www.jchr.org JCHR (2024) 14(3), 870-878 | ISSN:2251-6727



# **Evaluating the Knowledge and Practice of International Caries Classification and Management System and Internationalcaries Detection and Assessment System in Pediatric Dental Patient: A Cross-Sectional Survey Among Post-Graduate Dental Students**

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| (Received: 04   | February 2024   | Revised: 11 March 2024   | Accepted: 08 April 2024)   |
|---|---|--|--|
|   | ABSTRACT:   |  |  |
| KEYWORDS<br>International caries<br>classification and<br>management<br>system,<br>International caries<br>detection and<br>assessment system,<br>Postgraduate<br>dental students,<br>Knowledge | Background: To eve<br>educational activities<br>and Assessment Sys<br>System (ICCMS) in p<br>Materials and meth<br>students from all den<br>of gender and institu<br>ICCMS knowledge<br>activities and knowledge<br>activities and knowledge<br>paired t-test. Statistic<br>Results: A total of<br>toward the education<br>knowledge of ICCMS<br>Conclusion: Male de<br>preclinical years and<br>Sex and type of inst<br>more knowledgeable | aluate the association of type of<br>a with dental students' knowledge<br>tem (ICDAS) and International C<br>bediatric dental patients.<br><b>hods:</b> This was a cross-sectional<br>tal institutions in Ahmedabad.The<br>attain type with the satisfaction of<br>were tested. The relationship be<br>dge of ICDAS and ICCMS among<br>al significance was set at $p < 0.05$<br>264 responses were obtained. Ma<br>on activities. No significant dir<br>S and ICDAS and sex or institution<br>ental students felt more satisfied we<br>l were more prepared to treat pa<br>itution did not play a role in the<br>in ICDAS compared to ICCMS. | institution, gender, and satisfaction of<br>e of the International Caries Detection<br>Caries Classification and Management<br>I study involving postgraduate dental<br>e students' responses on the association<br>f education activities and ICDAS and<br>between satisfaction with educational<br>g dental students was evaluated using a<br>ales had a higher level of satisfaction<br>fference was observed between the<br>n type.<br>with pediatric lectures conducted during<br>tients independently upon graduation. |

#### Introduction

Dental caries have played a crucial role in maintaining oral health among children and adults worldwide in recent years. Dental caries is a multifactorial disease that occurs due to acid production from sugarcontaining food by many bacteria but mainly Streptococcus mutans, on tooth enamel surface resulting in demineralization of enamel and leading to caries. Other secondary factors also promote caries like hyposalivation, developmental anomalies of teeth, lack of oral hygiene, medically and physically compromised children, etc. The presence of all these multiple factors can increase the chances of caries. In dental practice, Caries risk assessment procedures normally have enough information to promptly identify the susceptibility of a person's disease and give many therapeutic and preventive measurements.<sup>1</sup> Dental caries can be prevented by patient and doctor with proper cautions and preventive therapies like maintenance of good oral hygiene, the use of systemic and topical

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JCHR (2024) 14(3), 870-878 | ISSN:2251-6727



fluoride professionally and personally, pit and fissure sealant in deep fissures and recently erupted tooth, proper diet counseling, regular follow-ups. Apart from awareness, prevention, and availability of treatment, dental caries is still considered the most common and chronic disease among young children, and some other common medical diseases.

Dental caries in children affect the quality of life because of the many problems occurring from the longstanding carious status of teeth such as poor esthetic excruciating discomfort, pain, abscesses, chewing difficulty, malnutrition, low self-esteem, absence in school, poor speech and articulation and increased risk for further caries.<sup>4-6</sup>It's concerning to see that this is a widespread problem in both developed and developing nations, and it's a significant public health issue. Being highly prevalent in both developed and developing countries, dental caries present a serious public health concern. In developing nations like Africa and Southeast Asia, the rates of dental decay are becoming a cause for concern, with figures ranging from 44% to as high as 82.5%.<sup>7,8</sup> Despite the significance of early risk assessment, there is a shortage of workforce available to address the oral health needs of these countries.

