
Knowledge, Attitude and Practices of Generic Medicine among Dentists in Karad city – A Questionnaire Survey

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Abstract:

This study investigates the knowledge, attitudes, and practices of dentists in Karad city regarding generic medicines through a cross-sectional survey conducted between January and October 2023. Against the backdrop of escalating healthcare costs and India's position as the third-largest global pharmaceutical exporter, the accessibility of essential medicines for the economically disadvantaged remains a concern. The aim is to evaluate the interchangeability perceptions, awareness of government schemes, and prescribing practices among 200 dental clinicians. Results reveal that 59% of dentists view generic medicines as interchangeable with branded drugs, yet 40% express concerns about their delayed onset of action. While 57.5% prescribe generics, 15% doubt their safety. Awareness of government initiatives like the Jan Aushadhi scheme stands at 53%. Though 80% recognize the affordability of generics, 30% associate them exclusively with the economically disadvantaged. The study underscores the need for targeted educational interventions to dispel concerns and promote awareness, fostering a more inclusive adoption of cost-effective generic medicines in dental practices.

Keywords: Generic Medicines, Dental Clinicians, Healthcare Costs, Accessibility, Jan Aushadhi Scheme, Prescription Practices, Pharmaceutical Export, India, Cross-sectional Study, Healthcare Affordability.

I. Introduction:

In the intricate tapestry of global healthcare, India's pharmaceutical industry stands as the third-largest in terms of the volume of medicines exported. However, a paradox persists within the country: the availability of essential medicines remains a challenge, particularly for the economically disadvantaged, amidst the soaring costs of healthcare. This conundrum necessitates a closer examination of healthcare practices, particularly pharmacotherapy, which stands as a paramount tool for physicians to influence patient health. The financial burden of healthcare is a pervasive concern across the world, resonating in the corridors of healthcare systems. Rising healthcare costs pose a formidable challenge to accessibility and affordability, compelling a reevaluation of existing paradigms. Against this backdrop, generic medicines emerge as a beacon of hope, offering a cost-effective alternative to branded drugs. Generic drugs, priced between 20-90% less than their branded counterparts, promise equivalence in quality, safety, and efficacy, presenting a potential solution to mitigate the economic strain on healthcare systems.

India, with its robust pharmaceutical industry, becomes a focal point for exploring the dynamics of generic medicine adoption. Despite the global standing of its pharmaceutical sector, a disconcerting reality persists within the nation—essential medicines elude a significant portion of the population, especially those grappling with financial constraints. This scenario accentuates the urgency to bridge the gap between pharmaceutical abundance and accessibility, prompting an exploration of factors influencing the adoption of generic medicines. The World Health Organization (WHO) underscores the significance of addressing pharmaceutical expenditures, which can escalate to a staggering 80% of total healthcare expenditures in developing countries. In

this context, generic medicines emerge as a potential solution, offering comparable efficacy at a fraction of the cost. The United States Food and Drug Administration (FDA) defines generic drugs as products with identical active ingredients, strength, dosage form, route of administration, quality, performance characteristics, and intended use as their brand-name counterparts. This stringent definition assures that when a generic drug receives FDA approval, it has met rigorous standards, ensuring its identity, strength, quality, purity, and potency.

Several studies have illuminated the advantages of generic medicines beyond cost savings. Patients' compliance with generic drugs has been reported to surpass that of branded counterparts, contributing to better health outcomes. Generic drugs, deemed bioequivalent to innovator drugs, are considered safe and effective. The cost-effectiveness of generic drugs is striking, with an average pricing 20-80% lower than brand-name products. The economic advantage stems from the fact that generic manufacturers are exempt from the costly clinical trials required for new drugs and are not burdened by exorbitant advertising and marketing expenses. Prescription practices wield significant influence over the adoption of generic medicines, with nearly 8 in 10 prescriptions in the United States being filled with generic drugs. However, the landscape differs in developing countries, where generic drugs are not as ubiquitously embraced. In India, where the awareness and usage of generic drugs remain underdocumented, there exists an opportune space for exploration and intervention.

