

Original Research Paper

Ethnic Disparities in the Prevalence of Dental Caries among the Outpatients of Riyadh Colleges of Dentistry and Pharmacy, Saudi Arabia

Shahzeb H. Ansari^{1*}, Afaf Mattar², Kholoud AlAjmi², Shahad AlHarbi², Aseel Madani² and Sabah Alenazi²

¹Lecturer preventive dentistry, Riyadh Colleges of Dentistry and Pharmacy, KSA

²Dental Interns, Riyadh Colleges of Dentistry and Pharmacy, KSA

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Dental caries is prevalent among various ethnicities living in different parts of the world. Studies in different parts of the world have suggested a clear difference in DMFT indices among various ethnic groups. High DMFT indices are also related to the varying frequency of dental visits among different ethnicities and it was seen in a study conducted in the United States. This research used a clinical type of study design. Research participants were included from the outpatients visiting the clinics of RCsDP. All patients aged more than 18 yrs were included in this research. 50 patients were used for each group of ethnicities. There is a difference between various ethnicities as far as DMFT is concerned. Saudis were found to have low DMFT as compared to other groups. Pilipino, Indian, Pakistani, Bangladeshi participants were recorded with the highest DMFT scores.

Keywords: Caries, DMFT, Ethnicities.

INTRODUCTION

Dental caries is prevalent among various ethnicities living in different parts of the world. Studies in different parts of the world have suggested a clear difference in DMFT indices among various ethnic groups. Dental health care needs precise and recent data about the level of caring in the United States. The survey and the date were conducted by the Third National Health and Nutrition Examination Survey. The survey shows that racial groups were distinct regarding to dental caries and for that it needs more data about active caries in some population race groups (Winn et al, 1996).

Another study was conducted in the United Kingdom which assessed disparities in dental health of 5-yr-old children of various ethnic origins. The Negro children had exfoliated the most primary teeth and most permanent teeth erupted and Asians the least and least permanent teeth erupted. Negro children had a lower prevalence of dental caries than the other children (Beal JF, 1973)

A Brazilian-based study assessed difference in the oral health status among Brazilian black and white children. White children had higher indexes of caries in permanent teeth than their black counterparts, concurrent with a higher utilization of dental attendance. In conclusion, the knowledge of conditions associated with a lower ethnic discrepancy in the risk of caries and in the incorporation of dental services can be used to

design socially appropriate dental services (Antunes et al. 2003). High DMFT indices are also related to the varying frequency of dental visits among different ethnicities and it was seen in a study conducted in the United States. They noticed that the elder Native Americans, which aged (65-74) years had less visit to the dentist compared to other ethnicities (Davidson & Anderson, 1997).

In a new study, a faculty member and an alumna of the UNC Gillings School of Global Public Health examined racial and ethnic disparities in dental caries, commonly known as "cavities," among kindergarten students in North Carolina as well as the cross-level effects between students' race and ethnicity and their school's poverty status. The study concludes that racial and ethnic oral health disparities exist among kindergarten students in N.C. regardless of school poverty status. Furthermore, disparities in caries between white and African-American students are larger in non-poor schools than in poor schools (Matsuo et al, 2015.)

In another study done by Cross-sectional design to describe the oral health status and the dental service use pattern of a Turkish population in Witten, Germany, and to assess the factors affecting this used pattern. Comparison of the study population with German studies showed a similar caries experience in younger groups but in older groups a

*Corresponding Author: Shahzeb H. Ansari. Lecturer preventive dentistry, Riyadh colleges of dentistry and pharmacy, KSA.
Email: shahzebhasan@riyadh.edu.sa

lower treatment level. Perceived oral condition, educational level and sex were also important for care pattern. (Ugur et al, 2002)

American study was done to characterize the dental caries experience, tooth loss, and unmet need of a group of Haitian immigrant residents of New York City: A purposive sample of 523 adults was obtained through community outreach activities during 1997–98. Results showed a relatively low caries experience among this group of Haitian immigrants, the unmet need was very high, the tooth loss experience was relatively high for all age groups, further denoting a lack of access to preventive and restorative services (Cruz et al, 2001).

