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Research Article

**THE RELATIONSHIP AMONG OVERWEIGHT, OBESITY,
AND IMPACT OF ADVANCED TOOTH DECAY IN PAKISTAN
ADULTS**¹Hamza Khan, ²Misbah Akbar, ³Mahnour Khan¹PIMS, House Officer, Nishtar Institute of Dentistry Multan.**Article Received:** October 2020**Accepted:** November 2020**Published:** December 2020**Abstract:**

***Aim:** The objective of this survey was to assess the relationship between overweight, overweight and the frequency of advanced dental caries in South Pakistani adults, using surrogate measures. Among the survey members, 376,077 people aged 20 years and older were assessed for their well-being between 2005 and 2008. This assessment was based on a difference in body mass index (BMI) class over a very long period of time, using a set of agent information available from the national health insurance system. Rather than using rotten, missing or filled (DMFT) teeth, demonstrative codes that show dental caries, pulp disease and recurrent visits to dental wellness experts were used for this situation. Our current research was conducted at Services Hospital, Lahore from March 2019 to February 2020. A multivariate Cox relapse survey was conducted to examine the relationship between dental caries progression and BMI. Despite BMI, a multivariate review of data on gender, age, lifestyle and basic disease was incorporated. To this end, the proportion at risk (HR) and the increase in certainty (CI) to 96% were determined. Essentially, it was found that overweight and obese individuals were destined to create progressive dental caries without predominant factors. The positive relationship between a high BMI and the development of progressive dental caries is most evident in those in the order of older people and women. Among wellness and life-cycle practices, smoking and non-smoking were found to be among the variables influencing outcomes. The surrogate technique used in this survey showed that overweight and corpulence had an immediate relationship with the frequency of advanced dental caries in Pakistani adults.*

Keywords: *Overweight, Obesity, Advanced Tooth Decay, Pakistan Adults.*

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INTRODUCTION:

Tooth decay is a multifactorial infection that affects the vast majority of the total population and is a major factor in maintaining a person's oral well-being throughout their lifetime [1]. It is the main reason for oral agony and toothache, as seen in adults and young people. While tooth decay has shown a downward trend in recent years, recent surveys have shown that it is actually rising today due to many factors influencing well-being [2]. As a systematic review of the global burden of disease in 2015 indicates, dental caries, particularly perpetual decay, ranks first among common infections and third among constant infections in the general sense of the term [3]. Its frequency has risen by 18% since 2005. Efforts have been made in different areas to prevent these problems by monitoring the levels of oral caries and tooth decay in order to pay attention to general well-being, with the ultimate goal of creating systems to prevent the spread of dental caries with better wellness outcomes for all patients. Despite the efforts of the WHO and many specialists, the increased use of refined sugar and the extreme use of foods that do not allow a solid diet have caused weight gain and an increase in cases of dental caries in some countries around the world. Public, sub-national and multifaceted reviews have demonstrated that weight, as estimated by the weight file, has been increasing steadily for a very long time in many populations around the world [4]. The frequency of overweight or corpulence is associated with increased risk of a few constant infections, including diabetes, coronary heart disease and malignant growth. Overweight people may also experience medical problems that may be related to oral well-being, including an increased risk of dental caries. These surveys show that life-cycle practices such as smoking, alcohol use and exercise are also linked to BMI, but there is no survey on the relationship with dental caries [5].

METHODOLOGY:

This survey used information from the Pakistan National Health Insurance Service, a partner office of the administration under the Pakistan Ministry of Health and Welfare that oversees and directs all clinical actions and methods for medical care in Pakistan. Our current research was conducted at Services Hospital, Lahore from March 2019 to February 2020. The KNHIS contains documents on qualification, clinical therapy, welfare assessment and information bases on clinical considerations for all patients in this information base who received care during the years under review. Our exploration depends on the use and investigation of anonymous information claimed by the KNHIS at a specific cost. For the most part, anonymous and unrecognized data were used for the investigations, and thus informed consent was not required on balance. The first information depends on the deletion after exploration. The deliberate review strategy was applied to the amount of proportionate testing within 1,479 stories based on the mix of age-sex ability levels. At the end of the day, the populations in the layers were arranged according to absolute annual clinical costs, and separation was then performed. As a final example, the effective extraction measure was repeated in each of the 1,478 tiers, and the final determination of an example illustrating the transmission of absolute clinical costs across tiers was used. Of the 377,079 members who underwent a wellness assessment at least once between 2005 and 2008, those with a maturity of <22 years (n = 1073) were avoided from the examination. From 2002 to the day of the assessment, 101,896 people lost their time and 29,707 missing qualifications were disqualified. Thus, the last number of persons retained for the examination was scored at 247,408. The dataset also remembers data from all documented clinical claims and registrations made by members between 2005 and 2014. The cycle of member selection is shown in Figure 1. Age, gender, smoking status, alcohol use, actual exercise, diabetes, hypertension, dyslipidemia, height and weight of members were collected and coordinated.

