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Workforce development among oral health providers in ministry of health facilities in Jazan, Saudi Arabia

Mosa A Shubayr[1,2]✉, **Estie Kruger**[3], **Marc Tennant**[3]

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Author Affiliation:
[1]School of Human Sciences, The University of Western Australia, Nedlands, Australia
[2]Department of Preventive Dental Sciences, College of Dentistry, Jazan University, Jazan, Kingdom of Saudi Arabia
[3]International Research Collaborative, Oral Health and Equity, School of Human Sciences, The University of Western Australia, Nedlands, Australia

✉**Corresponding author**
School of Human Sciences, The University of Western Australia, Nedlands, Australia
Department of Preventive Dental Sciences, College of Dentistry, Jazan University, Jazan, Kingdom of Saudi Arabia
Email: mosa.shubayr@research.uwa.edu.au

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ABSTRACT

Background: This study provides an overview of dental training participation-related activities reported by Saudi Ministry of Health-associated oral healthcare providers in Jazan, Saudi Arabia. *Method*: For this quantitative study, a total of 113 participants completed an online cross-sectional questionnaire for a response rate of 56.5%. Just over half (53.1%) of the participants were working in primary healthcare centres (PHCs) in the central area (88.5%) of the region. *Results*: This study found a number of variables were significantly associated with the providers' participation in dental workshops in the past year, including gender, age, work location, education level, professional type, years of experience, country of last degree, average time of any treatment procedure for each patient and number of patients every day. *Conclusion*: This study ends with the recommendation that comprehensive educational and training programs be developed that focus on increase and implement these programs in their practice.

Keywords: Continuous professional development, dental training, oral health providers, workforce development

1. INTRODUCTION

Healthcare workforce development is a crucial part of the health care system since providers are responsible for health service delivery to large populations (Ahern et al., 2019). Despite the importance of oral health to the general health of the population and the fact that the majority of people around the world are affected by oral diseases, policymakers have not prioritized planning for dental providers' development (Ahern et al., 2019). Since the discovery of oil in Saudi Arabia in 1930, many experts from different countries have helped to fill vacant positions in many fields due to the lack of qualified Saudi professionals. In terms of healthcare, dental health as a field was in the same situation, in the intervening years many non-Saudis have filled dental positions over Saudis (Salim et al., 2018). However, over the last 20 years there has been an increase in the number of dental professionals in the country that can be attributed to an increase in the number of dental schools in the country.

Since the beginning of dental education in Saudi Arabia in 1975, the number of dental colleges has increased from three to four colleges in the whole country in 2000 to more than 20 dental colleges today (Al Bakar et al., 2017; Ministry of Higher Education, n.d). Nevertheless, despite the existence of a larger number of dental colleges in Saudi Arabia, few of which have post-graduate programs (Al-Shalan et al., 2018). The Saudi Commission for Health Specialties, which regulates the practice and accreditation of health care in the country, recently established six other dental board specialist programs (Al-Dlaigan et al., 2011).

There is a worldwide tendency towards mandatory Continuing Professional Development (CPD) although, each country has its own requirements regarding the amount and content of CPD. Different definitions of CPD have been provided that emphasize the career-long importanceof CPD and its value for patient care. CPD helps dental practitioners to continue to develop their skills and knowledge and maintain up-to-date practice (Barnes et al., 2013). The Saudi Commission for Health Specialities has a role in the evaluation of CPD for different healthcare professionals in Saudi Arabia, including dentists. In Saudi Arabia, the number of mandatory hours for dentists is 30 CME hours every year for the purpose of license renewal (Saudi Commission for Health Specialties, n.d.). To our knowledge, few studies have been published that have assessed the uptake and factors related to CPD in Saudi Arabia. This study aims to provide an overview of dental training and participation in dental training-related activities reported by Saudi Ministry of Health- associated oral healthcare providers in Jazan, and to investigate the association of CPD with dental practitioners' socio-demographic and professional characteristics.

2. MATERIALS AND METHODS

Study Design and Sample

The current study is a cross-sectional survey focusing on continuing professional development among oral health providers (dentists, dental hygienists, and assistants) associated with the Ministry of Health (MOH). These professionals work in primary health care (PHC) facilities and hospitals in the Jazan region of the Kingdom of Saudi Arabia (KSA). Based on the recent statistics released by the Ministry of Health (2019), oral health hygienists and dental assistants are not listed as separate professional groups. As a result, estimating the overall number of oral health practitioners in the Jazan region is challenging. However, the number of dentists was 222 in 2019, distributed among 110 PHCs and 21 hospitals in 17 major cities in Jazan (Ministry of Health, 2019). The authors of the study received permission from the Institutional Review Board (REC41/5/132) at the College of Dentistry of Jazan University, as well as the Human Ethics Board (RA/4/20/6236) at the University of Western Australia. Oral health providers working in private clinics were excluded from the study.