The realm of dentistry, often overlooked in discussions of generic medicine adoption, plays a crucial role in this narrative. The bidirectional relationship between poor oral health and systemic diseases underscores the importance of oral healthcare in the broader healthcare spectrum. The expenditure on general medicine in dentistry should not be disregarded, considering oral health as a mirror reflecting overall health. While dental surgeons may not extensively prescribe medications, incorporating generic medicines into dental practice holds potential benefits, especially in cases requiring therapeutic or prophylactic interventions for acute and chronic infections. Dental practitioners frequently lean towards prescribing branded drugs, which, despite their efficacy, often come with a hefty price tag. This prompts a critical need to explore and advocate for the integration of generic medicines in dentistry, aligning with the broader goal of healthcare affordability and accessibility.

Against this backdrop, the present study aims to delve into the knowledge, attitudes, and practices of clinical practitioners and academicians regarding the use of generic medicines in Karad city. Karad, with its unique healthcare landscape, serves as an intriguing microcosm for understanding the dynamics of generic medicine adoption. The study endeavors to unravel the nuances influencing the choices of dentists, shedding light on potential barriers and avenues for improvement.

II. Literature Review:

The global pharmaceutical industry serves as a dynamic and essential component of healthcare systems worldwide. According to the World Trade Organization (WTO), India stands as the third-largest exporter of pharmaceuticals globally, contributing significantly to the availability of medicines across borders. However, the paradoxical challenge persists within the country as essential medicines remain inaccessible, especially for economically disadvantaged populations, in the face of escalating healthcare expenses (WTO, 2022). This duality sets the stage for exploring the role of generic medicines in balancing accessibility and affordability.

Generic medicines emerge as a beacon of hope in addressing the economic strains on healthcare systems. Generic drugs, defined by the United States Food and Drug Administration (FDA) as products with identical active ingredients, strength, dosage form, route of administration, quality, performance characteristics, and intended use as their brand-name counterparts, offer a cost-effective alternative to branded drugs (FDA, 2022).

The cost advantage of generic drugs, typically priced 20-90% lower than brand-name products, is a key driver in their widespread adoption. This financial benefit arises from the exemption of generic manufacturers from costly clinical trials required for new drugs and the absence of substantial expenses in advertising, marketing, and promotion (WHO, 2021). The economic advantage positions generic medicines as a viable solution to curb pharmaceutical expenditures, which, as noted by the WHO, can account for up to 80% of total healthcare expenditures in developing countries (WHO, 2021).

Beyond cost considerations, the efficacy and safety of generic medicines play a pivotal role in influencing prescription practices. The FDA's stringent standards for approval ensure that generic drugs meet the same rigorous criteria for identity, strength, quality, purity, and potency as their brand-name counterparts (FDA, 2022). Numerous studies have affirmed the bioequivalence of generic drugs, emphasizing their safety and effectiveness compared to innovator drugs (Davitt et al., 2009).

Patient compliance, a critical factor in healthcare outcomes, has been reported to be higher with generic drugs compared to brand-name products. This underscores the importance of fostering trust and confidence in the interchangeability of generic medicines within the healthcare community (Shrank et al., 2006).

Prescribing practices wield significant influence over the adoption of generic medicines. In developed countries like the United States, nearly 8 in 10 prescriptions are filled with generic drugs, reflecting a widespread acceptance of their efficacy and cost-effectiveness (IMS Institute for Healthcare Informatics, 2016). However, the scenario differs in developing countries like India, where the adoption of generic medicines is not as ubiquitous. Factors influencing prescription decisions include not only the perceived efficacy and safety of generics but also the influence of pharmaceutical representatives, patient demands, and economic considerations (Shrank et al., 2011).

