



## **THE EFFECT OF DENTAL INSURANCE ON THE PERCEIVED UTILIZATION OF ORAL HEALTH CARE DELIVERY SYSTEM IN RIYADH, SAUDI ARABIA**

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### **ABSTRACT**

Several factors such as age, income, race, sex, education and dental insurance have been shown to be the major determinants of dental service use. The aim of this study is to assess the influence of dental insurance on the perceived utilization of dental services in Riyadh, Saudi Arabia.

The sample was drawn from employees working in various sectors for a cross-sectional survey using questionnaires. Data show that majority of respondents were males, Saudi nationals and in the age group 26-35 years. There was no statistically significant association between dental insurance and the utilization of dental services among the sample surveyed.

A longitudinal study is essential to determine whether dental insurance has a positive influence as reported by previous studies conducted elsewhere or no relevant influence as reported by this survey, on perceived utilization of oral health care delivery system in Saudi Arabia.

**KEYWORDS:** Dental insurance, Utilization, Oral health care delivery system, Cross-sectional study, Questionnaires

### **INTRODUCTION**

The overall well being of individuals may be affected by poor oral health. An important role of the dental care system is to improve oral health in the population. Several factors such as age, income, race, sex, education and dental insurance have been shown to be the major determinants of dental service use. Other factors like nationality, employment status, marital status and family composition have

also been associated with dental service use rates <sup>(1)</sup>. A common reason noted for averting dental visits is the high cost of dental services <sup>(2)</sup>. The dental insurance typically consist of payment plans that help individuals by paying for a portion of the cost of their dental care whereas, medical insurance is based on principles of risk <sup>(3)</sup>.

The association between use of dental services and insurance coverage has been well demonstrated

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by a number of studies in Canada and the US <sup>(4)</sup>. The objective and subjective requirements of dental care, patient and dentist characteristics, and dental insurance and its delivery system were all shown to influence the dental service utilization <sup>(5)</sup>. Compared to non-insured subjects, those with dental insurance were found to have regular dental visits and checkups which suggest that dental insurance may be positively related to a higher demand for dental care <sup>(4, 6)</sup>. Having medical insurance with or without dental coverage has also been shown to be associated with a higher use of dental services <sup>(6)</sup>. But some cross-sectional studies have reported that dental insurance neither had a positive influence on dental treatment needs nor use of dental services <sup>(7)</sup>.

The influence of dental insurance on oral health may have key health policy consequences <sup>(8)</sup>. Dental insurance was introduced relatively recently (in the year 2006) in Saudi Arabia. In this context, the aim of this particular cross-sectional survey was to assess the influence of dental insurance on the utilization of oral health care delivery system among employees working in various sectors in Riyadh, Kingdom of Saudi Arabia.

## MATERIAL AND METHOD

The sample was drawn from employees working in various sectors like banking, tourism, telecommunication and government owned companies/institutions in the city of Riyadh for a cross-sectional survey using questionnaires, after obtaining the approval from the College of Dentistry Research Centre (CDRC) Ethical Sub-committee. Consent to participate in this survey was sought from the employees.

The questionnaires included information on sociodemographic and personal data. Based on literature review, the following independent variables were selected: age, gender, educational qualification, nationality, marital status, number

of family members, income and dental insurance coverage. Questions pertaining to the influence of dental insurance on the utilization of dental services included a) (Q1) have the frequency of your dental visit changed after taking dental insurance? b) (Q2) have the incidence of oral diseases decreased? c) (Q3) have you become more aware of your oral health and hygiene?

The target population was 800 employees and among those, 675 responded (response rate of 84.37%). The practicality criteria and the need to meet sampling objectives of this study determined the selection of the companies. An employee having dental insurance or medical insurance which covers dental treatment as well was considered as the inclusion criteria for the survey.

The statistical analyzes of the data included classification of data and calculation of frequencies and was carried out using SPSS software. Chi-square test was done to test the association between various socio-demographic characteristics and Q1, Q2, Q3. The level of significance was set at  $P$  value  $< 0.05$ .

