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IP Annals of Prosthodontics and Restorative Dentistry

Journal homepage: https://www.aprd.in/

Original Research Article

Knowledge, attitude and practices of ChatGPT in dental research among the dental students and dental professionals in Belagavi, India

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Abstract

Objectives: With the rapid advancement of technology, professionals and students in the field of dentistry are increasingly turning to innovative tools to enhance their research capabilities. One such groundbreaking tool that has emerged on the horizon is ChatGPT by OpenAI. This article evaluates the knowledge, attitude and practice of ChatGPT in dental research among the dental students and dental professionals in Belagavi, India.

Materials and Methods: In this cross-sectional type study 340 people were included in the sample size, which was estimated based on the results of the pilot study. Face validity of 83% as well as content validity ratio of 0.75 were used to evaluate the questionnaire's reliability, which consisted of 12 closed-ended questions.

Statistical Analysis: Data analysis is done using descriptive analysis, analysis of variance test, chi-square test, multiple linear regression as well as Pearson's correlation coefficient.

Results: Postgraduates showed highest mean knowledge, practice and attitude score followed by Academician and undergraduates and dental practitioner. Results concluded statistically significant difference in knowledge, attitude and practice in four groups. ($p < 0.001$) A positive linear correlation was observed among the knowledge, attitude as well as practice scores.

Conclusions: Study revealed that postgraduates and academicians are more knowledgeable than undergraduates. While many see ChatGPT's potential to improve research, some lack familiarity with it. This gap indicates a need for targeted educational programs to promote AI literacy. Dental institutions should incorporate AI-focused training to equip students and professionals. Further research should also address AI applications in dental research needs.

Keywords: Artificial Intelligence, ChatGPT, Dental research

Received: 26-03-2025; **Accepted** 01-05-2025; **Available Online**: 20-06-2025

1. Introduction

In today's dynamic world of healthcare and dentistry, the pursuit of knowledge is not just limited to traditional textbooks and academic resources. With the rapid advancement of technology, professionals and students in dentistry are rapidly turning to innovative tools as well as resources to enhance their research capabilities.[1] One such groundbreaking tool that has emerged on the horizon is ChatGPT, an artificial intelligence language model created by OpenAI.

OpenAI designed the natural language processing (NLP) model known as ChatGPT. It is of Generative Pre-trained Transformer (GPT) model category and is made especially to produce text responses that seem natural in a conversational setting.[2] ChatGPT is capable of understanding and generating text in a coherent and contextually relevant manner, making it beneficial for understanding of many natural languages.[3]

There are several variations and forms of ChatGPT like GPT-3, ChatGPT-4, Fine-tuned Models, GPT-3 for Education, ChatGPT API. Developments in AI and NLP models continue to evolve rapidly, so there may have been new iterations or forms of ChatGPT released after last knowledge update in September 2021.[4]It's essential to check OpenAI's official updates and documentation for the most current information on ChatGPT and its various forms.

Together with its uses in clinical dentistry, ChatGPT has become a useful tool for dental research, transforming the

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https://doi.org/ 10.18231/j.aprd.2025.024

way researchers collect and evaluate data. Dental researchers can take advantage of ChatGPT's extensive knowledge base along with natural language processing skills in a number of areas of their study. It can swiftly shift through extensive literature, providing quick access to the latest studies, articles, and clinical findings related to dentistry.[5] Moreover, ChatGPT can answer queries and provide explanations, making it an efficient resource for clarifying complex dental concepts or exploring innovative techniques. It can also help with data interpretation and analysis., helping researchers identify trends and patterns within their research data[6]. As a versatile and accessible tool, ChatGPT is proving to be an indispensable asset in advancing dental research, streamlining the research process, promoting collaboration and knowledge distribution in the dental community.[7]

By conducting this questionnaire study, researchers can gain a comprehensive understanding ChatGPT's utilization in dental research, its challenges, and opportunities. The information gathered could direct future research paths in this field and aid in the creation of AI advanced technologies that are specifically suited according to the demands and concerns of the dental research community.