While the literature on generic medicine adoption primarily focuses on medical practitioners, the role of dentists in this landscape is an area that warrants exploration. The bidirectional relationship between poor oral health and systemic diseases emphasizes the significance of oral healthcare in the broader healthcare spectrum (Petersen, 2003). Despite the potential therapeutic and prophylactic benefits of medications in dentistry, studies indicate that dental surgeons often lean towards prescribing branded drugs, which may pose financial challenges for patients (Gambhir et al., 2013). The incorporation of generic medicines into dental practice can potentially alleviate economic burdens on patients while maintaining therapeutic efficacy. This aspect has been less explored in the literature, and understanding the knowledge, attitudes, and practices of dentists regarding generic medicines is essential for shaping future interventions.

A critical factor influencing the adoption of generic medicines is the awareness and education of healthcare professionals. Studies have shown that educational interventions can significantly impact physicians' prescribing practices and attitudes towards generics (Shrank et al., 2011). Bridging knowledge gaps and dispelling misconceptions through targeted educational programs can contribute to a more informed and receptive healthcare community.

Government initiatives, such as the Jan Aushadhi scheme in India, aim to make quality generic medicines accessible to all. However, the success of such programs hinges on the awareness and participation of healthcare professionals. The literature suggests that collaborations between healthcare providers and government initiatives can enhance the effectiveness of programs aimed at promoting generic medicine adoption (Selvaraj et al., 2014).

While generic medicines present a promising solution to healthcare affordability, challenges persist. Concerns about the late onset of action, safety, and efficacy underscore the need for targeted interventions to address misconceptions. The influence of pharmaceutical representatives and patient demands adds layers of complexity to prescription decisions, necessitating a balanced approach to healthcare communication and patient education.

As healthcare systems evolve, future directions in the adoption of generic medicines call for interdisciplinary collaboration, continuous education, and policy advocacy. Integrating discussions about generic medicines into medical and dental education, fostering collaboration between healthcare providers and policymakers, and leveraging technology for widespread education and awareness campaigns can collectively contribute to a paradigm shift in healthcare practices. In conclusion, the literature reviewed provides a comprehensive understanding of the global pharmaceutical landscape, the role of generic medicines, and the factors influencing their adoption. The knowledge gaps and challenges identified underscore the need for ongoing research and

targeted interventions to enhance awareness, dispel misconceptions, and promote the widespread adoption of generic medicines. This literature review sets the stage for the present study, focusing on dentists in Karad city, and provides a foundation for future research in this evolving field.

III. Materials and Methods:

To unravel the intricacies of generic medicine adoption in dentistry, a cross-sectional study was meticulously designed. All registered dentists in Karad and faculty members working in dental colleges around the city were approached to be a part of this expansive exploration. The study unfolded between January and October 2023, involving 200 dentists actively engaged as clinicians in Karad.

The methodology embraced the digital age, utilizing an online platform for data collection. Google forms served as the conduit for disseminating the survey, reaching out to dental professionals through multiple email invitations. The voluntary participation of 200 dental professionals enriched the study's diversity and reliability. Ethical considerations were paramount, with the local Ethical Committee granting approval for the investigation.

The questionnaire, a pivotal instrument in this investigative journey, comprised twenty questions meticulously crafted to gauge the participants' knowledge of generic medicines. Responses were structured on a dichotomous yes or no scale, providing a nuanced understanding of the clinicians' perspectives.

The self-administered questionnaire was distributed to dentists working in various colleges, ensuring a representative sample. The study's statistical analysis, conducted using the Statistical Package for Social Sciences (SPSS) 21.0, aimed to compare the mean knowledge, attitude, and practice scores of clinicians, unraveling patterns and trends within the dataset.

