CAHIERS MAGELLANES-NS
Volume 06 Issue 2
2024

ISSN:1624-1940
http://magellanes.com/

EXPLORE THE PSYCHOSOCIAL EFFECTS OF DENTAL DEFECTS AND TOOTH LOSS AMONG SAUDI ARABIANS, AND THEIR KNOWLEDGE ABOUT DIFFERENT TREATMENT OPTIONS

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Abstract:

Background: Tooth loss is a common dental condition with great potential to negatively affect an individual's QoL and psychosocial wellbeing. In Arab world, dental caries, periodontal disease and trauma are the top causes of tooth loss that leads to the humiliation and social disengagement. Although we have done a lot with our dental treatments like implants, the awareness level is still low for the public. The purpose of this study was to assess knowledge and attitude towards use of treatment options for tooth defected and loss by Saudi population, as well as to evaluate psychosocial effects related to those disorders.
Methods: A descriptive cross-sectional study was carried out in Saudi Arabia between July - November 2024 using online questionnaires. Residents aged 18 and older but excluding those with formal dental education were the participants. We collected demographic data as well as measured participants' awareness of treatment options and psychosocial effects of tooth loss.
Results: This study included 903 participants, mean age of the participants 30.2 years and 63.7% females are total of 903 participants. The results showed that 75.9 percent of respondents have tooth decay and 49.9 percent feared more ill dental conditions. Notably, difficulties eating or a loss in self-esteem due to their dental problem was reported by 42.3% and 28.3% respectively. Although there was high recognition of basic treatments, concerning 75.2% of participants were ignorant of advanced treatment options. The 65.5% preferred dental implants with missing teeth. Significant relationships between knowledge levels and age (p=0.001) and occupational status (p=0.0001) were found as a result of the statistical analysis.

ISSN:1624-1940
http://magellanes.com/

Conclusion: The study identifies a significant knowledge gap regarding dental treatment choices and the psychological consequences of tooth loss in the Saudi population. These findings highlight the compelling need for tailored educational initiatives to raise awareness and encourage the adoption of healthy dental practices while also improving the quality of life and self-esteem of people with dental abnormalities.

Keywords: Knowledge, Attitude, tooth defects, tooth loss, Saudi Arabia.

Introduction:

A dental and oral health issue that frequently affects the community is tooth loss, which can be disruptive to speech, eating, looking good, and even to communicate with others [1]. Dental caries, periodontal disease, tooth loss, oral cancer, and dental trauma are the main oral health issues in the Arab world. These conditions have a substantial impact on the population's overall health and quality of life (QoL) [2]. Social involvement has been shown to be significantly correlated with tooth loss, which lowers one's self-esteem and negatively impacts one's performance in society [3].

Tooth loss is a common problem across the world, and it is generally caused by dental caries, periodontal disorders, or trauma. The World Health Organization has listed these disorders as the leading causes of tooth loss. The loss of natural teeth is not only a physical annoyance, but also a major psychological load. Individuals who have lost teeth frequently describe feelings of humiliation, low self-confidence, and social disengagement. These psychological effects might cause a decline in social connections and contribute to feelings of loneliness and despair [4]. A study examining the impact of tooth loss on oral-health-related quality of life (OHRQoL) among dental patients in Saudi Arabia found that as the number of missing teeth grew, so did the negative impact on OHRQoL. Participants who had lost more than ten teeth scored considerably higher on the Oral Health Impact Profile (OHIP-14), suggesting more oral impairment as well as higher degrees of physical pain, psychological discomfort, and social incapacity. These findings highlight the need of treating both the physical and psychological components of tooth loss in dental treatment [5]. Despite the availability of modern dental procedures such as dental implants, many people are unaware of these possibilities. Dental implants, regarded as one of the greatest treatment options for replacing lost teeth, provide various advantages, including enhanced aesthetics, usefulness, and overall quality of life. However, studies have revealed that many patients lack knowledge regarding dental implants and other prosthetic choices. For example, research done in Kinshasa, Democratic Republic of the Congo, discovered that just 14.4% of participants were aware of dental implants as an alternative therapy for missing teeth. The primary hurdles highlighted were the high cost and lack of information supplied by dental experts [4]. Increasing patient knowledge and education about dental treatment alternatives is critical. Dental practitioners play an important role in distributing information and advising patients on appropriate treatment options. Enhanced communication and education initiatives can help bridge the information gap, allowing patients to make educated decisions regarding their dental health [6].

