medical students during second year and in the same students when they became interns.

METHODS

A longitudinal cross sectional questionnaire-based study was conducted among under graduate second year MBBS students of a medical college and repeated during their internship few years later. A structured, pre-tested questionnaire containing eight items was used to collect data from the student participants during their second MBBS year. The second encounter was during their internship and the same questionnaire that was used during the first encounter was given to them as interns in order to avoid variability in questionnaire. The study was approved by institutional ethics committee. Written and informed

consent was taken from all participants during both encounters.

The questionnaire included questions pertaining to demographic details, self medication prior to one month before administration of questionnaire, indications for self-medication, details of the drug used, sources of advice for self-medication, reasons for favoring self-medication and knowledge of adverse effects of drugs. The data was analyzed to study the self medication pattern, the most common drugs used and knowledge about potential adverse drug reactions (ADRs), source and reasons for self medication in both the sets. We then compared these to observe any possible change in self-medication pattern, knowledge of ADRs etc during internship from second MBBS.

Statistical analysis

Descriptive data was expressed as percentage. Chi-square test was used for testing statistical significance. A p value less than 0.05 was considered to be statistically significant.

RESULTS

Table 1 shows that of the 80 students present on the day of study during their IInd MBBS and 73 students present on the day of study during their internship, all agreed to participate in the study giving a response rate of 100% both the times. Comparatively more students self-medicated during their internship than during their IInd MBBS (68% vs 55%). Proportion of males self-medicating also appears to be more during internship (58% vs 45.45% during IInd MBBS). Students who had self-medicated during IInd MBBS and during internship too, were referred as common students and subgroup analysis was done accordingly. More than half of the self-medicating IInd MBBS students (25/44, 56.81%) self-medicated during internship too.

Table 1: Demographic data and indication for self-medication.

Characteristics	Overall students		Common students	
	2 nd MBBS n ₁ (%)	Interns n ₂ (%)	2 nd MBBS n ₁ (%)	Interns n ₂ (%)
No. of students present on day of study	80	73		
No. of students presented with and answered questionnaire	80 (100%)	73 (100%)		
No. of students who had self- medicated in last one month	44 (55%)	50 (68.49%)	25/44 (56.81)	25/50 (50)
Females (n ₁ =44, n ₂ =50)	24 (54.54%)	21 (42%)	14 (56%)	14 (56%)
Males (n ₁ =44, n ₂ =50)	20 (45.45%)	29 (58%)	11 (44%)	11 (44%)
Mean age of students who had self-medicated	19.34 years	22.5 years		

Table 2 shows that, the indications for which participants self-medicated during their IInd MBBS and during Internship appear to be similar except that interns used

medication for pain/fever, Allergies and infections comparatively more and medicine for cough significantly less than during their IInd MBBS. The indications for self-

medication except for cough (significantly low in this group too), remained nearly same in the 25 common students.

Table 3 shows drug groups commonly used for self-medication during both encounters. The frequency of use of various drug groups is nearly similar during both years. Analgesics (56.8% and 80%) were most commonly used, followed by antihistaminics (43.1% and 44%) and antibiotics (38.6% and 24%). The use of analgesics by

students during internship is significantly more as compared to during IInd MBBS. The use of Antibiotics (38.6% vs 24%), Vitamins/minerals (31.8% vs 20%) is comparatively less and use of cough syrup is significantly less during internship (10%) than during Ind MBBS (31.8%). The subgroup analysis of 25 common students shows a significant decrease in use of antibiotics (48% vs 20%) and cough syrup (32% vs 12%) during internship.

Table 2: Indication for self-medication as mentioned by students.