Pediatric dentistry is a crucial but often overlooked field, with a lack of awareness regarding preventive measures for dental caries among students.9 There needs to be a better understanding of how caries develop in children and how they can be managed effectively. Dental practitioners are responsible for effectively diagnosing and managing childhood dental diseases, using their knowledge and skills acquired during dental education.<sup>10</sup> For more children to have access to dental services, dental practitioners need to be well-versed in oral healthcare. Dental students' awareness of pediatric oral health is essential in providing optimal treatment. With the ability to recognize and classify various conditions, they can accurately diagnose and instigate preventive or intervention methods. This knowledge will enable them to contribute positively to the oral health of young patients and improve their overall well-being. ICDAS (International Caries Detection and Assessment System) and ICCMS (International Caries Classification and Management System) are standardized systems that provide criteria based on clinical evidence for detecting and managing the early and late stages of caries. In a systematic approach, the risk factors would be assessed, a diagnosis and prognosis formed, and informed decision-making in the comprehensive management of the carious teeth would be carried out.<sup>11,12</sup> ICDAS is a global standard for classifying dental caries stages and lesion activity. It can be integrated into ICCMS(TM). The ICCMS allows dentists to integrate patients' dental data and caries risk status, enabling dentists to formulate, manage, and review treatment plans for dental caries.<sup>12</sup> It is imperative to determine whether dental colleges are adequately teaching caries risk detection tools and effectively evaluating students' knowledge on the subject. This study evaluates the relationship between dental students' knowledge of ICDAS and ICCMS in pediatric patients and their gender, type of institution, and satisfaction with educational activities.

#### Material and Methods

A survey was conducted on postgraduate dental students through a cross-sectional study. The survey was approved by the ethical committee of the College of Dental Science and Research Centre in Ahmedabad. The survey was conducted using Google Forms and sent via email to the participants' contacts. The questionnaire was divided into three sections. The first section aimed to gather information about the participant's sociodemographic status. The second section aimed to determine the satisfaction level with education activities conducted in the pediatric module of the postgraduate dentistry program. The third section consisted of a series of questions to assess the participant's knowledge of ICDAS and ICCMS. The third section of the questionnaire consisted of five questions related to ICDAS and seven questions related to ICCMS. This section was created based on the ICDAS and ICCMS methods, which are used for the staging of the caries process and help dentists in caries.<sup>12,</sup>Participants managing were given а questionnaire, where they had to rate each question on a scale of 1-5, with 1 representing "Strongly Disagree" and 5 representing "Strongly Agree".

#### **Statistical Analysis**

The responses and data were recorded numerically. Later, the records were analyzed by using Statistical Package for the Social Sciences software (SPSS V.23,

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IBM SPSS, Chicago, IL, USA). The frequency and percentage distributions for institution type, sexsegregated student counts, and response rates were calculated. The association between students' gender and their satisfaction level with education activities was tested using an independent t-test. The study examined the relationship between participants' gender, type of institution, satisfaction level with education activities, and their knowledge of ICDAS and ICCMS. Mean and confidence intervals were calculated to compare satisfaction levels and knowledge of ICDAS and ICCMS among different genders and types of institutions. The study evaluated the correlation between dental students' satisfaction with educational activities and their knowledge of ICDAS and ICCMS, using a paired t-test. All statistical tests were analyzed at a significance level of < 0.05.

#### Results

264 postgraduate dental students were identified, and 263 completed the questionnaires. Table 1 shows that out of all the respondents, 42.4% were female and 57.5% were male. Additionally, 78.4% were from a private institution while 21.5% were from a government institution. It was found that one out of six dental institutions did not take part in the study. The data in Table 2 confirms that every respondent expressed satisfaction with the academic activities conducted during the academic years. Most students reported being aware of ICDAS, having adequate training, satisfaction with the training, confidence in its use, and communication abilities. The items that students were most unsure about were satisfaction with training and confidence in using ICDAS, as shown in Table 3. Most of the students reported that they were uncertain about the ICCMS. 34.5-39.7% of the students disagreed or strongly disagreed with the adequacy of training they received, expressed dissatisfaction with their ICCMS training in dental college, struggled to communicate using ICCMS codes, and lacked confidence in creating treatment plans based on ICCS (Table 4). Male students scored significantly higher than female students on