2. Materials and Methods

2.1. Study design

According to reporting criteria for Strengthening the Reporting of Observational Studies related to Epidemiology, the present research employed a cross-sectional, observational study design.

2.2. Study setting

The study was carried out between dental students (undergraduate students of 3rd year, final year, interns and postgraduate students) and dental professionals of dental schools in the Karnataka state (Belagavi).

The survey was conducted between March, April, and May 2024.

2.3. Eligibility criteria

All dental college participants who were willingly able to provide informed permission were added in the study. People who all refused for consent for the participation in the study were not included.

2.4. Questionnaire validation

Ten participants in each group participated in a pilot study to find questionnaire issues and other issues pertaining to the questionnaire. Cronbach's α calculated the reliability related to the questionnaire, confirmed by the content validity ratio (0.75), face validity (83%). Based on this, the questionnaire was corrected through feedback and making it better as well as specific to the aim of the study, thereby providing acceptable questionnaire.

2.5. Questionnaire characteristics

Twelve English-language, closed-ended items were included in the survey.5 questions were of knowledge and 4 questions were based on attitude and 3 questions were practice based.

A total of 340 subjects including dental students as well as professionals were sent a validated questionnaire link via internet through social media (WhatsApp groups), with the informed consent.

The participants were given instructions to try each one of the twelve questions. The questionnaire's first part asked about the participant's age, gender, years of experience, and current state of practice; this information helped with qualitative analysis of the participants. The second part asked about the participant's knowledge, attitude, and practice of ChatGPT in dental research.

2.6. Bias

A single researcher gave the questionnaire at a predetermined time and day in a classroom. The entire process was closely monitored to minimise bias. Volunteers guarantee that the questionnaire is completed objectively. This technique assisted in maintaining the integrity. Responses were not influenced by other participants.

2.7. Sample size estimation and sample distribution

Using G* Power statistics software (Ver .3.1.9.4), the pilot study determined a minimum sample size of 340 with a type I (α) error of 0.05 and power (1-β) of 0.95. Using G* Power statistics software (Ver .3.1.9.4), the pilot study determined a minimum sample size of 340 with a type I (α) error of 0.05 and power (1-β) of 0.95. We obtained a list of participants from two Belagavi dentistry schools, covering a range of affiliations. From a list, participants were selected randomly. Consequently, 340 samples in total were obtained.

2.8. Statistical analysis

Excel was used to enter the collected data, and IBM-SPSS® Statistics-Version 21 (USA: IBM Corp.) was used for analysis. The frequency distribution, mean, and standard deviation were all calculated using descriptive statistics. Consequently, the unpaired T test and Mann Whitney U test were used.

3. Results

A total of 340 participants took part in the study. In them 75% were females, while 24.5 % were men. When the participants were distributed into categories according to their educational qualifications in dentistry, 159 were undergraduate students, while 47 were dental practitioners and remaining 78 were PG students, 56 were academicians. When participants were divided into categories based on their age group,254 participants were under age group of 17-30 years with remaining 86 participants under age group of 31-45 years. **(Table 1**)

3.1. Knowledge of ChatGPT as helping tool in dental research

When participants were asked whether they are aware of ChatGPT or any similar conversational AI tool, most of them, that is 97% participants were aware. But also, when participants were asked about ethical guidelines for using AI tools like ChatGPT in dentistry, almost 48% participants were not very familiar. (**Table 2**)

Among the 5 questions of knowledge, postgraduates show highest mean knowledge score (20.69) followed by Academicians (18.45) and undergraduates (14.55) and dental practitioners (10.87). While considering knowledge of ChatGPT as a helping tool in dental research among participants of different educational qualification, ANOVA test showed p value <0.001, showing statistically significant difference in between the groups. (**Table 3**)

3.2. Attitude towards ChatGPT as helping tool in dental research

When participants were asked about recommending ChatGPT for research purpose to their colleagues,54% participants showed positive response while 30% participants were neutral with their response. Also, when participants were asked whether ChatGPT has improved their efficiency in dental research,63% participants showed positive response. (Table 2)

