

Prosthetic dental treatment needs in Northern Saudi Arabia

Nadya A. Al-Ghannam, BDS, MDS, Abdulla R. Al-Shammery, BDS, MS, Amjad H. Wyne, BDS, BSc, Nazeer B. Khan, MSc, PhD.

ABSTRACT

Objective: The objective of this study was to determine the prosthetic treatment needs of an adult population in Al-Ahsa Area, Kingdom of Saudi Arabia.

Methods: A sample of adults attending the King Fahad Hospital Dental Center, Al-Ahsa, Kingdom of Saudi Arabia were examined for prosthetic treatment needs utilizing the World Health Organization criteria during 1999. Statistical analysis system was utilized to generate frequencies, means and standard deviations, and various statistical tests were carried out.

Results: A total of 435 adults, 192 (44.1%) males and 243 (55.9%) females with a mean age of 47.7 (standard deviation 15.4) years were examined for prosthetic treatment needs. About two-thirds (64.8%) of the sample were in need of an upper denture. A significantly higher number of males (68.8%) needed an upper denture as compared to the females (61.7%). About three-quarters (73.8%) of the sample were in need of a lower denture. The need for lower denture was similar among the males (75.0%) and females (72.8%). About one-sixth (17.2%) of the sample was in need of an upper bridge. A higher number of females (18.9%) needed an upper bridge as

compared to the males (15.1%). About one-quarter (22.5%) of the sample was in need of a lower bridge. A higher number of females (25.5%) needed lower bridge as compared to the males (18.8%). The need for upper denture was similar in both urban (64.7%) and rural (65.1%) dwellers. The need for lower denture was also similar in both urban (73.2%) and rural (75.2%) dwellers. A higher number of rural dwellers needed an upper (20.2%) and lower (26.4%) bridge as compared to the upper (16%) and lower (20.9%) bridge in urban dwellers.

Conclusions: The results indicate that more than one-quarter of the sample needs a denture. A significantly higher number of males needed dentures than females. More females were in need of a bridge as compared with males. A significantly higher percentage of urban population needed full dentures as compared with rural population.

Keywords: Prosthetic, treatment needs, dentures, adult population.

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The prosthetic treatment need studies are regularly carried out in various parts of the world to assess the available services, for future planning and improvement of the prosthetic treatment facilities.¹⁻³ Al-Shammery et al⁴ have provided detailed base-line data with regards to dental prosthetic status and

treatment needs in the adult population of Riyadh region, Kingdom of Saudi Arabia (KSA). There have been no reports on the prosthetic treatment needs in the Al-Ahsa area, KSA. Therefore, the objective of this study was to determine the prosthetic treatment needs of an adult population in Al-Ahsa area, KSA.

From the Department of Prosthetic Dentistry, (Al-Ghannam), Al-Ahsa Dental Center, King Fahad Hospital, Al-Ahsa, Department of Restorative Dental Sciences, (Al-Shammery), Department of Preventive Dental Sciences, (Wyne, Khan), King Saud University, College of Dentistry, Riyadh, Kingdom of Saudi Arabia.

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Address correspondence and reprint request to: Dr. Nadya Al-Ghannam, Department of Prosthetic Dentistry, King Saud University College of Dentistry, PO Box 60169, Riyadh 11545, Kingdom of Saudi Arabia. Tel. +966 (1) 4677217. Fax. +966 (1) 4626201.

Methods. A sample of adults attending the King Fahad Hospital Dental Center, Al-Ahsa, KSA were examined in 1999 for prosthetic treatment needs utilizing the World Health Organization (WHO) criteria⁵ described below briefly.

Denture status. 1. No denture, dentition is complete or examinee claims not to possess and never to have possessed a denture. 2. Partial denture wearing. 3. Full denture wearing.

Bridge status. 1. No bridge. 2. One bridge. 3. Two or more bridges.

Need for dentures. 1. No denture needed; either as of a completely or satisfactorily intact dentition or the denture possessed is being worn and satisfactory. 2. Need for full denture; either edentulous or full clearance required or the denture possessed is unsatisfactory. 3. Need for partial denture; either dentition incomplete to require a denture or the partial denture possessed is unsatisfactory.

Need for bridge 1. No bridge needed. 2. One new bridge needed. 3. Two or more bridges needed. The findings were recorded on a chart developed for the study. The data were entered into microcomputer using FOXPRO 2.5 database software. The data were then transferred into King Saud University, Riyadh, KSA, Mainframe Computer System (IBM 3078). Statistical Analysis System (SAS) was utilized to generate frequencies, means and standard deviations, and various statistical tests were carried out.