Teeth appearance can affect every human being life in a way or another, in 2021 a study conducted about the impact of tooth loss on quality of life in adults and how people who have teeth loss in their anterior teeth will face many difficulties with eating, talking and maintaining oral aesthetics [7]. Another research conducted in 2021 that Dentists around the world usually focus on treating patients' teeth and focus on the problem it self neglecting the patient psychosocial status regarding their well-being, emotions and social factors. Understanding the patient situation is a crucial part to determine the suitable treatment. Teeth appearances are important in ever human life because it affects their quality of life, charm and face beauty. A questionnaire was made under the name of Psychosocial Impact of

ISSN:1624-1940
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Dental Aesthetics Questionnaire to assess the impact of teeth display on people [8].
This research is crucial due to the limited studies available in Saudi Arabia regarding the same topic. This gap highlights the need to understand how dental issues impact the psychosocial well-being of Saudis and their knowledge of available treatments.

Objective:
The main objective of this study was to measure the knowledge and attitude of treatment options of tooth defects and loss in Saudi population and to assess the psychosocial effects after tooth defect and loss also in same population**.**

Materials and Methods:
Study design: and Study setting:
This a descriptive cross-sectional questionnaire-based study was conducted in Kingdom of Saudi Arabia from July to November 2024. The study evaluated the awareness of treatment options and the psychosocial effects of tooth defects and loss in the Saudi population.

Inclusion and Exclusion Criteria:
Participants eligible for this study must be residents of the Kingdom of Saudi Arabia (KSA), aged 18 years or older, and have not received any formal dental education. Exclusion criteria include individuals who do not reside in KSA, those under the age of 18, and individuals who have undergone formal dental education, such as dental school or professional dental training. These criteria aim to ensure that the study focuses on a specific demographic group within KSA without prior dental education, thus maintaining consistency and relevance in the research findings.

Sample size:
Sample size calculations were made to determine the bare minimum of responses required to create a representative sample for the entire population. A Rao soft sample size calculator was used to calculate the sample size. The determined sample size was 384, with an indicator percentage of 0.50, a margin of error of 5%, and a confidence interval (CI) of 95%.

Pilot test :
The questionnaire was distributed on 20 individuals and asked to fill it. This was done to test the simplicity of the questionnaire and the feasibility of the study. Data of the pilot study was excluded from the final data of the study.
Method for data collection and instrument (Data collection Technique and Tools):
Data was collected through an online survey designed with several parts to gather comprehensive information from participants. The survey was with a brief description of the research objectives and a consent form, ensuring that respondents are informed about the study's purpose and their rights as participants. Following this, demographic data was collected, including age, gender, education level, and other relevant characteristics. Subsequent sections were focus on assessing participants' attitudes and knowledge regarding the psychosocial effects of dental defects and tooth loss, as well as various treatment options available.

Scoring system:
There are 28 statements for personal questions, examine participants' attitudes and levels of knowledge.5 statements for demographics, 10 questions for Knowledge, and 13 questions for Attitude.

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One point is given for correct answers, and zero points are given for incorrect answers or "I don't know". For scoring, we utilized Likert scales (Agreement ,Importance, and five-Point). The maximum score was 15 and divided as follows: The original Bloom's cut-off points, 80%-100%, 60-79 %, and 59% The participants was divided into three groups based on their scores .Knowledge questions score varied from 0 to 15 points and was classified into three levels as follows: those with a score of 18 or below (≤ 8) were classified as having a low level of knowledge, those with scores between 10 and 11 as having a moderate level of knowledge, and those with scores 12 or above (≥ 12) as a high level of knowledge .

Analyzes and entry method:
Data was inserted into the computer using the "Microsoft Office Excel Software" program for Windows (2016). Subsequently, the information was transferred for statistical analysis using the Statistical Package for the Social Sciences (SPSS) software, version 20 (IBM SPSS Statistics for Windows, Version 20.0, Armonk, NY: IBM Corp.).

Results:

Table (1) displays various demographic parameters of the participants with a total number of (903). The mean age of participants was 30.2 years, with a notably higher percentage (20.3%) falling within the 36 to 45 age range, indicating a predominance of middle-aged individuals in this study. The gender distribution reveals a significant majority of females (63.7%), suggesting an important demographic composition that could affect study outcomes and interpretations. Marital status data shows a nearly even split between single (48.7%) and married individuals (47.7%), which may influence social dynamics and support structures among participants. The educational attainment is striking, with 58% holding a bachelor's degree, underscoring a relatively educated population. Income distribution reflects socioeconomic diversity, with a substantial proportion (33.6%) earning less than 1000 Saudi riyals, thus emphasizing the need for context-specific policy considerations in this demographic segment.

