

## Original Research

### Awareness on various dental care applications among general population

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#### ABSTRACT:

**Background:** The rise of mobile applications (apps) presents an opportunity to enhance dental care management. However, awareness and utilization among general population remain underexplored. **Objective:** This study aimed to assess awareness of various dental care mobile applications among patients in the outpatient department of a private dental college. **Methods:** A cross-sectional survey was conducted from June to August 2024, involving 101 participants. Data were collected using a questionnaire and analyzed using descriptive statistics and chi-square tests. **Results:** The mean age of participants was 38.85 years, with a gender distribution of 46.6% males and 53.4% females. Awareness of dental apps was significantly higher among males (95.7% unaware) than females (83.3% unaware,  $p = 0.044$ ). Notable gender differences emerged in recognizing apps that provide dental hygiene information (46.3% females vs. 23.4% males,  $p = 0.014$ ) and those that track treatment plans (35.2% females vs. 10.6% males,  $p = 0.003$ ). Awareness of apps for alleviating dental anxiety was low (11.1% females and 8.5% males). **Conclusions:** The findings highlight a significant gap in awareness, particularly among females, indicating the need for targeted educational campaigns to promote dental care apps and improve oral health outcomes.

**Keywords:** Mobile Applications, Dental Care, Awareness, Patient Education, Oral Health

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#### INTRODUCTION

A mobile application, or mobile app, is a software program specifically designed to operate on smartphones, tablets, and other mobile devices. The increase in global mobile phone ownership and internet connectivity has spurred the development and exploration of mobile health initiatives aimed at promoting various behavior change strategies for managing chronic illnesses.<sup>1</sup> Access to accurate information and a solid understanding of oral health is essential for establishing effective oral hygiene practices. The use of mobile devices has transformed many aspects of healthcare, with apps like Dental Coach, White Smile, Pearl for home dental check-ups, and Brush DJ becoming popular among patients.<sup>2</sup> The rapid advancement of technology has significantly transformed various aspects of

healthcare, including dental care. With the proliferation of mobile applications, patients now have access to a wealth of information and tools that can enhance their dental health management.<sup>3</sup> Dental care mobile applications offer a convenient and accessible way for patients to manage their oral health. These apps provide a range of features, from finding nearby dentists to tracking dental appointments and receiving personalized oral health advice. These applications offer features such as appointment scheduling, reminders for oral hygiene practices, access to educational resources, and even self-diagnosis tools.<sup>4</sup> Despite these potential benefits, the awareness and utilization of dental care mobile applications among patients remain relatively underexplored. Awareness of dental care mobile applications among patients is crucial for improving

oral health outcomes.<sup>5</sup> Recent studies highlight varying levels of awareness influenced by factors such as education, socioeconomic status, and the effectiveness of educational interventions. Understanding patients' awareness of these applications is crucial, as it directly influences their engagement with dental health services and adherence to preventive measures.<sup>6,7</sup> This study aims to assess the level of awareness regarding various dental care mobile applications among patients in the outpatient department of a private dental college.

**MATERIALS AND METHODS**

This study utilized a cross-sectional design to evaluate patients' awareness of various dental care applications. Conducted over three months from June to August 2024, it involved data collection, analysis, and report preparation. The research focused on patients attending the outpatient department of a private dental college, with approval granted by the Department of Oral Medicine and Radiology and ethical clearance from the Institutional Review Board. A sample of 101 participants was selected through simple random sampling, and demographic information was recorded. A questionnaire with 10 questions was distributed on paper, and informed consent was obtained to ensure confidentiality and privacy. Participants were briefed about the questions and encouraged to respond accurately. Data collected via paper forms were entered into Excel and analyzed using IBM SPSS Statistics for Windows (Version 26.0, Armonk, NY: IBM Corp). Descriptive statistics, including means, standard deviations, frequencies, and percentages, were calculated for age and all participant responses. Gender- based comparisons of responses were made using cross-tabulations, with

statistical significance evaluated using Pearson's chi-square test and Fisher's exact test, set at  $p < 0.05$ .

**RESULTS**

The study involved a total of 101 participants, with a mean age of 38.85 years (ranging from 10 to 90 years) and a gender distribution of 46.6% males and 53.4% females. The results indicated varying levels of awareness regarding dental care applications among participants, with significant gender differences observed in several areas. Notably, awareness of dental apps was significantly higher among females, with 83.3% of females unaware compared to 95.7% of males ( $p = 0.044$ ). Furthermore, a significant proportion of females (46.3%) expressed willingness to use a dental app compared to 44.7% of males, though this difference was not statistically significant ( $p = 0.515$ ). Awareness that dental apps provide information on dental care hygiene showed a significant difference as well, with 46.3% of females aware compared to 23.4% of males ( $p = 0.014$ ). Additionally, the perception that dental apps save time and consultation fees was also significant, with only 11.1% of females aware compared to 31.9% of males ( $p = 0.010$ ). Awareness that dental apps store and track treatment plans significantly favored females, with 35.2% aware compared to only 10.6% of males ( $p = 0.003$ ). Other areas, such as identifying potential dental problems and helping navigate nearby clinics, did not show significant gender differences ( $p = 0.174$  and  $p = 0.254$ , respectively). Finally, the awareness that dental apps help alleviate dental anxiety also did not present a statistically significant difference between genders ( $p = 0.462$ ). Reminder apps regarding appointments were used 31.2% by the patients as the most used app.

