

# Perspectives, Realities, and Difficulties in Clinical Practice Experience of Left-handed Dental Students in Udaipur, India

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## ABSTRACT

**Introduction:** Dentistry is a demanding profession requiring focus, accuracy, and skills. However, with scientific advances, various new advances and types of equipment have developed enhancing the general dental care. It has been reported that chairs intended for right-handed users result in manual uneasiness or discomfort for left-handed dentists. This might constrain the left handers to adjust, thereby leading to decrease in their performance with increased perception of inconvenience.

**Objective:** To assess the dental practice perspectives and determine the hand preference and difficulties among the left-handed clinical dental students.

**Materials and methods:** A descriptive cross-sectional survey was conducted among all the five dental colleges of Udaipur in the academic year of 2017. Study population consisted of clinical dental students (third- and final-year undergraduates, dental interns, and postgraduates). Descriptive statistics, frequency distribution, and percentage were used for statistical analysis.

**Results:** In the academic year 2017, at the five dental colleges, about 9.48% (117 out of 1,234) were found to be left-handed clinical dental students. Among these, 23 (19.7%) were accounted in third year, 31 (26.5%) in final year, 30 (25.6%) were interns, and 33 (28.2%) were postgraduate students. Maximum of participants (89.7%) were using their left hand for hand piece/during cavity cutting. Participants (19.7%) were using both their hands to holding a mouth mirror and denture work in the laboratory.

**Conclusion:** The outcomes recommend that being a left hander, they had a positive perspective. Maximum of them were utilizing their left hand for dental practices and were not having difficulties.

**Keywords:** Clinical dental students, Dental practice, Handedness, Musculoskeletal complications.

**How to cite this article:** Sultane P, Sen N, Bhat N, Patil V, Patel S, Patel H, Limbachiya P, Dudhat D. Perspectives, Realities, and Difficulties in Clinical Practice Experience of Left-handed Dental Students in Udaipur, India. *Int J Prev Clin Dent Res* 2017;4(3):179-183.

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**Source of support:** Nil

**Conflict of interest:** None

## INTRODUCTION

Dentistry is a demanding profession requiring focus, accuracy, and skills.<sup>1</sup> However, with scientific advance, various new advances and types of equipment have developed enhancing the general dental care.<sup>2</sup> A successful treatment of any dental issue is based on skillful performances with the anatomy and location of teeth, determination of well-adopted instrument, appropriate angulation of the patient, particularly the dental practitioners, and in addition manual skill.<sup>3-5</sup> Most dental instruments are "all inclusive," yet the general manufacture and design are suited for right-handed users.<sup>6,7</sup> This might constrain the left handers to adjust, thereby leading to decrease in their performance with increased perception of inconvenience. Numerous dental schools do not have dental chairs designed particularly for left-handed users.<sup>2</sup>

Nonetheless, there are manufacturers who have developed equipment for left-handed dental specialists, which are added up to identical representation of right-handed equipment.<sup>7</sup> But it is not prominent and utilization is moderately lesser.<sup>2,8</sup> It has been reported that chairs intended for right-handed users result in manual uneasiness or discomfort for left-handed dentists.<sup>9</sup>

Handedness becomes important for dental professional with respect to his training position. Unfortunately, all dental training and practices in dental schools are planned just for right-handed students.<sup>5,9,10</sup> Therefore, left-handed students are made to learn at right-sided chairs from the starting point of their education. As expected, Henderson et al<sup>9</sup> have reported that designed right-sided chairs intended for right-handers may create some inconvenience for left-handed dentists.

Also, Canakci et al<sup>10</sup> have revealed that left-handed dental specialists could show confirmation of manipulative disadvantage and this may be a consequence of trouble with working conditions. Hence, a cross-sectional survey was conducted to assess perspectives, realities, and difficulties and determine the hand preference and discomfort level among the left-handed clinical students.

## MATERIALS AND METHODS

### Study Design and Population

A descriptive cross-sectional survey was conducted among all the five dental colleges of Udaipur in the academic year 2017. Study population consisted of clinical dental students (third- and final-year undergraduates, dental interns, and postgraduates).

### Ethical Clearance and Official Permission

The study protocol was reviewed and approved by the Institution Review board of Pacific Dental College & Hospital and was granted ethical clearance. An official permission was taken from the head of institution of each college.

### Informed Consent

Written informed consent was obtained from participants after explaining the nature and purpose of research.

### Sample Size

Investigator collected the list of dental colleges in Udaipur city and it was found that there are total five dental colleges in Udaipur city. The study participants were identified through a network of informants (class leaders and student representatives). This snowballing approach employed in each college helped to enlist the number of left-handers.<sup>11</sup> The total number of clinical dental students was found to be 117 in five dental colleges in Udaipur city and who participated in the study.