Among the 4 questions of attitude, postgraduates show highest mean knowledge score (14.56) followed by Academicians (12.59) and undergraduates (9.84) and dental practitioners (6.09). While considering attitude towards ChatGPT as a helping tool in dental research among participants of different educational qualification, ANOVA test showed p value <0.001, stating statistically significant difference among them. (**Table 3**)

3.3. Practice of ChatGPT by participants as helping tool in dental research

In this study 60% of the participants had used ChatGPT in their day-to-day life.58% participants had used ChatGPT for dental related purposes. Among those, 19% participants had used ChatGPT for research assistance. (**Table 2**)

Among the 3 questions of practice, postgraduates showed highest mean knowledge score (11.38) followed by Academician (8.48) and undergraduates (5.84) and dental practitioner (4.83). While considering practice of ChatGPT as a helping tool in dental research among participants of different educational qualification, ANOVA test showed p value <0.001, showing statistically significant difference among them. (**Table 3**)

3.4. Relationship between study variables using pearson's correlation coefficient

A positive linear correlation (r = +0.824) was found in the knowledge and attitude scores that was statistically significant (p < 0.001) with the help of Pearson's correlation coefficient test. A positive linear correlation (r = +0.824) was also seen within the knowledge and practice scores that was statistically significant (p< 0.001) with the help of Pearson's correlation coefficient test. (**Table 4**)

3.5. Association between demographic variables and knowledge/attitude scores using multiple linear regression

Multiple linear regression analysis among knowledge, attitude, practice associated with the participant's age (R= 0.7) and affiliation (R = 0.3) showed statistically significant difference (p < 0.001) (**Table 5**). But Multiple linear regression analysis showed no statistically significant difference in knowledge, attitude, practice of the participants and also their gender(p>0.05) (**Table 5**)

3.6. Association between knowledge, attitude and practice responses among Dental professionals and Dental students using Binomial logistic regression test

Binomial logistic regression test resulted statistically significant difference among knowledge scores between 2 groups of Dental professionals and Dental students (p<0.001) with odds ratio of 3.335 for dental students with confidence interval of 1.851 – 6.009. There was no statically significant difference with attitude and practice scores (p=0.119, p=0.611) respectively. (**Table 6**)

Table 1: Demographic details of the study participants

Demographic details		**Qualification**							
		Postgraduates		**Undergraduates**		**Dental practitioner**		**Academician**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Age group	17-30 years	78	100.0%	157	98.7%	19	40.4%	0	0.0%
	31-45 years	0	0.0%	2	1.3%	28	59.6%	56	100.0%
Gender	Male	19	24.4%	36	22.6%	12	25.5%	15	26.8%
	Female	59	75.6%	123	77.4%	35	74.5%	41	73.2%

Table 2: Comparison of knowledge, attitude and practice responses among various groups of the study participants

