



Clinical Difficulties among Left Handed Dentists, Dental Students and Interns-A Cross-Sectional Survey in Saudi Arabia

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ABSTRACT

Background and objective: The practice of dentistry largely depends on manual dexterity and hand skills. Appropriate position and equipment according to the dominant hand is very important for safe and effective dental practice. Most of the dental chairs used in training or dental practice are designed to be used by right handed dentists. The aim of the study was to assess whether left-handed (LH) dental students and dentists faced any problems during their course of study or in dental practice and their perspectives based on their discomfort. **Methods:** A questionnaire was used the survey tool to conduct a cross-sectional survey among LH dental students, interns and dentists. **Results:** A total of 152 LH dentists and dental students completed the survey. 52.6% of the participants reported sometimes having a problem in being LH to do the required dental work. 31.6% of the participants reported having a problem with RH instructors. Only 20.4% reported they can easily use devices manufactured to be used by RH dentists. 77 % reported that patients complained of their working from the left side of the dental chair. **Conclusion:** The findings of this study support a need for alterations to learning environment and personalized teaching to better support LH students in their learning experience to avoid difficulties faced by them and to provide adequate working environment for LH dentists.

Keywords: Clinical, Difficulties, Left handed, Dentists, Saudi

INTRODUCTION

Handedness in human biology is defined as the use of one hand more effectively and with more control in specific movement than the other hand. About 90% of people are right handed, whereas left handed (LH) represented 10% [1]. Dentistry is a specialized field which involves high degree of manual dexterity [2]. Delivery of fruitful dental treatment depends on the proper position of the patient and dentist. It also depends on the position and anatomy of the tooth, selection of suitable instrument, correct angulation of the instrument and dentist manual skills [3,4].

Although there have been great advancements in tools for dentistry, they are mostly designed to suit right-handers [5]. And in most of dental colleges, the techniques and chairs and equipment used are mainly designed to suit RH operators [6]. A matter that makes LH dentists face some difficulties to adapt and improve their work, and to make it more comfortable to avoid any complications [2].

Of the few studies that were done to assess problems faced by LH dentists, a study done in India in 2016 revealed that one third of the participants reported that their college was not properly equipped to cater to LH students. In this study, participants reported that LH dentist have higher risk to develop musculoskeletal complications. This study observed that dental practice perspective scores significantly correlated with difficulty levels [2]. Another study done in Australia in 2018 reported that LH students perceive greater difficulty from the inconvenience caused by inadequate design of the surgery and chair, and due to a lack of personalised teaching. The finding of this study supported a need for alteration of learning environment to better support LH student in learning specific procedures and increase access to individualised teaching approaches [7]. The same result was observed in a study done in New Zealand [8], and India [9].

A study that investigated the difficulties of Brazilian left-handed dental students in clinical practice also found that left-handers have high intensity and frequency of musculoskeletal symptoms compared to the right-handed counterparts [10]. As for studies in Arab countries, a study was done in United Arab Emirates on dentists, dental students and interns in 4 dental colleges in different regions. Of the participants, 76.9% of the dentists and 63.6 % of the students declared facing difficulties, and 73.9% of the respondents reported having musculoskeletal complications due to the use of facilities of RH dentists [11].

According to a careful literature review, only one study was done in the Kingdom of Saudi Arabia (KSA) in 2013 to survey problems faced by dental students and interns in their dental education or in their practice of dentistry. The study included both RH and LH dentists of four dental colleges in different regions in the kingdom. This study revealed that 68% of the LH participants reported having a problem with having RH instructors, 84.5% said that their institution is not properly equipped to accommodate LH students, and 34% agreed that using facilities of an RH dentist may cause musculoskeletal complications to an LH dentist [5].

Due to the lack of studies done in the kingdom specifically for LH students and dentists, this study was aimed to investigate their dental practice perspectives regarding their difficulties or ergonomic complications in clinical practice and to suggest solutions to their problems.

MATERIALS AND METHODS

Study Design

A cross-sectional study was carried out.