Results. A total of 435 adults were examined for prosthetic treatment needs with a mean age of 47.7 years standard deviation (SD) 15.4 years. The sample consisted of 192 (44.1%) males and 243 (55.9%) females.

Male versus female. Denture status (Table 1). One-tenth (9.9%) of the sample had an upper denture. A significantly higher number of males (12.5%) had an upper denture as compared to the females (7.8%). Out of the 12.5% males who had upper dentures, one quarter had partial dentures and 3-quarters had full

dentures. Out of the 7.8% females who had upper dentures, 2-thirds had partial dentures and one 3rd had full dentures. About one-tenth (9.7%) of the sample had a lower denture. A significantly higher number of males had a lower denture as compared to the females (7.8%). Out of the 12 males who had lower dentures, few had partial dentures and most had full dentures. Out of the 7.8% females who had lower dentures higher number had partial dentures as compared with the full denture.

Denture needs (Table 2). About 2-thirds (64.8%) of the sample was in need of an upper denture. A significantly higher number of males (68.7%) needed an upper denture as compared to the females (61.7%). Among the subjects who needed upper denture, a majority in both males and females needed partial denture. About 3 quarters (73.8%) of the sample was in need of a lower denture. The need for lower denture was similar among the males (75%) and females (72.8%). Among the subjects who needed lower denture, majority in both males and females needed partial dentures, but females need significantly more partial denture than males (p<0.001).

Bridge status (Table 3). Very few (5.5%) in the sample had an upper bridge. A higher number of females (6.6%) had an upper bridge as compared to the males (4.2%). About 3-quarters of the females with upper bridge had only one upper bridge, while 2 3rds of the males with upper bridge had 2 or more upper bridges. Only 3% of the sample had a lower bridge. More than twice the number of females (4.1%) had an upper bridge as compared to the males. All the males with lower bridge had 2 or more than 2 bridges, while a great majority of the females had only one lower bridge.

Bridge needs (Table 4). About one-fifth (17.2%) of the sample was in need of an upper bridge. A higher number of females (18.9%) needed an upper bridge as compared to the males (15.1%). Among both the male and female subjects who needed the

Table 1 - Denture status of adults categorized by gender in Al-Ahsa region, Kingdom of Saudi Arabia.

Gender	Upper				Lower						
	No denture	Partial denture	Full denture	Total	No denture	Partial denture	Full denture	Total			
n male (%)	168 (87.5)	6 (3.1)	18 (9.4)	192	169 (88)	4 (2.1)	19 (9.9)	192			
n female (%)	224 (92.2)	12 (4.9)	7 (2.9)	243	224 (92.2)	11 (4.5)	8 (3.3)	243			
Total (%)	392 (90.1)	18 (4.1)	25 (5.8)	435	393 (90.3)	15 (3.5)	27 (6.2)	435			
(X ² = 11.164; p=0.025)				n - number				(X ² = 10.956; p=0.027)			

Table 2 - Need of dentures for adults categorized by gender in Al-Ahsa region, Kingdom of Saudi Arabia.

Gender	Upper				Lower						
	No denture needed	Need for full denture	Need for parital denture	Total	No denture	Need for full denture	Need for partial denture	Total			
n male (%)	60 (31.3)	60 (31.2)	72 (37.5)	192	48 (25)	66 (34.4)	78 (40.6)	192			
n female (%)	93 (38.3)	44 (18.1)	106 (43.6)	243	66 (27.2)	45 (18.5)	132 (54.3)	243			
Total (%)	153 (35.2)	104 (23.9)	178 (40.9)	435	114 (26.2)	111 (25.5)	210 (48.3)	435			
(X ² = 14.820; p=0.002)				n - number				(X ² = 17.694; p=<0.001)			

Table 3 - Bridge status of adults categorized by gender in Al-Ahsa region.

Gender	Upper				Lower						
	No bridge	One bridge	Two or more bridges	Total	No bridge	One bridge	Two or more bridges	Total			
n male (%)	184 (95.8)	3 (1.6)	5 (2.6)	192	189 (98.4)	0 (0)	3 (1.6)	192			
n female (%)	227 (93.4)	12 (4.9)	4 (1.7)	243	233 (95.9)	7 (2.9)	3 (1.2)	243			
Total (%)	411 (94.5)	15 (3.4)	9 (2.1)	435	422 (97)	7 (1.6)	6 (1.4)	435			
(X ² = 4.087; p=0.130)				n - number				(X ² = 5.687; p=0.058)			

Table 4 - Need of bridge for adults categorized by gender in Al-Ahsa region, Kingdom of Saudi Arabia.