Descriptive, cross-sectional study was conducted using data from the Madrid City Health Survey to describe the use of dental services and the prevalence of dental caries in children living in Madrid, Spain, which concluded lower education level typically results in a less frequent use of dental health services, and children of immigrants have a greater risk of suffering from dental caries (Ledema et al, 2011).

A study was done to find out the prevalence of dental caries among adolescent and adult inhabitants of Ljubljana. The prevalence of dental caries is very high among the citizens of Ljubljana, already at the age of 15, 98.3% immigrant inhabitants had a greater number of healthy teeth in all aged groups in comparison with the native inhabitants (Kovac & Skaleric, 1989).

Israeli study done among recent immigrants from rural Ethiopia According to interview data, the diet in Ethiopia had been based on local agricultural products and was almost sugar-free. The mean total count of salivary bacteria, as determined on blood agar Low levels of caries in this population can be attributed to an almost sugar-free diet and high salivary flow, but not to the composition of oral microflora (Cohen et al, 1992).

Another study done in Africa and the Middle East Region to determine the prevalence and severity of oral health diseases Dental caries prevalence is less severe in most African countries than in developed countries, but the high rate of untreated caries reflects the limited resources available and difficulties of access and affordability to essential oral health care services. There are very few effective public prevention and oral health promotion programs in the AMER. Universal health coverage is not achievable without scientific research on the effectiveness of health promotion interventions (Abid et al, 2015).

Other this study was to assess inequality of experience of dental caries, based on race/ethnicity, among Brazilian adolescents aged 15 to 19 years Data analysis demonstrated that Whites have a significant reduction in dental caries experience in 15 to 19-year old Brazilians, as compared to African descents and Mixed Race. Education and income fully explained ethnic inequalities in experience of dental caries between Whites and African descents, and largely explained inequalities between Whites and Mixed Race (Drummond et al, 2015).

Another Brazilian study assessed the inequality in the distribution of dental caries and the association between indicators of socioeconomic status and caries experience in a representative sample of schoolchildren. This study followed a cross-sectional design. Inequalities in the distribution of dental caries were observed and socioeconomic factors were found to be strong predictors of the prevalence of oral disease in children of this age group (Piovesan et al, 2011)

An American study was done to evaluate ethnicity/race, household income and caregiver education level as predictors of (1) any early childhood caries, and (2) each of four proposed patterns of primary dentition caries. Multivariate analyses were conducted to assess the association of income, education and ethnicity/race, they concluded. This study supports the association of both ethnicity/race and social status with any early childhood caries (Psoter et al, 2006).

In a study in Brazil, authors assessed gender differentials in the distribution of dental caries and restorative treatment at the city level in order to discuss gender inequities in health. We retrieved data for caries prevalence and dental service utilization by 11- and 12-year-old girls and boys in 131 towns in Brazil. Public resources destined to dental assistance contributed to reducing inequities in oral health by allowing an incorporation of restorative dental treatment more equitably distributed between girls and boys (Antunes et al, 2003).

From another study in the USA, poor oral health has important implications for the healthy development of children. Children in Medicaid, especially Latinos and African Americans, experience high rates of tooth decay, yet they visit dentists less often than privately insured children. Latino and African American children in Medicaid are more likely than white children in Medicaid to have longer intervals between visits. These findings raise concerns about Medicaid's ability to address disparities in dental care access and, more broadly, in health care (Pourat & Finocchio, 2010).

AIMS OF THE STUDY

- To measure the caries prevalence in patients from various ethnicities.
- To compare the prevalence of caries among different ethnicities.

MATERIALS AND METHODS

This research used a clinical type of study design. Research participants were included from the outpatients visiting the clinics of RCsDP. Convenient sampling was done using subjects from various nationalities including Saudis, Syrians, Egyptians, Lebanese, Indians, Pakistanis, Bangladeshis, Filipino, Sudanese, Yemeni. DMFT, gingival and plaque indices were recorded from the patients. All patients aged more than 18 yrs were included in this research. 50 patients were used for each group of ethnicities. The period of completion for this research was 6 months.