### Inclusion Criteria

- All the left-handed clinical dental students in the dental colleges of Udaipur city.

### Exclusion Criteria

- Acquired left-handedness due to medical conditions like trauma/polio/paralysis, etc.

### Data Collection Tool

A pretested, structured questionnaire was developed based on our study objectives, taking guidance from the previous literature.<sup>8,12</sup>

The pro forma consisted of five sections: Demographic information; perspective, realities, and difficulties of left-handed students in clinical practice; most difficult quadrant of the dental arch to work; hand preferred by clinical dental students during dental procedures; difficulty level of clinical dental students during dental procedures.

## Survey Methodology

The questionnaire was distributed to the clinical dental students and they were further informed about the purpose and methods of the study; 10 to 15 minutes was taken by the students to complete the questionnaire. Filled questionnaire pro forma was collected and analyzed.

## Statistical Analysis

Completed questionnaires were coded, compiled, and entered in a spreadsheet computer program (Microsoft Excel 2013) and then exported to data editor page of Statistical Package for the Social Sciences version 20.0 (SPSS Inc., Chicago, Illinois, USA) and analyzed. Descriptive statistics frequency distribution and percentage were used for statistical analysis.

## RESULTS

Table 1 shows distribution of study population according to demographic variables.

In the academic year of 2017, at the five dental colleges about 9.48% (117 out of 1234) were found to be left-handed clinical dental students. Among these, 23 (19.7%) were accounted in third year, 31 (26.5%) in final year, 30 (25.6%) were interns, and 33 (28.2%) were postgraduate students.

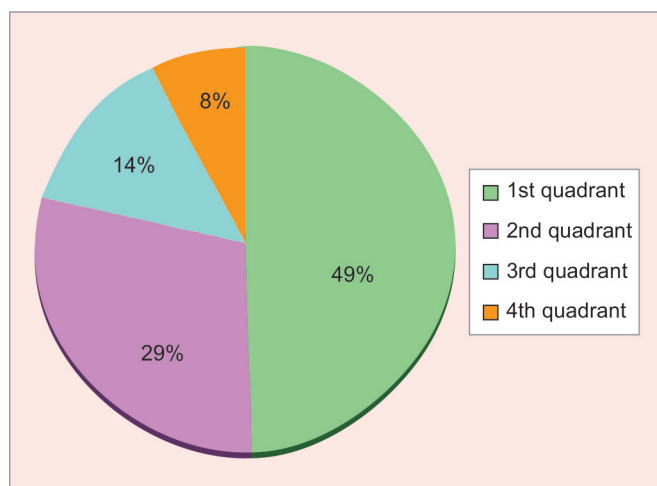
There were 72 (61.5%) females and 45 (38.5%) males, age ranging from 23 to 26 years. A relatively greater number of left-handers emerged among the postgraduates. Figure 1 shows majority of participants (49%) regarding first quadrant of the dental arch found it most difficult to work.

Table 2 shows perspectives, realities, and difficulties of left-handed students in clinical practice.

Majority of participants (93.2%) agreed that being a left-handed dentist will affect dental assistants' ability or convenience to work and 83.8% agreed they preferred using a dental chair, unit, or station designed especially

**Table 1:** Distribution of study population according to demographic variables

Variables	Number (n)	Percentage
<b>Age (years)</b>		
19–22	12	10.3
23–26	67	57.3
27–29	38	32.5
<b>Gender</b>		
Male	45	38.5
Female	72	61.5
<b>Clinical dental students</b>		
Third-year undergraduates	23	19.7
Final-year undergraduates	31	26.5
Interns	30	25.6
Postgraduates	33	28.2
<b>Total</b>	<b>117</b>	<b>100</b>



**Fig. 1:** Percentage regarding most difficult quadrant of the dental arch to work

for left-handed dentists. Maximum of participants (82.9%) disagreed with have a problem in being left-handed to do the required dental work.

Table 3 shows hand preference by clinical students during dental procedures.

Maximum of participants (89.7%) were using their left hand for hand piece/during cavity cutting and 87.2% respondents were using their left-hand for mixing cements/restorative/impression materials. Participants who were using both their hands to hold a mouth mirror and denture work in the laboratory was 19.7%. Participants who were using their right hand to hold a probe were 29.1%, holding a mouth mirror and suture material were 24.8% and 23.1% respectively.

Table 4 shows the difficulty level of clinical students during dental procedures.