Figure 1:

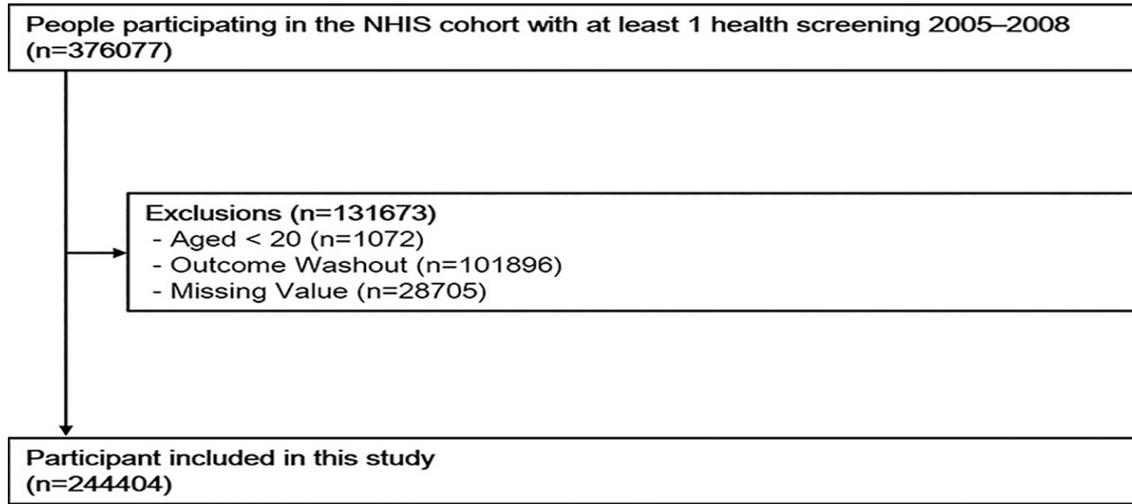


Figure 2:

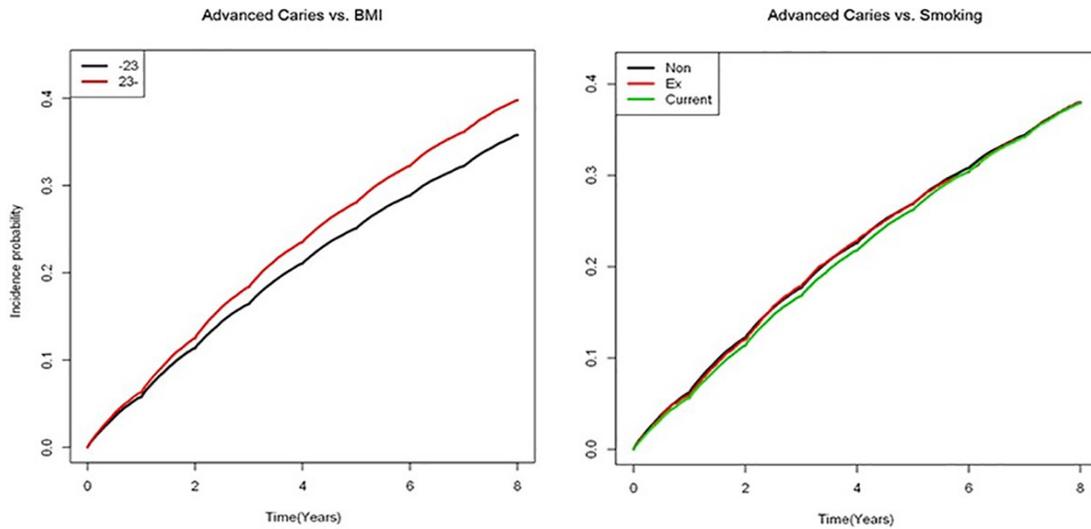


Table 1:**Table 1. Comparison of clinical characteristics according to BMI.**

BMI category (kg/m ²)	< 23	≥ 23
No of individuals	111655	132749
Age (≥ 65)	12198 (10.92)	15819 (11.92)
Sex (Male)	47954 (42.95)	77811 (58.62)
Smoking		
Non	81155 (72.68)	88673 (66.80)
Ex.	3811 (3.41)	7509 (5.66)
Current	26689 (23.90)	36567 (27.55)
Alcohol consumption	50766 (45.47)	64359 (48.48)
Exercise	44146 (39.54)	64152 (48.33)
Current Diabetes	5231 (4.68)	12271 (9.24)
Current Hypertension	15981 (14.31)	40162 (30.25)
Current Dyslipidemia	7149 (6.40)	17818 (13.42)
Height	162.75 ± 8.84	163.66 ± 9.63
Weight	55.2 ± 7.48	69.44 ± 10.26

Data are presented as the means ± SE, or % (SE). BMI: body mass index, SE: standard error.

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RESULTS:

The general characteristics of the population and subgroups in the review are summarized in Table 1. From the beginning of 2005 to the end of 2014, there were 83,973 episodes of progressive dental caries, as shown in the information. The thickness of occurrence is 62.8 cases per 1,000 person-years. Out of a total of 245,408 members, 113,659 (36.75%) were normal weight, while 132,749 (36.17%) were overweight (counting those who are usually put aside with weight). The normal time for members was 46.47, while the ratio of males to females was 1:1.07 (119,638 males and 126,768 females). Table 2 shows the relationship between the peak dental caries rate and BMI limits from the relapse after change surveys for the relevant covariates. Being over 67 years of age (speaking to the elderly; in Pakistan the working age population has been set at 17-69 years since 1964, and this documentation has remained until now) and being female were critical hazard factors in the age-change

and multivariate change models. For non-smoking members, the HR expansion of advanced dental caries due to changes in BMI was found to be strongly articulated. In selecting factors, we chose those factors available in the KNHIS information that should have an impact on the BMI adjustment. In addition, life-cycle practices, including smoking status, alcohol use status, and exercise, were selected for examination, and the survey showed that smoking was considered to be a huge and measurable factor in this situation. Human resources for advanced dental caries were delineated by BMI level and smoking status in the age change and multivariate models (Table 2, Figure 2). It was found that in overweight individuals, advanced dental caries was more fragile. At typical weight gain, smoking classifications were also shown to affect HR ($p < 0.06$). The risk of advanced dental caries in the regular and underweight groups with smoking extended to groups with similar BMI without smoking (Table 3).

Table 2:

	BMI category	N	event	Total follow-up	Incidence rate ¹	Hazard ratio (95% CI)		
						Crude	Multivariables adjusted ²	
TOTAL	< 23	111655	35059	620197.50	56.53	1 (reference)	1 (reference)	
	≥ 23	132749	46912	725022.85	64.70	1.14 (1.13, 1.16)	1.10 (1.09, 1.12)	
Age	< 65	< 23	99457	32184	557054.42	57.78	1 (reference)	1 (reference)
		≥ 23	116930	41819	643606.98	64.98	1.12 (1.11, 1.14)	1.04 (1.02, 1.05)
	≥ 65	< 23	12198	2875	63143.08	45.53	1 (reference)	1 (reference)
		≥ 23	15819	5093	81415.87	62.56	1.37 (1.31, 1.44)	1.25 (1.20, 1.31)
Sex	Male	< 23	47954	15534	266458.27	58.30	1 (reference)	1 (reference)
		≥ 23	77811	26651	434192.59	61.38	1.05 (1.03, 1.07)	1.05 (1.03, 1.07)
	Female	< 23	63701	19525	353739.23	55.20	1 (reference)	1 (reference)
		≥ 23	54938	20261	290830.26	69.67	1.26 (1.23, 1.28)	1.19 (1.17, 1.22)
Smoking	Non	< 23	81155	25114	451908.80	55.57	1 (reference)	1 (reference)
		≥ 23	88673	31886	479726.54	66.47	1.19 (1.17, 1.21)	1.03 (1.00, 1.05)
	Ex	< 23	3811	1210	21216.39	57.03	1 (reference)	1 (reference)
		≥ 23	7509	2593	41126.39	63.05	1.10 (1.03, 1.18)	1.14 (1.12, 1.16)
	Current	< 23	26689	8735	147072.30	59.39	1 (reference)	1 (reference)
		≥ 23	36567	12433	204169.92	60.90	1.03 (1.00, 1.06)	1.09 (1.02, 1.17)
Drinking	No	< 23	60889	19237	335971.80	57.26	1 (reference)	1 (reference)
		≥ 23	68390	25082	365925.02	68.54	1.20 (1.17, 1.22)	1.16 (1.14, 1.19)
	Yes	< 23	50766	15822	284225.70	55.67	1 (reference)	1 (reference)
		≥ 23	64359	21830	359097.83	60.79	1.16 (1.14, 1.18)	1.17 (1.15, 1.19)
Exercise	No	< 23	67509	20454	374945.67	54.55	1 (reference)	1 (reference)
		≥ 23	68597	23838	373728.74	63.78	1.17 (1.15, 1.18)	1.14 (1.12, 1.16)
	Yes	< 23	44146	14605	245251.82	59.55	1 (reference)	1 (reference)
		≥ 23	64152	23074	351294.11	65.68	1.14 (1.12, 1.16)	1.15 (1.13, 1.17)

Data are presented as HR (95% confidence interval).

¹Incidence rates are expressed as number per 100 person-years

²Adjusted for age, sex, smoking, drinking and exercise

BMI: body mass index, HR: Hazard ratio, CI: confidence interval

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Table 3:**Table 3. Hazard ratios for advanced dental caries to body mass index in multivariable Cox regression analysis.**

BMI	Smoke	N	Event	Total follow-up	Incidence rate ¹	Hazard ratio ² (95% CI)
< 23	Non	81155	25114	451908.8	55.57	1 ³ (ref.)
	Ex	3811	1210	21216.39	57.03	1.05 (0.99,1.11)
	Current	26689	8735	147072.31	59.39	1.12 (1.09,1.15)
≥ 23	Non	88673	31886	479726.53	66.47	1.14 (1.12,1.16)
	Ex	7509	2593	41126.39	63.05	1.15 (1.10,1.20)
	Current	36567	12433	204169.92	60.9	1.16 (1.13,1.19)

Data are presented as HR (95% confidence interval).

¹Incidence rates are expressed as number per 100 person-years

²Adjusted for age, sex, smoking, drinking and exercise

BMI: body mass index, HR: Hazard ratio, CI: confidence interval

³Reference group

<https://doi.org/10.1371/journal.pone.0229572.t003>

DISCUSSION:

This huge population-based public complicity study indicated that overweight and overweight individuals were destined to create progressive dental caries, for example, requiring root canal treatment without

confounding factors in Pakistani adults [6]. The positive relationship between being overweight, overweight and progressive dental caries was found to be more evident in people over 68 years of age and in women. Among wellness and life-cycle practices,

smoking and non-smoking was found to be one of the factors influencing outcomes [7]. This observational study is important in that it is the primary examination of a large number of adults, reliable compared to previous reports, which have been conducted primarily among youth, including young people. In addition, the Pakistani NHIS information base, with an exceptionally supportive delegate from most Pakistani individuals, contains a huge example of size and concrete data that are useful for this and comparative reports [8], for example, actual qualities and life-cycle practices including alcohol consumption, smoking status, and exercise [9]. Similarly, we used an optional technique to screen for progressive dental caries requiring root canal treatment, which is clinically essential to recognize them in clinicians and, in addition, in patients. We used the analytical code indicated by the ICD-10 and visit recurrence to characterize the progression of dental caries in this investigation [10].

CONCLUSION:

This review is a survey conducted by associates in different countries to explain the link between advanced dental caries requiring root canal treatment and the associated rate of overweight patients and being overweight. Using a KNHIS information base and a strategy of choice, it was found that a high BMI causes the development of advanced dental caries, which is more articulated in women and more established than in people aged 65. Given the different life cycle practices, smoking has apparently been a significant factor that has had an impact on the improvement of advanced dental caries.

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