RESULTS

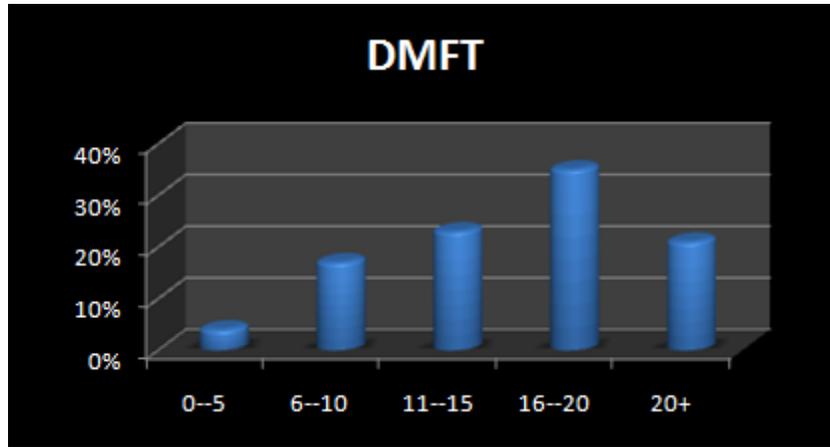


Figure 1: DMFT for all participants

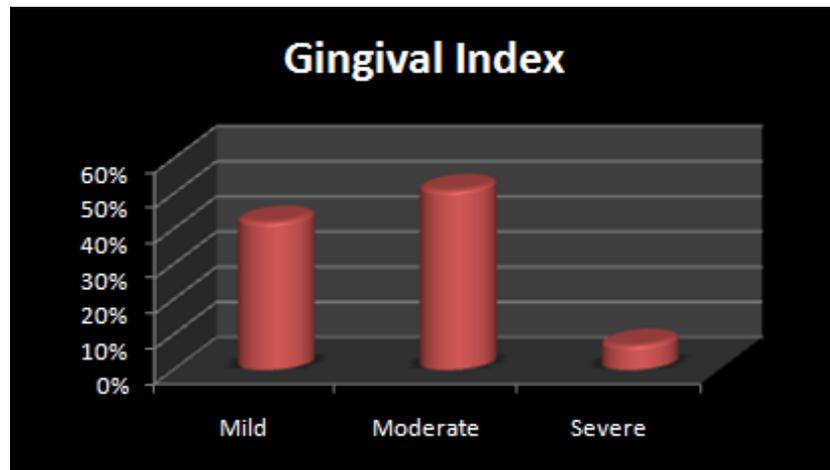


Figure 2: Gingival index for all the participants

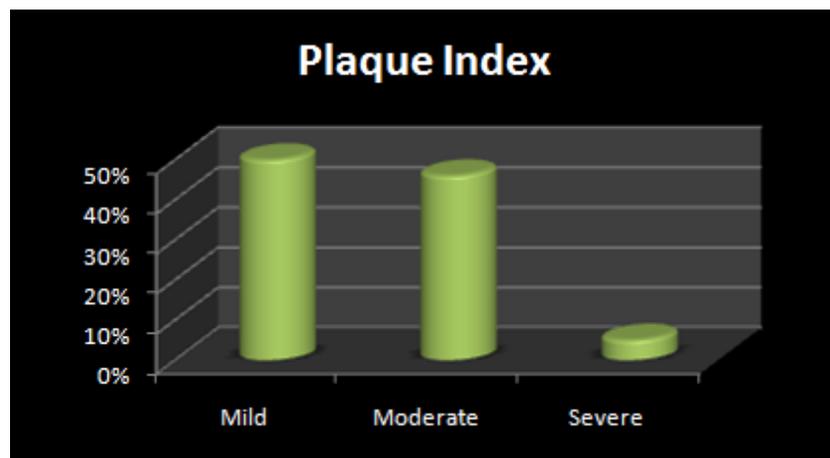


Figure 3: Plaque index for all the participants

Table 1: DMFT index for males and females (all nationalities)