Table (1): Sociodemographic characteristics of participants (n=903)

Parameter		***No.***	***Percent (%)***
Age (Mean:30.2, STD:11.4)	Less than 23	159	17.6
	23 to 25	166	18.4
	26 to 30	132	14.6
	31 to 35	111	12.3
	36 to 45	183	20.3
	more than 45	152	16.8
Gender	Female	575	63.7
	Male	328	36.3
Marital status	Single	440	48.7
	Married	431	47.7
	Divorced	19	2.1
	Widowed	13	1.4
Region	Northern region	21	2.3
	Southern region	316	35.0
	Central region	155	17.2
	Eastern region	37	4.1

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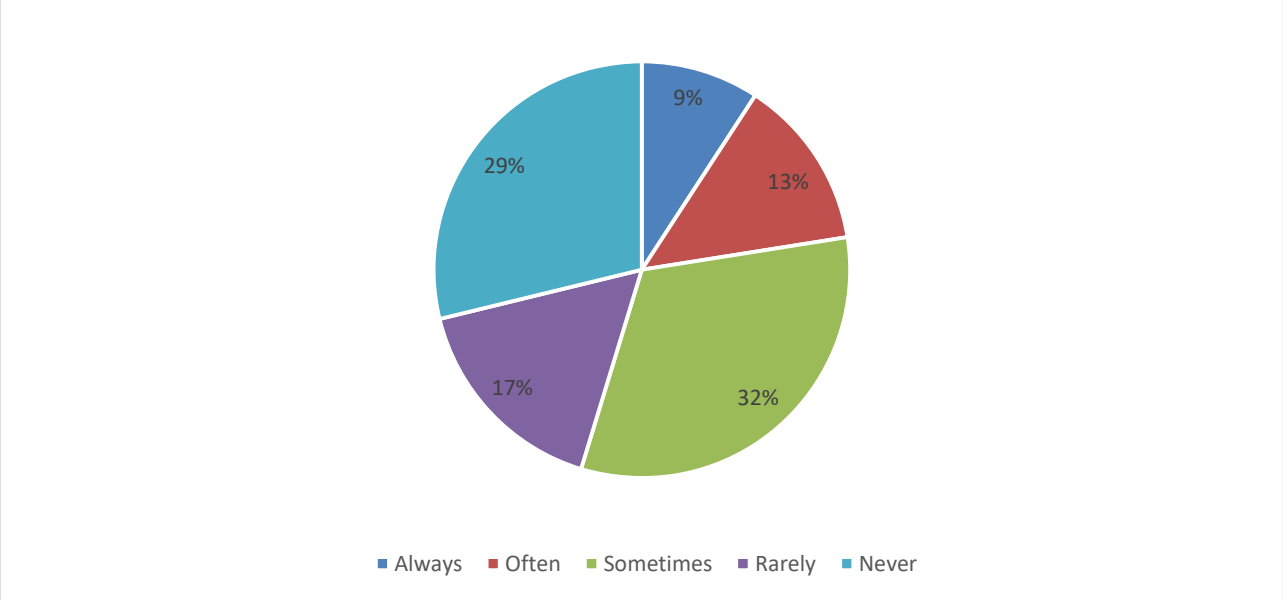
	Western region	374	41.4
Educational level	Primary school	9	1.0
	Middle school	28	3.1
	High school	194	21.5
	Diploma	91	10.1
	Bachelor's degree	524	58.0
	Postgraduate degree	48	5.3
	Uneducated	9	1.0
Occupational status	Student	228	25.2
	Employed	312	34.6
	Freelancer	32	3.5
	Unemployed	278	30.8
	Retired	53	5.9
Income:	Less than 1000 Saudi riyal	303	33.6
	1000 – 5000	240	26.6
	5000 – 10000	170	18.8
	10000 – 15000	109	12.1
	More than 15000 Saudi riyal	81	9.0

As shown in figure 1, The data presented concerning the self-consciousness related to dental aesthetics among Saudi Arabians reveals significant insights into the psychosocial effects of dental defects and tooth loss. Notably, a substantial proportion of respondents, specifically 291 individuals (approximately 34.8%), reported feeling self-conscious about their teeth sometimes. Conversely, 120 participants (14.6%) indicated that they often grapple with such feelings, while 83 participants (10.1%) feel this way always. On the other hand, a combined total of 149 respondents (18.2%) expressed that they rarely feel self-conscious, and the largest segment, comprising 260 participants (31.7%), reported never feeling self-conscious about their dental appearance.

