

Original Article

Evaluation of Knowledge, Attitude and Perception about Generic Medicines among Medical Students and Interns in a Tertiary Care Hospital

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Abstract: Background: Majority of the countries are facing the problem of high expenditure for healthcare services. The affordability of the rising cost of the medicines is a global challenge for both the patients and the government. In a period of quickly rising health care costs, generic medications give a more affordable contrasting option to branded prescriptions. **Aim of the study:** To evaluate knowledge, attitudes, perceptions among medical students and intern doctors on generic medication and to document the association of understanding and perception with age, sex and work experience in hospital. **Materials and methods:** The present study was non-interventional, cross sectional, observational questionnaire based study conducted in the Department of Pharmacology of D.Y Patil Medical College and Hospital, Kolhapur over a period of four months from October 2016 to January 2017. A total of 400 students from 2nd, 3rd and final year MBBS (100 students from each year) and 100 interns in this study were included. A questionnaire was used as the study tool, developed using information adapted from literature reviews for evaluation. **Results:** 74.1% students agreed that generic medicines are interchangeable with Branded medicines; 58% students agreed that a generic medicine must be in same dosage form as branded medicine; 66.3% students agreed that generic medicines are therapeutically equivalent to Branded medicines; 42.8% students agreed that generic medicines are manufactured after the Patent expiry of originator/innovator; and only 19.6% agreed that generics produce more side effects than branded medicines. On comparison, the results were found to be statistically significant. **Conclusion:** It was found that the respondents’ overall knowledge about generic medicines was deficient. Although all students & interns were aware about generic medication but their perception toward generic medicines was negative. This information about generic medicines may strengthen future knowledge, attitudes and perceptions.

Keywords: Branded medicine, Generic medicine, Pharmacy, Questionnaire

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Introduction:

The advancement in the field of medication has lead to the tremendous fall in the morbidity and mortality rates which has lead to enhanced nature of life. Medicines have played a crucial part in this endeavor. But the pricing of the prescription medicines is the most urgent component limiting use of medicines.^{1, 2} Majority of the countries are facing the problem of high expenditure for healthcare services. The affordability of the rising cost of the medicines is a global challenge for both the patients and the government.^{3, 4}

In a period of quickly rising health care costs, generic medications give a more affordable contrasting option to branded prescriptions. A generic drug is defined as a medication that is produced freely after expiry of the patent protecting the branded product, necessarily being similar to the reference drug in bioequivalence in order to obtain the same therapeutic effect. The reference drug is registered with the federal public health surveillance agency, and its quality must be proven scientifically when applying for registration, with its efficacy and safety being tested through clinical trials.⁵ In addition to reference and generic drugs, there is a third class called “similar drugs”, defined as medications with the same active ingredient(s),

concentration, pharmaceutical form, route of administration, dosage and treatment indication, which are equivalent to the medication registered with the federal agency, although allowed to differ in some characteristics, such as product size and shape, use-by dates, packaging, labeling, excipients and vehicles.^{6,7}

It is necessary to educate and to give proper awareness regarding generic medicines to medical students and interns. In addition internship is the period when they may get in touch with medical representatives who try to change their prescribing habits. Despite the several advantages offered by the use of generic medicines, the knowledge, perceptions and attitudes held by healthcare professionals have been identified as a potential barrier to the use of generic medicines.⁸ It's very necessary to correct those misconceptions before the commencement of professional practice. So, the present study was planned to evaluate knowledge, attitudes and perceptions among medical students and interns on generic medication and to document the association of understanding and perception with age, sex and work experience in hospital.

Materials and methods:

The present study was non-interventional, cross sectional, observational questionnaire based study conducted in the Department of Pharmacology of D.Y Patil Medical College and Hospital, Kolhapur over a period of four months from October 2016 to January 2017. For the study, we included a total of 400 students from 2nd, 3rd and final year MBBS (100 students from each year) and 100 interns in this study. The students of 1st year MBBS students were not included in the study. The ethical approval for this study was obtained from institutional ethical committee of D.Y Patil University, Kolhapur. Written consent was obtained from the students who participated in the study. Any information disclosing student's identity was excluded from the tool.

A questionnaire was used as the study tool, developed using information adapted from literature reviews for evaluation. The questionnaire was subdivided into four sections. The first section consisted of four demographic questions about age, gender, discipline, and work experience. A 5 item Likert-type scale was used to record variations in perceptions, attitudes and knowledge, constituting the remaining 3 sections. The questionnaires were personally distributed and data were collected over a 4 week period. The collected data was tabulated for further evaluation.