Gender	0 - 5	6 - 10	11 – 15	16 - 20	20+
Male	4%	17%	18%	36%	25%
Female	3%	18%	27%	34%	18%

Table 2: DMFT comparisons for various ethnicities visiting RCDP clinics

Ethnicity	0-5	6-10	11-15	16-20	20+
Saudis	8%	24%	26%	36%	6%
Sudanese	2%	8%	38%	38%	14%
Indian, Pakistani, Bangladeshi	4%	24%	14%	24%	34%
Syrian, Egyptian, Lebanese	6%	14%	18%	40%	22%
Pilipino	2%	8%	26%	30%	34%
Somalis, Ethiopian, Moroccan	0%	24%	18%	42%	16%

Table 3: Plaque index comparison for various ethnicities visiting RCDP clinics

Ethnicity	Mild	Moderate	Severe
Saudis	46%	52%	2%
Sudanese	34%	60%	6%
Indian, Pakistani, Bangladeshi	50%	38%	12%
Syrian, Egyptian, Lebanese	46%	48%	6%
Pilipino	32%	58%	10%
Somalis, Ethiopian, Moroccan	44%	52%	4%

Table 4: DMFT comparison among different age groups

Age	0-5	6-10	11-15	16-20	20+	Total
18-25	7%	26%	26%	29%	12%	69
26-35	3%	19%	23%	35%	18%	103
36-45	3%	12%	24%	41%	20%	74
45+	0%	7%	19%	35%	39%	54

DMFT GingivalIndex, PlaqueIndex * Gender

Gender		DMFT	Gingival Index	Plaque Index
Male	Mean	3.6212	1.6742	1.5909
	N	132	132	132
	Std. Deviation	1.14272	.62390	.59199
Female	Mean	3.4524	1.6250	1.5179
	N	168	168	168
	Std. Deviation	1.08230	.58614	.57880
Total	Mean	3.5267	1.6467	1.5500
	N	300	300	300
	Std. Deviation	1.11059	.60252	.58478

DMFT GingivalIndex PlaqueIndex * Nationality

Nationality		DMFT	GingivalIndex	PlaqueIndex
Saudi	Mean	3.0800	1.5600	1.5200
	N	50	50	50
	Std. Deviation	1.08496	.54060	.54361
Sudanese	Mean	3.5400	1.7200	1.5800
	N	50	50	50
	Std. Deviation	.90824	.57286	.49857
Indian, Pakistani, Bangali, Srilankan	Mean	3.6000	1.6200	1.5800
	N	50	50	50
	Std. Deviation	1.29363	.69664	.64175
Syrian, Egyptian, Labanese	Mean	3.5800	1.6000	1.5200
	N	50	50	50
	Std. Deviation	1.16216	.60609	.61412
Phillipines	Mean	3.8600	1.7800	1.5600
	N	50	50	50
	Std. Deviation	1.04998	.61578	.64397
Somalis, Ethiopia, Morroco	Mean	3.5000	1.6000	1.5400
	N	50	50	50
	Std. Deviation	1.03510	.57143	.57888
Total	Mean	3.5267	1.6467	1.5500
	N	300	300	300
	Std. Deviation	1.11059	.60252	.58478