Data Collection Process

Between July and December 2020, a web-based questionnaire was conducted to collect data, and a pre-validated questionnaire was distributed to the target sample by using Qualtric. The online survey was shared by using a convenience sample among oral health providers working in Saudi Arabia through social media (WhatsApp, Facebook, and Twitter) and e-mail. The survey was open for six months and the anonymity of respondents was maintained throughout the process. The social media post specified that the study was about workforce development and that it included only MOH-based dentists, dental assistants, and hygienists. Before starting the study, participants gave consent by clicking on a button after the consent paragraph with information on the voluntary nature of the study, risks and benefits of participating, and procedures for maintaining confidentiality.

Study Instrument

The questionnaire was written in English with slight modifications from a previously validated and published questionnaire (Vance et al., 2016). The questionnaire included questions on every construct that was helpful in meeting the aims and objectives of the current study. The questionnaire collected data on basic demographic information and workplace- related questions. Two dental public health professors at Jazan University reviewed the questions and then provided suggestions to improve the clarity and accuracy of the questions before distribution to the study sample. In addition, a pre-test was conducted via email among 24 dental providers to confirm the questionnaire's reliability and validity (ICC = 0.71).

Study Variables and Measures

The first part of the questionnaire included questions on gender, age, facility type, work location, education level, profession, job title, years of experience, country of the participant's last degree, monthly salary, and contact with patients, as well as questions on additional oral health providers in their clinics. Gender was assessed as male and female; age was grouped into two categories: ≤35 years and >35 years. Facility type was grouped into primary healthcare centers and hospitals. Workplace location was divided

based on the areas of the region: north, south, and central. Participants' education level was grouped into providers who had less than a bachelor's degree, a bachelor's degree, and more than a bachelor's degree. Profession type included dentist, dental hygienist, and dental assistants. Participants' job title was grouped into three work groups: clinician, clinical director, and administrative. The participants were asked about where they received their last degree, which was grouped into Saudi Arabia or abroad. Monthly salary was classified as 0-10,000, 10,000-20,000, and >20,000 Saudi Riyals. Contact with patients was assessed by four statements: direct contact with patients (yes and no option); how many days/week you have contact with patients; number of patients/day; and average time for each patient. The last section of the first part included questions about the number of oral health providers and if they believed that more oral health providers were needed in their clinic.

The second part included questions about dental training among providers, which consisted of 12 items with various response options. The participants were asked about their participation in dental workshops during the past year, with yes and no response options. In addition, they were asked about the number and type of workshops they had attended, with response options for one to more than four workshops and for different types of dental specialties. For the question about workshop location, participants had two options: Jazan region and another region in Saudi Arabia. The participants also were asked about: whether they were up-to-date with the latest information on dentistry; whether they have enough time to attend workshops; continuing education strategies at work; whether there is a Dental Education Center at work; how many full-time-equivalent dental trainees are at their workplace; education and training programs designed to match national health needs; and evaluations of these training activities. All of these were assessed by three options: yes, no, and I don't know. The last question in this part was an open question about whether the participants had any other learning needs.

Data Analysis

To provide a summary of each variable, descriptive statistics (percentages and means) were used. A chi-square test was utilized to establish factors associated with training experience scores. The significance level was set at 0.05, and all the analyses were performed using the IBM SPSS StatisticsV25.0.

3. RESULTS

Results regarding the percentage distribution and the participants' demographic characteristics and work conditions are as shown in Table 1. The total participants were 113 oral health providers, 97 (85.8%) males and 16 (14.2%) females aged ≤35 years (67.3%). Most of the participants were working in the central area (88.5%) of the region in a primary healthcare centre (53.1%). Nearly 84.1% of the participants had a monthly salary between 10,000 -20,000 SR (≈ 3422 - 6843 AU dollars). With regards to participants' education level, 4.4% had higher than a bachelor's degree, 87.6% had a bachelor's degree, and 8% had less than a bachelor's degree (e.g., diplomas and certificates). The majority (92.0%) of the participants were working as clinical dentists (85.0%) and 62.8% had five years or less of clinical experience. The majority of the participants (92.0%) received their degree from institutions within Saudi Arabia and 60.2% had contact with patients five days a week. In addition, 43.4% of the oral health providers served eight patients daily, and 55.8% of participants reported spending about 30 minutes on average for each patient.

