Original Article

A comparative study on perception and use of generic drugs between public and private health practitioners

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Abstract

Context: The perception of generic drugs may vary significantly between government and private doctors because physicians in the private sector have more prescribing choices and flexibility. Hence, this study was undertaken to analyse the knowledge, attitude and perception (KAP) of government and private physicians on generic drugs. **Materials and Methods:** This was a questionnaire-based cross-sectional study conducted among physicians working in public and private health sectors. The questionnaire had 25 closed-ended questions related to the KAP of generic medicine. The overall scores were categorised using Bloom's cut-off point. The Chi-square or Mann–Whitney U-test was used to compare the differences between the two groups. **Results:** About 80% of the participants in both groups agreed that generic medicines contain the same active ingredients as brand-name drugs, are less expensive and are available in the Indian market. Nearly 84% of government physicians and only 64% of private physicians believed that generic medicines are just as effective and secure as branded medicines (*P* - 0.003). The majority of physicians from both groups concurred that there is a lack of quality check in generic drug manufacturing, and they require more information about bioequivalence studies. In both categories, about 75% of participants preferred generic medications for their patients. However, in both groups, more than 50% of physicians were concerned about therapeutic failure and expressed reluctance to prescribe generic medications in life-threatening situations. **Conclusions:** Knowledge and acceptance of generic drugs regarding efficacy, safety, bioequivalence and therapeutic failure are low among both government and private physicians.

Keywords: Generics, perception, physicians, practices, private sector, public sector

Introduction

India has a diverse healthcare system that includes primary, secondary and tertiary government facilities, commercial institutions and healthcare services offered by independent practitioners. According to World Bank data, India's overall budgetary allocation for health care was only 3.53 per cent in 2017—far less than Brazil's 9.5 per cent, South Africa's 9.0 per cent, the Russian Federation's 6.5 per cent and China's 5.0 per cent—which is rather low given the size of our nation's population.[1] About 80.0 per cent of the cost is out-of-pocket payment. Currently, between 40 and 50 per cent of total health spending goes on drugs.[2]

Generic medications are interchangeable with branded medications, have an equal therapeutic impact and level of safety and cost 20 to 80 per cent less.[3] The cost of health care can be significantly reduced if prescribers use generic medications.[4] There are disagreements over generic drugs due to various drug policies and legislation, as well as the unique attitudes and knowledge of healthcare professionals.[5]

The Central Drug Standard Control Organization (CDSCO) Drug Consultant Committee has made it mandatory for doctors to prescribe only generic medicines. In 2008, the

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Indian government took action to promote generic medications by announcing the 'Pradhan Mantri Bhartiya Jan Aushadhi' programme. This programme's goal was to make effective generic medications accessible to the nation's citizens at a reasonable cost.[6] The perception and utilisation of generics have not been satisfying despite the government of India taking numerous attempts to promote them. Enhancing the use of generics depends on consultants' perceptions and prescribing practices.[7]

The knowledge, attitude and practice (KAP) is a model that can be used to assess the changing human health-related behaviour. It categorises the evolution of human behaviour into three sequential stages: knowledge acquisition, belief formation and maintenance and establishing conduct.[8] As a result, research has been conducted worldwide on the attitudes and expertise of physicians towards generic substitution. Thus, the successful implementation of a generic prescribing policy depends heavily on physicians' knowledge and attitude towards generic alternatives. The perception of generic drugs may vary significantly between government and private doctors because physicians in the private sector have more prescribing choices and flexibility as compared to the public sector. Hence, this study was undertaken to analyse the KAP of government and private physicians on generic drugs.

Materials and Methods

Study design and participants

This was a questionnaire-based cross-sectional study. The main participants in the study were physicians working in tertiary care medical college teaching hospital and private hospitals in and around the city from March 2022 to May 2022. A pre-validated questionnaire formulated using reference material from similar types of studies in the English language was used to collect the data.[9,10] A convenient sample of 150 physicians was recruited with 75 of them working in the government sector and 75 working in the private sector.