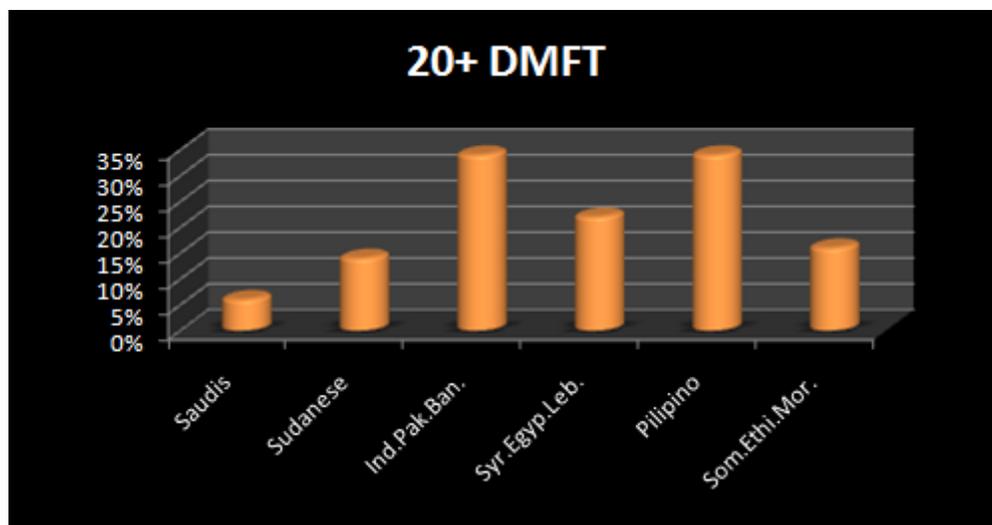


Figure 4: Ethnic comparison with DMFT more than 20 for all age groups

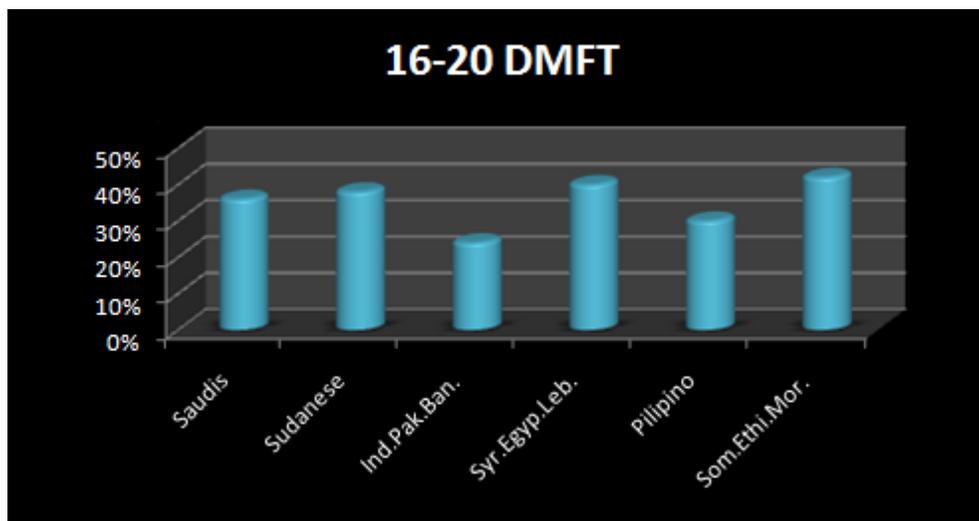


Figure 5: Ethnic comparison with DMFT from 16-20 for all age groups

DISCUSSION

Saudi Arabia consists of multi-ethnic populations in major as well as small cities. This study was done in Riyadh colleges of dentistry and pharmacy, which receive patients from all nationalities for various dental treatments. Participants were divided into groups depending on their ethnicities. Equal number of participants were utilized in each group in order to have uniformity and fair results.

DMFT is strongly associated with plaque accumulation; therefore plaque index was recorded for each participant. Saudis were found to have more participants with DMFT less than 5 as compared to Somalis, Ethiopian and Moroccan, which did not have a single participant in that list. On the other hand, a large majority of both Pilipino group as well as Indian, Pakistani group fell in the category of 20+ DMFT as compared to Saudis who had the least number of participants in this category.

Argument can be generated when comparing the socioeconomic as well as general health status of the various groups. Riyadh colleges is a teaching hospital where treatment cost is kept to minimal and most of the patients visiting the clinics belong to low to average socioeconomic status, which is linked with compromised general as well as oral health status in these people. As a result, overall DMFT of the participants was very high. The results of this study may not be indicative of poor or good oral health of various ethnicities, as mostly low socioeconomic people were involved. In order to have a more accurate comparison, further investigations need to be done on all types of socioeconomic groups of ethnicities.

CONCLUSION

- There is a difference between various ethnicities as far as DMFT is concerned.
- Saudis were found to have low DMFT as compared to other groups.
- Pilipino, Indian, Pakistani, Bangladeshi participants were recorded with the highest DMFT scores.

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