Table 1 Descriptive statistics of study participants (n=113).

Variables	**N (%)**
Gender	
Male	97 (85.8)
Female	16 (14.2)
Age	
≤35 years	76(67.3)
>35 years	37(32.7)
Facility Type	
Primary Healthcare Centre (PHC)	60(53.1)
Hospital	53(46.9)
Current work location	
North area	4(3.5)
Central Area	100(88.5)
South Area	9(8.0)

Education level	
< Bachelors	9 (8.0)
= Bachelors	99(87.6)
> Bachelors	5(4.4)
Professional Type	
Dentist	104(92.0)
Dental Hygienists	5(4.4)
Dental Assistants	4(3.4)
Job Title	
Clinician	96(85.0)
Clinical Director	4(3.5)
Administrative	13(11.5)
Years of experience	
≤10 years	71(62.8)
>10 years	42(37.2)
Country of your last degree	
KSA	104(92.0)
Abroad	9(8.0)
Monthly Salary (Saudi Riyals)	
0-10,000	13(11.5)
10,000 -20,000	95 (84.1)
>20,000	5 (4.4)
Direct Contact with Patients through Your Position	
Yes	100(88.5)
No	13(11.5)
Number of days/week have direct contact with patients (n=100)	
Non	13(11.5)
1-2 Day	10 (8.8)
3-4 Days	22(19.5)
5 days	68(60.2)
Average time of any treatment procedure for each patient	
Non	13(11.5)
<30 Minutes	9(8.0)
30 Minutes	63(55.8)
> 30 Minutes	28(24.8)
Number of patients every day	
Non	13(11.5)
< 8 patients	11(9.7)
8 Patients	49(43.4)
> 8 patients	40(35.4)

Table 2 shows that 57.5% reported that they were the sole general dentist working in the healthcare facility (primary healthcare center or hospital), while 19.5% and 23% had one and two more dentists at their facility. 38.9 % had one dental assistant while only 2% had a dental hygienist. 61.9% of the participants reported that they need additional oral providers in their clinics: 38.1% need one more dentist, 30.1% need more one dental assistant, and 33.6% need one more dental hygienist.

Table 2 Additional Oral health providers in MoH Facilities (n=113).

Variables	N (%)
Other oral health providers in Your Clinic	
Yes	70 (61.9)
No	43(38.1)
General Dentist	
No	65(57.5)
One	22 (19.5)
Two	26(23.0)
Three	
Four	
Dental Assistants	
No	54(47.8)
One	44(38.9)
Two	5(4.4)
Three	9(8.0)
Four	
Dental Hygienists	
No	111(98.0)
One	2(2.0)
Two	
Three	
Four	
Need more oral Health Providers	
Yes	70 (61.9)
No	43(38.1)
General Dentist	
No	52(46.0)
One	43(38.1)
Tow	18(15.9)
Three	
Four	
Dental Assistants	
No	51(45.1)
One	34(30.1)
Tow	19(16.8)
Three	5(4.4)
Four	4(3.5)
Dental Hygienists	
No	61(54.0)
One	38(33.6)
Tow	9(8.0)
Three	5(4.4)
Four	0(0.0)

Regarding dental training (Table 3), 74.3% had participated in a workshop during the previous year. Of these participants, 60.2% had participated in one workshop. Almost half (47.8%) of these workshops had taken place in the Jazan region. Endodontic

was the most prominent specialty (31.0%) among the workshops they attended. In total 76.1% of the providers believed that they were keeping up-to-date with their dental skills and knowledge. More than half (53.1%) of the providers responded that they did not have enough time to attend workshops. The study found that 48.7% of the participants did not believe there was a continuous education strategy in their workplace. Similarly, 52.2% reported that there was no dental education center in their workplace. Among workplaces that had training activities, only 31.0% matched national health needs and only 27.4 % of these training activities were evaluated. The results showed that 60.2% of the workplaces did not have full-time-equivalent dental trainees. The study included one open question regarding whether they have identified other development or learning needs (Figure 1), but only a few (15.8%) answered this question. Of those who answered, 4.4% asked for more annual training programs and trainings related to dental implants.