**Table 1. Distribution of subjects based on demographic details**

	Range	Mean	Standard Deviation
AGE	10-90	38.85	18.639
		<b>FREQUENCY (N)</b>	<b>PERCENTAGE (%)</b>
GENDER	MALES	47	46.6
	FEMALES	54	53.4
TOTAL		101	100.0

**Table 2: Questionnaire Responses [Comparison between Males and Females]**

Question	Options	Gender (%)		p-value
		Female	Male	
Are you aware of dental apps?	Yes	9 [16.7%]	2 [4.3%]	.044
	No	45 [83.3%]	45 [95.7%]	
Are you willing to use a dental app?	Yes	25 [46.3%]	21 [44.7%]	.515
	No	29 [53.7%]	26 [55.3%]	
Are you aware that dental apps allow self- diagnosis?	Yes	10 [18.5%]	15 [31.9%]	.093
	No	44 [81.5%]	32 [68.1%]	
Are you aware that dental apps provide information on dental care hygiene?	Yes	25 [46.3%]	11 [23.4%]	.014
	No	29 [53.7%]	36 [76.6%]	
Are you aware that dental apps save time and consultation fees?	Yes	6 [11.1%]	15 [31.9%]	.010
	No	48 [88.9%]	32 [68.1%]	
Are you aware that dental apps store and track past and current treatment plans?	Yes	19 [35.2%]	5 [10.6%]	.003
	No	35 [64.8%]	42 [89.4%]	

<b>Are you aware that dental apps identify potential dental problems?</b>	<b>Yes</b>	<b>22 [40.7%]</b>	<b>14 [29.8%]</b>	<b>.174</b>
	<b>No</b>	<b>32 [59.3%]</b>	<b>33 [70.2%]</b>	
<b>Are you aware that dental apps help navigate nearby clinics?</b>	<b>Yes</b>	<b>8 [14.8%]</b>	<b>8.5%</b>	<b>.254</b>
	<b>No</b>	<b>46 [85.2%]</b>	<b>91.5%</b>	
<b>Are you aware that dental apps help alleviate dental anxiety?</b>	<b>Yes</b>	<b>6 [11.1%]</b>	<b>4 [8.5%]</b>	<b>.462</b>
	<b>No</b>	<b>48 [88.9%]</b>	<b>43 [91.5%]</b>	

## DISCUSSION

The findings from our study indicate a concerning trend in the awareness of dental applications, particularly highlighting that 83.3% of females were unaware of these resources, despite the awareness being significantly higher among males (95.7% unaware). This suggests that while there may be some awareness among males, the majority of females lack familiarity with these dental care tools, which is critical given the increasing role of technology in healthcare. Comparatively, the study by Soumya Sri S. reported that 32.82% of females and 14.50% of males were aware of mobile applications for dental consultation. These figures illustrate a noteworthy gap, particularly among females, as the awareness in our study appears to be much lower. This discrepancy could stem from various factors, including differences in sample demographics, the effectiveness of outreach and education about dental apps, or cultural influences that affect technology adoption.<sup>8</sup> Additionally, the findings from the study by Dejmaj, which indicated that only a small percentage of the population was aware of mobile applications, reinforce a broader trend. This suggests that awareness of dental apps remains relatively low across different studies, pointing to a significant opportunity for improvement in patient education and outreach.<sup>9</sup>

The findings from our study, indicating that 46.3% of females are aware that dental apps provide information on dental care hygiene compared to only 23.4% of males, underscore a significant gender disparity in recognizing the educational potential of these applications. This heightened awareness among females suggests that they may be more receptive to using technology for oral health information, which aligns with the broader trend of women generally being more proactive about health-related matters. Supporting our findings, Toniazzo et al. emphasized that dental apps can be effective tools for enhancing patients' oral hygiene. This assertion highlights the potential of these applications not just for awareness, but also for practical guidance in maintaining oral health.<sup>10,11</sup> Studies that demonstrate the effectiveness of dental apps in providing brushing instructions are particularly relevant, as they illustrate how such tools can raise awareness about the importance of proper brushing techniques. Research by Marchetti et al. further indicates that the use of mobile oral health apps can lead to long-term improvements in periodontal health among adolescents.<sup>12</sup> Additionally, Kay et al. found that dental apps are successful in improving brushing outcomes in the short term, which points to the immediate impact that these tools can

have on patient behaviours. This short-term effectiveness may be critical for initiating better oral hygiene habits, especially among those who may not have received comprehensive dental education.<sup>13,14</sup>

In our study, the low awareness regarding dental apps' ability to alleviate dental anxiety—only 11.1% of females and 8.5% of males—highlights a significant gap in understanding the mental health benefits these applications can offer. This finding is particularly concerning given the role of dental anxiety in deterring patients from seeking necessary dental care. Huang et al. emphasized that mobile health applications enable dentists to conduct teleconsultations that assess both the physical and psychological status of patients. This capability allows dental professionals to engage with patients prior to procedures, helping to manage anxiety not only before but also after dental visits, thereby addressing any complications that may arise. This proactive approach can foster a supportive environment, potentially reducing the stress associated with dental treatments.<sup>15,16</sup>

## CONCLUSION

The findings suggest that targeted educational campaigns and marketing strategies are necessary to enhance awareness and adoption of dental care mobile applications among males. By addressing the specific knowledge gaps and concerns identified in this study, healthcare providers and app developers can promote the benefits of these digital tools and encourage their use within the dental community. By using dental care mobile applications, patients can significantly improve their oral health outcomes. These apps empower individuals to effectively manage their dental care routines, from tracking appointments and receiving personalized oral health advice to finding nearby dentists. Moreover, these apps facilitate seamless communication between patients and dentists, strengthening the patient-dentist relationship. For those residing in remote areas or with limited access to dental services, these mobile applications serve as invaluable resources, expanding access to quality dental care.

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