## RESULTS

In this survey of 675 employees who responded to the questionnaire enquiry, majority were males ( $n=549, 81.7\%$ ), Saudi nationals ( $n=633, 94.3\%$ ) and in the age group 26-35 years ( $n=421, 66.0\%$ ). Table 1 gives the relative distribution of the survey sample according to their socioeconomic characteristics.

52.2% of respondents with monthly income of 3000 Saudi Riyals or less reported that the incidence of oral diseases have decreased after taking dental insurance. 53.8% of respondents aged 25 or less and 51.2% of males reported that they have become more aware of their oral health and hygiene after taking dental insurance. Except for respondents with monthly income of 12,000 Saudi Riyals or more, majority of subjects in the other income



TABLE (1) Socio-demographic characteristics of the respondents

		Number	Valid percentage
<b>Age</b>	25 years or less	112	17.6
	26-35	421	66.0
	36-45	73	11.4
	46-55	25	3.9
	56 years or more	7	1.1
	Total	638	100.0
	Missing	37	
<b>Gender</b>	Male	549	81.7
	Female	123	18.3
	Total	672	100.0
	Missing	3	
<b>Nationality</b>	Saudi	633	94.3
	Non-Saudi	38	5.7
	Total	671	100.0
	Missing	4	
<b>Marital status</b>	Single	264	39.3
	Married	397	59.2
	Others	10	1.4
	Total	671	100.0
	Missing	4	
<b>Level of education</b>	Post graduation	80	12.0
	Under graduation	422	63.1
	High school	155	23.2
	Below High school	12	1.8
	Total	669	100.0
	Missing	6	
<b>Number of family members</b>	1-2	103	17.0
	3-4	206	33.9
	5-6	124	20.4
	7-8	101	16.6
	9 or more	73	12.0
	Total	607	100.0
	Missing	68	

groups reported that their awareness regarding oral health and hygiene increased after taking insurance.

Majority of respondents, irrespective of their nationality and level of education reported that their dental visit pattern, incidence of oral diseases or oral

health awareness has not changed after taking dental insurance. By and large, there was no statistically significant association between dental insurance and the perceived utilization of dental services as shown in tables 2, 3 and 4.

TABLE (2) Frequency and percentage of participants responding to Q1 according to socio demographic characteristics. (Chi-square test, P value < 0.05).

Q1. Have the frequency of your dental visit changed after taking dental insurance?						
		Yes(n)	Yes (%)	No(n)	No (%)	*P value
Age	≤25	33	31.4	72	68.6	.136
	26-35	111	26.5	308	73.5	
	36-45	27	37.0	46	63.3	
	46-55	11	44.0	14	56.0	
	≥56	1	16.7	5	83.3	
Gender	Male	163	30.2	377	69.8	.122
	Female	28	23.1	93	76.9	
Nationality	Saudi	182	29.2	441	70.8	.776
	Non-Saudi	10	27.0	27	73.0	
Marital status	Single	64	25.0	192	75.0	.08
	Married	123	31.2	271	68.8	
	Others	5	50.0	5	50.0	
Level of education	Post graduation	27	34.2	52	65.8	.241
	Under graduation	113	27.3	301	72.7	
	High school	45	29.4	108	70.6	
	Below High school	6	50.0	6	50.0	
Monthly income(SR)	≤3000	7	28.0	18	72.0	.347
	4000-6000	31	27.4	82	72.6	
	7000-10,000	80	26.4	223	73.6	
	≥12,000	69	33.7	136	66.3	



TABLE (3) Frequency and percentage of participants responding to Q2 according to socio-demographic characteristics. (Chi-square test, P value &lt; 0.05).