Statistical analysis:

The statistical analysis of the data was done using SPSS program (version 20.0) for windows. The Student's t-test and Chi-square test were used for the verification of significance of data. The statistical significance was predefined at p-value <0.05.

Results:

A total of 400 students from 2nd year, 3rd year, Final year, and internship of MBBS (100 students from each class) participated in the study. The majority of patients belonged to the age group of 23-25 years (n=212). 65% of the total students were male and 35% were female students. 25% of the students had work experience in hospital whereas 75% students did not have any work experience in hospital. 77.5% students had previously heard of branded medicines. Similarly, 84% students had previously heard of generic medicines [Table 1, Fig 1 & 2]. In this study, 74.1% students agreed that generic medicines are interchangeable with Branded medicines; 58% students agreed that a generic medicine must be in same dosage form as branded medicine; 66.3% students agreed that generic medicines are therapeutically equivalent to Branded medicines; 42.8% students agreed that generic medicines are manufactured after the Patent expiry of originator/innovator; and only 19.6% agreed that generics produce more side effects than branded medicines [Table 2]. On comparison, the results were found to be statistically significant (p<0.05). Table 3 shows the perception of students for the quality, safety & efficacy of generic medicines vs. branded medicines as per Likert scale. 54% students disagreed that generic medicines are of inferior quality to brand-name medicines; 52.8% students disagreed that generic medicines are less effective than brand-name medicines; 64.7% students disagreed that generic medicines are less safe than original medicines; 63.1% students agreed that Generic medicines are less expensive than brand-name medicines; 39.3% students disagreed that brand-name medicines are required to meet higher safety standards than generic medicines; and 62.7% students disagreed that generic medicines are only meant for the poor. Table 4 shows the perceptions of students with current university education as per Likert Scale. 53.3% students agreed that they needed more information on the issues pertaining to the safety and efficacy of generic medicines. 36.2% students agreed that they find it easier to recall a medicine's therapeutic class using generic names rather than brand names. 22.4% students agreed that they have been taught how medicines are subsidized in Pharmaceutical Benefits Scheme. On comparison of the results in Table 3 and 4, statistically non-significant results were observed (p>0.05).

Table 1: Student demographics & general knowledge about generic medicines

Demographics & knowledge		Frequency
Students Groups	1 st Year	100
	2 nd Year	100
	3 rd Year	100
	Interns	100
Age (years)	18-20	60
	21-22	58
	23-25	212
	>25	70
Gender	Male	260 (65%)
	Female	140 (35%)
Work experience in hospital	Yes	100 (25%)
	No	300 (75%)
Have you ever heard of branded medicines	Yes	310 (77.5%)
	No	90 (22.5%)
Have you ever heard of generic medicines	Yes	336 (84%)
	No	64 (16%)

