

## OCCUPATIONAL HAZARDS AMONG JORDANIAN DENTISTS

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### ABSTRACT

*The aim of this study was to find out the common occupational hazards among dentists in Jordan.*

*Any occupation has some effects on the occupant, surrounding living objects and the environment but in different degree, ranging from illness to death. For human beings the effects could be physical and psychological. Dentists face many hazards due to introduction of newer technologies and chemicals in dentistry. These harmful effects should be identified to protect the dental staff from these hazards and even their families. This data can be used in insurance and occupational- medical-legal issues.*

*Present study shows the frequency of musculoskeletal disorders and dermatitis among the dentists in Jordan. Working hours and professional level play the major role. Results showed that, male dentists suffered more than females. Those who had served longer suffered more. Musculo-skeletal and dermatitis were particularly noticed.*

**Key Word:** Occupational hazards, musculo-skeletal disorders, dermatitis

### INTRODUCTION

Dentistry was described as stressful and hard profession in the last century.<sup>1</sup> Exposures to chemicals and dental equipment leads to high risk occupational hazards.<sup>2</sup> Some authors described dentistry as the least hazardous of all occupations.<sup>3</sup> Infection hazards from needles, sharp objects, blood and aerosols can transmit a life threatening disease like Human Immunodeficiency Virus (HIV) and Hepatitis B Virus (HBV)<sup>4,5</sup> or bacterial infection like tuberculosis and syphilis.<sup>6</sup> There may be allergic reactions<sup>7</sup>, non-ionized radiation and ionized radiation hazards,<sup>8,9</sup> chemical hazards including mercury,<sup>8</sup> physical hazards like musculoskeletal problems which have direct relation to dental treatment postures,<sup>10,11</sup> visual and hearing impairment and injury from chemicals and dental equipment.<sup>12-21</sup> Dermatitis can be caused due to increased use of gloves and rubber dams.<sup>22-24</sup> There may be psychological hazards due to stress which can effect even their families.<sup>25-27</sup>

New materials and chemicals have been introduced in dentistry. Laser was also introduced in dental treatments. All of these developments increased the hazards in the dental professional. Many studies show factors like gender, age, years of experience and working hours

in relation to occupational hazards.<sup>11-27</sup> Studies have been done on Dental Occupational Hazards in Norway, Australia and Belgium.<sup>28-31</sup> In Jordan there was few studies investigating musculoskeletal problems among Jordanian dentists.

The aim of this study was to find out common dental occupational hazards among dentists in Jordan.

### MATERIALS AND METHODS

Present study was approved by Royal Medical Services Ethical Committee and was conducted in 2018. Participants included 5<sup>th</sup> year dental students from university of Jordan in Amman and licensed dentists from North, Middle and South of Jordan. Two hundred questionnaires were distributed among these. The response rate was 67 %.

A pilot study was done on 20 participants to ensure the clarity, relation and correct sequence of questions. The questionnaire were repeated on the same participants to ensure reliability.

Reliability was calculated by using Cohort Kappa method which showed high reliability with the kappa coefficient of 0.9.

The questionnaire included personal information like name, gender, age, place of living whether married or not. Years of working in the profession & nature of hazard like musculoskeletal disorders, dermatitis stress etc. were particularly recorded.

Data were coded and entered in Statistical package for social sciences software (SPSS version 17.0, Chicago, IL, USA) Frequency was used on Category variable. Mean and standard deviation were used for continues

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variable, and chi square test for assisting the association between variables ( age, gender ,years of experience ,institution ,profession level ,working hours) P value equal or less than  $\leq 0.05$  was considered as statistical significant.

## RESULTS

Response rate was 67%. Among the responder there were 59% males and 41% females.

Musculoskeletal disorders and dermatitis were particularly noticed. For details see table 1 & 2.

## DISCUSSION

This survey was conducted among all stages of dentists starting from final year at university till exceeding 30 years of practicing.

