

Original Research Article

Perception of oral health professionals towards oral health care in children with attention deficit hyperactivity disorder: a cross-sectional questionnaire study

Sanika U. Karmarkar, Shivayogi M. Hugar*, Chandrashekhar M. Badakar,
Niraj Gokhale, Bhuvanesh N. Bhusari, Krishna S. Kadam

Department of Pediatric and Preventive Dentistry, Kaher's KLE V. K. Institute of Dental Sciences, Belagavi, Karnataka, India

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*Correspondence:

Dr. Shivayogi M. Hugar,

E-mail: dr.hugarsm@gmail.com

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ABSTRACT

Background: Attention deficit hyperactivity disorder is one of the most common psychiatric disorders that affects both children and adults and is characterized by inattention, hyperactivity, and impulsivity. Around 9% of world's child population and 20% of India's is affected by ADHD. A child with ADHD can often have neglected or poor oral hygiene. Attending to the dental treatment of such children can be a challenging task for dentists. The aim of the study was to assess the knowledge, attitude, and practices of oral health care towards children with ADHD among oral health professionals.

Methods: The study was carried out among 151 oral health professionals using a validated questionnaire. The results were tabulated in an excel sheet and analysed using SPSS software version 22.0.

Results: It was found that among the participants, 71.52% had knowledge scores below the mean knowledge score, while 74.83% had attitude scores below the mean and likewise, 53.64% had practice scores below the mean practice scores. A positive correlation was found between knowledge, attitude, and practice by Karl Pearson's correlation coefficient with a highly statistically significant p value of 0.0001 ($p < 0.05$). This signified low knowledge correlated with less positive attitude leading to poor practices.

Conclusions: Majority of the participating professionals perceive that their training did not prepare them well to treat ADHD affected children. However, practice levels were better among those with more years of experience.

Keywords: ADHD, Attitude, Children, Dentists, Knowledge, Practices

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is one of the most common psychiatric disorders that affects both children and adults and cause distress in their lives. It is defined as a family of related chronic neurobiological disorders that interferes with an individual's capacity to regulate activity level, inhibit behaviour, and attend to tasks in a developmentally appropriate way.¹ Hence,

ADHD is characterized by hyperactivity, impulsivity, and inattention.² Around 9% of the world's population of children is affected by ADHD including an estimated 3-5% of preschool and school-age children.^{3,4} Children affected with ADHD are less likely to do regular tooth brushing along with altered diet and appetite leading to a very poor oral hygiene. Increased occurrence of caries in both primary and permanent dentition, maxillary incisor fractures and increased plaque accumulation and calculus

formation are also commonly seen in these children.¹ A recently published systematic review and meta-analysis has confirmed the association between an increased prevalence of dental caries in children suffering from ADHD as compared to their healthy counterparts suggesting that these children are more prone to caries.⁵ Another systematic review concluded that ADHD is also associated with increased prevalence of gingivitis.⁶ Data regarding oral health professionals' awareness about ADHD and its management in the dental operator is an aspect that hasn't been studied yet.⁷ In this study, we aim to assess their knowledge about ADHD, their attitude towards managing patients suffering from it and how it is manifested in their practice.

METHODS

This study was a cross-sectional questionnaire study conducted at department of pediatric and preventive dentistry at KLE V. K. institute of dental sciences, Belagavi. The participants of this study included interns, post graduate students, practising dentists, and the faculty referred to cumulatively as oral health professionals. Sample size of 151 was calculated using standard sample size calculating formula.⁸

$$n = \frac{Z^2 pq}{d^2}$$

The questions were obtained from different published articles and were modified and condensed to 13 items.⁸⁻¹² The participants were also required to fill out their demographic details as well as years of experience and designation. The questionnaire used 5-point Likert's scale for standardization. The participants were instructed regarding filling of the questionnaire and a written informed consent was taken. The confidentiality of the demographic details of the participants was maintained. A pilot study was conducted among 25 participants to ensure ease and lucidity of answering the questionnaire. The reliability of the administered questionnaire was determined and a Cronbach alpha coefficient value of 0.82 was obtained. These participants were then excluded in the final study, and the questionnaire did not require any modifications. The collected forms were entered in MS excel sheet (Microsoft Corp). The data was analyzed using IBM SPSS software (version 22.0 Chicago IL, USA) and percentages were then calculated. Descriptive statistics was generated for all questions, and for each answer, frequency distributions and percentages were examined.