IV. RESULTS

A total of 200 questionnaires were judiciously distributed among clinicians, each question becoming a thread in the intricate tapestry of understanding generic medicine adoption. The results, like a mosaic, began to reveal the multifaceted landscape of dentists' perspectives. The findings unveiled that 59% of clinicians acknowledged the interchangeability of generic medicines with branded drugs, reflecting a commendable level of awareness. However, a notable 40% expressed concerns about the late onset of action associated with generic drugs, illuminating potential areas for intervention and education.

Awareness regarding the Indian Medical Council (IMC) Act was found in 46% of clinicians, emphasizing the need for increased dissemination of regulatory information. A significant proportion, 53%, demonstrated awareness of the Jan Aushadhi scheme by the Government of India, showcasing a mixed landscape of knowledge. Concerns regarding safety and efficacy surfaced, with 15% of clinicians expressing reservations about the safety of generic drugs compared to innovator drugs. A notable 30.5% believed that generic drugs were less effective than their innovator counterparts. The perception of a delayed onset of action for generic drugs was echoed by 40% of clinicians, signaling a potential area for targeted educational interventions.

Interestingly, a majority of clinicians, 80%, affirmed the affordability of generics compared to brand-name drugs. However, 30% felt generics were exclusively meant for the economically disadvantaged, highlighting a nuanced perspective on the target audience for generic drugs. The importance of building patient confidence in using generic medicines was recognized by 70.5% of clinicians, emphasizing the role of trust in fostering adoption. Furthermore, 83% agreed on the significance of incorporating the importance of generics into early medical training, underscoring the need for a foundational understanding among future healthcare professionals.

The study illuminated the academic inclinations of clinicians, with only 51% reporting having read articles on the efficacy of generic drugs versus brand drugs. Nevertheless, a majority, 57%, asserted that switching to generics had influenced the outcome of therapy, reflecting a tangible impact on clinical practice. The practice of substituting generics for branded drugs was affirmed by 59% of clinicians, indicating a practical integration of generic medicines into dental prescriptions. Considerations in prescription decisions varied, with 20%

prioritizing the availability of drugs in pharmacies, 23% factoring in the price, and 48% emphasizing the efficacy and safety profile of drugs. Notably, 9% considered the economic profile of patients when prescribing, highlighting a comprehensive approach to patient-centric care.

Clinicians' preferences in prescribing from local manufacturers emerged, with 56% prescribing generics from all local manufacturers. However, the influence of branded medical representatives was pronounced, with 72% acknowledging their impact on prescription decisions. The human element in prescription decisions surfaced, with 68% of clinicians admitting to being influenced by personal experiences with medicine prescriptions. Patient demands also played a pivotal role, with 68% acknowledging their influence in the prescribing process, portraying a delicate balance between professional judgment and patient expectations. In the realm of pharmacy interactions, 56% of clinicians expressed comfort when pharmacists changed the branded drugs prescribed by them, emphasizing a collaborative approach in patient care.

This comprehensive exploration of dentists' perspectives on generic medicines illuminates a complex landscape of knowledge, attitudes, and practices. The results not only underscore the need for targeted educational interventions but also reveal promising trends in the integration of generic medicines into dental practice. The study sets the stage for further discourse and action, envisioning a future where generic medicines become an integral component of dental care, contributing to the broader goal of healthcare accessibility and affordability.

A total of 200 questionnaires were distributed among clinicians. The questions related with knowledge and its frequency response rate. About 59% of the clinicians agreed that generic medicines were intended to be interchangeable with branded drugs. 46% of clinician were aware of IMC act. (Fig 1 & 2)

Do you support generic substitution for brand drugs in most cases?
200 responses

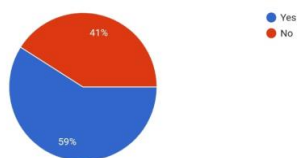


Fig 1

Are you aware of IMC act to prescribe the drugs with Generic names?
200 responses