Fig 1: Student demographics

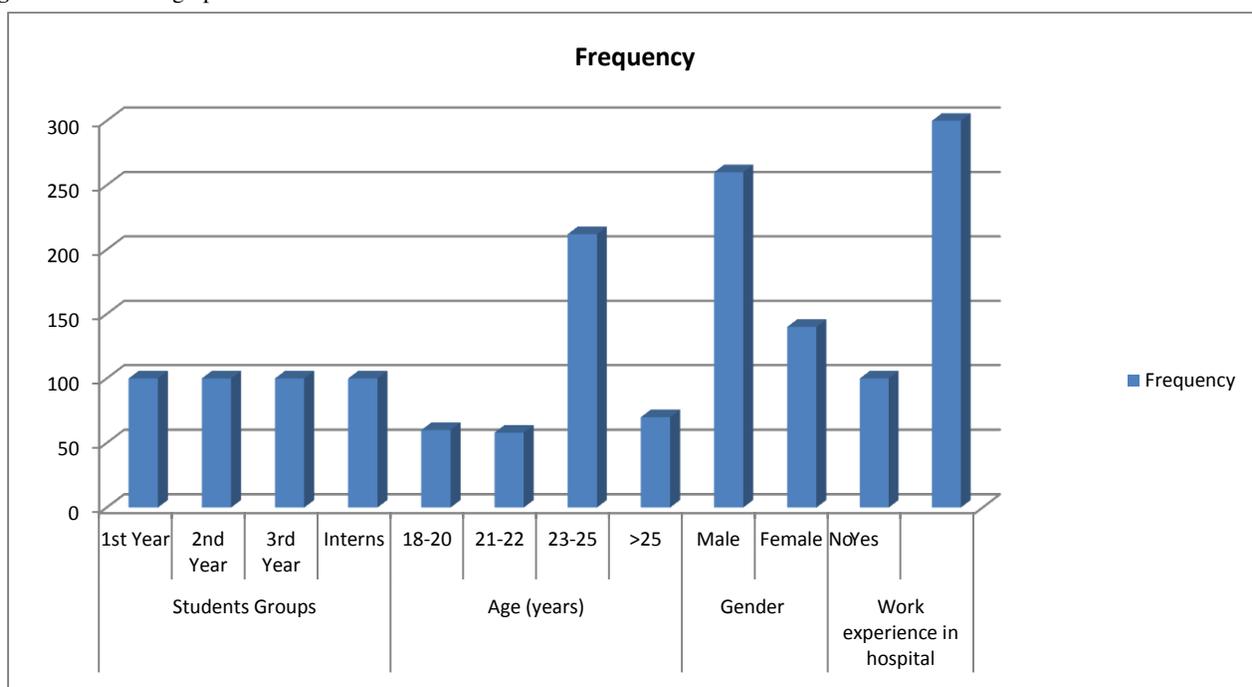


Fig 2: General knowledge of students regarding Branded medicine and generic medicine

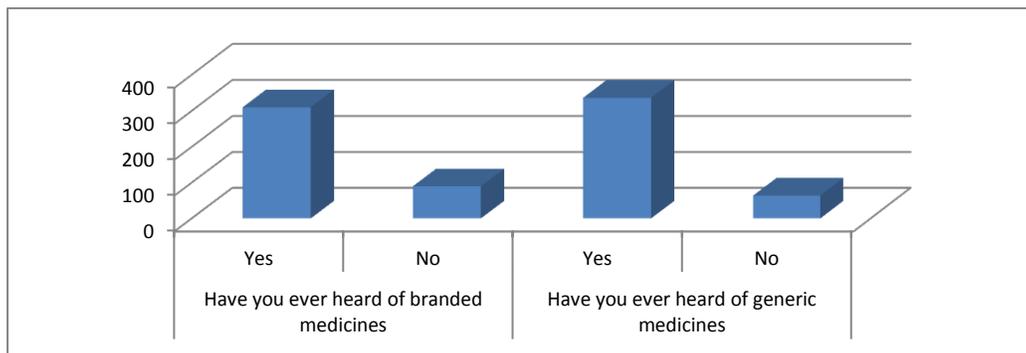


Table 2: Knowledge of Generic Medicines recorded as per Likert Scale

Survey question	1	2	3	4	5	p-value
Generic medicines are interchangeable with Branded medicines (%)	41.6	32.5	19.1	5.3	1.4	0.02*
A generic medicine must be in same dosage form as branded medicine (%)	37.2	20.8	23.2	14.5	3.9	
Generics are therapeutically equivalent to Branded medicines (%)	38.0	28.3	21.0	9.3	2.4	
Generic medicines are manufactured after the Patent expiry of originator/innovator (%)	31.4	11.4	32.4	12.9	11.9	
Generics produce more side effects than branded medicines (%)	4.3	15.3	34.4	22.5	23.4	

Table 3: Perception of the quality, safety & efficacy of generic medicines vs. branded medicines as per Likert scale

Survey question	1	2	3	4	5	p-value
Generic medicines are of inferior quality to brand-name medicines (%)	4.8	17.2	23.9	25.8	28.2	0.42
Generic medicines are less effective than brand-name medicines, (%)	6.3	14.9	26.0	26.4	26.4	
Generic medicines are less safe than original medicines, (%)	2.9	11.1	21.3	33.3	31.4	
Generic medicines are less expensive than brand-name medicines, (%)	28.2	34.9	16.7	11.0	9.1	
Brand-name medicines are required to meet higher safety standards than generic medicines, (%)	11.7	19.4	29.6	16.5	22.8	
I believe that generic medicines are only meant for the poor, (%)	11.5	7.7	17.7	16.3	46.4	