Study questionnaire

The questionnaire had 25 closed-ended questions related to the KAP of generic medicine and the demographic details of the doctors. The first part included socio-demographic details of the participating physicians. The second part included seven statements with responses being yes, no and don't know and addressed the physician's knowledge about ingredients, interchangeability, safety, quality and efficacy of generic medicines. The third part consisted of seven statements to assess the physician's attitude about bioequivalence, safety, quality and efficacy of generic medicines on a 3-point Likert scale. The fourth section contained seven assertions with response categories of yes/no/sometimes, to assess their prescribing practices, and also reviewed the influence of patient's socioeconomic status, individual experiences and the medical representatives in prescribing generic drugs. The overall KAP scores were categorised using Bloom's cut-off point.[11] Scores to answers, total scores and categories based on Bloom's cut-off points for each section are summarised in Table 1. Validation of questionnaire was performed by choosing five private physicians and five faculty members in the medical college. Changes and improvements were made in response to the suggestions received.

On the day of the data collection, questionnaires were distributed to the physicians who gave consent for participating in the study. Also, on request by the physicians, the link for filling the questionnaires via Google Forms was shared.

Ethical considerations

The study proposal was approved by Institutional Ethics Committee (TIREC—20212181/19-11-2021). Informed consent was obtained before the administration of questionnaire. The data collected from the physicians were kept anonymous and recorded in such a way the participant could not be identified.

Statistical analysis

Statistical Package for the Social Sciences (SPSS) version 24 software was used to analyse the data. The demographics of the participants and their respective responses to the various categories of the questionnaires were analysed using descriptive statistics. Data normality was assessed using the Kolmogorov–Smirnov test. The Chi-square or Mann–Whitney U-test was used to compare the differences between the two groups. A *P* value of <0.05 was considered significant.

Table 1: Method of calculating KAP scores

Variables	No. of items	Scores to answers	Total scores	Level of variables (%)	Physicians	
					Govt.	Private
Knowledge	7	1—correct 0—incorrect/ don't know	7	Good=6, 7 (80-100) Moderate=4, 5 (60-79) Poor=0-4 (<60)	22 (29) 42 (56) 11 (15)	25 (33) 36 (48) 14 (19)
Attitude	7	Q 1-5 0/1/2—agree/neutral/disagree Q 6,7 2/1/0—agree/neutral/disagree	14	Positive=11-14 (80-100) Neutral=8-10 (60-79) Negative=0-7 (<60)	2 (3) 15 (20) 58 (77)	2 (3) 17 (23) 56 (74)
Practice	9	1—good practice 0—poor practice	6	Good=5, 6 (80-100) Moderate=3, 4 (60-79) Poor=0-2 (<60)	18 (24) 44 (59) 13 (17)	19 (25) 36 (48) 20 (27)

Results

Demographic characteristics

A total of 150 physicians in government ($n = 75$) and private ($n = 75$) hospitals participated in the study. The demographic details and the mean KAP scores of the participants are summarised in Table 2. Of all participants, 48% were male and 52% were female, 55% (male and female) were from 30 years to 39 years of age category and 68% of participants were masters in medicine and allied departments, whereas 32% were masters in surgery and allied departments.

Knowledge scores

In our study, the mean knowledge scores of government and private physicians were 4.89 ± 1.20 and 4.66 ± 1.50, respectively, demonstrating moderate-level knowledge in them and were statistically insignificant [Table 2]. About 80% of the participants in both groups agreed that generic medicines should contain the same active ingredients as brand-name drugs, generic drugs are less expensive than brand-name drugs and generic drugs are available in the Indian market, and thus, the difference was statistically insignificant. Similarly, 40% of respondents in both groups were unaware that generic drug manufacturers need not repeat preclinical and clinical trials. Of the respondents, 77% of private physicians and only 56% of government physicians concurred that generic and branded medications can be interchanged (*P* - 0.003). About 48% of private physicians were aware that generic medicines are manufactured after the patent expiry of the original as compared to only 32% of government physicians (*P* - 0.046). Similarly, 84% of government physicians and only 64% of private physicians believed that generic medicines are just as effective and secure as branded medicines (*P* - 0.003) [Table 3].