Study Population

Left handed undergraduate students, LH graduated dentists and interns from the four KSA regions (central, western northern and southern) were invited to participate in the study.

Study Instrument

The study was conducted by a survey which consisted of a questionnaire based on the available literature on this topic. The questionnaire collected data about the participants' age, gender, educational level, residence and years of working experience. It included items to assess if the participants had a problem in being LH to do the required dental work, problems faced during their dentistry practice, their dental practice perceptions, and their future perceptions. A pilot test was done on 10 LH dental students and interns to ensure face validity and was finalized with some modifications. A total of 152 LH dental students, interns and dentists completed the survey.

Ethical Considerations

An ethical approval was obtained from the research ethics committee of Al-Farabi College of Dentistry. Written and verbal consents were obtained from all participants before participating in the study.

Data Analysis

Data was coded, tabulated and analyzed using (SPSS) version 20 (Armonk, NY: IBM Corp.). Qualitative data was expressed as numbers and percentages and Chi-square test (χ^2) was applied to test the relationship between variables. A p-value of <0.05 was considered as statistically significant.

RESULTS

The present study included 152 participants. 61.2% participants had age ranging from 24-27 years, 65.1% were females, and 46.1% were from the western region of KSA. As for the educational level, 36.8% of the participants were interns and 70.4% of them had ≤ 5 years of practicing dentistry (Table 1).

Figure 1 shows that 30.3% of the participants reported having a problem in being LH to do the required dental work. 52.6% of the participants reported sometimes having a problem in being LH to do the required dental work. 31.6% of the participants reported having a problem with RH instructors or supervisors. 10.5% preferred to use a dental chair unit designed especially for LH dentist, 20.4% had the ability to use the devices manufactured to be used by RH dentist

easily, and 77% reported that patients complained of their working in the left side (Table 2).

According to the dental practice perception of the participants, most of them (43.3%) reported that using of hand piece was the most difficult procedure for them as a LH dentist, and 27.6% stated that the quality of work is decreased by using a right sided chair. Of the participants, only 12.5% believed that their performance would be better if they work on a left sided chair, and 21.1% reported that being LH dentist, will affect their dental assistant’s convenience to work (Table 3).

As for the future perception of the participants, 38.8% of them preferred to introduce themselves as LH in their personal interview, 20.4% thought if their supervisors are LH their learning ability and performance will be better, and only 9.2% reported having a problem on finding a left sided chair in the private clinics (Figures 1-4).

Table 4 illustrates that the relation of LH dentists facing problems in clinical work to the years of practicing dentistry, age, gender, educational level, residence region and years of practicing dentistry was not statistically significant ($p \geq 0.05$).

Table 1 Distribution of the studied participants according to their demographic characters (N=152)

Variable	N (%)
Age	
20-23 years	34 (22.4%)
24-27 years	93 (61.2%)
28-31 years	21 (13.8%)
Gender	
Male	53 (34.9%)
Female	99 (65.1%)
Education level	
Undergraduate student†	45 (29.6%)
Graduated dentist	51 (33.6%)
Intern	56 (36.8%)
Residence region	
Central region of KSA	18 (11.8%)
Western region of KSA	70 (46.1%)
Northern region of KSA	39 (25.7%)
Southern region of KSA	17 (11.2%)
Years of practicing dentistry	
≤ 5 years	107 (70.4%)
>5 years	45 (29.6%)