<b>Q2. Have the incidence of oral diseases decreased after taking dental insurance?</b>						
		<b>Yes(n)</b>	<b>Yes (%)</b>	<b>No(n)</b>	<b>No (%)</b>	<b>*P value</b>
<b>Age</b>	≤25	41	39.0	64	61.0	.436
	26-35	155	37.7	256	62.3	
	36-45	31	44.9	38	55.1	
	46-55	12	50.0	12	50.0	
	≥56	1	16.7	5	83.3	
<b>Gender</b>	Male	211	40.1	315	59.9	.205
	Female	41	33.9	80	66.1	
<b>Nationality</b>	Saudi	237	38.9	372	61.9	.896
	Non-Saudi	14	37.8	23	62.2	
<b>Marital status</b>	Single	87	34.3	167	65.7	.086
	Married	161	42.0	222	58.0	
	Others	5	55.6	4	44.4	
<b>Level of education</b>	Post graduation	32	42.1	44	57.9	.009
	Under graduation	147	36.4	257	63.6	
	High school	62	40.8	90	59.2	
	Below High school	10	83.3	2	16.7	
<b>Monthly income(SR)</b>	≤3000	12	52.2	11	47.8	.537
	4000-6000	41	36.6	71	63.4	
	7000-10,000	119	39.7	181	60.3	
	≥12,000	74	37.6	123	62.4	

TABLE (4) Frequency and percentage of participants responding to Q3 according to socio-demographic characteristics. (Chi-square test, P value&lt;0.05)

Q3. Have you become more aware of your oral health and hygiene after taking dental insurance?						
		Yes(n)	Yes (%)	No(n)	No (%)	*P value
Age	≤25	57	53.8	49	46.2	.507
	26-35	201	48.0	218	52.0	
	36-45	42	57.5	31	42.5	
	46-55	11	44.0	14	56.0	
	≥56	3	50.0	3	50.0	
Gender	Male	277	51.2	264	48.8	.072
	Female	55	45.8	65	54.2	
Nationality	Saudi	315	50.6	308	49.4	.821
	Non-Saudi	18	48.6	19	51.4	
Marital status	Single	122	47.5	135	52.5	.431
	Married	207	52.7	186	47.3	
	Others	5	50.0	5	50.0	
Level of education	Post graduation	35	44.3	44	55.7	.209
	Under graduation	206	49.8	208	50.2	
	High school	81	52.9	72	47.1	
	Below High school	9	75.0	3	25.0	
Monthly income(SR)	≤3000	13	52.0	12	48.0	.452
	4000-6000	62	54.4	52	45.6	
	7000-10,000	156	51.7	146	48.3	
	≥12,000	94	45.9	111	54.1	



## DISCUSSION

Analyses show that none of the socio-demographic characteristics like age, gender, nationality, marital status, level of education and monthly income have a statistically significant influence on dental visit pattern, incidence of oral diseases or oral health awareness. This is contrary to the results reported from studies conducted in the Netherlands <sup>(5)</sup>, Iran <sup>(2)</sup> and Canada, US and Australia <sup>(4)</sup>. It may be hypothesized that the lack of a statistically significant positive influence may be due to the fact that health care is free for the Saudi citizens working in government owned companies/institutions (expatriates in this survey being minimal to substantiate otherwise;  $n=38$ , 5.7%) or due to individual specific health pursuing behavior or due to relatively small sample size. The results are comparable to that of a study conducted in Canada<sup>(7)</sup> but the sample selected in that particular study was elderly people aged 50 years or older, which may have had an influence on the results.

Even though these data and analyses are useful, they do have limitations. The limitations include a) cross-sectional surveys cannot establish cause and effect relationships even though they can demonstrate an association between dental insurance and use of dental services <sup>(7)</sup>, b) a large sample is required if the data are to be nationally representative and to analyze complex relationships, c) collection of data by observation or by dental record abstraction is comparatively more accurate than self-reporting of data<sup>(6)</sup>, d) the questionnaire did not contain a lead sentence that introduced the oral health item and our survey did not include variables measuring dental needs. The number and reasons for dental visits were not recorded as well, e) the inability to generalize the findings to the Saudi population. This study group was a convenient sample and was not randomized. A comparison of data drawn from this study with recent studies was therefore not always feasible because of differences in methodology.

In conclusion, a longitudinal study is essential to isolate specific overlooked health behavior factors and to determine whether dental insurance has a positive influence as reported by previous studies<sup>(4-6)</sup> conducted elsewhere or no influence as reported by this survey on perceived utilization of oral health care system in Saudi Arabia. Further studies are also needed to prove whether this is a real tendency.

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