Table 2: Comparison of demographic characteristics and mean KAP scores between government and private practitioners

Demographic characters	Government practitioners *n*=75	Private practitioners *n*=75	*P*
Male	26 (35)	46 (61)	0.001
Female	49 (65)	29 (39)	
Age			0.284
<29	28 (37)	19 (25)	
30–39	38 (51)	45 (60)	
>40	9 (12)	11 (15)	
Medicine and allied	62 (83)	56 (75)	0.231
Surgery and allied	13 (17)	19 (25)	
Mean knowledge scores (mean±SD)	4.78±1.28	4.84±1.40	0.78
Attitude scores	6.06±2.05	6.25±1.98	0.56
Practice scores	3.63±1.29	3.45±1.43	0.41

Attitude scores

In our study, the mean attitude scores of government and private physicians were 6.06 ± 2.05 and 6.25 ± 1.98, respectively, demonstrating negative attitude and were statistically insignificant [Table 2]. The physicians who needed more information about bioequivalence of generic drugs constituted about 76% in both groups. Similarly, 50% of respondents in both groups agreed that there is a lack of quality check in generic drugs. Compared to 46% of private physicians, 64% of government physicians feel that there is a dearth of knowledge on the efficacy and safety of generic drugs (*P* - 0.07). In contrast to the 21% of government physicians, about 46% of private physicians thought that generic drugs were produced in subpar facilities, while brand-name medications were produced in modern facilities (*P* - 0.001). About 45% of government and 64% of private physicians agreed that only a few local companies can manufacture reputable generic medicine. Over 60% of participants from both groups believed that we need to have guidelines on generic substitution. Nearly 79% of private physicians believed that generic substitution will ensure prompt availability of drugs to the patient as compared to only 68% of government physicians (*P* - 0.036) [Table 4].

Practice scores

In our study, the mean practice scores of government and private physicians were 3.63 ± 1.29 and 3.45 ± 1.43, respectively,

Table 3: Knowledge-related questions and their percentage responses between government and private practitioners

Knowledge		Yes *n* (%)	No *n* (%)	Don't know	*P*
1. Generic medicines contain the same active ingredients as brand-name drugs	Government	65 (87)	7 (9)	3 (4)	0.498
	Private	62 (84)	10 (12)	3 (4)	
2. Generic medicines are interchangeable with brand-name medicines	Government	41 (55)	30 (40)	4 (5)	0 0.003
	Private	58 (77)	15 (20)	2 (3)	
3. Generic drugs are manufactured after the patent expiry of the original	Government	24 (32)	32 (43)	19 (25)	0.046
	Private	36 (48)	23 (31)	16 (21)	
4. Does a generic drug manufacturer need to repeat preclinical and clinical trials?	Government	30 (40)	33 (44)	12 (16)	0.744
	Private	30 (40)	35 (47)	10 (13)	
5. Generic medicines are available in the Indian market	Government	67 (90)	1 (1)	7 (9)	0.241
	Private	62 (83)	11 (15)	2 (2)	
6. Generic drugs are less expensive than brand-name drugs	Government	66 (88)	5 (7)	4 (5)	0.358
	Private	62 (85)	11 (12)	2 (3)	
7. Generic drugs are not as effective and safe as brand-name medicines	Government	6 (8)	63 (84)	6 (8)	0 0.005
	Private	22 (29)	48 (64)	5 (7)	

indicating a moderate level of practice and being statistically insignificant [Table 2]. In both categories, about 75% of participants preferred generic medications for their patients. However, in both groups, more than 50% of physicians were concerned about therapeutic failure and expressed reluctance to prescribe generic medications in life-threatening situations. Approximately 45% of the respondents in both groups had used generic medications for them and had suggested them to families as well. Almost 47% of government physicians opposed moving from brand name to generic medications as compared to only 37% of private physicians. More than 60% of participants in both categories had not read any articles comparing the efficacy and safety of generic and branded medications [Table 5]. When responses were sorted out from participants for factors that affect their generic prescribing, 65% and 76% of government and private physicians, respectively, agreed that the socioeconomic status of the patient influences their prescription the most followed by personal experiences and visits by medical representatives [Figure 1].