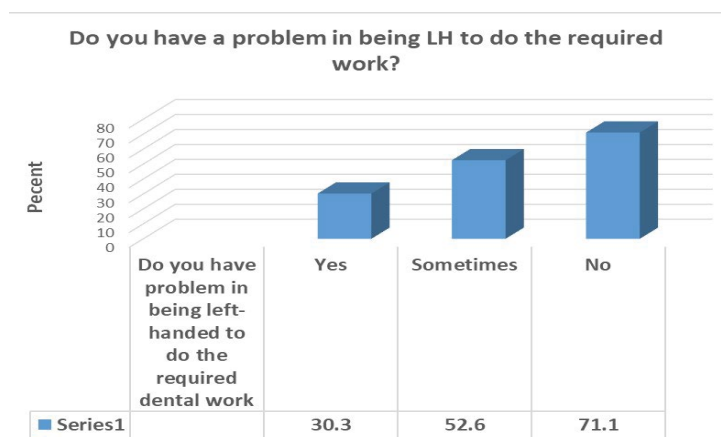


Figure 1 Distribution of the studied participants according to having a problem in being LH to do the required dental work (N=152)

Table 2 Distribution of the studied participants according to problems faced during their dentistry practice (N=152)

Variable	N (%)
Do you have problem with RH instructors or supervisors?	
Yes	48 (31.6%)
Sometimes	62 (40.8%)
No	42 (27.6%)
Do you prefer to use a dental chair unit designed especially for LH dentist?	
Yes	16 (10.5%)
Sometimes	14 (9.2%)
No	122 (80.3%)
Can you use the devices manufactured to be used by RH dentists easily?	
Yes	31 (20.4%)
Sometimes	80 (52.6%)
No	41 (27%)
Did patients complain of you working in the left side?	
Yes	118 (77.6%)
Sometimes	21 (13.8%)
No	13 (8.6%)

Table 3 Distribution of the studied participants according to their dental practice perceptions (N=152)

Variable	N (%)
In your opinion, which of the following procedures are most difficult for you as a LH dentist?	
Scaling and root planning	8 (0.4%)
Use of hand piece	66 (43.4%)
Use of tooth Extraction forceps	49 (32.2%)
Use endo files	1 (0.7%)
Crown preparation	24 (15.8%)
All the above	4 (2.6%)
Do you think the quality of work is decreased by using a right sided chair?	
Yes	42 (27.6%)
Sometimes	53 (34.9%)
No	57 (37.5%)
Do you believe that your performance would be better if you work on a left sided chair?	
Yes	19 (12.5%)
Sometimes	18 (11.8%)
No	115 (75.7%)
Being LH dentist, will it affect your dental assistant's convenience to work?	
Yes	32 (21.1%)
Sometimes	41 (27%)
No	79 (52%)

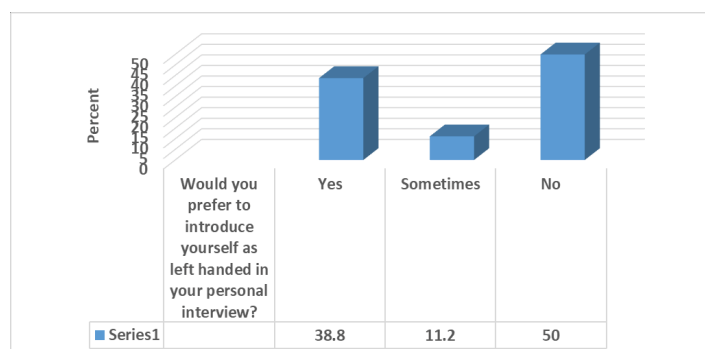


Figure 2 Distribution of the studied participants according to their preference of introducing themselves as left handed in their personal interview (N=152)