satisfaction with pediatric dentistry lectures and preparation for treating pediatric patients (p < 0.05) (Table 5). Females reported higher satisfaction levels with ICDAS and ICCMS training in college as compared to males. The average scores for males on their awareness of ICDAS, ICDAS training received, training satisfaction, confidence in classifying caries, and effectively communicating with ICDAS were generally lower compared to females. According to Table 6, female respondents had an average score of 4.0, indicating that they were uncertain about the sufficiency of the training they received, their satisfaction with the training they received, their understanding of the codes related to the lesion, their ability to communicate effectively using ICCMS, their ability to create a treatment plan, and their ability to treat patients based on ICCMS. The satisfaction level of students from private institutions towards the number of clinical hours allocated to treat pediatric patients was significantly higher than that of students from public institutions (p < 0.05). Students from private institutions felt less prepared to treat patients independently upon graduation than students from government institutions(Table 7). No significant differences were found in patient satisfaction between private and public institutions based on the number of pediatric patients assigned and the administration of pediatric dentistry lectures during preclinical studies (p > 0.05). The type of institution and knowledge of ICDAS or ICCMS did not affect the students' knowledge. There was unanimous uncertainty regarding awareness of ICCMS, satisfaction with school training, and confidence in making a treatment plan and treating patients using ICCMS. No significant correlation was found between the satisfaction level of educational activities and the knowledge of dental students in ICDAS. However, a high correlation was observed between the satisfaction level of educational activities and ICCMS knowledge (p < 0.05). Table 8 showed a strong correlation between the number of pediatric patients assigned to dental students and their preparedness for postgraduation treatment.

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| Characteristics                                       | Number |
|---|--------|
| Gender  |        |
| Female  | 168    |
| Male  | 96     |
| Type of institution                                   |        |
| Private   | 207    |
| Government  | 57     |
| Year of treatment commencement for pediatric patients |        |
| Year 1  | 72     |
| Year 2  | 98     |
| Year 3  | 94     |
| Total   | 264    |

| Table 1 | Sociodemographic characteristics of | participants |
|---------|-------------------------------------|--------------|
|---------|-------------------------------------|--------------|

Table 2: Dental students' satisfaction with education activities in the pediatric dentistry module

|  | 1           | 2           | 3        | 4         | 5         | Total |
|--|-------------|-------------|----------|-----------|-----------|-------|
|  | Very        | Unsatisfied | Adequate | Satisfied | Very      |       |
|  | Unsatisfied |             |          |           | satisfied |       |
| 1) How satisfied are you with the      | 1           | 4           | 52       | 119       | 88        | 264   |
| number of clinical hours/sessions      |             |             |          |           |           |       |
| that are allocated for you to treat    |             |             |          |           |           |       |
| pediatric patients?                    |             |             |          |           |           |       |
| 2) Are you satisfied with the number   | 0           | 8           | 62       | 123       | 71        | 264   |
| of pediatric patients that you treat   |             |             |          |           |           |       |
| during your allocated clinical         |             |             |          |           |           |       |
| sessions?                              |             |             |          |           |           |       |
| 3) Are you satisfied with the          | 1           | 6           | 45       | 134       | 78        | 264   |
| pediatric dentistry lectures that are  |             |             |          |           |           |       |
| given during your studies?             |             |             |          |           |           |       |
| 4) How satisfied are you in the        | 0           | 2           | 50       | 147       | 65        | 264   |
| aspect of the pediatric dentistry      |             |             |          |           |           |       |
| module in the preparation for you to   |             |             |          |           |           |       |
| treat pediatric patients independently |             |             |          |           |           |       |
| when you postgraduate?                 |             |             |          |           |           |       |

| Table 3 Dental students | ' knowledge on inter | national caries | detection and | assessment system | (ICDAS) |
|-------------------------|----------------------|-----------------|---------------|-------------------|---------|
|-------------------------|----------------------|-----------------|---------------|-------------------|---------|