Figure (1): Illustrates self-conscious among participants about their teeth appearance.



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The data presented in Table 2 provides valuable insights into the attitudes and experiences of Saudi Arabians regarding dental defects and tooth loss. Notably, a substantial 75.9% of respondents reported experiencing tooth decay, highlighting a significant public health concern. The consequences of these dental issues are multifaceted, as evidenced by the 49.9% of participants expressing fear of worsening conditions and 42.3% reporting difficulty eating. Social perceptions also appear to play a role in shaping self-esteem, with 57.5% indicating that their dental condition has no effect on their self-esteem, while a combined 28.3% perceive a slight to significant decrease. Additionally, the overwhelming preference for professional dental treatment (78.7%) underscores the importance of accessible healthcare services. The data further reveals that a majority (71.3%) consider seeking treatment for dental issues to be extremely important, reflecting a proactive approach to personal health and well-being within the community. This information emphasizes the imperative for comprehensive dental health initiatives and public awareness campaigns to address these pervasive issues.

Table (2): Parameters related to attitude regarding dental defects and tooth loss among Saudi Arabians (n=903).

Parameter		***No.***	***Percent (%)***
1.Have you experienced any of the following dental problems? *	Tooth discoloration	391	43.3
	Misshaped teeth	209	23.1
	Tooth decay	686	75.9
	Tooth loss	318	35.2
	None	68	7.5
2.How many teeth are affected:	1-3	362	40.1
	4-6	271	30.0
	More than 6	203	22.5
	None	67	7.4
3.What problems did she encounter because of this problem? *	Difficulty eating	382	42.3
	Difficulty speaking	47	5.2
	Low self-confidence	198	21.9
	Bullying	48	5.3
	Afraid of worsening the problem	451	49.9
	None	216	23.9
4.How often do you feel self-conscious about the appearance of your teeth?	Always	83	9.2
	Often	120	13.3
	Sometimes	291	32.2
	Rarely	149	16.5
	Never	260	28.8
5. How does your current tooth appearance affect your self-confidence?	Significantly increase my confidence	230	25.5
	Slightly increase my confidence	100	11.1
	No effect on my confidence	357	39.5
	Slightly decrease my confidence	175	19.4
	Significantly decrease my confidence	41	4.5
6.Have you ever avoided social activities due to concerns about your teeth?	Yes, frequently	52	5.8
	Yes, occasionally	121	13.4
	Rarely	142	15.7

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	No, never	588	65.1
7.How do you believe missing teeth impact your professional relationships?	Positively	62	6.9
	No impact	330	36.5
	Negatively	275	30.5
	Unsure	236	26.1
8. Do you face a disparagement by society because of any tooth problems?	Strongly agree	33	3.7
	Agree	85	9.4
	Neutral	230	25.5
	Disagree	262	29.0
	Strongly disagree	293	32.4
9.How do your teeth defects or missing teeth affect your self-esteem?	Significantly boost my self-esteem	66	7.3
	Slightly boost my self-esteem	54	6.0
	No effect on my self-esteem	519	57.5
	Slightly lower my self-esteem	202	22.4
	Significantly lower my self-esteem	62	6.9
10.Have you noticed changes in how others perceive you due to your dental issues?	Yes, very often	51	5.6
	Yes, occasionally	184	20.4
	Rarely	209	23.1
	No, never	459	50.8
11.How have your teeth defects or missing teeth affected your eating habits?	Improved my eating habits	130	14.4
	No change	490	54.3
	Slightly worsened my eating habits	220	24.4
	Significantly worsened my eating habits	63	7.0
12.What type of support would you find most helpful in addressing dental issues?	Professional dental treatment	711	78.7
	Emotional support from friends/family	45	5.0
	Educational resources	28	3.1
	Online support groups	11	1.2
	None of the above	108	12.0
13.How important is it to you to seek treatment for teeth defects or missing teeth?	Extremely important	644	71.3
	Very important	152	16.8
	Moderately important	68	7.5
	Slightly important	18	2.0
	Not important	21	2.3