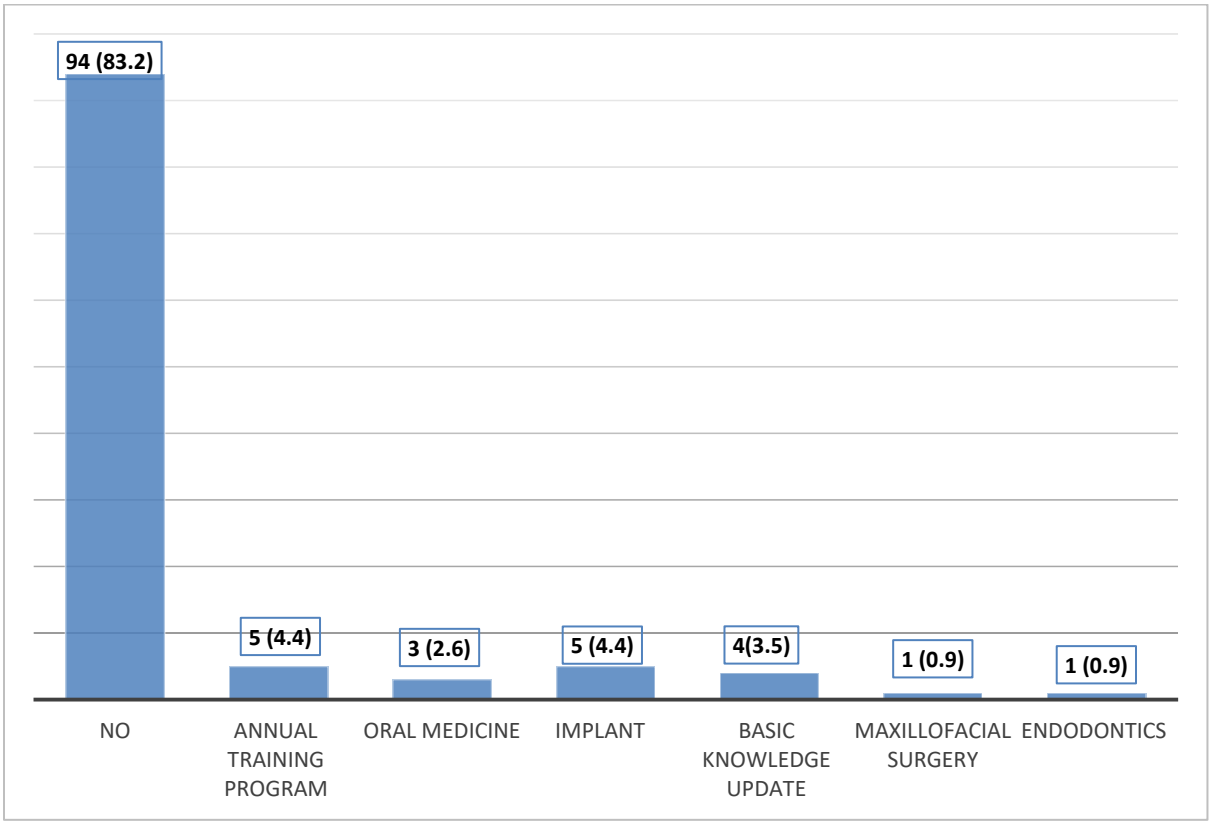

Figure 1 Other development or learning needs

Table 3 Dental Training among Oral Health Providers in MoH Facilities (n=113).

Variables	**N (%)**
Participated in dental workshop in the past year	
Yes	84(74.3)
No	29(25.7)
Number of attended Workshop	
No	29 (25.7)
One	68(60.2)
Tow	12(10.6)
Three	0(0.0)
Four or more	4(3.5)
Workshop Speciality	
No	29(25.7)
Paediatric Dentistry	22(19.5)
Endodontics	35(31.0)