|                                      | 1           | 2           | 3        | 4         | 5         | Total |
|--------------------------------------|-------------|-------------|----------|-----------|-----------|-------|
|                                      | Very        | Unsatisfied | Adequate | Satisfied | Very      |       |
|                                      | unsatisfied |             |          |           | satisfied |       |
| 1) I am aware of what the ICDAS is?  | 1           | 4           | 52       | 119       | 88        | 264   |
| 2) I have adequate training received | 0           | 8           | 62       | 123       | 71        | 264   |
| in the area of ICDAS                 |             |             |          |           |           |       |
| 3) I am satisfied with the ICDAS     | 1           | 6           | 45       | 134       | 78        | 264   |
| training given to me in school?      |             |             |          |           |           |       |
| 4) I am confident in classifying     | 0           | 2           | 50       | 147       | 65        | 264   |
| caries using ICDAS in clinics?       |             |             |          |           |           |       |
| 5) I am able to communicate          | 2           | 6           | 30       | 143       | 83        | 264   |

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| effectively with my colleagues using |  |  |  |
|--------------------------------------|--|--|--|
| ICDAS                                |  |  |  |

**Table 4:** Dental students' knowledge of the international caries classification and management system (ICCMS)

|                                      | 1           | 2           | 3        | 4         | 5         | Total |
|--------------------------------------|-------------|-------------|----------|-----------|-----------|-------|
|                                      | Very        | Unsatisfied | Adequate | Satisfied | Very      |       |
|                                      | unsatisfied |             |          |           | satisfied |       |
| 1) I am aware of ICCMS               | 53          | 24          | 51       | 81        | 79        | 264   |
| 2) I have adequate training received | 11          | 8           | 57       | 106       | 82        | 264   |
| in the area of ICCMS                 |             |             |          |           |           |       |
| 3) I am satisfied with the ICCMS     | 12          | 9           | 54       | 121       | 68        | 264   |
| training given to me in college      |             |             |          |           |           |       |
| 4) I am able to understand the codes | 10          | 13          | 85       | 49        | 107       | 264   |
| corresponding to the lesion in       |             |             |          |           |           |       |
| ICCMS                                |             |             |          |           |           |       |
| 5) I am able to communicate          | 18          | 21          | 47       | 97        | 81        | 264   |
| effectively with my colleagues       |             |             |          |           |           |       |
| using ICCMS                          |             |             |          |           |           |       |
| 6)I have confidence in making a      | 24          | 13          | 79       | 94        | 54        | 264   |
| treatment plan based on the ICCMS    |             |             |          |           |           |       |
| 7) I am able to treat a patient      | 15          | 12          | 61       | 88        | 88        | 264   |
| confidently using the ICCMS          |             |             |          |           |           |       |

**Table 5:** Dental students' satisfaction level of education activities by gender

|  | Male          | Female        | P value |
|--|---------------|---------------|---------|
|  | Mean value    | Mean value    |         |
| 1) How satisfied are you with the number of clinical         | 3.5 (3.4–3.7) | 3.3(3.2–3.4)  | 0.000   |
| hours/sessions that are allocated for you to treat pediatric |               |               |         |
| patients?  |               |               |         |
| 2) Are you satisfied with the number of pediatric patients   | 3.2 (3.1–3.4) | 3.1 (3.2–3.0) | 0.275   |
| that you treat during your allocated clinical sessions?      |               |               |         |
| 3) Are you satisfied with the pediatric dentistry lectures   | 4.0 (3.9–4.2) | 3.9 (3.8–4.1) | 0.672   |
| that are given during your studies?                          |               |               |         |
| 4) How satisfied are you in the aspect of the pediatric      | 3.7 (3.6–3.9) | 3.9 (3.7–4.1) | 0.016*  |
| dentistry module in the preparation for you to treat         |               |               |         |
| pediatric patients independently when you postgraduate?      |               |               |         |