Questions	Qualification								*P*- value
	Postgraduates		Undergraduates		Dental practitioner		Academician		
	N	%	N	%	N	%	N	%	
Knowledge questions:									
K1									<0.001*
Very unaware	0	0.0%	20	12.6%	44	93.6%	0	0.0%	
unaware	1	1.3%	6	3.8%	2	4.3%	0	0.0%	
Neither aware nor unaware	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
Aware	49	62.8%	100	62.9%	0	0.0%	41	73.2%	
Very aware	28	35.9%	33	20.8%	1	2.1%	15	26.8%	
K2									<0.001*
Not familiar at all	2	2.6%	18	11.3%	43	91.5%	3	5.4%	
Not very familiar	20	25.6%	62	39.0%	4	8.5%	29	51.8%	
Somewhat familiar	16	20.5%	25	15.7%	0	0.0%	5	8.9%	
Familiar	20	25.6%	31	19.5%	0	0.0%	15	26.8%	
Very familiar	20	25.6%	23	14.5%	0	0.0%	4	7.1%	
K3									<0.001*
Strongly disagree	0	0.0%	78	49.1%	42	89.4%	0	0.0%	
Disagree	0	0.0%	4	2.5%	2	4.3%	0	0.0%	
Neither agree nor disagree	2	2.6%	5	3.1%	1	2.1%	4	7.1%	
Agree	17	21.8%	22	13.8%	2	4.3%	19	33.9%	
Strongly agree	59	75.6%	50	31.4%	0	0.0%	33	58.9%	
K4									<0.001*
Strongly disagree	0	0.0%	125	78.6%	8	17.0%	0	0.0%	
Disagree	1	1.3%	12	7.5%	4	8.5%	1	1.8%	
Neither agree nor disagree	4	5.1%	4	2.5%	12	25.5%	4	7.1%	
Agree	16	20.5%	12	7.5%	14	29.8%	21	37.5%	
Strongly agree	57	73.1%	6	3.8%	9	19.1%	30	53.6%	
K5									<0.001*
Strongly disagree	12	15.4%	89	56.0%	16	34.0%	11	19.6%	
Disagree	12	15.4%	26	16.4%	20	42.6%	25	44.6%	
Neither agree nor disagree	8	10.3%	13	8.2%	6	12.8%	6	10.7%	
Agree	16	20.5%	26	16.4%	4	8.5%	12	21.4%	
Strongly agree	30	38.5%	5	3.1%	1	2.1%	2	3.6%	
Attitude questions:									
A1									<0.001*
Strongly disagree	7	9.0%	47	29.6%	47	100.0%	6	10.7%	
Disagree	8	10.3%	37	23.3%	0	0.0%	13	23.2%	
Neither agree nor disagree	13	16.7%	27	17.0%	0	0.0%	12	21.4%	
Agree	26	33.3%	26	16.4%	0	0.0%	11	19.6%	
Strongly agree	24	30.8%	22	13.8%	0	0.0%	14	25.0%	
A2									<0.001*
Strongly disagree	5	6.4%	53	33.3%	46	97.9%	12	21.4%	
Disagree	9	11.5%	26	16.4%	0	0.0%	11	19.6%	
Neither agree nor disagree	13	16.7%	33	20.8%	1	2.1%	12	21.4%	
Agree	27	34.6%	27	17.0%	0	0.0%	10	17.9%	
Strongly agree	24	30.8%	20	12.6%	0	0.0%	11	19.6%	
A3									<0.001*
Made research less efficient	7	9.0%	131	82.4%	47	100.0%	7	12.5%	
No improvement	4	5.1%	2	1.3%	0	0.0%	9	16.1%	
Slightly improved	24	30.8%	11	6.9%	0	0.0%	15	26.8%	
Moderately improved	22	28.2%	13	8.2%	0	0.0%	14	25.0%	
Significantly improved	21	26.9%	2	1.3%	0	0.0%	11	19.6%	
A4									<0.001*
Not recommend at all	0	0.0%	125	78.6%	47	100.0%	0	0.0%	
May not recommend	12	15.4%	6	3.8%	0	0.0%	11	19.6%	
Neutral	23	29.5%	21	13.2%	0	0.0%	29	51.8%	

Recommend	28	35.9%	6	3.8%	0	0.0%	12	21.4%	
Strongly recommend	15	19.2%	1	0.6%	0	0.0%	4	7.1%	
Practice questions:									
P1									<0.001*
Never	3	3.8%	144	90.6%	46	97.9%	15	26.8%	
Rarely	5	6.4%	6	3.8%	0	0.0%	5	8.9%	
Sometimes	18	23.1%	5	3.1%	0	0.0%	20	35.7%	
Often	18	23.1%	3	1.9%	1	2.1%	14	25.0%	
Always	34	43.6%	1	0.6%	0	0.0%	2	3.6%	
P2									<0.001*
Never	5	6.4%	113	71.1%	46	97.9%	17	30.4%	
Rarely	3	3.8%	38	23.9%	0	0.0%	11	19.6%	
Sometimes	21	26.9%	5	3.1%	1	2.1%	20	35.7%	
Often	19	24.4%	3	1.9%	0	0.0%	8	14.3%	
Always	30	38.5%	0	0.0%	0	0.0%	0	0.0%	
P3									<0.001*
Never	7	9.0%	142	89.3%	46	97.9%	1	1.8%	
Rarely	15	19.2%	10	6.3%	1	2.1%	13	23.2%	
Monthly	7	9.0%	4	2.5%	0	0.0%	12	21.4%	
Weekly	24	30.8%	1	0.6%	0	0.0%	20	35.7%	
Daily	25	32.1%	2	1.3%	0	0.0%	10	17.9%	