Discussion

The study results revealed that there were gaps in the knowledge of physicians about generic drugs. The majority of the physicians from both groups perceived that generic drugs have the same ingredients, are equally effective and safe as branded drugs. These results were consistent with similar studies conducted in India by Hadia *et al.*[9] and Wahlang *et al.*[12] However, there were some distinctions between the groups. Nearly 40% of government physicians did not favour interchangeability between generic and branded drugs as compared to only 20% among private physicians. Government hospitals are stocked with one group of drugs alone, and hence, physicians are not exposed to the use of

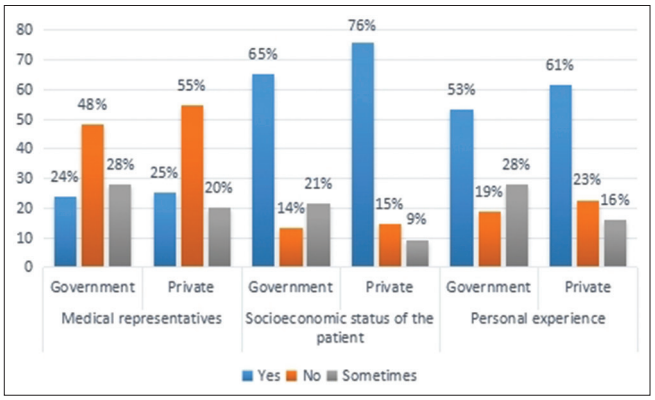

Figure 1: Factors influencing generic drugs prescribing

Table 4: Attitude-related questions and their percentage responses between government and private practitioners

Attitude		Agree	Neutral	Disagree	*P*
1. I believe I need more information pertaining to bioequivalence of generic	Government	57 (76)	6 (8)	12 (16)	0.68
	Private	57 (76)	14 (19)	4 (5)	
2. I believe there is a lack of quality check in generic drugs	Government	33 (45)	38 (35)	4 (20)	0.63
	Private	38 (50)	29 (39)	8 (11)	
3. I believe there is a lack of information about efficacy and safety of generics	Government	448 (64)	19 (25)	8 (11)	0.07
	Private	34 (46)	21 (28)	20 (26)	
4. Brand name is made in modern facilities and generic drugs are made in substandard facilities	Government	16 (21)	28 (37)	31 (42)	0.001
	Private	34 (46)	24 (32)	17 (22)	
5. I view only a few local companies as reputable generic medicine manufacture	Government	36 (48)	29 (39)	10 (13)	0.102
	Private	48 (64)	16 (21)	11 (15)	
6. I believe we need to have guidelines on generic substitution process	Government	46 (61)	9 (12)	20 (27)	0.259
	Private	49 (65)	17 (23)	9 (12)	
7. I believe generic substitution will ensure prompt availability of drugs to the patient	Government	50 (67)	4 (5)	21 (28)	0.036
	Private	59 (79)	12 (16)	4 (5)	

Table 5: Practice-related questions and their percentage responses to government and private practitioners

Practice		Yes	No	Sometimes	*P*
1. Do you prescribe generic drugs to your patients?	Government	57 (76)	8 (11)	10 (13)	1
	Private	57 (76)	8 (11)	10 (13)	
2. Have you been concerned about therapeutic failure with generic medicines after prescribing?	Government	34 (45)	26 (35)	15 (20)	0.60
	Private	35 (47)	18 (24)	22 (29)	
3. Have you been hesitant to prescribe generics in life-threatening situations?	Government	34 (45)	31 (42)	10 (13)	1
	Private	34 (45)	31 (42)	10 (13)	
4. I prefer taking and recommending generics to my family members	Government	35 (47)	16 (21)	24 (32)	0.24
	Private	34 (45)	24 (32)	17 (23)	
5. Have you ever switched a patient on brand-name drugs to available generic drugs?	Government	28 (37)	35 (47)	12 (16)	0.36
	Private	29 (39)	28 (37)	18 (24)	
6. Have you read any article on the comparison of efficacy and safety of generic vs brand-name drugs	Government	18 (13)	41 (65)	16 (22)	0.039
	Private	17 (23)	52 (69)	6 (8)	

generic and branded drugs in a wide range of clinical scenarios and their opinions about interchangeability were unfavourable. About 29% of private physicians felt that generic drugs were less reliable and less safe than brand drugs as opposed to only 8% among government physicians. Private care settings tend to stock the drugs that are already well established in markets with regard to efficacy and safety, which are most likely to be branded medications to provide better care to the patients, and hence, physicians in the private sector might have a notion that generic drugs are less reliable. A study by Kumar *et al.*[13] conducted among private physicians observed that there was an association between the stock of generic medicines and their belief in the statement that generic medicines have low efficacy.