RESULTS

The data of this study was based out of responses gathered from 151 individuals. The data was statistically analysed using SPSS software (version 22.0 Chicago IL, USA) and $p < 0.05$ was taken as significant. There were no dropouts in the study as all the participants returned a

completely filled questionnaire. The question wise responses are listed in (Table 1-2). Participants belonged to various age groups, gender, and qualifications. Majority of the population i.e., 70.86% was female while the remaining 29.14% was males. The mean age of the population was 27.60 ± 5.97 , where 52.98% were between 23-25 years of age, 37.09% belonged to age bracket of 26-35 years, 9.93% belonged to >36 year of age. 51.66% of the participants had an experience of lesser than or equal to 1 year, 31.13% had an experience of 2 to 5 years while 17.22% of them had an experience of more than or equal to 6 years. Interns and practising general dentists were grouped together (Group A) while participants with ongoing or completed post-graduation (faculty) were grouped separately (Group B). The participants were posed with a wide array of questions that tried evaluating their perception about oral health care towards children suffering from ADHD. 88.74% of them treated only 0-3 ADHD affected children every month, 7.95% treated 4-6 children and 3.31% treated 6-10 of such cases.

The mean knowledge scores were found to be 20.60 ± 1.96 , that of attitude were 12.60 ± 1.49 and that of practice were 16.40 ± 1.54 . In the overall comparison of levels of knowledge, attitude, and practice among the participants, 71.52% had knowledge scores below the mean knowledge score, while 74.83% had attitude scores below the mean and likewise, 53.64% had practice scores below the mean practice scores of all the participants (Figure 1).

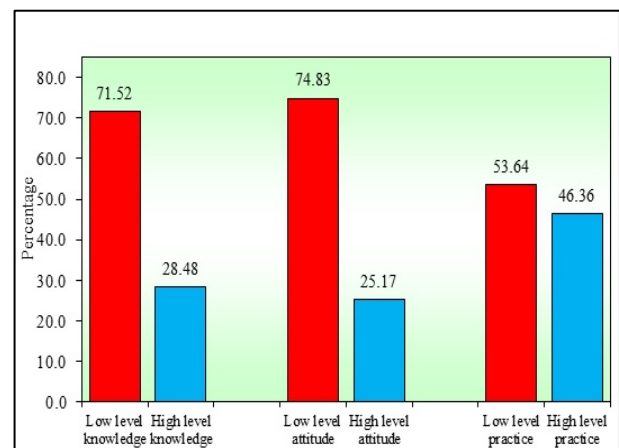


Figure 1: Distribution of participants with levels of knowledge, attitude, and practice.

When levels of knowledge were evaluated using Chi square test, it was revealed that highest number of participants (77.5%) with low knowledge scores were found to be in the age group of 23 to 25 years. Comparatively lesser number of participants with low knowledge were found in the age groups above 25 years, which was approximately 65%. High levels of knowledge were found in 40% of the participants belonging to Group B as compared to only 26.72% in Group A. Low levels of knowledge were found among 76.92% of those with

experience of less than 1 year. It was observed that the number of subjects with low knowledge dropped to 65.96% in those with 2 to 5 years of experience and to 65.38% in those with experience of greater than 6 years.

Similarly, in the comparison of levels of attitude with the help of chi square test, low levels of attitude were found in 80% of the individuals of the age groups of 23-25 years. It was 73.33% in the age group of ≥ 36 years. The age group of 26 to 35 years had the least number of individuals with poor attitude scores amounting to 67.86%. Poor attitude was found among 70% participants

of Group B as compared to Group A for which poor attitude was seen in 75.57% of the participants. Although low levels of attitude among those with experience of less than 1 year were found in 78.21%, there was no considerable difference found in the attitude levels of those with more experience, pointing towards a general poor attitude of the participants. Comparison of age groups with levels of knowledge with the help of Kruskal Wallis ANOVA showed that participants belonging to the age group of more than 36 years had better knowledge about ADHD which had a statistically significant p value of 0.0350 ($p < 0.05$) (Table 3).

Table 1: Question wise response of participants.

Questions	Answers				
How many patients do you treat per month?		30-60	60-90	90-120	>120
	N	106	20	13	12
	%	70.20	13.25	8.61	7.95
How many ADHD affected children/ hyperactive children come to your clinic in a month?		0-3	4-6	6-10	>10
	N	134	12	5	0
	%	88.74	7.95	3.31	0

Table 2: Elaborative question wise response of participants.