Indication for self- medication as mentioned by students	Overall students		Common students	
	2 nd MBBS n ₁ =44(%)*	Interns n ₂ =50(%)*	2 nd MBBS n ₁ =25(%)*	Interns n ₂ =25(%)*
Pain/fever	25 (56.8%)	35 (90%)	14 (56%)	18 (72%)
Flu/cold	20 (45.45%)	16 (32%)	11 (44%)	9 (36%)
Infections	12 (27.27%)	16 (32%)	7 (28%)	8 (32%)
Gastric problems	11 (25%)	11 (22%)	6 (24%)	9 (36%)
Vitamins/minerals	16 (36.3%)	17 (34%)	10 (40%)	10 (40%)
Allergies	5 (11.36%)	11 (22%)	2 (8%)	5 (20%)
Cough	20 (45.4%)	10** (20%)	14 (56%)	5** (20%)
Menstrual problem	3 (6.8%)	2 (4%)	2 (8%)	1 (4%)
Asthma	1 (2.27%)	2 (4%)		

*The total for indication for self- medication does not add up to 100% because more than one indication was ticked by an individual student.

**Result was statistically significant (p=0.008).

Table 3: Frequency of drug groups consumed by students during self-medication.

Drug groups	Overall students			Common students		
	2 nd MBBS n ₁ =44(%)*	Interns n ₂ =50(%)*	p value	2 nd MBBS n ₁ =25(%)*	Interns n ₂ =25(%)*	p value
Analgesics	25 (56.8%)	40 (80%)	0.01**	17 (68%)	23 (92%)	0.03**
Antihistaminics	19 (43.1%)	22 (44%)	0.9	10 (40%)	12 (48%)	0.5
Antibiotics	17 (38.6%)	12 (24%)	0.12	12 (48%)	5 (20%)	0.03**
Vitamins/minerals	14 (31.8%)	10 (20%)	0.18	9 (36%)	5 (20%)	0.2
Cough syrup	14 (31.8%)	5 (10%)	0.008**	8 (32%)	3 (12%)	0.008
Antacids/antidiarrhoeal/ H2 antihistaminics	12 (27.27%)	12 (24%)	0.7	5 (20%)	9 (36%)	0.2
Bronchodilator/	1 (2.27%)	2 (4%)	0.6			
Other				5 (20%)	2 (8%)	0.2

*The total frequency of drug groups consumed by students during self -medication does not add up to 100% because more than one drug group was consumed by an individual student.

**Result was statistically significant (p<0.05).

Table 4 shows awareness about potential adverse drug reactions to drugs used for self medication in students and interns during both encounters. It was observed that 35 (70%) interns were aware of potential ADRs. This was statistically very significant in comparison to their awareness during IInd MBBS [9(20.45%)]. Awareness was also significantly high among common students [80% during internship vs 20% during IInd MBBS]. There was also significant improvement in number of students stating

correct potential ADRs to drugs consumed by them during IInd MBBS and internship [20% vs.66% (p=0.0001)].

Table 5 shows the sources of advice for self-medication. Interns seem to rely more on themselves (96%) for self-medication (Table 4) as compared to when they were in IInd MBBS (77.2%). None of the interns took advice from pharmacist/parents as opposed to during IInd MBBS. Interns also took less advice from friends as compared to when they were students (4% vs 20.4% during IInd MBBS).

Table 4: Awareness in students about ADRs to drugs used for self-medication.

Characteristics	Overall students		Common students	
	2 nd MBBS N1=44 (percentage)	Interns N2=50 (percentage)	2 nd MBBS N1=25 (percentage)	Interns N2=25 (percentage)
Number of students indicating awareness of adverse drug reactions to the drugs they have taken	9 (20.45%)	35** (70%)	6 (24%)	20** (80%)
number of students unaware of ADRs/not answered the question	35 (79.54%)	15 (30%)	19 (76%)	5 (20%)
Number of students stating wrong ADRs to the drugs they have taken	0	2 (4%)	0	1 (4%)
Number of students stating correct ADRs to the drugs they have taken	9 (20.45%)	33 (66%)	6 (24%)	19 (76%)
Number of students stating one ADRs	4 (44.45%)	23 (46%)	3 (12%)	15 (60%)
Number of students stating two ADRs	4 (9.09%)	7 (14%)	3 (12%)	4 (16%)
Number of students stating three ADRs	1 (2.27%)	3 (6%)		
Females	7/9 (77.77)	14/33 (42.42%)	5 (20%)	12 (48%)
Males	2/9 (22.22)	19/33 (57.57%)	1 (4%)	8 (32%)

**Result was statistically significant (p<0.05).

Table 5: Sources of advice for self-medication.