\*Indicates p value lower than 0.05

**Table 6:** Dental students' knowledge of the International Caries Detection and Assessment System (ICDAS) and

 International Caries Classification and Management System (ICCMS) by gender

|  | Female n = 168 | Male n = 96   | p value |  |
|--|----------------|---------------|---------|--|
| (1) I am aware of ICDAS                                | 4.1 (4.2–4.3)  | 4.1 (4.1–4.4) | 0.435   |  |
| 2) I have adequate training received in the area of    | 4.2 (4.1–4.4)  | 4.2 (4.1–4.3) | 0.061   |  |
| ICDAS)   |                |               |         |  |
| 3) I am satisfied with the ICDAS training given to me  | 4.2 (4.1–4.3)  | 4.0 (3.8–4.2) | 0.048*  |  |
| 4) I am confident in classifying caries using ICDAS in | 4.3 (4.1–4.4)  | 4.2(3.9–4.3)  | 0.542   |  |

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|  | 1             |               |       |
|--|---------------|---------------|-------|
| clinics  |               |               |       |
| 5) I am able to communicate effectively with my        | 4.2 (4.1–4.4) | 4.3(4.1-4.4)  | 0.967 |
| colleagues using ICDAS                                 |               |               |       |
| 6) I am aware of ICCMS                                 | 3.6(3.4–3.7)  | 3.5(3.4–3.6)  | 0.895 |
| 7) I have adequate training received in the area of    | 3.2 (2.9–3.3) | 3.1 (2.8–3.2) | 0.668 |
| ICCMS  |               |               |       |
| 8) I am satisfied with the ICCMS training given to me  | 2.8 (2.7–3.0) | 2.8 (2.9–3.0) | 0.843 |
| in school  |               |               |       |
| 9) I am able to understand the codes corresponding to  | 3.1(2.8–3.2)  | 3.0 (2.8–3.1) | 0.761 |
| the lesion in ICCMS                                    |               |               |       |
| 10) I am able to communicate effectively with my       | 3.0 (2.8–3.1) | 2.9 (2.7–3.2) | 0.731 |
| colleagues using ICCMS                                 |               |               |       |
| 11) I have confidence in making a treatment plan based | 2.8(2.7–3.0)  | 2.9 (2.8–3.1) | 0.831 |
| on the ICCMS   |               |               |       |
| 12) I am able to treat a patient confidently using the | 2.9 (2.8–3.1) | 3. (2.8–3.1)  | 0.378 |
| ICCMS  |               |               |       |

 Table 7: Dental students' satisfaction level of education activities by institution type

|  | Private       | Government    | p value |
|--|---------------|---------------|---------|
| Are you satisfied with the number of clinical hours/sessions that are  | 3.5 (3.4–3.8) | 3.1 (3.0–3.2) | 0.000*  |
| allocated for you to treat pediatric patients?                         |               |               |         |
| Are you satisfied with the number of pediatric patients that you treat | 3.0 (2.8–3.1) | 3.1 (3.0–3.3) | 0.168   |
| during your allocated clinical sessions?                               |               |               |         |
| Are you satisfied with the pediatric dentistry lectures that are given | 4.0 (3.8–4.0) | 3.9 (3.8–4.0) | 0.739   |
| during your preclinical studies?                                       |               |               |         |
| How satisfied are you in the aspect of the pediatric dentistry module  | 3.7 (3.5–3.8) | 3.8 (3.7–3.9) | 0.033*  |
| in preparation for you to treat pediatric patients independently when  |               |               |         |
| you graduate?  |               |               |         |

**Table 8:** Relationship between satisfaction toward education activities and knowledge of international caries detection and assessment system (ICDAS) and international caries classification and management system (ICCMS)

|                    |                                      | How satisfied are<br>you with the   | Are you<br>satisfied   | Are you satisfied   | How satisfied are<br>you in the aspect of   |
|--------------------|--------------------------------------|---|--|---|---|
|                    |                                      | numberofclinicalhours/sessionsthatareallocated for youto treat pediatricpatient | with the<br>number of<br>pediatric<br>patients that<br>you treat<br>during your<br>allocated | with the<br>pediatric<br>dentistry<br>lectures<br>that are<br>given<br>during | the pediatric<br>dentistry module in<br>the preparation for<br>you to treat pediatric<br>patients<br>independently when<br>you graduate |
|                    |                                      |   | clinical<br>sessions?  | your<br>preclinical<br>studies?   |   |
| I am aware of what | Pearson                              | 0.041   | 0.008  | 0.054   | -0.031  |
| the ICDAS is       | correlation<br>Sig. (two-<br>tailed) | 0.395   | 0.865  | 0.261   | 0.513   |