****Results may overlap***

As shown in figure (2), The data presented illustrates a noteworthy awareness of various treatment options. Remarkably, a substantial majority of the respondents, constituting 65.5%, identified dental implants as the most durable and long-lasting solution for missing teeth. This preference underscores a growing recognition of the benefits associated with dental implants, not only in terms of functionality but also in enhancing psychosocial well-being and self-esteem. In contrast, removable dentures were chosen by 44 respondents, accounting for 4.4%, while dental bridges garnered 7.1% of the preferences, indicating a relatively lower inclination towards these options. Furthermore, 2.8% opted for orthodontic treatment to close gaps, while a notable 10.5% admitted a lack of knowledge concerning available treatments.

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Figure (2): Illustrates what treatment participants think is the most durable and long-lasting solution for missing teeth.

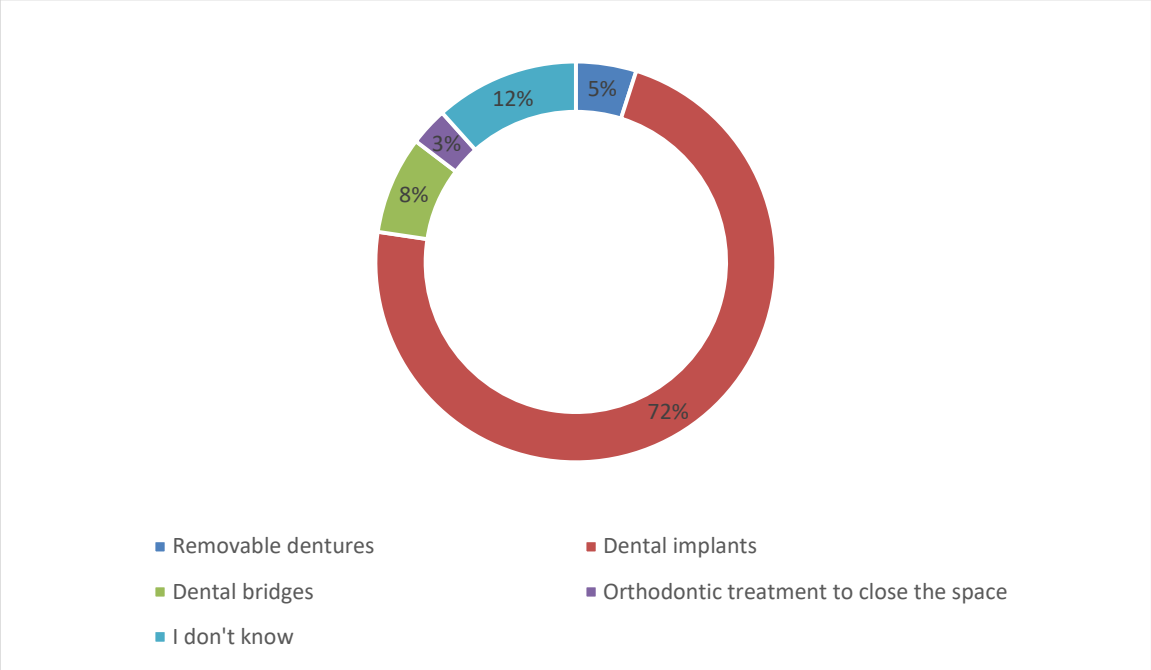

Table (3) reveals a comprehensive overview of the knowledge and awareness of dental treatments among a sample of 903 Saudi Arabian participants. A notable finding is the high recognition of teeth cleaning and polishing (72.7%) as a treatment for teeth discoloration, indicating a general understanding of basic oral hygiene practices. However, there is a marked gap in knowledge regarding advanced treatment options, as evidenced by the 12.5% of participants unaware of any treatments for teeth discoloration. For misaligned teeth, a significant percentage (27.6%) reported uncertainty about available treatments, highlighting a potential area for public health education. The data also reveals a strong awareness of restorative treatments for tooth decay, with restorations being recognized by 76.9% of respondents. Interestingly, dental implants emerged as the preferred solution for missing teeth (65.5%), while misconceptions about dental crowns and veneers reveal a need for further clarification of their purposes among the population.

Table (3): Participants' knowledge regarding dental defects and tooth loss among Saudi Arabians (n=903).