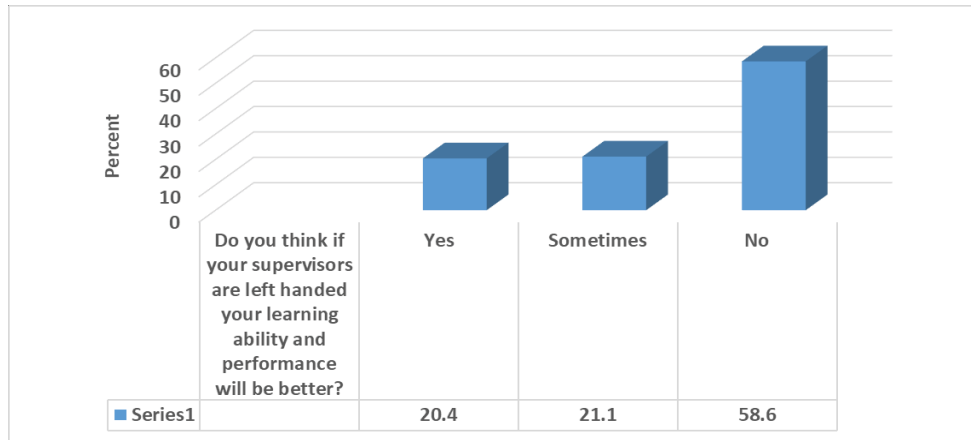


Figure 3 Distribution of the studied participants according to their thought if their supervisors are LH, their learning ability and performance will be better

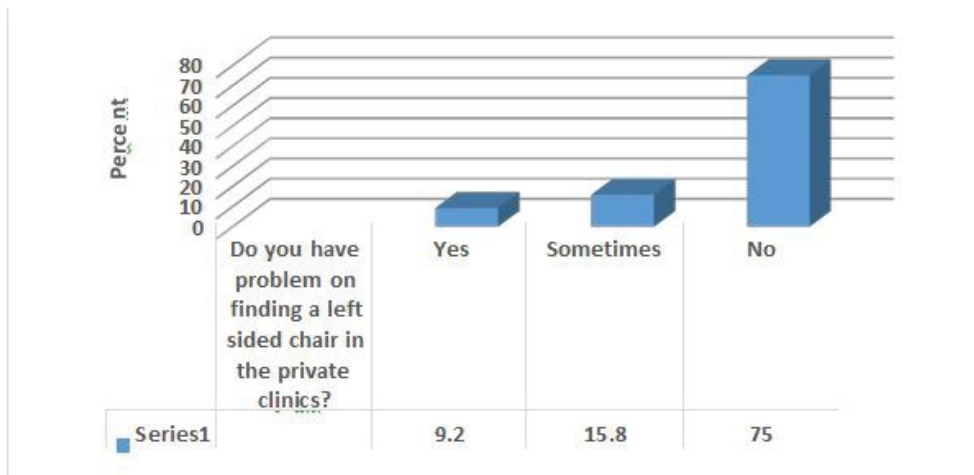


Figure 4 Distribution of the studied participants according to having a problem on finding a left sided chair in the private clinics

Table 4 Relationship between having a problem in being LH to do the required dental work and age, gender, educational level residence region and years of practicing dentistry

Variable	Having a problem being LH			Test*	p-value
	Yes	Sometimes	No		
Age					
20-23 years	12 (35.3%)	18 (52.9%)	4 (11.8%)	1.55	0.95
24-27 years	28 (30.1%)	48 (51.6%)	17 (18.3%)		
28-31 years	5 (23.8%)	12 (57.1%)	4 (19%)		
More than 31 years	1 (25%)	2 (50%)	1 (25%)		
Gender					
Male	14 (26.4%)	25 (47.2%)	14 (26.4%)	4.98	0.83
Female	32 (32.3%)	55 (55.6%)	12 (12.1%)		
Education level					

Undergraduate student	15 (33.3%)	23 (51.1%)	7 (15.6%)	2.84	0.58
Graduated dentist	11 (21.6%)	30 (58.8%)	10 (19.6%)		
Intern	20 (35.7%)	27 (48.2%)	9 (16.1%)		
Residence region					
Central region of KSA	10 (25.6%)	21 (53.8%)	8 (20.5%)	3.93	0.86
Western region of KSA	25 (35.7%)	36 (51.4%)	9 (12.9%)		
Northern region of KSA	2 (25%)	5 (62.5%)	1 (12.5%)		
Southern region of KSA	5 (29.4%)	9 (52.9%)	3 (17.6%)		
Eastern region of KSA	4 (22.2%)	9 (50%)	5 (27.8%)		
Years of practicing dentistry					
≤ 5 years	35 (32.7%)	56 (52.3%)	16 (15%)	1.7	0.42
>5 years	11 (24.4%)	24 (53.35%)	10 (22.2%)		
N.B.*Chi- squared test (χ^2)					

DISCUSSION

The optimal therapeutic approach and the success of practice involve special working conditions for the dentist and his team in an ergonomic environment [12]. Left-handedness is the preferential use of the left hand in activities which require precision [13]. Most dental chairs are designed to be used by right-handed people, which must be adopted by left-handed dentists [14].