During dental procedures, majority of participants (92.3%) did not have any difficulty in oral prophylaxis; for holding extraction forceps, 36.8% faced little difficulty and 14.5% had lots of difficulties for holding suturing scissors.

## DISCUSSION

Surveys are procedures used to investigate opinions, and a paper-and-pencil questionnaire can be utilized to improve the response rate and the accuracy of responses. Only a few data regarding left-handed clinical dental students were found in the literature. In this study,

**Table 2:** Perspectives, realities, and difficulties of left-handed students in clinical practice

Questions	Agree	Do not know	Disagree
It is difficult for you to be left-handed	20 (17.1)	18 (15.4)	79 (67.5)
You have a problem in being left-handed to do the required dental work	12 (10.3)	8 (6.8)	97 (82.9)
You have a problem with your instructors or supervisors in being left-handed and they are right-handed	60 (51.3)	2 (1.7)	55 (47.0)
You prefer to use a dental chair, unit, or station designed especially for a left-handed dentist	98 (83.8)	7 (6.0)	12 (10.3)
You can use the devices manufactured to be used by right-handed dentist	88 (75.2)	4 (3.4)	25 (21.4)
Being a left-handed dentist will affect your dental assistant's ability or convenience to work	109 (93.2)	3 (2.6)	5 (4.3)
Patients feel discomfort being treated by a left-handed dentist	15 (12.8)	56 (47.9)	46 (39.3)
You should write being a left-handed dentist in your resume	51 (43.6)	15 (12.8)	51 (43.6)
You will correct the habit of your children in the future if they show the habit of using their left hand	10 (8.5)	12 (10.3)	95 (81.2)
A left-handed dentist using the facilities of a right-handed dentist can cause some musculoskeletal medical complications	60 (51.3)	8 (6.8)	49 (41.9)

**Table 3:** Hand preference by clinical students during dental procedures

Dental procedures	Left hand (always and usually)	Both hands	Right hand (always and usually)
Holding a mouth mirror	65 (55.6)	23 (19.7)	29 (24.8)
Holding a probe	70 (59.8)	13 (11.1)	34 (29.1)
Administering local anesthesia	88 (75.2)	10 (8.5)	19 (16.2)
Holding extraction forceps	86 (73.5)	12 (10.3)	19 (16.2)
Holding suturing scissors	92 (78.6)	4 (3.4)	21 (17.9)
Holding suture material	83 (70.9)	7 (6.0)	27 (23.1)
Oral prophylaxis	97 (82.9)	6 (5.1)	14 (12.0)
Using a hand piece/during cavity cutting	105 (89.7)	3 (2.6)	9 (7.7)
Mixing cements/restorative/impression materials	102 (87.2)	6 (5.1)	9 (7.7)
Root canal instrumentation	98 (83.8)	10 (8.5)	9 (7.7)
Denture work: Clinical	100 (85.5)	10 (8.5)	7 (6.0)
Denture work: Laboratory	91 (77.8)	23 (19.7)	3 (2.6)
Orthodontic work	92 (78.6)	20 (17.1)	5 (4.3)

**Table 4:** Difficulty level of clinical students during dental procedures

<i>Dental procedures</i>	<i>Do not have any difficulty</i>	<i>Little difficulty</i>	<i>Lots of difficulties</i>
Holding a mouth mirror	97 (82.9)	18 (15.4)	2 (1.7)
Holding a probe	97 (82.9)	17 (14.5)	3 (2.6)
Administering local anesthesia	86 (73.5)	22 (18.8)	9 (7.7)
Holding extraction forceps	68 (58.1)	43 (36.8)	6 (5.1)
Holding suturing scissors	70 (59.8)	30 (25.6)	17 (14.5)
Holding suture material	90 (76.9)	20 (17.1)	7 (6.0)
Oral prophylaxis	108 (92.3)	7 (6.0)	2 (1.7)
Using a hand piece/during cavity cutting	97 (82.9)	16 (13.7)	4 (3.4)
Mixing cements/restorative/impression materials	95 (81.2)	15 (12.8)	7 (6.0)
Root canal instrumentation	81 (69.2)	31 (26.5)	5 (4.3)
Denture work: Clinical	92 (78.6)	14 (12.0)	11 (9.4)
Denture work: Laboratory	96 (82.1)	17 (14.1)	4 (3.4)
Orthodontic work	90 (76.9)	23 (19.7)	4 (3.4)

the left-handed clinical dental third- and final-year undergraduates, interns, and postgraduates were asked to express their opinions about various aspects of learning and practicing dentistry.