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|                     | N           | 262    | 262    | 264     | 264    |
|---------------------|-------------|--------|--------|---------|--------|
|                     | N           | 263    | 262    | 264     | 264    |
| I have adequate     | Pearson     | 0.121  | 0.051  | 0.127   | 0.080  |
| training received   | correlation |        |        |         |        |
| in the area of      | Sig. (two-  | 0.011* | 0.287  | 0.008*  | 0.095  |
| ICDAS               | tailed)     |        |        |         |        |
| ICDAS               | N           | 262    | 262    | 264     | 264    |
|                     | IN          | 203    | 202    | 204     | 204    |
| I am satisfied with | Pearson     | 0.122  | 0.109  | 0.156   | 0.179  |
| the ICDAS           | correlation |        |        |         |        |
| training given to   | Sig. (two-  | 0.011* | 0.023* | 0.001*  | 0.000* |
| me in school        | tailed)     |        |        |         |        |
|                     | Ň           | 263    | 262    | 264     | 264    |
| I am confident in   | Doorson     | 0.081  | 0.106  | 0.114   | 0.140  |
|                     | rearson     | 0.001  | 0.100  | 0.114   | 0.140  |
| classifying caries  | correlation |        |        |         |        |
| using ICDAS in      | Sig. (two-  | 0.089  | 0.027* | 0.017*  | 0.003* |
| clinics             | tailed)     |        |        |         |        |
|                     | Ν           | 263    | 262    | 264     | 264    |
| I am able to        | Pearson     | 0.059  | 0.090  | 0.095   | 0.082  |
| communicate         | correlation |        |        |         |        |
| offootivoly with    | Sig (two    | 0.210  | 0.050  | 0.047*  | 0.085  |
| effectively with my | Sig. (two-  | 0.219  | 0.039  | 0.047** | 0.083  |
| colleagues using    | tailed)     |        |        |         |        |
| ICDAS               | Ν           | 263    | 262    | 264     | 264    |
| I am aware of what  | Pearson     | 0.050  | 0.164  | 0.078   | 0.142  |
| the ICCMS is        | correlation |        |        |         |        |
|                     | Sig. (two-  | 0.301  | 0.001* | 0.103   | 0.003* |
|                     | tailed)     |        |        |         |        |
|                     | N           | 262    | 262    | 264     | 264    |
|                     | N D         | 203    | 202    | 204     | 204    |
| I have adequate     | Pearson     | 0.053  | 0.381  | 0.072   | 0.265  |
| training received   | correlation |        |        |         |        |
| in the area of      | Sig. (two-  | 0.178  | 0.010* | 0.257   | 0.030* |
| ICCMS               | tailed)     |        |        |         |        |
|                     | Ν           | 263    | 263    | 264     | 264    |
| I am satisfied with | Pearson     | 0.074  | 0.254  | 0.894   | 0.442  |
| the ICCMS           | correlation |        |        |         |        |
| training given to   | Sig (two    | 0.067  | 0.000* | 0.024*  | 0.000* |
| main callers        | sig. (two-  | 0.007  | 0.000  | 0.024   | 0.000  |
| me in conege        | (alled)     | 2.4    | 264    | 2.54    | 264    |
|                     | N           | 264    | 264    | 264     | 264    |
| I am able to        | Pearson     | 0.034  | 0.149  | 0.084   | 0.144  |
| understand the      | correlation |        |        |         |        |
| codes               | Sig. (two-  | 0.365  | 0.004* | 0.068   | 0.014* |
| corresponding to    | tailed)     |        |        |         |        |
| the lesion in       | Ν           | 263    | 263    | 264     | 264    |
| ICCMS               | - '         |        |        |         |        |
| I om alla 4-        | Deemaar     | 0.048  | 0.215  | 0.029   | 0.240  |
| i am able to        | Pearson     | 0.048  | 0.215  | 0.038   | 0.249  |
| communicate         | correlation |        |        |         |        |
| effectively with my | Sig. (two-  | 0.736  | 0.000* | 0.013   | 0.003* |
| colleagues using    | tailed)     |        |        |         |        |
| ICCMS               | Ν           | 263    | 263    | 264     | 264    |
|                     |             |        |        |         |        |