Periodontics	4(3.5)
Prosthodontics	4(3.5)
Maxillofacial Surgery	5(4.4)
Dental Public Health	4(3.5)
Oral Medicine & Pathology	5 (4.4)
Operative Dentistry	5 (4.4)
Workshops Location	
No	29(25.7)
Jazan region	54(47.8)
Another Region Within Saudi Arabia	30(26.5)
Keep up with latest information in Dentistry	
Yes	86(76.1)
No	27(23.9)
Have Enough time to attend workshops	
Yes	53(46.9)
No	60(53.1)
Continues Education Strategy at work	
Yes	31(27.4)
No	55 (48.7)
I don't Know	27(23.9)
Dental Education Centre at Work	
Yes	27(23.9)
No	59(52.2)
I don't Know	27(23.9)
Full-time-equivalent dental trainees at work	
Yes	27(23.9)
No	68(60.2)
I don't Know	18 (15.9)
Education and training programs designed to match national health needs	
Yes	35(31.0)
No	50(44.2)
I don't Know	28(24.8)
Evaluations of training activities	
Yes	31(27.4)
No	41(36.3)
I don't Know	41(36.3)

Chi-square was carried out to validate if there is a significant association between the training experience and gender, age, facility type, work location, education level, professional type, job title, years of experience, country of last degree, monthly salary, and number of treated patients (Table 4). Gender, age, work location, education level, professional type, year of experience, country of last degree, average time of treatment for each patient, and number of patients seen every day were significantly ($p < 0.05$) associated with the providers' participation in dental workshops in the past year. Male dentists who were 35 years or less, worked in the central area in the region, had a bachelor's degree, had 10 years of experience of less, received their last degree from an institution within Saudi Arabia, spent 30 minutes with their patients, treated eight patients or more daily for treatment had higher participation in dental training in the past 12 months. In addition, the study found that gender, age, facility type, work location, professional type, job title, country of last degree, monthly salary, direct contact with patients, number of days of the week spent with patients, average time with patients, and number of daily patients were significantly ($p < 0.05$) associated with the providers' time to attend dental training.

The younger male dentists who generally worked as clinicians in central-area hospitals, who worked five days/ week, had eight patients daily, spent 30 minutes with each patient, received their last degree from an institution within Saudi Arabia, and had a monthly salary between 10,000 to 20, 000 SR showed significantly more time to participate in dental training than the other groups in the study. The study also found that age, facility type, education level, professional type, job title, direct contact with patients, number of weekly days with patient, average time with patients, and number of daily patients were significantly ($p < 0.05$) associated with the providers' exposure to the latest knowledge in dentistry. Older clinician dentists who worked in PHCs, had a bachelor's degree, worked five days/ week, had eight patients for treatment daily, and spent 30 minutes with each patient were more likely to be exposed to the most up-to-date knowledge in dentistry compared to the other groups.

Table 4 Associations of Training Experience with participants' characteristics.

Variables	Participation in dental workshop in the past year			Time to attend dental training			keep up to date with the latest in dentistry		
	N(%)		P- value	N(%)		P- value	N(%)		N(%)
	Yes	No		Yes	No		Yes	No	
Gender			0.006			0.02			0.57
Male	68(60.2)	29(25.7)		41(36.3)	56(49.6)		74(65.5)	23(20.4)	
Female	16(14.2)	0(0.0)		12(10.6)	4(3.5)		12(10.6)	4(3.5)	
Age			0.01			0.02			0.02
≤35 years	62(54.9)	14(12.4)		30(26.5)	46(40.7)		63(55.8)	13(11.5)	
>35 years	22(19.5)	15(13.3)		23(20.4)	14(12.4)		23(20.4)	14(12.4)	
Facility Type			0.52			0.02			0.005
PHC	45(39.8)	15(13.3)		22(19.5)	38(33.6)		52(46.0)	8(7.1)	
Hospital	39(34.5)	14(12.4)		31(27.4)	22(19.5)		34(30.1)	19(16.8)	
Current work location			0.000			0.002			0.18
North area	4(3.5)	0(0.0)		4(3.5)	0(0.0)		4(3.5)	0(0.0)	
Central Area	80(70.8)	20(17.7)		49(43.4)	51(45.1)		77(68.1)	23(20.4)	
South Area	0(0.0)	9(8.0)		0(0.0)	9(8.0)		5(4.4)	4(3.5)	
Education level			0.000			0.10			0.04
< Bachelors	4(3.5)	5(4.4)		4(3.5)	5(4.4)		4(3.5)	5(4.4)	
= Bachelors	80(70.8)	19(16.8)		49(43.4)	50(44.2)		77(68.1)	22(19.5)	
> Bachelors	0(0.0)	5(4.4)		0(0.0)	5(4.4)		5(4.4)	0(0.0)	
Professional Type			0.000			0.01			0.000
Dentist	80(70.8)	24(21.2)		49(43.4)	55(48.7)		82(72.6)	22(19.5)	
Dental Hygienists	0(0.0)	5(4.4)		0(0.0)	5(4.4)		0(0.0)	5(4.4)	
Dental Assistants	4(3.5)	0(0.0)		4(3.5)	0(0.0)		4(3.5)	0(0.0)	
Job Title			0.28			0.000			0.001
Clinician	72(63.7)	24(21.2)		53(46.9)	43(38.1)		77(68.1)	19(16.8)	
Clinical Director	4(3.5)	0(0.0)		0(0.0)	4(3.5)		0(0.0)	4(3.5)	
Administrative	8(7.1)	5(4.4)		0(0.0)	13(11.5)		9(8.0)	4(3.5)	
Years of experience			0.000			0.14			0.06
≤10 years	62(54.9)	9(8.0)		30(26.5)	23(20.4)		58(51.3)	28(24.8)	
>10 years	22(19.5)	20(17.7)		41(36.3)	19(16.8)		13(11.5)	14(12.4)	
Country of your last degree			0.05			0.002			0.14
KSA	80(70.8)	24(21.2)		53(46.9)	51(45.1)		81(71.7)	23(20.4)	
Abroad	4(3.5)	5(4.4)		0(0.0)	9(8.0)		5(4.4)	4(3.5)	