In the present study, out of 117 left-handed participants, there were 38.5% males and 61.5% females. Similar results were found in studies done by Odabas et al,<sup>13</sup> Kapoor et al,<sup>12</sup> Silva et al,<sup>2</sup> and Silva et al,<sup>14</sup> but contrasting result was found in the study done by Al-Johany,<sup>8</sup> in which 63% were males and 47% were females. Maximum number of participants (57.3%) was from age group 23 to 26 years. Similar results were found in study conducted by Kapoor et al<sup>12</sup> and Al-Johany.<sup>8</sup>

In our survey, maximum number of participants (28.2%) was postgraduates. Similar result was found in the study conducted by Kapoor et al.<sup>12</sup> Majority of participants (82.9%) did not agree that they have a problem in being left-handed to do the required dental work. This was in accordance with the study conducted by Kapoor et al<sup>12</sup> but not in accordance with the study done by Al-Johany<sup>8</sup> where contrasting result was found (50.9%).

Our survey stated that the majority of participants, i.e., 51.3%, who were themselves left-handed, agreed that they have a problem with their instructors or supervisors in being right-handed. Similar finding was found in the study done by Al-Johany.<sup>8</sup>

Our study revealed that majority of participants (83.8%) agreed that they prefer to use a dental chair, unit station designed especially for a left-handed dentist, and 75.2% agreed that they can use the devices manufactured to be used by the right-handed dentist; 47.9% knew that patients felt discomfort while being treated by left-handed dentist. Similar result was found in a study done by Al-Johany.<sup>8</sup>

In the present study, maximum number of participants (93.2%) agreed that being a left-handed dentist will affect their dental assistants' ability or convenience to work. Similar finding was found in study done by Al-Johany<sup>8</sup> but when we compared it with another study by Kapoor et al,<sup>12</sup> contrasting result was found (57%).

In our study, lesser number of participants (12.8%) did not know that they should mention in their curriculum vitae that they were left-handed dentist and maximum number of participants (81.2%) did not agree that will correct the habit of their children in the future if they showed the habit of using their left hand. These facts are also in accordance with the findings of Al-Johany<sup>8</sup> and Kapoor et al.<sup>12</sup>

In the present study, majority of participants (51.3%) agreed that a left-handed dentist using facilities of right-handed dentist can cause some musculoskeletal medical complications. This was in accordance with the study done by Kapoor et al<sup>12</sup>; on the contrary, contrasting result was found (33.6%) according to the study done by Al-Johany.<sup>8</sup>

According to the present study, maximum number of participants (49%) found that first quadrant of the dental arch is the most difficult to work. Similar result was found by Silva et al,<sup>2</sup> but when we compare it with another study done by Kapoor et al,<sup>12</sup> contrasting result was found that the second quadrant (41.7%) of the dental arch is the most difficult to work. Majority of the participants preferred left hand for the dental procedures and did not have any difficulty during dental procedure. This was in accordance with the study conducted by Kapoor et al.<sup>12</sup> Therefore, in the present study, handedness was taken as replied by the participants. To the best of our information, only one study has been done to assess dental practice perspectives of left-handed clinical dental students in Bengaluru city, India. Next one is our present study to assess perspectives, realities, and difficulties in clinical practice experience of left-handed dental students in Udaipur, India. Moreover, the reaction review (100%) is thought to be high, expanding the extrapolation of the outcomes. The limited sample size and social eligibility bias in self-reported surveys prove to be a major limitation to the present study.



## CONCLUSION

This article has endeavored to convey the consideration of the profession to this essential issue of left-handed clinical dental students facing challenges. This problem seems to be an issue in dental training around the world. This work demonstrated that there does exist a few challenges for left-handed dentistry students created by the inadequacy of equipment and supplies. The percentage of left-handed clinical dental students was 9.48%. The outcomes recommend that being a left-hander, they had the positive perspective. Maximum of them were utilizing their left hand for dental practices and not having difficulties. The findings from this study give knowledge toward the needs of this minority group.

Dental schools, and also educators, ought to know about the presence of this gathering to better guide and tailor the equipment to their requirements, accordingly advancing a guidance for these students, for at least a large investment is distributed in their training or education.

## RECOMMENDATION

The foundations can give better help and orientation to these students and readapt the equipment infrastructure with the goal that work conditions are perfect for all clinical dental left-handed students. In this way, occupational diseases that nowadays appear precociously will be prevented, while differences are respected and individual potentials are appraised. However, there is a need for a suggestion from the regulatory agencies regarding left-sided dental equipment in dental schools for an improved quality of dental practice and ergonomics.

## ACKNOWLEDGMENTS

Authors would like to thank the individuals who contributed their precious time during data collection. The

respondents who took part in this study are also acknowledged for their time.

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