Gender	Upper				Lower						
	No bridge needed	One bridge needed	Two or more bridges needed	Total	No bridge needed	One bridge needed	Two or more bridges needed	Total			
n male (%)	163 (84.9)	20 (10.4)	9 (4.7)	192	156 (81.2)	17 (8.9)	19 (9.9)	192			
n female (%)	197 (81.1)	34 (14)	12 (4.9)	243	181 (74.5)	37 (15.2)	25 (10.3)	243			
Total (%)	360 (82.8)	54 (12.4)	21 (4.8)	435	337 (77.5)	54 (12.4)	44 (10.1)	435			
(X ² = 5.40; p=0.249)				n - number				(X ² = 7.068; p=0.132)			

upper bridge, a majority needed one upper bridge. One quarter (22.5%) of the sample was in need of a lower bridge. A higher number of females (25.5%) needed lower bridge as compared to the males (18.8%). Among the males almost similar number needed one and 2 or more lower bridges, while in

females a majority needed one lower bridge as compared with 2 or more lower bridges.

Urban versus rural. Denture status (Table 5). About one 10th of the sample had an upper denture in both urban and rural areas. Out of the 9.8% urban subjects who had upper dentures, 2 3rds (6.9%)

Table 5 - Denture status of adults categorized by area in Al-Ahsa region, Kingdom of Saudi Arabia.

Area	Upper				Lower			
	No denture	Partial denture	Full denture	Total	No denture	Partial denture	Full denture	Total
n urban (%)	276 (90.2)	9 (2.9)	21 (6.9)	306	273 (89.2)	13 (4.3)	20 (6.5)	306
n rural (%)	116 (89.9)	9 (7)	4 (3.1)	129	120 (93)	2 (1.6)	7 (5.4)	129
Total (%)	392 (90.1)	18 (4.2)	25 (5.7)	435	393 (90.4)	15 (3.4)	27 (6.2)	435
(X ² = 5.087; p=0.055)				(X ² = 2.241; p=0.326)				
n -number								

Table 6 - Need of dentures for adults categorized by area in Al-Ahsa region, Kingdom of Saudi Arabia.

Area	Upper				Lower			
	No denture needed	Need for full denture	Need for partial denture	Total	No denture	Need for full denture	Need for partial denture	Total
n urban (%)	108 (35.3)	90 (29.4)	108 (35.3)	306	82 (26.8)	92 (30.1)	132 (43.1)	306
n rural (%)	45 (34.9)	14 (10.8)	70 (54.3)	129	32 (24.8)	19 (14.7)	78 (60.5)	129
Total (%)	153 (35.2)	104 (23.9)	178 (40.9)	435	114 (26.2)	111 (25.5)	210 (48.3)	435
(X ² = 21.058; p<0.0001)				(X ² = 14.146; p<0.001)				
n -number								

had a full upper denture, while among the 10.1% rural population a great majority had partial dentures. A slightly higher percentage of urban population (10.8%) had lower denture as compared with the rural population. Out of the 10.8% urban subjects who had lower dentures, 2 3rds had a full lower denture, while among the 7% rural subjects also a great majority had full lower dentures.

Denture needs (Table 6). The need for upper denture was similar in both urban (64.7%) and rural (65.3%) dwellers. Among the urban dwellers, which needed an upper denture, slightly higher number needed partial dentures than full dentures. In rural dwellers with a need for upper denture (65.3%), more than 3 quarters needed a partial denture. The need for lower denture was also similar in both urban (73.2%) and rural (75.2%) dwellers. Among the urban dwellers, which needed a lower denture (73.3%), majority needed partial dentures than full dentures. In rural dwellers with a need for lower denture (75.2%), a great majority needed a partial denture.

Bridge status (Table 7). A similar percentage of subjects had an upper bridge in both urban (5.6%) and rural (5.4%) dwellers. A majority of subjects

with upper bridge in both urban (3.3%) and rural dwellers had one upper bridge. A slightly higher percentage of urban dwellers than rural dwellers had a lower bridge. Among the urban dwellers with a lower bridge, a majority had 2 or more lower bridges. On the other hand all the rural dwellers with lower bridge had one lower bridge.