All values are expressed as frequency and percentage (in parentheses); Statistical test applied: Chi-square test; Level of significance: P ≤ 0.05 is considered statistically significant

Table 3: Comparison of knowledge, attitude and practice scores among the study participants

Scores		**N**	**Mean**	**SD**	**95% Confidence Interval**		***P*- value**
					Lower Bound	**Upper Bound**	
Knowledge score	Postgraduates	78	20.69	2.298	20.17	21.21	<0.001*
	Undergraduates	159	14.55	2.040	14.23	14.87	
	Dental practitioner	47	10.87	3.555	9.83	11.92	
	Academician	56	18.45	1.361	18.08	18.81	
Attitude score	Postgraduates	78	14.56	3.500	13.78	15.35	<0.001*
	Undergraduates	159	9.84	2.734	9.41	10.27	
	Dental practitioner	47	6.09	2.858	5.25	6.92	
	Academician	56	12.59	1.817	12.10	13.08	
Practice score	Postgraduates	78	11.38	2.337	10.86	11.91	<0.001*
	Undergraduates	159	5.84	3.301	5.32	6.35	
	Dental practitioner	47	4.83	2.461	4.11	5.55	
	Academician	56	8.48	1.607	8.05	8.91	

SD-Standard deviation; All values are expressed as mean and SD; Statistical test used: One-way ANOVA; Level of significance: P≤ 0.05 is considered statistically significant

Table 4: Correlation between knowledge, attitude and practice score of study participants

Scores		**Knowledge**	**Attitude**	**Practice**
Knowledge	Pearson correlation coefficient	-	0.824	0.794
	P-value	-	<0.001*	<0.001*
Attitude	Pearson correlation coefficient	0.824	-	0.802
	P-value	<0.001*	-	<0.001*
Practice	Pearson correlation coefficient	0.794	0.802	-
	P-value	<0.001*	<0.001*	-

Statistical test used: Pearson correlation test. Level of significance: P-value ≤ 0.05 is considered statistically significant

Table 5: Association between demographic variables and knowledge/attitude/ practice scores among study participants

Predictors	**Coefficient r**	**SE**	**t**	**95% CI**	***P*- value**	**Adjusted R2**
Dependent variable: Knowledge score						
(Constant)	15.142	0.980	15.452	13.214 - 17.069	<0.001*	0.240
Age	6.811	0.759	8.978	5.318 - 8.303	<0.001*	
Gender	0.144	0.440	0.328	-0.721 - 1.010	0.743	
Education	-3.500	0.335	-10.457	-4.159 - -2.842	<0.001*	
Dependent variable: Attitude score						
(Constant)	10.898	1.002	10.881	8.928 - 12.868	<0.001*	0.173
Age	5.439	0.775	7.016	3.914 - 6.964	<0.001*	
Gender	-0.152	0.450	-0.339	-1.037 - 0.732	0.735	
Education	-2.943	0.342	-8.601	-3.616 - -2.270	<0.001*	
Dependent variable: Practice score						
(Constant)	7.228	0.909	7.955	5.441 - 9.016	<0.001*	0.232
Age	6.143	0.703	8.732	4.759 - 7.526	<0.001*	
Gender	-0.238	0.408	-0.584	-1.041 - 0.564	0.560	
Education	-3.172	0.310	-10.218	-3.783 - -2.561	<0.001*	

CI- Confidence interval; SE- standard error. Statistical test used: Multiple linear regression analysis. Level of significance: P value ≤ 0.05 is considered statistically significant

Table 6: Association between knowledge, attitude and practice responses among Dental professionals and Dental students using Binomial logistic regression test

Parameters	**Knowledge score**			**Attitude score**			**Practice score**		
	OR	95% CI	*P*-value	OR	95% CI	*P*-value	OR	95% CI	*P*-value
Type of participants									
Dental professionals	Ref	-	-	Ref	-	-	Ref	-	-
Dental students	3.335	1.851 – 6.009	<0.001	1.448	0.910 – 2.304	0.119	0.886	0.555- 1.414	0.611