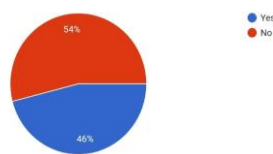


Fig 2

53% of the clinician said that they were aware regarding the Jan Aushadhi scheme by government of India. Most of the Clinicians (15%) were of the view that generic drugs were not as safe as the innovator drug. 30.5% of the clinicians felt that generic drugs are not effective as innovator while, 40% clinicians felt the onset of action of generic drugs are late. Most of the clinicians said that patients should have the liberty to choose generics over innovators. (Fig 3 & 4)

Are you aware about Jan Aushadhi by government of India?
200 responses

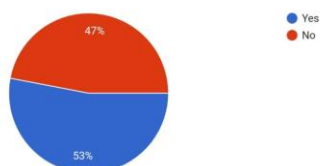


Fig 3

What is your opinion regarding generics in context of:
200 responses

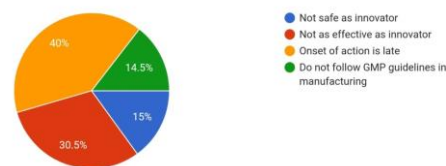


Fig 4

All the 80% clinicians agreed that generics are more affordable than brand name drugs. 30% clinicians felt that generics are meant only for poor. (Fig 5 & 6)

Are generics more affordable than brand name drugs?
200 responses

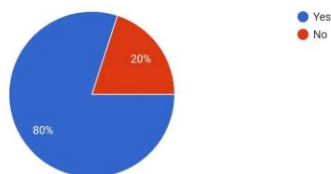


Fig 5

Are generics meant only for poor?
200 responses

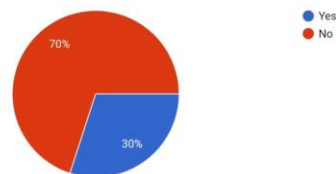


Fig 6

70.5% clinicians of our study felt that confidence should be built on patients to use more generics, while 83% clinicians agreed that importance of generics should be taught in early part of doctors training. (Fig 7 & 8)

Should confidence be built in patients to use generics more?
200 responses

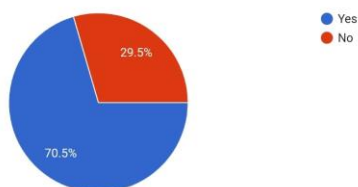


Fig 7

Do you think training programme is essential to increase awareness about generics?
200 responses

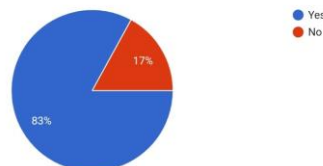


Fig 8

Only 51% of the clinicians have read articles based on efficacy of generic drugs versus brand drugs. In our study, 57% clinicians said switching to generics changed the outcome of therapy. (Fig 9 & 10)

Have you read any article on safety and efficacy off generics vs brand drugs?
200 responses

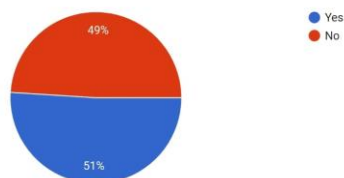


Fig 9

What do you think that switching brand medicine with narrow therapeutic range to generic drug product may be change the main outcome of treatment?
200 responses

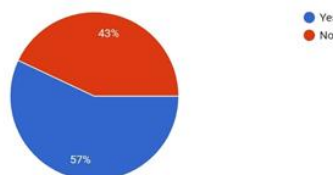


Fig 10

59% clinicians substituted generics in place of branded drugs. Most of the clinicians (20%) considered availability of drugs in pharmacies before prescribing, while, 23% clinicians considered price of medicine before prescribing. Efficacy and safety profile of drugs were considered by most of the clinicians (48%), 9% considered economic profile of the patients. (Fig 11 & 12)

