

# Backache among Different Specialties in Dentistry (An Over World Survey)

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## Abstract

**Aim of the Study:** The purpose of this study is to determine the prevalence of backache among dentists in different countries, as well as to discover the possible correlation of this prevalence with age, gender, specialty, working posture and how to reduce this prevalence.

**Materials and Method:** The study was conducted among 600 dentists (359 male and 241 female). Dentists were evaluated with the special self-administered questionnaire (SAQ), for geographic distribution, prevalence of ache and its correlation to different variables in this study.

**Results:** The outcome of statistics showed a 44.7% incidence of backache among dentists, with the ratio of 51% of Males, and 35.3% of females, with the most incidence of presence of pain over the age of 40s.

**Conclusion:** Dentists worldwide demonstrate a moderate prevalence of low back pain, with the most incidence of lumber back ache by 50.4%, with correlation to specialty and working position and the geographic distribution.

**Keywords:** *Dentist, Backache; Health care; prevalence; genders.*

## Introduction

Dentists are at high risk for back ache, working position, recurrent work, and long standing, can result in harm to muscles, joints, bones, ligaments, tendons, nerves, and blood vessels, which can then lead to pain<sup>(1)</sup>. Back pain is the most frequent complaint, and almost all dentists worldwide have experienced this during their work<sup>(2)</sup>.

As dentists use prolonged sitting and standing positions during their job, apply awkward posture and repetitive movements, many loads are exerted to the spine, it is believed that the higher muscular demand may lead to fatigue and consequently increase the risk of back pain<sup>(3,4)</sup>.

In a systematic review, it was reported that the prevalence of general back pain ranges between 64% and 93%, and the most prevalent regions for pain in dentists have been shown to be the back (36.3-60.1%)<sup>(5)</sup>. However, despite technical advances, dentists worldwide and particularly in the Middle East are still at higher risk of developing back pain<sup>(6,7)</sup>.

Different preventive measures can be taken to minimize such pain, such as stretching before work, taking a break in the middle of the work time, performing procedures with good sitting posture, and reducing repetitive motion. However, many other factors may still be associated with this defect, the literature suggests other associated factors are age of the dentist, and type of cases handled<sup>(8,9)</sup>.

**Aim of the study:** The purpose of this study is to investigate the risk factors, prevalence, and association of physical load and general health status with the onset of backache. Additionally, we aim to determine the dentist's characteristics, such as age, sex, specialty, country, and working position.

## Materials and Method

**Study design and data collection:** The sample of this study consisted of (600) dentists randomly taken from (23) countries over the world. The study was conducted electronically, and the questionnaires were filled and returned to us directly online by Google forms and data were collected directly by sheet forms.

The questionnaire (figure 1) consists of many steps: the first step is the personal information (Age, Country, Sex, Specialty including: Surgery, Prosthodontics, Periodontics, Conservative, Endodontics, Orthodontics, Oral medicine, Pedodontics, Prevention, General Practitioner). The second step consists of questions related to back pain: if the dentist complains of back pain, site of pain, if the dentist attends for treatment, if gets better after treatment. The final step is the question about position during working this includes: Standing, Sitting, and combination.

- 1- Age
- 2- Country
- 3- Sex
  - Male
  - Female
- 4- Specialty
  - Surgery
  - Prosthodontics
  - Periodontics
  - Conservative
  - Endodontics
  - Orthodontics
  - Oral medicine
  - Pedodontics
  - Prevention
  - General practitioner
- 5- Do you complain of back pain?
  - Yes
  - No
- 6- Site of pain
  - Cervical
  - Thoracic
  - Lumbar
  - Sacral
- 7- Do you attend for treatment?
  - Yes
  - No
- 8- Do you get better after treatment?
  - Yes
  - No
- 9- Your position during working
  - Standing
  - Sitting
  - combination

**Figure 1. The questions that were applied in the self-administrative questionnaire. (SAQ)**

**Data Analysis:** The data were analyzed using IBM SPSS V24, and Microsoft Excel 2019. Two main statistical method are used in the questionnaire data analysis: descriptive statistics, which summarize data from a sample using frequencies and percentages and cross tabulation. Besides, Inferential statistics represented by Chi square test of association were used. To examine the degree of significance and probability values less than 0.05 were considered significantly

different, (\*, \*\*, \*\*\* represent p-value less than 0.05, 0.01, and 0.001 respectively).