This is the second study reporting experiences of Saudi Arabian LH dental students. The data was collected from participants in the different regions in Saudi Arabia among which females represented 65.1%. Our results showed that 30.3% of the participants reported having a problem in being LH to do the required dental work which was closely compatible with the results of the study of Kapoor, et al. [2], where they mentioned that 29.8% of participants have problem to do required dental work. On the contrary, other studies done by Al Lawati, et al. mentioned that all participants reported having clinical difficulties being left-handed students and using right-handed equipment [8].

Of the participant of the present study, 10.5% mentioned that they prefer to use a dental chair unit designed especially for LH dentist. In a study done by Al-Johany, 84.5% of the participants prefer to use a dental chair, unit, or station designed especially for a left-handed dentist [6].

In the present study, 27.6% of the participants reported that they did not have a problem with RH instructors or supervisors. This finding agrees with that reported by Al-Johany, who had a slightly lesser proportion (22.7%). Of our participants, 20.4% mentioned that they can use the devices manufactured to be used by RH dentist easily. A much higher percent was found in the study done by Al Johany [6], where 80.0% of participants mentioned that they can use the devices manufactured to be used by right-hand dentists which is highly different [6].

About 77% of our research participants (77.6%) reported that patients complained if the dentist works from the left side. This result is much higher than that reported by Kapoor, et al. where only 9.4% of patients complain if the dentist works from the left side [2].

In a descending order, the most difficult procedure for our research participants as LH dentists was: using of hand piece (43.3%), use of tooth extraction forceps (oral surgery) (32.2%), have a problem in crown preparation 15.8%, have difficult on using endodontic files 0.7%, and the least difficult procedure was scaling and root planning (0.4%).

Lee, et al. stated in their study that the top three difficulties were: operative dentistry (73%), periodontics (49%), prosthodontics (46%), oral surgery (45%) and endodontics (44%) [7]. In this work, 37.5% LH dentists stated that the quality of work is affected by using a RH chair, whereas Kapoor et al reported that 46.4% thought the quality of work is decreased by working on a right-sided chair [2].

Half of our participants (50%) felt that dental assistant's convenience may be affected with LH dentist and this is going on with results of Kapoor, et al. and Lee, et al. studies which mentioned that almost two-thirds (63%) felt their dental assistant experienced problems assisting a LH dentist [2,7].

The present study showed that 50% of LH dentist did not prefer to introduce themselves as LH in interview, similar results were observed in the study done by Azim, et al. [11] where 57.6% of dentists prefer not to mention being a left-handed dentist in their CV. This agrees with Lee, et al. [7] study where 45% of the participants felt that being LH would affect them getting a job. On the contrary, Kapoor et al. study showed that 69.1% of the participants prefer to introduce themselves as LH [2]. According to whether the handedness of the supervisor can affect their learning, our study results matched Lee, et al. where half of the participants reported that there was a preference to LH instructors or supervisors [7].

Limitations

A limitation of the present study was the self-reported questionnaire that could be subjected to a recall bias.

CONCLUSION

Most of the dental units are designed for RH dentists, therefore majority of LH dentists have to adapt themselves and their positions to be able to use such chairs. This study shows that LH students and dentists face some problems during their training and clinical practice which may affect the quality of work. This study calls for a need to address these issues by alterations of the learning environment and individualization of the teaching approach to better support LH students in their learning experience. This is to avoid difficulties faced by them and to provide adequate work conditions for LH dentists.

DECLARATIONS

Acknowledgment

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Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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