OR- Odd's ratio; CI- Confidence Interval; Reference category: Dental students; Statistical test used: Binomial logistic regression; Level of significance: P ≤ 0.05 is considered statistically significant

Table 7:

Gender	-0.152	0.450	-0.339	-1.037 - 0.732	0.735	
Education	-2.943	0.342	-8.601	-3.616 - -2.270	<0.001*	
Dependent variable: Practice score						
(Constant)	7.228	0.909	7.955	5.441 - 9.016	<0.001*	0.232
Age	6.143	0.703	8.732	4.759 - 7.526	<0.001*	
Gender	-0.238	0.408	-0.584	-1.041 - 0.564	0.560	
Education	-3.172	0.310	-10.218	-3.783 - -2.561	<0.001*	

CI- Confidence interval; SE- standard error. Statistical test used: Multiple linear regression analysis. Level of significance: P value ≤ 0.05 is considered statistically significant

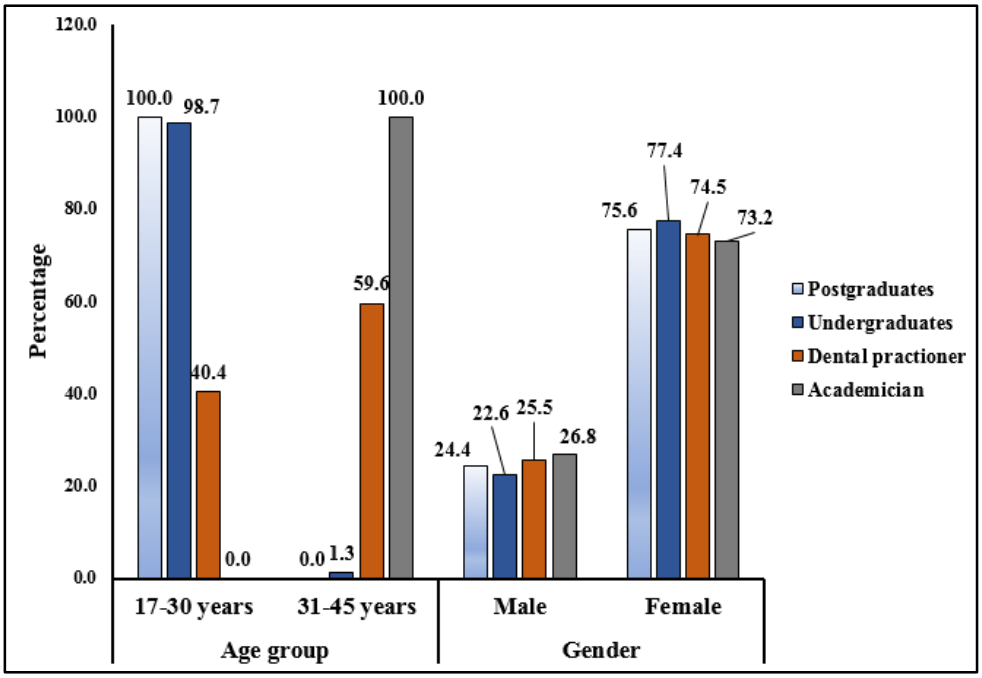

Figure 1: Demographic details of the study participants

4. Discussion

The inclusion of artificial intelligence (AI) is bringing dramatic improvements in a variety of disciplines, particularly healthcare as well as research. ChatGPT is an interesting AI technology and an advanced language model created by OpenAI. ChatGPT, which refers to Chat Generative Pre-Trained Transformer, uses deep learning techniques to create human-like narrative from the input it receives. This feature has opened up a wide range of applications, including the dental profession research.[8]

Dental research is considered as one of the important aspects in oral health sciences. Traditionally, dental research relied significantly on manual processes such literature reviews, data collecting, and analysis.[9] Performing these tasks are typically time-consuming and frequently labour-intensive. The incorporation of AI, specifically ChatGPT, into dentistry research has the potential to streamline these processes by increasing efficiency and productivity.[10]

With the continuing revolution in technology, the survey was undertaken to find out knowledge, attitude and practice regarding ChatGPT as a helping tool in dental research amongst dental professionals and students in the Belagavi (Karnataka) population. AI has the potential to boost productivity, precision, and creativity in dentistry research.[11] However, the extent to which dental professionals and students in India are aware of and use ChatGPT is largely unknown. This study is designed to address this difference by conducting a detailed survey for examination of knowledge, attitude and practice of ChatGPT among dental students and professionals in the Belagavi (Karnataka) population.