**Results**

Data analysis of this study showed that there’s average age groups as shown in table 1; in which the percentage of age group 20-29 was 11.3 and 30-39 was 41.7 and 40-49 was 29.3 and 50-59 was 16.3, and 60 years and more was 1.3 and in the same table there’s the gender distribution of: male 59.8%, and female 40.2%, and the distribution of specialties.

The frequency of the presence of pain where shown in table 2, and also the sites of pain, showing percentage of those who have pain to attend treatment, percentage of type of treatment (i.e. medicine, exercises, or combination), and further represents percentage of getting better after treatment, and finally prescribes percentage of working positions in which 10.5% standing, 46.3% sitting, and 43.2% combination type of work. Finally, the frequencies of samples between the 23 countries were shown in table 5.

**Table 1. Distribution of gender, age groups, and specialties**

Variables	N	(%) (N = 600)	P-value*
<b>Gender</b>			
Male	359	59.8	0.001**
Female	241	40.2	
<b>Age group</b>			
20-29	68	11.3	0.001**
30-39	250	41.7	
40-49	176	29.3	
50-59	98	16.3	
60≤	8	1.3	
<b>Speciality</b>			
Oral Medicine	28	4.7	0.001**
Conservative	75	12.5	
Prosthetics	52	8.7	
General Practitioner	196	32.7	
Surgery	55	9.2	
Orthodontics	32	5.3	
Prevention	38	6.3	
Pedodontic	30	5.0	
Endodontics	60	10.0	
Periodontics	34	5.7	

\*Chi square test were used, \*\*\*, very high significant (P < 0.001)

**Table 2. Percentage of presence of pain, site of pain, if attending treatment, type of treatment, if treatment is effective, position during work.**

Variables	Frequency	Percent	P-value <sup>‡</sup>
<b>Do you complain of backache</b>			
No	332	55.3	0.009
Yes	268	44.7	
<b>Site of pain</b>			
Lambar	135	22.5	0.001***
Cervical	62	10.3	
Sacral	71	11.8	
<b>Do you attend for treatment</b>			
No	106	39.6	0.001***
Yes	162	60.4	
<b>Type of treatment</b>			
Exercises	62	28.7	0.214 <sup>N.S</sup>
Medicine	83	38.4	
Combination	71	32.9	
<b>Do you get better after treatment</b>			
No	40	18.5	0.001***
Yes	176	81.5	
<b>Your position during work</b>			
Standing	63	10.5	0.001***
Sitting	278	46.3	
Combination	259	43.2	

<sup>‡</sup>Chi square test were used, N.S, \*\*, \*\*\*: Not significant, highly significant (P<0.01), Very high significant (P < 0.001)

Then after application of statistics, we concluded that P-value of gender to complain of back pain was 0.001, that means there's a very high significant difference, as the male have high incidence than female.

In table 3 we observe that there's a very high relation between age groups and pain, as the pain incidence is more in age of 40s and more, also we conclude that there's a relation between gender and site of pain. And about the relation of age groups to the site of back pain, we found a very high relation especially for cervical and sacral region. In Table 3. also shows relation of specialties to the site of back pain, there's a very high significant relation, for example: in conservative the more incidence in lumber region, while in orthodontics in cervical. It was found that there's a very high significant relation of age groups to the working positions, as there's

more standing position with old ages and more sitting in younger ages. Also, there's a very high significant relation between specialties to the working positions, as shown in Table. 4, for example, in surgery there's is a greater number of standing and combination position, while in endodontics there's is obvious number of sitting positions. We observe a very significant relation of gender to the working positions, for example the number of standing is higher in males than females.