	Overall students		Common students	
	2 nd MBBS N1=44 (percentage)	Interns N2=50 (percentage)	2 nd MBBS N1=25 (percentage)	Interns N2=25 (percentage)
Pharmacist	4 (9%)	0	4 (16%)	0
Parents	8 (18.18%)	0	6 (24%)	0
Friend	9 (20.4%)	2 (4%)	4 (16%)	2 (8%)
Self	34 (77.2%)	48 (96%)	21 (84%)	24 (96%)

Table 6: Reasons for self-medication.

Reason	Overall students		Common students	
	2 nd MBBS n1=44 (%)	Inter ns n2=50 (%)	2 nd MBBS n1=25 (%)	Interns n2=25 (%)
Previous experience	32 (72.7%)	33 (66%)	21 (84%)	21 (84%)
Illness was mild	29 (65.9%)	26 (52%)	18 (72%)	10** (40%)
Already had medicines	16 (36.3%)	16 (32%)	11 (44%)	9 (36%)
Doctor not available / time consuming	2 (4.54%)	2 (4%)	2 (8%)	2 (8%)

**Result was statistically significant (p=0.02).

The reasons cited by students for self-medication, both during IInd MBBS and Internship (Table 6) do not seem to differ significantly. Having previous experience of the illness still remained the first reason for self-medication (72.7% during IInd MBBS and 66% during Internship) during both encounters. This was followed by the illness

being considered mild (65.9% during IInd MBBS and 52% during internship). 36.3% during IInd MBBS and 32% during internship self-medicated because they had the medicine with them. The least common reason for self-medication during both the encounters was the non-availability of a doctor or a visit to a doctor being time consuming.

DISCUSSION

As observed from Table 1 the prevalence of self-medication in participants appears to be higher during internship (68%) as compared to during their second year (55%) indicating an increasing tendency towards self-medication with increasing seniority. A study by Lukovic JA et.al in Belgrade also observed that sixth year medical students self-medicated more as compared to first and third years.¹¹ The prevalence of self-medication is more as compared to that observed in a similar setting in third MBBS students (39.24%) but less as compared to other studies.^{5,6,8}

Pain/Fever (56.8% and 70%), cold/flu (45.4% and 32%), infections (27.27% and 32%) and nutritional supplementation (36.4% and 34%) were the main

indications for which participants self-medicated during IInd MBBS and during internship respectively (Table 2). Further the similarity in most indications during both years indicates that medical students might be facing almost the same health concerns throughout their tenure as medical students. This view is strengthened by observation of other studies on self-medication wherein similar indications have been cited.^{5,6} Significantly less participants self-medicated due to cough during internship (20%) as compared to during IInd MBBS (45.4%). Sontakke, et al have also reported that IIIrd MBBS students used self-medication significantly less for cough as compared to Ist MBBS students albeit these were two totally different groups of students.⁵

A very important and unique observation in the present study is that more than half [25 /44(56.81%)] of the 44 students who had self-medicated during IInd MBBS self-medicated during internship too. A study conducted in Norway by Erlend Hem et.al has shown that self prescribing during internship by physicians is a significant predictor of self-prescribing in the ninth postgraduate year, but observations of present study indicate that the practice of self medication begin early in the medical career and is carried forward into the future of medical students.⁴ Thus the findings of present study could serve as a guideline for medical teachers to focus on and educate students regarding drugs used for these indications with regards to self medication.