When knowledge of Chat GPT as a helping tool in dental research was assessed amongst various educational qualification of the participants (Postgraduates, Dental practitioners, Academicians, Undergraduate students), postgraduates showed highest knowledge, attitude and practice scores followed by academicians and undergraduates respectively while dental practitioners showed the least scores. Dental students (both undergraduates and post graduates) as well as academicians are more exposed to advancements in digital dentistry, in this study, ChatGPT, through various awareness workshops and seminars than dental practitioners.[12]

Anushree Rathore et al concluded in their review that the use of ChatGPT in dental research regarding various applications like forming literature reviews, text mining and information extraction, generating informative summaries, answering research queries. Also,combining AI and human skills can transform dental research and open up new possibilities and it will ultimately help in enhancing the research work.[13]

In this research,46% participants showed progress in the efficiency of their research as ChatGPT is capable to be accurate, particularly for factual questions along with straightforward replies. When discussing established facts, ChatGPT can retrieve material from its training also provides accurate responses. When ChatGPT comes upon a new or challenging question, they tend to mix things up. This is due to the fact that generative language models are meant to imitate human writing, not thought. As a result, their capacity for logical reasoning is restricted.

Alhaidry et al. mentioned in their review that in dentistry, AI has made significant advances, particularly in

the area of research. Due to its many features, including treatment planning as well as tracking individual dental health, ChatGPT has the capacity to transform the dentistry as well as healthcare systems. To lessen the possible risks, policies must be created. Furthermore, because of several ethical difficulties and inappropriate reference production, it is advised that this chatbot should be continuously monitored, particularly in the research field.[14]

Prior published research indicates that ChatGPT has proven its ability to assist researchers in conducting dentistry and medical research. Scientists have used ChatGPT to summarise, translate, and paraphrase scientific data. Nevertheless, using ChatGPT exclusively for research writing is not advised because the scientific writing generated by this chatbot has not yet been fully evaluated and more investigation is required to look into the moral dilemmas and negative impacts of this program.[15]

This cross-sectional study includes a wide range of participants, including practicing dental professionals and students from various dental institutes in Belagavi (Karnataka) population. The survey collected information about their exposure with ChatGPT, the frequency and context of its use, and their perceptions of its efficacy as a research tool. This study provides light on the current level of AI integration in dental research in the Belagavi (Karnataka) population, highlighting potential to improve adoption of ChatGPT in dental research.

5. Conclusion

This study has examined the current state of AI tool usage in the dental research community. The data collected in the study showed higher level of knowledge and involvement with ChatGPT in postgraduates and academician followed by undergraduates, reflecting both enthusiasm and understanding the gaps. While many dental professionals and students recognised the possible advantages of ChatGPT in improving research efficiency, some participants were unaware to use this technology. This gap showed the importance of focused educational campaigns and training programmes to promote a better understanding and wider use of AI techniques in dental research.

Also, the dental institutions can focus on the incorporation of AI-focused programmes and workshops to provide dental professionals and students, skills and knowledge required to effectively use technologies such as ChatGPT. Furthermore, ongoing research and development should be more focused on the AI applications specifically in dental research, ensuring that these tools can address the unique challenges and requirements of the field.

6. Source of Funding

None.

7. Conflict of Interest

None.

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Cite this article: Dumbre SP, Kanathila H. Knowledge, attitude and practices of ChatGPT in dental research among the dental students and dental professionals in Belagavi, India. *IP Ann Prosthodont Restor Dent*. 2025;11(2):119-126.