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| I have confidence    | Pearson     | 0.084 | 0.172  | 0.189 | 0.218  |
|----------------------|-------------|-------|--------|-------|--------|
| in making a          | correlation |       |        |       |        |
| treatment plan       | Sig. (two-  | 0.130 | 0.003* | 0.018 | 0.004* |
| based on the         | tailed)     |       |        |       |        |
| ICCMS                | Ν           | 264   | 264    | 264   | 264    |
| I am able to treat a | Pearson     | 0.072 | 0.421  | 0.050 | 0.271  |
| patient confidently  | correlation |       |        |       |        |
| using the ICCMS      | Sig. (two-  | 0.228 | 0.002* | 0.235 | 0.003* |
|                      | tailed)     |       |        |       |        |
|                      | Ν           | 264   | 264    | 264   | 264    |

#### Discussion

The study aimed to assess the relationship between dental students' knowledge of ICDAS and ICCMS on young children's oral health and their gender, type of institution, and satisfaction with education activities. The study found that male dental students were more satisfied with their educational activities than their female counterparts. Additionally, male dental students felt more confident in treating pediatric patients independently upon postgraduation. A previous study conducted by Gilmour et al has reported similar findings to those presented here.<sup>13</sup> However, in some literature, females tend to report higher levels of satisfaction.<sup>14</sup> There was no difference in the knowledge of ICDAS and ICCMS between male and female dental students in Gujarat, regardless of the type of institution they attended. Similar results were found in this study with previous studies conducted among dental students from other countries aimed to explore their ability to examine dental caries using the ICDAS system. <sup>15,16,17</sup>.ICDAS and ICCMS are diagnostic criteria for caries that have been developed in the last decade through several workshops and meetings between experts.<sup>18</sup> Despite being relatively new, their implementation and accessibility could be widespread enough to eliminate any disparity.<sup>19,20</sup> It's worth noting that dental students are more familiar with ICDAS than ICCMS, which may be due to the fact that other systems are also available for promoting the staging of caries, risk assessment, and management. Although most colleges have been actively educating and training their students to recognize and diagnose caries using ICDAS, they may not have taught about ICCMS. However, it's essential to use both systems to ensure that caries don't progress further. Therefore, dental colleges should place equal emphasis on both ICDAS

can benefit from the ICDAS e-learning program available on the Internet, developed by the ICDAS Foundation. <sup>21</sup> This study evaluated the knowledge of ICDAS and ICCMS among postgraduate dental students in dental colleges in Ahmedabad, and its outcomes cannot be generalized to dental students in other places. Additionally, it's unclear whether dental practitioners use any of the caries detection and management systems in their practice, and future studies could be conducted to assess their knowledge in this area. The study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology statement's reporting guidelines.

and ICCMS in their study curriculum. Dental students

#### Conclusion

This study assessed the knowledge of ICDAS and ICCMS among postgraduate dental students in Ahmedabad's dental colleges. This study found that providing comprehensive lectures on pediatric dentistry during preclinical years has a positive impact on male dental students' ability to diagnose and treat pediatric patients. Male dental students who received better exposure to pediatric dentistry during their preclinical years felt more confident and prepared to treat patients independently after graduation. This highlights the importance of early education in pediatric dentistry to produce well-rounded and capable dental professionals.

#### Acknowledgment

The authors confirm that they have no conflicts of interest related to this research and publication. Additionally, this research has been self-funded.

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JCHR (2024) 14(3), 870-878 | ISSN:2251-6727



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