Questions	Definitely disagree	Disagree	Neutral	Agree	Definitely agree
ADHD is a disorder that manifests in early childhood with symptoms of hyperactivity, impulsivity and/or inattention.	N 0	0	3	97	51
	% 0	0	1.99	64.24	33.77
Slow reading speed, learning disabilities, very talkative nature are characteristics frequently associated with ADHD.	N 0	1	14	102	34
	% 0	0.66	9.27	67.55	22.52
I feel knowledgeable and comfortable while providing oral health care to a child with ADHD.	N 0	18	59	50	24
	% 0	33.11	39.07	11.92	15.89
ADHD affected children are at a higher risk of truancy and escaping (dental appointment).	N 0	4	24	88	35
	% 0	2.65	15.89	58.28	23.18
You will refer a pediatric patient who has been diagnosed with ADHD/ hyperactive children to a pedodontist for his oral health care needs.	N 0	3	13	67	68
	% 0	1.99	8.61	44.37	45.03
ADHD affected children experience more difficulties in their relations with their families that in turn affect their oral health.	N 1	3	23	92	32
	% 0.66	1.99	15.23	60.93	21.19
Measures should be taken to eliminate/reduce stimuli that easily distract an ADHD patient.	N 1	0	6	93	51
	% 0.66	0	3.97	61.59	33.77
Undergraduate courses should include more syllabus about managing and treating a child with ADHD.	N 0	2	9	73	67
	% 0	1.32	5.96	48.34	44.37
Your curriculum has prepared you enough to manage or treat a child with ADHD or hyperactivity.	N 7	42	52	36	14
	% 4.64	27.81	34.44	23.84	9.27
Do you desire to take additional training for managing and treating a child with ADHD?	N 2	4	17	77	51
	% 1.32	2.65	11.26	50.90	33.77
Parents and teachers should be made aware about ADHD.	N 0	0	3	52	96
	% 0	0	1.99	34.44	63.58

Responses of males and females were compared with the help of Mann Whitney U test which showed that more

males believe that children with ADHD are more likely to escape dental treatment. This had a statistically

significant p value of 0.0180 ($p < 0.05$). Comparison done on the basis of designation between Group A and Group B by Mann Whitney U test showed that participants in Group B agreed more to the fact that ADHD patients are

more likely to escape dental treatment suggesting that they had more knowledge with a statistically significant p value of 0.0280 ($p < 0.05$).

Table 3: Comparison of age groups with responses of participants by Kruskal Wallis ANOVA.

Parameters	23-25 yrs	26-35 yrs	≥ 36 yrs	Total	H value	P value
Mean	4.23	4.39	4.53	4.32	6.7020	0.0350
SD	0.48	0.53	0.52	0.51		

Table 4: Comparison of experiences in each question by Kruskal Wallis ANOVA.

Parameters	≤ 1 yrs	2-5 yrs	≥ 6 yrs	Total	H value	P value
Mean	4.19	4.43	4.50	4.32	9.8600	0.0070
SD	0.49	0.50	0.51	0.51		

Participants with an experience of more than 6 years were more aware about ADHD as compared to those with lesser experience which had a statistically significant p value of 0.0070 ($p < 0.05$) (Table 4). By One way ANOVA, better mean practice scores were obtained in the age group of 26 to 35 years as compared to others which had a statistically significant p value of 0.0495 ($p < 0.05$) (Table 5).

Table 5: Comparison of age groups with mean knowledge, attitude, and practice scores by one way ANOVA.

Age groups (years)	Practice	
	Mean	SD
23-25	16.40	1.37
26-35	16.63	1.76
≥ 36	15.53	1.25
Total	16.40	1.54
F value	3.0684	
P value	0.0495	

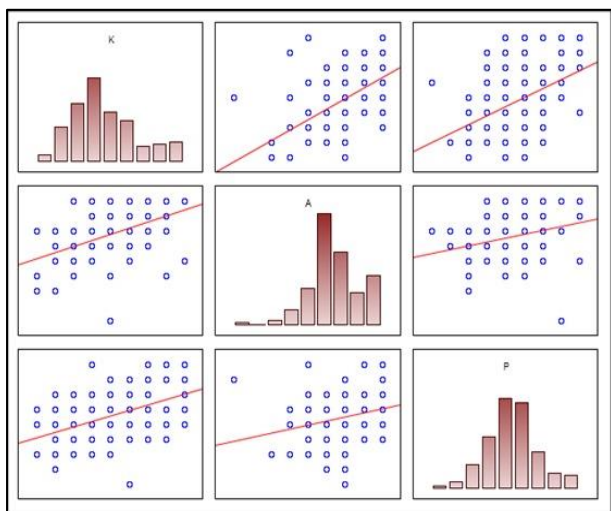


Figure 2: Scatter diagram of correlation between knowledge, attitude and practice scores by Karl Pearson's correlation coefficient.

Among all participants, a high number of 84% wished to acquire additional training in managing such cases. It was shown by 't' test that those in Group B had better mean knowledge scores (t value 0.9716) and attitude scores (t value 1.1183) as compared to those in Group A. A positive correlation was found between knowledge, attitude, and practice by Karl Pearson's correlation coefficient with a highly statistically significant p value of 0.0001 ($p < 0.05$). This signified low knowledge correlated with less positive attitude owing to poor practices (Figure 2).