Regarding the commonly used drug groups; Analgesics/antipyretics were most commonly used drugs for self medication and the use of analgesics/antipyretics by students during internship is significantly more as compared to during IInd MBBS (80% vs56.8%) (Table 3). On the other hand the use of antibiotics seems to be less (24% vs 38%) in the interns and significantly less in the subgroup of 25 interns (20%) who had also self-medicated during IInd MBBS (48%). This finding is important if one takes into consideration the fact that infection as an indication for self-medication is fairly constant during both encounters. Thus it may indicate that medical education may improve antibiotic use. Other studies conducted on Ist MBBS, IInd and IIIrd MBBS and practicing physicians, too have indicated Analgesics to be most commonly used.^{5,6,10-12} The significantly lesser use of cough syrups during internship could possibly be because of increased awareness that treating the primary cause can allay cough because though 20% interns mentioned cough as an indication for self-medication; only half (10%) consumed cough syrup. The drug groups most frequently used in present study by participants for self-medication were similar to other studies.^{5,6,10,12}

Table 4 shows that awareness about potential ADRs to drugs consumed is significantly more during internship (70%) as compared to during IInd MBBS (20.45%). More interns wrote ADR correctly (33vs9) and numbers of ADRs stated by them for a particular drug was also more as compared to during IInd MBBS. This indicates that

medical training may increase awareness about adverse drug reactions to self-medicated drugs. The level of awareness about ADRs during internship (70%) in present study is much more than IIIrd MBBS student's awareness (45.16%) in another study conducted in similar settings.⁶ Badiger, et al observed the awareness of ADRs in self-medicated drugs to be 67.4% in a mixed sample of medical students.¹²

Table 5 shows that both during IInd MBBS and during internship most (77.2% and 96%) participants self-medicated on own counsel, but whereas during IInd MBBS at least some received advice from pharmacist, parents, friends; during internship reliance on pharmacist, parents as sources of advice for self-medication is nil and reliance on friends is significantly reduced. On the other hand during internship relying on self for medication has significantly increased with improvement in level of education, indicating confidence in own treatment. This though appreciable is also risky because this may prevent them from seeking timely help when it is most needed. Other studies on medical students have also shown that unlike nonmedical self-medicating population,¹³⁻¹⁶ medical students tend to rely on themselves for self-medication.^{6,8,11}

As observed from Table 6, reasons for self-medication do not seem to alter much over a period of time, previous experience, considering the illness to be mild and already having the medicine stocked with them are consistent reasons cited by participants both during IInd MBBS and internship. These findings are very similar to another study in similar setup where previous experience (67.74%), illness being considered mild (80.64%) were the main reasons for self-medicating by IIIrd MBBS students.⁶ These findings are consistent with other studies indicating that medical students everywhere may have similar outlook towards self-medication.^{8-12,17} On the other hand lay public self-medicate for economic reasons and non availability of health care facilities.¹⁸ Roberts LW, et al suggest that medical students may be uncomfortable with dual role of student and patient.¹⁹ Further the fact that the result for these items should be so consistent during both encounters is important and indicates that the initial beliefs and reasons could continue to influence whether a individual will self medicate or not. Hence it is all the more imperative to educate students regarding responsible self-medication very early in their curriculum.

CONCLUSION

Although prevalence of self-medication and use of analgesics is higher during internship than during; IInd MBBS, the use of antibiotics and cough syrup is lower the pattern of self-medication is similar during both encounters. The practice of self-medication continues into the future of medical students. Awareness about potential ADRs to drugs consumed is much improved during internship as compared to during IInd MBBS. Overall we conclude that self-medication during internship appears to

be more responsible as compared to during IInd MBBS indicating that this could be due to increase in level of medical education. During internship participants relied more on themselves than on pharmacist, parents for self-medication. The reasons for self-medicating were similar during both encounters indicating that the initial beliefs and reasons could continue to influence whether a individual will self medicate or not hence it is imperative to educate students regarding responsible self- medication very early in their curriculum.

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