Parameter		***No.***	***Percent (%)***
1.What treatments do you know for teeth discoloration? *	Teeth cleaning and polishing	657	72.7
	Teeth whitening	436	48.3
	restorations	188	20.8
	Veneers	147	16.2
	Crowns	127	14.0
	I don't know	113	12.5
2.What treatments do you know for	Teeth cleaning and polishing	174	19.2

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misaligned teeth? *	Teeth whitening	115	12.7
	Restorations	216	23.9
	Veneers	206	22.8
	Crowns	359	39.7
	I don't know	250	27.6
3.What treatments do you know for simple and advanced tooth decay? *	Restorations	695	76.9
	Protective fluoride layer	215	23.8
	Partial coverage tooth crowns	188	20.8
	Full coverage crown crowns	150	16.6
	Veneers	46	5.1
	Extraction	156	17.3
	I don't know	113	12.5
4.What treatments do you know for missing teeth? *	No need for replacment	53	5.8
	Removable partial denture	216	23.9
	Fixed partial denture (bridges)	389	43.1
	Orthodontic treatment to close the space	194	21.5
	Implants	592	65.5
	I don't know	97	10.7
5.What is a dental implant primarily used for?	Filling cavities	50	5.5
	Straightening teeth	31	3.4
	Replacing a missing tooth	672	74.4
	Whitening teeth	10	1.1
	I don't know	140	15.5
6.What is the primary purpose of a dental veneer?	Replace a missing tooth	28	3.1
	Cover and improve the appearance of the front surface of a tooth	503	55.7
	Fill a cavity	44	4.9
	Realign the jaw	9	1.0
	I don't know	319	35.3
7.Which treatment is often considered the most durable and long-lasting solution for missing teeth?	Removable dentures	44	4.9
	Dental implants	655	72.5
	Dental bridges	71	7.9
	Orthodontic treatment to close the space	28	3.1
	I don't know	105	11.6
8.What is the main function of a dental crown?	Replace a missing tooth	86	9.5
	Protect a damaged tooth	306	33.9
	Realign crooked teeth	118	13.1
	Whiten teeth	29	3.2
	I don't know	364	40.3
9.Which treatment involves creating a removable set of artificial teeth?	Implants	87	9.6
	Bridges	98	10.9

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	Dentures	394	43.6
	Veneers	53	5.9
	I don't know	271	30.0
10.Which of the following treatments can be used to replace multiple missing teeth?	Single dental implant	241	26.7
	Partial dentures	422	46.7
	Tooth whitening	26	2.9
	Composite fillings	23	2.5
	I don't know	191	21.2

Results may overlap

The data presented in Table 4 reveals a concerning trend regarding the knowledge of Saudi Arabians about the treatment of dental defects and tooth loss. With a staggering 75.2% of respondents scoring a low level of knowledge, it is evident that there is a significant gap in understanding and awareness concerning dental health issues. In contrast, only a mere 12.6% of the population demonstrated a high level of knowledge, alongside 12.2% with a moderate level.

Table (4): knowledge about treatment of dental defects and tooth loss among Saudi Arabians score results.

	Frequency	**Percent**
High level of knowledge	114	12.6
Moderate level	110	12.2
Low level of knowledge	679	75.2
Total	903	100.0

Table (5) shows that knowledge level of treatment of dental loss and defects has statistically significant relation to age (p value=0.001), and occupational status (p value=0.0001). It also shows statistically insignificant relation to gender, marital status, region of residence, educational level, and monthly income.

Table (5): Relation between knowledge level of treatment of dental loss and defect and sociodemographic characteristics.

Parameters		***Knowledge level of treatment of dental loss and defect***		***Total (N=903)***	***P value****
		High or moderate level	**Low level of knowledge**		
Gender	Female	152	423	575	0.134
		67.9%	62.3%	63.7%	
	Male	72	256	328	
		32.1%	37.7%	36.3%	
Age	Less than 23	44	115	159	0.001
		19.6%	16.9%	17.6%	
	23 to 25	55	111	166	