DISCUSSION

Every child has an equal right to health care facilities. Oral health constitutes a major health problem among individuals with mental or physical disability. Poor oral health or neglected oral health has been observed in such individuals.⁸ ADHD is one of the most common, behaviour affecting neuropsychiatric disorders in children.³ Children suffering from ADHD are more prone to caries due to their impulsivity and inattention as well as hyperactivity which results in worse oral hygiene attitudes and consequently, worse oral hygiene. Due to lack of, or poor motor skills and attention, maintenance of oral hygiene by means of toothbrushing or flossing in such children is difficult.¹ The symptoms of ADHD are very likely manifested when the child is on a dental chair. Their attention is difficult to gain. It is difficult to keep them seated in the chair and manage their activities during treatment.¹³ The dentist needs to be aware of all these factors and identify the special requirements of such children. In a study carried out by Blumer et al, responding participants, both pediatric dentists and general practitioners noted a higher incidence of ADHD patients.¹⁴ Hence, it becomes important to assess a dentists' perception about management of a patient with ADHD.

Our study was a cross-sectional questionnaire-based study with an aim to assess oral health professionals' knowledge about children affected by ADHD. The study used 5-point Likert scale due to its summative nature and

high reliability. This study incorporated interns, practising general dentists, faculty and post graduate students belonging to different range of experience and years of practice which collected a more diverse data set. There were zero dropouts in our study which indicates that participants were willing to take a step towards acquiring knowledge and spreading awareness. In this study, we evaluated whether oral health professionals knew the basics of ADHD, its symptoms, and the manifestation of these symptoms in a patient in the dental operatory. It also assessed the attitude of dentists towards referral practices, and if they felt sufficiently learned about the subject. It also recorded their willingness to gain more knowledge or training regarding the same. 70% of the study participants were female which correlates with the present scenario of more females choosing dentistry as their career. The present study revealed that most participants had poor knowledge. This can be because dental school curriculum covers very insufficiently about requirements of patients with special healthcare needs. Very few subjects of this study (27.81%) believed that they feel knowledgeable and comfortable while treating a child with ADHD which follows the findings of Blumer et al.¹⁴

In general, majority participants had knowledge, attitude, and practice scores below the mean scores. This is in accordance with the findings of Shahwan et al.³ Most of the participants treated lesser than 1 to 3 ADHD affected children per month which is also consistent with the findings of Shahwan et al and Nowaiser et al.^{3,15} The study by Shahwan et al also showed that those who treated patients with ADHD were more likely to be aware about ADHD as compared to those who did not provide treatment. Similarly, in our study, it was noted that those respondents with experience of more than 6 years and those in the age group of more than 36 years were more knowledgeable about ADHD. According to a study by Hugar et al most participants would refer a child with special health care needs to a pediatric dentist.⁸ Similarly, in our present study, almost 90% of the respondents would wish to refer a case of ADHD to a pediatric dentist for his/her oral healthcare needs. As reported by Blumer et al the specialists estimated that there was a higher percentage of ADHD patients in their practice compared to the non-specialists.¹⁴ Most of the participants of this study believe that their curriculum hasn't prepared them enough to manage or treat a patient with ADHD. Similarly, it was found in the study by Nowaiser et al that most consulting pediatric dentists, half of the residents and negligible interns believed that they had received proper education to effectively treat children with ADHD. Most of these participants, however, did not believe they had received proper training regarding the same.¹⁵ It was also found in our study that in comparison between Group B consisting of faculty and post graduate students and Group A consisting of practising general dentists and interns, Group A had more awareness regarding ADHD and the management of such patients. Similar findings were observed in Nowaiser et al study

which said that there is a gradient decrease in the percentage of agreement and willingness to provide dental care to individuals with ADHD from consultants down to residents then interns which is statistically significant.¹⁵ A systematic review by Chau et al concludes that for children suffering from ADHD more awareness among clinicians would promote better caries and trauma-preventive advice and management.¹⁶ A study by Begnini et al about oral health of children and adolescents suffering from ADHD says that children and adolescents with ADHD have worse oral health conditions and hence deserves greater attention from dental professionals.¹⁷

Limitations

A cross sectional survey with larger sample size involving larger geographical area is required to further support the findings of the study.

CONCLUSION

Thus, from our present study, we found out that majority of the oral health professionals have poor perception towards oral healthcare of children suffering from ADHD. Therefore, there is a need for improving awareness about this condition and the rightful management of such patients in the dental operatory. This starts with putting emphasis on learning about patients with special healthcare needs as part of the curriculum of dental students. More training courses and lectures need to be conducted for the same. Referral practices to pediatric dentists should be encouraged if the management of such cases is found to be difficult by the concerned dentist.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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