Monthly Salary			0.24			0.000			0.21
0-10,000	8(7.1)	5(4.4)		13(11.5)	0(0.0)		8(7.1)	5(4.4)	
10,000 -20,000	71(62.8)	24(21.2)		35(31.0)	60(53.1)		73(64.6)	22(19.5)	
>20,000	5(4.4)	0(0.0)		5(4.4)	0(0.0)		5(4.4)	0(0.0)	
Direct Contact with Patients through Your Position			0.21			0.000			0.002
Yes	76(67.3)	24(21.2)		53(46.9)	47(41.6)		81(71.7)	19(16.8)	
No	8(7.1)	5(4.4)		0(0.0)	13(11.5)		5(4.4)	8(7.1)	
Number of days/week have direct contact with patients (n=100)			0.18			0.000			0.003
Non	8(7.1)	5(4.4)		0(0.0)	13(11.5)		5(4.4)	8(7.1)	
1-2 Day	10(8.8)	0(0.0)		5(4.4)	5(4.4)		10(8.8)	0(0.0)	
3-4 Days	17(15.0)	5(4.4)		17(15.0)	5(4.4)		17(15.0)	5(4.4)	
5 days	49(43.4)	19(16.8)		31(27.4)	37(32.7)		54(47.8)	14(12.4)	
Average time of any treatment procedure for each patient			0.003			0.000			0.000
Non	8(7.1)	5(4.4)		0(0.0)	13(11.5)		5(4.4)	8(7.1)	
<30 Minutes	5(4.4)	4(3.5)		5(4.4)	4(3.5)		5(4.4)	4(3.5)	
30 Minutes	43(38.1)	20(17.7)		25(22.1)	38(33.6)		48(42.5)	15(13.3)	
> 30 Minutes	28(24.8)	0(0.0)		23(20.4)	5(4.4)		28(24.8)	0(0.0)	
Number of patients every day			0.000			0.001			0.001
Non	8(7.1)	5(4.4)		0(0.0)	13(11.5)		5(4.4)	8(7.1)	
< 8 patients	3(2.7)	8(7.1)		3(2.7)	8(7.1)		6(5.3)	5(4.4)	
8 Patients	34(30.1)	15(13.3)		29(25.7)	20(17.7)		39(34.5)	10(8.8)	
> 8 patients	39(46.4)	1(0.9)		21(18.6)	19(16.8)		36(31.9)	4(3.5)	

Notes: Chi Square test used to test for significance

4. DISCUSSION

Data regarding CPD among MOH oral health providers in Jazan have not previously been published. The current study was undertaken in order to inform the establishment of better CPD and dental workforce development for oral health providers in the region. This study found that more than half of the participants have oral providers' colleagues in their clinics; however, only 2% have dental hygienists who tend to participate more in oral health promotion activities more than other oral health providers do (Shubayr et al., 2019). This low number of providers likely affects oral health status in general by decreasing promotion activities for dental care in the region. That might align with why many participants in the study felt that they needed more oral health providers in their clinics; more importantly, they asked for more dentists, then dental hygienists, and then assistants. Many oral health providers had a preference for training in endodontics. The result from this study is in contrast with findings from other studies in Saudi Arabia by Nazir et al., 2018, and in India by Nayak et al., 2015, which found that many providers prefer courses in aesthetic dentistry.