Concerning the relation of countries to the presence of back pain, Table 5 shows that there's a very high significant relation, for example in Belgium, England, Italy, and Turkey the responses of (nopain) are higher, while in Iraq, India, and Egypt the responses of (yes there's pain) are higher.

**Table 3. Relation of cite of pain to gender, age group, specialty**

Variables	Site of pain						P-value
	Lumbar		Cervical		Sacral		
	N	%	N	%	N	%	
<b>Gender</b>							
Male	90	49.20	37	20.2	56	30.6	0.041*
Female	45	52.9	25	29.4	15	17.6	
<b>Age group</b>							
20-29	12	57.1	7	33.3	2	9.5	0.001***
30-39	33	55	9	15	18	30	
40-49	53	54.1	20	20.4	25	25.5	
50-59	36	44.1	19	23.5	26	32.1	
60≤	1	12.5	7	32.1	0	0	
<b>Speciality</b>							
Oral medicine	4	40	2	20	4	40	0.001***
Conservative	16	61.5	0	0	10	38.5	
Prosthetics	9	40.9	6	27.3	7	31.8	
General practitioner	45	57	21	26.6	13	16.5	
Surgery	21	63.6	2	6.1	10	30.3	
Orthodontics	4	16	12	48	9	36	
Prevention	11	84.6	0	0	2	15.4	
Pedodontic	6	28.6	7	33.3	8	38.1	
Endodontics	12	48	5	20	8	32	
Periodontics	7	50	7	50	0	0	

‡Chi square test were used, N.S, \*, \*\*, \*\*\*: Not significant, significant (P<0.05), highly significant (P<0.01), very high significant (P < 0.001)

**Table 4. Relation of position during work to gender, age group, specialty**

Variables	Position during work						P-value
	Standing		Sitting		Combination		
	N	%	N	%	N	%	
<b>Gender</b>							
Male	51	81	150	54	158	61	0.001*
Female	12	19	128	46	101	39	
<b>Age group</b>							
20-29	0	0	45	66.2	23	33.8	0.001***
30-39	12	4.8	152	60.8	86	34.4	
40-49	14	8	49	27.8	113	64.2	
50-59	37	37.8	27	27.6	34	34.7	
60≤	0	0	5	62.5	3	37.5	

Variables	Position during work						P-value
	Standing		Sitting		Combination		
	N	%	N	%	N	%	
<b>Speciality</b>							
Oral medicine	4	14.3	14	50	10	35.7	0.001***
Conservative	0	0	42	56	33	44	
Prosthetics	5	9.6	17	32.7	30	57.7	
General practitioner	15	7.7	103	52.6	78	39.8	
Surgery	22	40	1	1.8	32	58.2	
Orthodontics	0	0	16	50	16	50	
Prevention	6	15.8	8	21.1	24	63.2	
Pedodontic	0	0	19	63.3	11	36.7	
Endodontics	4	6.7	44	73.3	12	20	

¥Chi square test were used, N.S, \*, \*\*, \*\*\*: Not significant, significant (P<0.05), highly significant (P<0.01), very high significant (P < 0.001)