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		24.6%	16.3%	18.4%	
	26 to 30	36	96	132	
		16.1%	14.1%	14.6%	
	31 to 35	20	91	111	
		8.9%	13.4%	12.3%	
	36 to 45	49	134	183	
		21.9%	19.7%	20.3%	
	more than 45	20	132	152	
		8.9%	19.4%	16.8%	
Marital status	Single	122	318	440	0.075
		54.5%	46.8%	48.7%	
	Married	99	332	431	
		44.2%	48.9%	47.7%	
	Divorced	2	17	19	
		0.9%	2.5%	2.1%	
	Widowed	1	12	13	
		0.4%	1.8%	1.4%	
Occupational status	Student	76	152	228	0.0001
		33.9%	22.4%	25.2%	
	Employed	72	240	312	
		32.1%	35.3%	34.6%	
	Freelancer	8	24	32	
		3.6%	3.5%	3.5%	
	Unemployed	65	213	278	
		29.0%	31.4%	30.8%	
	Retired	3	50	53	
		1.3%	7.4%	5.9%	
Region of residence	Northern region	6	15	21	0.374
		2.7%	2.2%	2.3%	
	Southern region	88	228	316	
		39.3%	33.6%	35.0%	
	Central region	30	125	155	
		13.4%	18.4%	17.2%	
	Eastern region	9	28	37	
		4.0%	4.1%	4.1%	
	Western region	91	283	374	
		40.6%	41.7%	41.4%	
Educational level	Primary school	0	9	9	0.057
		0.0%	1.3%	1.0%	
	Middle school	5	23	28	
		2.2%	3.4%	3.1%	
	High school	38	156	194	
		17.0%	23.0%	21.5%	
	Diploma	17	74	91	

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		7.6%	10.9%	10.1%	
	Bachelor's degree	149	375	524	
		66.5%	55.2%	58.0%	
	Postgraduate degree	13	35	48	
		5.8%	5.2%	5.3%	
	Uneducated	2	7	9	
		0.9%	1.0%	1.0%	
Income:	Less than 1000 Saudi riyal	80	223	303	0.531
		35.7%	32.8%	33.6%	
	1000 – 5000	64	176	240	
		28.6%	25.9%	26.6%	
	5000 – 10000	35	135	170	
		15.6%	19.9%	18.8%	
	10000 – 15000	28	81	109	
		12.5%	11.9%	12.1%	
	More than 15000 Saudi riyal	17	64	81	
		7.6%	9.4%	9.0%	

P value was considered significant if ≤ 0.05.

Discussion:

Fundamental to and a critical determinant of overall well-being, oral health is a key determinant of quality of life [9, 10]. The dental defects in many developing and underdeveloped countries are major barriers in oral health. Dental defects include the destruction or loss of varying degrees of dental hard tissues including both developmental abnormalities leading to abnormal tooth shape, occlusion and contact relationships between adjacent teeth. Distention of pulp and periodontal tissues, and of general health, as well as differing effects on mastication, development, and aesthetics [11] make these conditions capable of affecting the knowledge, awareness and attitude towards treatment options for tooth defect and loss in Saudi population, also psychologically harmful on them, this is the purpose of this study.

Our study on Saudi Arabians' experience, attitude and treatment towards dental defects and tooth loss provides critical insights into a critical public health issue. In particular, the data we got showed that a hefty 75.9 percent of respondents had tooth decay, which is an epidemic as referenced by Al-Ansari et al and Cheng et al [12, 13] who found out that their populations tooth decay records is higher than 40 percent. Similar consequences follow from such dental issues. Research from Hussain et al and Jayasinghe et al [14, 15] showed that higher awareness of available treatment options corresponded with fear of worsening dental health and we confirmed this by finding that 49.9% of participants were fearful of their dental health deteriorating further. It implies distribution of dental conditions awareness, but at the same time is often accompanied by heavy concern of progressing dental conditions. Our study also found 42.3 % of respondents reported problems in eating consequent upon dental problems. This is in agreement with Mohammed D Alshehri et al [16], who demonstrated that elderly persons not only experienced difficulty in mastication, but as it is a cumulative effect of loss of teeth, more teeth were lost in those individuals. What makes these difficulties stand out is that they not only affect one's physical health, but also affect broader life aspects such as speech and social interactions, emphasizing the importance of dental health beyond just being physically healthy. We find that the link between self-