Do you support generic substitution for brand drugs in most cases?
200 responses

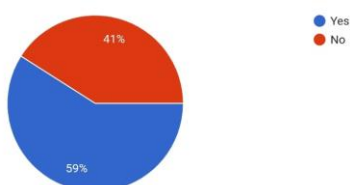


Fig 11

What factors are considered while prescribing drugs?
200 responses

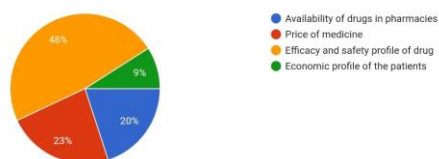


Fig 12

56% clinicians prescribed generics from all local manufacturers, while, 72% clinicians agreed that they are influenced by branded medical representatives. The clinicians were comfortable when pharmacist changed the branded drug prescribed by them. (Fig 13 & 14)

Do you prescribe generics from all local manufacturers?
200 responses

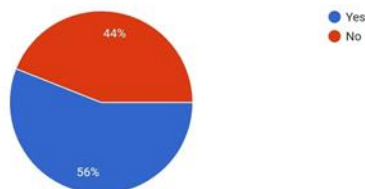


Fig 13

Which medical representatives give you frequent visits?
200 responses

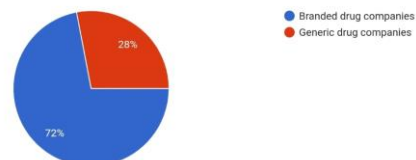


Fig 14

68% clinicians were influenced by their personal experiences with medicine prescription, while, patient's demands were also influenced by 68% clinicians while prescribing medicines. (Fig 15 & 16)

Does your personal experience with medicines influence prescription?
200 responses

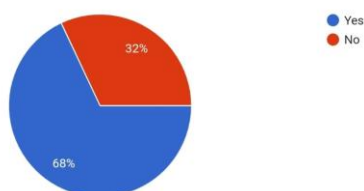


Fig 15

Do patients demands influence your prescriptions?
200 responses

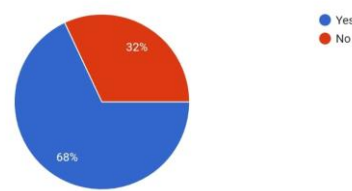


Fig 16

V. Discussion:

The comprehensive study on the knowledge, attitudes, and practices of dentists regarding generic medicines in Karad city unraveled a rich tapestry of insights. As we delve into the discussion, it's crucial to interpret the findings in the context of the broader healthcare landscape, addressing the challenges and opportunities that surfaced throughout the research.

The study illuminated a commendable level of awareness among dentists in Karad regarding the interchangeability of generic medicines with their branded counterparts. A majority, 59%, acknowledged the interchangeability, reflecting a foundational understanding of the concept. However, concerns about safety, efficacy, and the perceived late onset of action highlight potential areas for targeted educational interventions.

The finding that only 51% of clinicians have read articles on the efficacy of generic drugs versus brand drugs suggests a potential gap in staying updated with the evolving landscape of pharmaceutical research. Encouraging a culture of continuous learning and providing easily accessible resources could bridge this knowledge gap.

The study revealed nuanced perceptions among dentists regarding the safety and efficacy of generic drugs. While a significant proportion recognized their affordability (80%), a notable 15% expressed concerns about the safety of generic drugs compared to innovator drugs. Similarly, 30.5% believed that generic drugs are less effective than their innovator counterparts, and 40% perceived a late onset of action.

These perceptions underscore the importance of addressing misconceptions about generic medicines. Educational interventions should emphasize the rigorous standards set by regulatory bodies like the FDA to

ensure the bioequivalence, safety, and efficacy of generic drugs. Highlighting success stories and real-world examples of positive outcomes with generic medicines could also contribute to changing these perceptions.

The study provided valuable insights into dentists' prescription practices, shedding light on the factors influencing their decisions. While 59% of clinicians substituted generics for branded drugs, considerations in prescription decisions varied. Notably, a significant proportion considered the economic profile of patients (9%), reflecting a holistic approach to patient-centric care.