**Table 5. Relation of countries to the presence of back pain**

Your country * do you complain of backache									
Country		Do you complain of backache		Total	Country		Do you complain of backache		Total
		No	Yes				No	Yes	
Belgium	Count	8	4	12	Pakistan	Count	30	15	45
	% within your country	66.7%	33.3%	100.0%		% within your country	66.7%	33.3%	100.0%
Canada	Count	8	17	25	Palestine	Count	9	11	20
	% within your country	32.0%	68.0%	100.0%		% within your country	45.0%	55.0%	100.0%
Egypt	Count	14	27	41	Saudi Arabia	Count	12	3	15
	% within your country	34.1%	65.9%	100.0%		% within your country	80.0%	20.0%	100.0%
England	Count	10	3	13	Syria	Count	36	23	59
	% within your country	76.9%	23.1%	100.0%		% within your country	61.0%	39.0%	100.0%
France	Count	5	16	21	Turkey	Count	35	11	46
	% within your country	23.8%	76.2%	100.0%		% within your country	76.1%	23.9%	100.0%
India	Count	21	30	51	UAE	Count	29	6	35
	% within your country	41.2%	58.8%	100.0%		% within your country	82.9%	17.1%	100.0%
Iran	Count	7	8	15	USA	Count	3	10	13
	% within your country	46.7%	53.3%	100.0%		% within your country	23.1%	76.9%	100.0%
Iraq	Count	25	31	56	Yemen	Count	7	8	15
	% within your country	44.6%	55.4%	100.0%		% within your country	46.7%	53.3%	100.0%

Your country * do you complain of backache									
Country		Do you complain of backache		Total	Country		Do you complain of backache		Total
		No	Yes				No	Yes	
Jordan	Count	7	1	8	Italy	Count	14	2	16
	% within your country	87.5%	12.5%	100.0%		% within your country	87.5%	12.5%	100.0%
Lebanon	Count	9	18	27	Morocco	Count	6	4	10
	% within your country	33.3%	66.7%	100.0%		% within your country	60.0%	40.0%	100.0%
Lybia	Count	6	11	17	Sudan	Count	10	5	15
	% within your country	35.3%	64.7%	100.0%		% within your country	66.7%	33.3%	100.0%
Malaysia	Count	18	7	25		Count	329	271	600
	% within your country	72.0%	28.0%	100.0%		% within your country	54.8%	45.2%	100.0%

## Discussion

The review of the backache of dental operator, indicates that strategies to prevent the multifactorial problem, These strategies address deficiencies in operator position, posture, flexibility, strength and ergonomics. Education and additional research are needed to promote an understanding of the complexity of the problem and to address the problem's multifactorial nature<sup>(10)</sup>.

In the present study, the main variable we concentrate on was the geographic distribution, in addition to other variables which includes: (age, gender, specialty, position during work), our results agreed with the results of Külcü D et Al<sup>(11)</sup>, were they concluded that the Working duration and posture have important influences on backache in dentistry, and also agreed with Gaowzeh RA h et al<sup>(12)</sup>

Our study disagreed with Jabbar T.<sup>(13)</sup>, who concluded that: Younger dentists had more symptoms than the older dentists. The female dentists had a significantly higher frequency of pain; this disagreement may be due to limitations of his study by number and method of sample selection.

Concerning the relation of back pain with the different specialties in dental field, our study agrees with the Al-Rawi N. et al<sup>(14)</sup>, who concluded that the incidence of back pain is related to specialty.

The most important factor in this study is the

good number of the sample (and there demographic distribution), while other studies were done locally in some countries Shaik A.<sup>(15)</sup>, that's why it's not available to compare with other study from this aspect.

When we do an overall review of the studies in this field Vijay S. & Ide M.<sup>(16)</sup>, we can easily observe that: within the introduction of time, there's a general decrease in number of dentists complaining of back pain Regina P. Ford<sup>(17)</sup>, (that's mean comparing to nowadays results of studies), but still we need continuous and meaningful efforts for education of dental students and newly graduated dentist, to ensure good results for our profession in the future.

## Conclusion

As a result of this study, and within its limitation, we can conclude that there's a significant relation between back pain of dentists (and its location), with age sex, specialty, and demographic distribution, and it is important for all dentists to follow the correct principles of proper sitting and working to minimize the risk of loss of occupation due to back pain.

**Ethical Clearance:** The Research Ethical Committee at scientific research by ethical approval of both MOH and MOHSER in Iraq.

**Conflict of Interest:** Non

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