Musculoskeletal Disorders (MSDs) was one of the

most investigated subject in dentistry. In this study, frequency of MSDs was 19.4% which was less than previously reported study in Jordan by Barghout et al which was 86%.<sup>11</sup> MSDs show significant relation with gender, age, profession institution and years of experience (Table 1). Males were more susceptible than females which disagree with previous studies<sup>11,39,40</sup> who have reported the opposite. Present study also showed that risk of MSDs increased with age and 10-19 years of experience which agree with the study done by Barghout et al<sup>11</sup>. In addition the GDP had more incidence of MSDs than specialists and much more than dental students. Most of MSDs were found among dentists who worked in Public Institutes due to increased working hours and crowded dental clinics in Public Hospitals and Primary care centers in Jordan.

Dermatitis was another common hazard noted among the dentists and staff.<sup>41</sup> Latex was considered

TABLE 1: MUSCULOSKELETAL DISORDERS

		Musculoskeletal		Total	
		Yes	No		
Gender	Male	21	58	79	
	P Value=0.01	Female	5	50	55
Age Group		26	108	134	
	21-30	1	60	61	
	P Value=0.00	31-40	13	34	47
	41-50	6	7	13	
	>=50	6	7	13	
Years Of Experience		26	108	134	
	0-9	4	72	76	
	10-19	15	24	39	
	20-29	5	8	13	
	>30	2	4	6	
Institutions		26	108	134	
	Public	22	64	86	
	Private	4	18	22	
	5th Year Dental Students	0	26	26	
Profession level		26	108	134	
	5th Year Dental Students	0	27	27	
	P Value=0.01	General Practitioners	15	52	67
Working Hours/Week		11	29	40	
	<18	0	1	1	
	18-33	4	32	36	
	34-50	19	69	88	
	>50	3	6	9	
Total		26	108	134	

TABLE 2: DERMATITIS

		Dermatitis		Total	
		Yes	No		
Gender	Male	6	73	79	
	P Value=0.14	Female	1	54	55
Age Group		7	127	134	
	21-30	1	60	61	
	P Value=0.21	31-40	3	44	47
	41-50	1	12	13	
	>=50	2	11	13	
Years Of Experience		7	127	134	
	0-9	3	73	76	
	P Value=0.01	10-19	2	37	39
	20-29	0	13	13	
	>30	2	4	6	
Institutions		7	127	134	
	Public	7	79	86	
	P Value=0.13	Private	0	22	22
	5th Year Dental Students	0	26	26	
Profession level		7	127	134	
	5th Year Dental Students	0	27	27	
	General Practitioners	4	63	67	
	Specialists	3	37	40	
Working Hour/Week		7	127	134	
	<18	0	1	1	
	P Value=0.90	18-33	2	34	36
	34-50	5	83	88	
	>50	0	9	9	
Total		7	127	134	

as one of the major factors which caused contact dermatitis.<sup>42-44</sup> Other factors were increased use of rubber dam.<sup>22</sup> The frequency of latex allergic reactions has rapidly increased.<sup>22,24,45</sup> Different studies done in Sweden have reported 15% of hand eczema.<sup>46</sup> In Thailand a study reported 22% of contact dermatitis<sup>47</sup>, and around one third of dentists reported hand dermatitis in Newzeland<sup>48</sup>, Australia<sup>49</sup> and UK<sup>41</sup>. In this study it showed increased risk of dermatitis in first years of practice but then it reduced followed by increase in longer years (P value=0.01) (Table 2). which is logical because most dermatitis is diagnosed in early years of practice. All dentists who were affected with dermatitis were found in public institutes (5.2%).

## CONCLUSION

Present study show the frequency of musculo-skeletal disorder and dermatitis among the dentists

in Jordan, and their relations to factors (institutions, working hours and professional level). Male dentists suffered more than females. Those who had served longer also suffered more.

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**CONTRIBUTIONS BY AUTHORS**  
All authors contributed substantially