Bridge needs (Table 8). A higher number of rural dwellers (20.2%) needed an upper bridge as compared to the urban dwellers (16%). Among the 16.0% urban dwellers, which needed upper bridge, 3 quarters needed one upper bridge and one quarter needed 2 or more upper bridges. Among the 20.2% rural dwellers, which needed upper bridge, 2 3rds needed one upper bridge and one 3rd needed 2 or more upper bridges. A higher number of rural dwellers (26.4%) needed lower bridge as compared to the urban dwellers (20.9%). Among the urban dwellers, which needed lower bridge, half needed one lower bridge and the other half needed 2 or more lower bridges. Among the rural dwellers, which needed lower bridge, 2 3rds needed one lower bridge and one 3rd needed 2 or more lower bridges.

Table 7 - Bridge status of adults categorized by area in Al-Ahsa region, Kingdom of Saudi Arabia.

Area	Upper				Lower			
	No bridge	One bridge	Two or more bridges	Total	No bridge	One bridge	Two or more bridges	Total
n urban (%)	289 (94.4)	10 (3.3)	7 (2.3)	306	296 (96.7)	4 (1.3)	6 (2)	306
n rural (%)	122 (94.6)	5 (3.9)	2 (1.5)	129	126 (97.7)	3 (2.3)	0 (0)	129
Total (%)	411 (94.5)	15 (3.4)	9 (2.1)	435	422 (97)	7 (1.6)	6 (1.4)	435
$(X^2 = 0.337; p=0.845)$				$(X^2 = 3.125; p=0.210)$				
n -number								

Table 8 - Need of bridge for adults categorized by area in Al-Ahsa region, Kingdom of Saudi Arabia.

Area	Upper				Lower			
	No bridge needed	One bridge needed	Two or more bridges needed	Total	No bridge needed	One bridge needed	Two or more bridges needed	Total
n urban (%)	257 (84)	37 (12.1)	12 (3.9)	306	242 (79.1)	32 (10.5)	32 (10.4)	306
n rural (%)	103 (79.8)	17 (13.2)	9 (7)	129	95 (73.7)	22 (17.1)	12 (9.3)	129
Total (%)	360 (82.8)	54 (12.4)	21 (4.8)	435	337 (77.5)	54 (12.4)	44 (10.1)	435
$(X^2 = 2.029; p=0.363)$				$(X^2 = 3.648; p=0.161)$				
n -number								

Discussion. The present study was the first of its kind in Al-Ahsa Region, KSA. The results of the study will assist the concerned authorities in the planning of dental prosthetic services in the study population. The results will also serve as base-line data for future comparisons. The results indicate that one 10th of the sample is wearing a denture, while actually more than one quarter of the sample needs a denture. An identical situation exists for fixed prostheses also in the sample. Similar findings were reported in Riyadh, KSA by Al-Shammery et al.⁴ This indicates a gap between the treatment received and the treatment required. Therefore, there is a need for patient education in this area and improvement in the prosthetic treatment facilities for the study population. It is even more important, keeping in view that a higher percentage of adults needed dentures and bridges as compared with that reported in the Riyadh adult population by Al-Shammery et al.⁴

A significantly higher number of males needed dentures more so than females. Females have been popularly known to take care of their teeth, as they

are more conscious regarding esthetics as compared with males. On the other hand more females had, or were in need of a bridge as compared with males. This further indicates a low level of tooth loss in females as compared with males. However, Nevalainen et al⁶ in their study of elderly adults in Finland reported a higher percentage of edentulous women than men, indicating that the gender differences could vary from population to population.

A significantly higher percentage of urban population needed full dentures as compared to the rural population. A higher prevalence of edentulism in urban dwellers was also reported by Osterberg et al⁷ in the adult Swedish population. This could be attributed to the higher consumption of cariogenic food by the urban population resulting in greater loss of teeth due to caries.

The results of the present study suggest that the need for prosthetic replacement of lost teeth, will continue to be an important dental treatment service in Al-Ahsa Region, KSA.

In conclusion, one-10th of the sample is wearing dentures, while actually more than one quarter of the

sample needs dentures. A significantly higher number of males need dentures than females. On the other hand, more females need a bridge as compared with males. A significantly higher percentage of urban dwellers need full dentures as compared to rural dwellers. Lastly, the need for prosthetic replacement of lost teeth will continue to be an important dental treatment service in Al-Ahsa Region, KSA.

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