This study found that oral health providers had a high level of participation, training at a minimum of one workshop in the past year, which aligns with the result that many participants felt that they are up-to-date regarding dental information. The Saudi Commission for Health Specialties requires oral health providers to renew their professional registration every other year, requiring 60 hours (30 hours per year) for dentists and 30 CME hours for other oral health providers (Nazir et al., 2018). This study also found that approximately half of the participants felt they did not have enough time to attend a workshop, a finding that is supported by a

study conducted by Nazir et al., (2018) in which lack of time was one of the main barriers to attending continuing education activities. In addition, many workplaces did not have continuous education strategies, dental education centers, or full-time-equivalent dental trainees.

Next, the current study also found that many variables were significantly associated with participation in dental training in the past year. Younger male dentists who had less experience as oral health providers, worked in the central area in the region, and had a little more time since they treat just eight patients daily with 30 minutes for each patient showed higher participation in dental training in the past 12 months. The possible explanation might be that most of the younger providers felt the need to increase their knowledge and skills by attending more training activities (Nazir et al., 2018). Moreover, the study found that the providers who work in central area hospitals had enough time to participate in dental training than others. This might be because the central area of Jazan has more oral health providers than other areas (Shubayr et al., 2021), which might allow them more free time to attend dental training. The current study found that older dentists who work in PHCs, work five days/week, and treat eight patients requiring 30 minutes per treatment were more likely to attend CPD activities this might be because dental providers in PHCs perform simple dental procedures while those working at hospitals provide more advanced treatments (Shubayr et al., 2021).

This study had a number of advantages. This was a cross-sectional study; thus researchers were able to capture a snapshot of the target population. Cross-sectional studies are a rapid and low-cost way to gather useful information (Setia, 2016). This study also was useful in identifying the weak aspects of oral health providers' participation in professional development activities, which can increase the information on the oral health providers' training and development in Jazan. There are, however, some limitations to discuss. The study sample had a higher percentage of males (85.8%), which could be due to the large number of male dental professionals in Saudi Arabia compared to female dentists (Ministry of Health, 2019). Because of the low response rate, the sample size was smaller than expected based on the number of dentist's workingin the Jazan region (222 in 2019) (Ministry of Health, 2019). Dental providers who were active on social media throughout the data collecting period were more likely to participate in this study, introducing selection bias. Despite the low response rate, it was comparable to the response rate in two previous studies (Althomairy, 2018; Khader, 2020).

Researchers should investigate effective educational strategies and programs for improving participation in dental development and training, as well as the type of training. The current study clearly shows that a relatively large proportion of oral health providers in Jazan region participated in dental training but they requested more training to improve their knowledge. This study can help the KSA's MOH better understand different aspects of the training activities and overcome barriers to attendance. In addition, the decision makers in the MOH can use the results of this study to plan educational programs based on the participants' reported needs. This would help to match the training demand and increase the knowledge and skills among the providers.

5. CONCLUSION

The current study is the first to report on the participation of oral health providers in Jazan region in dental CPD. In particular, endodontics trainings were in high demand by the oral health providers. Lack of time was one of the barriers to attending dental trainings in the current study and previous studies. A significantly higher percentage of younger male dentists' than other male dentists participated in dental trainings in the region. Also, a substantial number of participants in this study felt that they need more oral health providers in their clinics. Hence, one recommendation is to hire more dental providers as well as develop comprehensive educational and training programs that focus on increasing and implementing best practices among oral health provider groups.

Compliance with ethical standards

The data collection commenced after ethics approval was obtained from the Institutional Review Board (REC41/5/132) at the College of Dentistry of Jazan University and the Human Ethics Board (RA/4/20/6236) at the University of Western Australia.

Competing interests

The author declares that there is no conflict of interest.

Informed consent process

Informed consent was obtained from all participants included in the study.

Contribution of the authors

MS, EK, and MT designed and implemented the study, acquisition of data, drafted the article, and revised it for intellectual content. MS completed the data collection and data entry. MS completed the analysis and interpretation of data. MS, EK, and MT wrote and proofread the manuscript. All authors have revised and approved of the final version to be published and are responsible for the content and similarity index of the manuscript.

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Data and materials availability

All data associated with this study are present in the paper.

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