Table 4: Perceptions of current university education as per Likert Scale

Survey question	1	2	3	4	5	p-value
I need more information on the issues pertaining to the safety and efficacy of generic medicines, (%)	26.2	27.1	17.6	14.8	14.3	0.22
I find it easier to recall a medicine’s therapeutic class using generic names rather than brand names, (%)	17.6	18.6	41.0	12.4	10.5	
I have been taught how medicines are subsidized in Pharmaceutical Benefits Scheme, (%)	10.0	12.4	25.2	20.0	32.4	

**1-Strongly agree, 2-agree, 3-neither disagree nor agree, 4-disagree, 5-strongly disagree

Discussion:

To increase the uptake of generic medicines, it’s vital that health science practitioners, in particular future practitioners should have a sound knowledge of the issues surrounding generic medicines. Current study showed that majority of students had heard of branded & generic medicines. Jamshed SQ et al conducted a study to evaluate the understanding and perceptions of generic medicines among final-year Doctor of Pharmacy students in Karachi, Pakistan. They used a 23-item survey instrument that included a question on the bioequivalence limits and Likert-type scale questions regarding the understanding and perceptions of generic medicines among the students. When comparing a brand-name medicine to a generic medicine, pharmacy students scored poorly on bioequivalence limits. More than 80% of the students incorrectly answered that all the products that are rated as generic equivalents are therapeutically equivalent to each

other. Half of the students agreed that a generic medicine is bioequivalent to the brand-name medicine. With regard to quality, effectiveness, and safety, more than 75% of the students disagreed that generic medicines are of inferior quality and are less effective than brand-name medicines. More than 50% of the students disagreed that generic medicines produce more side effects than brand-name medicines. They identified a positive perception toward generic medicines but also gaps in the understanding of generic medicines. Pharmacy academia should address these issues, which will help build confidence in generic medicines and increase the generic medicine use.⁹ In our study a significant proportion of students were unfamiliar with the correct definition of generic medicines, which came through by incorrect responses to questions on knowledge. In this study it has been found that majority of the students (74.1%) knew that generics are interchangeable and are the therapeutic equivalents of

branded medicines (66.3%). Only 42.8% students knew that generic medicines are manufactured after patent expiry of originator medicines, whereas 19.6 % agreed that generics produce more side effects than branded medicines. Colgan S et al conducted a research to investigate negative perceptions about generic medicines and evaluate the proportions of lay people, doctors and pharmacists who hold these perceptions. A high proportion of doctors, pharmacists and lay people had negative perceptions of generics. Lay people were significantly more likely to view generics as less effective than branded medication compared to doctors and pharmacists. Pharmacists were significantly more likely to believe generics were of inferior quality compared to branded medication than were doctors and lay people. Doctors believed generics caused more side effects than branded medication, compared to pharmacists and lay people. Doctors and pharmacists had significantly more safety concerns about generics than did lay people. A greater proportion of lay people felt negatively about generic substitution, compared to doctors and pharmacists. It was concluded that significant proportion of doctors, pharmacists and lay people hold negative perceptions of generic medicines. It is likely these attitudes present barriers to the wider use of generics. Overall 63.1 % students acknowledged that generics are less expensive than branded medicines.¹¹

Gyawali S et al performed research to explore the knowledge and perception of senior medical students about the generic medicines. A cross-sectional study was conducted among 237 senior medical students (final year students and interns) using a validated self-administered questionnaire. The average age of the respondents was 23.54 years. Almost 5% of respondents correctly answered the question regarding the regulatory limits for bioequivalence. Almost two-thirds of respondents correctly agreed that generic medicine is bioequivalent to a brand-name medicine, and 79.3% and 72.5% of respondents correctly agreed that the medicine should be present in the same dosage form and same dose, respectively, as the brand-name medicines. However, almost half of the respondents had impression that brand-name medicines are required to meet higher safety standard than generic medicines. Almost 90% of respondents felt that advertisement by the drug companies would influence the use of brand-name medicine and they need more information about generic medicine. It was concluded that the students' responses to almost all the statements were almost similar to the respondents' academic year, gender and nationality. Lack of or incorrect responses to survey questions may reflect non exposure to generic medicine issues and lack of

understanding. Future practitioners need to be exposed to these issues early in their education, so that they can be confident in counseling & treating patients whenever possible.¹¹

Conclusion:

From the above results this can be concluded that the respondents' overall knowledge about generic medicines was deficient. Although all students & interns were aware about generic medication but their perception toward generic medicines was negative. This information about generic medicines may strengthen future knowledge, attitudes and perceptions.

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