ISSN:1624-1940
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esteem and dental health is especially worrying: 28.3 percent of respondents reported that low dental health caused a slight to a severe reduction in self-esteem. As in the work of Puneet Kaur et al [17], who found that dental disorders including tooth decay and loss had a marked effect on self-esteem. Redundancy of this psychological dimension is important because this psychological dimension is intertwined with individuals' perception of the whole of their quality of life. Furthermore, we also find that 57.5% of the respondents believe their dental conditions have no impact on their self-esteem, suggesting more of a disparity between awareness and reality of the psychological impact of the dental health. These insights highlight the importance of more targeted interventions in dental education related to the impact of oral health onto self-image and social perceptions similar to that observed by Muhammad Adeel Ahmed et al [18], who showed a correlation between perception of oral health and psychological outcomes. Our study showed that 75.2% of participants have low levels of knowledge and awareness of dental treatment options, a gap in the understanding of these choices. Findings in various regions were similar to this, and showed that high awareness levels of causes and prevention of dental disease was low, including a study where it was noted that Chinese residents had limited knowledge [19]. Interestingly enough, our respondents did show a remarkable awareness of the most basic treatments of teeth cleaning and polishing (72.7%), despite the fact that they were unaware of anything within the realm of hygiene. On the other hand, it is still uncertain about advanced treatment options, as only 12.5 percent were aware of treatments for teeth discoloration, and 27.6 percent were uncertain about options for misaligned teeth. This resonates with Abdulrahiman et al [20] who reported that the younger populations were more aware of restorations and treatments because of increased access to dental information. Furthermore, our findings about treatment preferences complement a broader understanding of contemporary dental solutions. According to Khyati Arora Jr et al.'s research [21] many patients also preferred this option for tooth replacement, a significant 65.5% of participants preferred dental implants for missing teeth. However, there are still misconceptions about the treatment alternatives such as dental crowns and veneers, which call for committed education campaigns ensuring public gets to know these options and what their benefits are. In our study, we found significant relationships between knowledge level and demographic factors such as age ($p=0.001$) and occupational status ($p=0.0001$) suggesting that education tailored for older people and certain occupational groups is necessary. Similar to Mohammed D Alshehri et al's study [16] which suggests older adults frequently change their expectations about tooth loss and this results in reduced awareness and less proactive care seeking behaviour. Furthermore, it is also in line with a more general observation from the literature of the gap between awareness and behaviour. Yet, while our respondents recognized that dental treatment was very important, similar studies indicate relatively small numbers paying attention to getting treatment for their dental problems, indicating a need for a push for initiatives focused on awareness as well as the willingness to act. A study that reported on the problem of low rate of dental care seeking behavior in spite of high prevalence of dental caries and periodontal disease also indicated this trend [22].

Conclusion:

Finally, the importance of enhanced dental health initiatives in Saudi Arabia on knowledge as well as psychosocial effects of tooth defects, tooth loss is highlighted by this study. We find that a majority (75.9%) of participants have tooth decay and over half have anxiety about worsening conditions. In addition, while many participants acknowledge simple treatments, alarmingly 75.2 percent report low awareness of sophisticated options such as dental implants. This gap of information with demographic characters such as age and occupational status that basically needs targeted educational strategies. Additionally, diminished self-esteem of 28.3% of respondents emphasizes the need for comprehensive

ISSN:1624-1940
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approaches that include oral health education but also address mental wellbeing. It's through developing accessible treatment options, alongside awareness campaigns that can help us greatly improve the oral health landscape, on a larger scale, for the Saudi population.

Recommendation:
To address the significant gaps identified in this study, it is recommended to implement targeted educational campaigns focusing on advanced dental treatment options, such as dental implants, particularly for demographic groups with lower awareness levels. These campaigns should incorporate tailored messaging based on age, occupational status, and other relevant factors.
Additionally, integrating oral health initiatives with mental well-being programs is essential to mitigate the psychosocial impacts of tooth loss, such as diminished self-esteem. Efforts should include community-based workshops, school and workplace programs, and collaboration with healthcare providers to promote early diagnosis, prevention, and treatment.
Furthermore, expanding access to advanced dental treatments through subsidized programs or partnerships with dental clinics could improve treatment uptake. These combined strategies would not only enhance dental health knowledge but also foster holistic well-being within the Saudi population.

Acknowledgement:

Special thanks to the Deanship of Scientific Research (DSR) and the Faculty of Dentistry at King Abdulaziz University, Jeddah, for supporting this project.

Ethical approval

An informed consent was obtained from each participant after explaining the study in full and clarifying that participation is voluntary. Data collected were securely saved and used for research purposes only.

Funding

There was no external funding for this study.

Conflict of interests

The authors declare no conflict of interest.

Informed consent:

Written informed consent was acquired from each individual study participant.

Data and materials availability

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

ISSN:1624-1940
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