The influence of branded medical representatives (72%) suggests the need for a nuanced approach to counteract potential biases. Continuing education programs that include unbiased information on both generic and branded drugs could empower dentists to make well-informed prescription decisions.

The study highlighted the importance of building patient confidence in using generic medicines (70.5%). This underscores the significance of effective doctor-patient communication. Dentists play a pivotal role in educating and empowering patients to make informed decisions about their healthcare. Integrating discussions about the benefits and affordability of generic medicines during patient consultations can contribute to building this confidence.

The acknowledgment by 83% of clinicians on the importance of incorporating the significance of generics into early medical training presents an exciting opportunity for long-term change. Integrating comprehensive modules on generic medicines in dental education can create a generation of healthcare professionals well-versed in the advantages and considerations associated with generic drugs.

The comfort expressed by clinicians when pharmacists changed the branded drugs prescribed by them (56%) signifies a collaborative approach in patient care. This collaboration could be further enhanced by fostering open communication channels between dentists and pharmacists, ensuring a seamless transition between branded and generic medications when clinically appropriate.

The study revealed mixed awareness regarding government schemes like Jan Aushadhi (53%). Promoting awareness about such initiatives among healthcare professionals can contribute to broader public education and encourage the adoption of generic medicines.

VI. Conclusion

In conclusion, this study delves into the intricate landscape of knowledge, attitudes, and practices among dentists in Karad city regarding generic medicines. The findings reveal a nuanced perspective, with a majority acknowledging the interchangeability of generics but significant proportions expressing concerns about safety and delayed onset of action. While over half of the clinicians prescribe generics, a notable segment remains skeptical. The identified knowledge gaps and concerns underscore the imperative for targeted educational interventions. Bridging these gaps can enhance awareness, dispel misconceptions, and potentially shift the paradigm toward a more widespread acceptance of cost-effective generic medicines in dental practices. The study also illuminates the need for continued efforts to integrate awareness of government initiatives, such as the Jan Aushadhi scheme, into the healthcare professional's consciousness. Aligning these efforts with the acknowledgment of generics' affordability, even by those who express reservations, can contribute to a more inclusive and informed healthcare community. As dentistry holds a pivotal position in the broader healthcare spectrum, the study's implications extend beyond dental practices. The identified factors influencing prescription decisions, including economic considerations and patient demands, highlight the delicate balance between healthcare provider judgment and patient expectations. This research serves as a catalyst for future initiatives, calling for collaborative efforts from educational institutions, healthcare policymakers, and pharmaceutical stakeholders. By addressing the concerns, enhancing awareness, and fostering a culture of informed prescribing practices, the dental community in Karad has the potential to contribute significantly to the larger goal of making healthcare more accessible and affordable. The study opens avenues for further exploration and action, marking a step towards a healthcare landscape where generic medicines are seamlessly integrated into the fabric of dental care.

VII.Future Directions and Recommendations:

- a. Educational Interventions: Tailored educational programs should be designed to address the concerns and misconceptions identified in the study. These interventions can take the form of workshops, seminars, and online resources providing evidence-based information on the safety, efficacy, and cost-effectiveness of generic medicines.
- b. Continuing Professional Development: Implementing mandatory modules on generic medicines in the continuous education programs for dentists can ensure that they stay abreast of the latest developments in pharmaceuticals.
- c. Collaborative Initiatives: Strengthening collaborations between dental associations, pharmaceutical companies, and regulatory bodies can facilitate a unified approach toward promoting the adoption of generic medicines.
- d. Patient Education Campaigns: Beyond professional education, there is a need for public campaigns to raise awareness about the benefits and safety of generic medicines. This can contribute to building trust among patients and encouraging them to choose generic options when appropriate.
- e. Policy Advocacy: Dentists can play an active role in advocating for policies that support the accessibility and affordability of generic medicines. Engaging with healthcare policymakers can contribute to creating an enabling environment for the widespread adoption of generics.

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