In our study, private physicians have better knowledge about the regulatory requirements imposed on generic drugs. Pharmacies are an integral part of private healthcare facilities where physicians frequently serve as the owners and are responsible for purchasing medications, and hence, they become aware of regulations, whereas in government settings physicians play a minimal role in drug procurement. In our study, private physicians were with the notion that generic drugs are manufactured in substandard facilities and they view only a few local companies as reputable manufacturers. This was on par with the study by Kumar *et al.* where 74% of the physicians thought that branded drugs are required to meet higher standards than generic drugs. Thus, a lack of awareness about regulatory requirements and these discernments can have a negative impact on generic prescribing as evident from our study. The solution to the problem lies in strengthening the quality control check by drug regulatory authorities. Also, all the firms can provide in-house quality control reports for each batch of medicines supplied to the hospitals.[14]

In the present study, both group participants were aware that generics are less expensive than brand drugs. This was consistent with studies by Gupta *et al.*[15] and Saha *et al.*[16] where the later stated that generics are cost-effective with price being 80–90% less than brands. Half of the participants from both groups were hesitant about prescribing generics in life-threatening situations and are also concerned about therapeutic failure. Generics are exempted from the extensive and expensive clinical trials and with the added factor of multiple generic companies flooding the Indian markets ultimately lower their cost, which may raise questions about the effectiveness of generic drugs, thereby worsening the concerns of the physicians in their practice.[17] A study by Tian Y *et al.* that compared the efficacy of generics with their branded counterparts found that generics were often comparable to and in some cases even superior in reducing mortality and major cardiovascular events.[18] Many more trials can be conducted to prove clinical equivalence, which can make physicians prescribe generics with confidence.

Nearly two-thirds of physicians in both groups have not read any article comparing the efficacy and safety of generics and brands, but 23% of private physicians have read as compared to only 13% among government doctors. Thus, the major source of information about generics is provided to the physicians by medical representatives. Medical representatives promote generics as cost-effective alternate to brands, but rather than the cost they should focus on bioequivalence, safety and Current Good Manufacturing Practices (cGMP) involved in the manufacturing of their products. In a qualitative study conducted on private physicians, one of them quoted that 'When a medical representative shows me the bioequivalence study, I feel more comfortable to prescribe. If this study is published in a reputed medical journal and he shows me that … I will feel even more confident'.[19] In our study, also most respondents from both groups felt that they need more information on bioequivalence, efficacy and safety of generics. Thus, a list of interchangeable and noninterchangeable medicines with regard to bioequivalence and therapeutic equivalence can be developed nationally and provided to physicians.

Most of the participants felt the need for guidelines for generic substitution. Also, more than 50% of physicians in both groups agreed that they do not switch patients from branded drugs to generic drugs. Thus, framing guidelines may encourage physicians to use generics. Nearly 28% of government physicians disagreed that generic substitution will ensure prompt availability of drugs as opposed to only 5% of private physicians. Government physicians are well aware of supply chain issues even though the extent of availability of medicines has been improved in stores and thus making availability questionable.[20] Whereas studies have shown that the availability of drugs is better in the private sector and with choices of drugs from their own pharmacy, private physicians have favoured the statement.

A possible limitation of this particular study could be the sampling technique and sample size. The participants were not selected randomly nor were we able to compute the response rates. Second, we have only analysed the physicians' perception of generic medicine prescribing. The studies regarding the perception of general population (consumers) pharmacist and medical representatives should be planned since collaborative approach by these target participants is required to promote generics.

Conclusion

Significant gaps were identified in knowledge about generic drugs, and acceptance of generic drugs with regard to efficacy, safety, bioequivalence and therapeutic failure is low among both government and private physicians. Continued medical education, educational interventions to physicians, framing generic substitution guidelines, providing data on bioequivalence and audit by regulatory bodies can impart positive attitude towards generic drugs. Thus, all these combined measures rather than a single measure will be needed to promote the use of generic drugs.

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Conflicts of interest

There are no conflicts of interest.

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