

Identifying The Level Of Awareness Of Psmchs Female Students And Employees About Dental Amalgam Fillings

Mohammad Joman Al Zahrani¹, Mohammed Abdullah Aljuhani², Abeer Assad Al Ohali³, Ahmed Humaid Al Saedi⁴, Waheed Ahmad Baig^{5*}, Arulanantham Zechariah Jebakumar⁶

¹Associate Professor, Department of Dental and Oral Health Prince Sultan Military College of Health Science Dhahran, Saudi Arabia, Email: jomman@psmchs.edu.sa¹

²Consultant Family physician, Family & Community Medicine Department. Prince Sultan Military Medical City Riyadh, Saudi Arabia., Email: maljuhani@msd.med.sa

³Assistant Professor, Department of Dental and Oral Health, Prince Sultan Military College of Health Sciences, Dhahran, Saudi Arabia, Email: alohali@psmchs.edu.sa

⁴Lecturer, Prince Sultan Military College of Health Sciences, Dhahran, Saudi Arabia, Email: saedi@psmchs.edu.sa

⁵Lecturer, Vice Deanship of Development and Quality Prince Sultan Military College of Health Sciences, Dhahran, Saudi Arabia, waheedbaig@psmchs.edu.sa

⁶Lecturer, Vice Deanship of Postgraduate Studies and Research, Prince Sultan Military College of Health Science Dhahran, Saudi Arabia, Email: zechariah@psmchs.edu.sa

Corresponding Author Details

Waheed Ahmad. Baig

Lecturer, Vice Deanship of Development and Quality, Prince Sultan Military College of Health Science, Dhahran, Saudi Arabia

Email: waheedbaig@psmchs.edu.sa

ABSTRACT

An amalgam filling is a dental material used to fill a tooth cavity after removing caries. Dental amalgam fillings are also known as “silver fillings” because of their silver present. The aim of this study is to identify the level of awareness of PSMCHS female students and employees about dental amalgam fillings.

Materials and methods: The study included a total of 253 respondents who work/study at PSMCHS. pre-tested administered questionnaire consisting of 15 questions was employed to collect the data from the target group. The questions referred to age, gender, marital status, level of education, monthly income, types of dental fillings, whether or not the amalgam fillings include mercury and whether or not mercury was harmful to human health. Questions were solicited to determine the respondents’ level of awareness in respect to mercury, amalgam fillings and its effect on human health.

Results: Out of 253 respondents 212 females (83.8%) and 41 males (16.2%). The economic status based on a monthly income ranged from 0-3000 SR (150 respondents/ 59.3%) to more than 3001 SR (103 respondents/ 40.7%). Based on the level of education, respondents included 82 postgraduate individuals (32.4%) and 171 undergraduate individuals (67.6%). The type of dental fillings was unknown by 21.7% of the respondents and 39.1% did not know that amalgam fillings contained mercury. In this study, 27.3% of the respondents did not know whether mercury was harmful and 24.1% did not know whether mercury in amalgam was harmful to human wellbeing.

Conclusion: The level of awareness of harmful mercury was slightly low among the respondents studied and the level of acceptance toward amalgam appears to be related to economics, specialty, age, and gender.

Keywords: Identifying, Level, Awareness, Female students, Employees, Amalgam fillings.

INTRODUCTION

Dental amalgam a mixture of mercury with other elements like silver, copper and tin, which may also consist of palladium, zinc and other to improve handling characteristics and clinical performance. Amalgam filling is a dental material used to fill tooth cavity after removing caries. Dental amalgam fillings are also known as “silver fillings” because of their silver present. Amalgam fillings are used for many years because of their advantages such as, low cost, lifelong, strength, withstand to stress area, and easy to use. Amalgam restorations are combining of mercury with other metals. The primary component is the mercury. Approximately 50% of dental amalgam is elemental mercury by weight. Mercury allows it to react with and bind together the silver, copper, tin alloy particles to form an amalgam ("Statement on Dental Amalgam", 2019).

The principle presentation to mercury from dental amalgam happens amid arrangement or evacuation of rebuilding in the tooth. When the response is finished less measure of mercury is discharged, and that is far beneath the present well-being standard. Despite the fact that amalgam is equipped for creating postponed extreme touchiness responses in certain individuals, if the suggested mercury cleanliness strategies are pursued the dangers of unsafe well-being impacts could be limited (Pant et al., 2012). Dental amalgam has been contemplated and audited drawn out and has built up a record of security and viability. (Aljammali, 2015). Although all dental materials are considered safe to use and exhibit very low levels of local adverse effects, Components of dental amalgam are silver, copper, tin and zinc in addition to mercury which is known to be toxic and hazardous to human health. There is no proof of dental materials instigating any systemic disease

(Johnston & Sanderson, 2012) but there is enough evidences that dental amalgam fillings are unsafe due to consequence of mercury in it (Faraj B, 2015) and so a decrease in the use of dental amalgam fillings has been contributed to the fear of patients from mercury toxicity.

The current study is designed towards identifying the level of awareness of Prince Sultan Military College of Health Sciences (PSMCHS) female students and employees about dental amalgam fillings. Hence, this study will be used as a reference for future studies and a baseline for further studies such as lectures, combines and workshops.

METHODOLOGY

This investigation was affirmed by the exploration morals advisory group at Prince Sultan Military College of Health Sciences, Saudi Arabia. A clear cross-sectional study configuration was utilized in this examination. The study was conducted in a sample of 253 respondents (male and female employees) of different ages, different specialties and levels by random sample method. All the Female students and employees (male and female) at PSMCHS were included in the study by excluding Male students. Level of awareness about amalgam fillings among PSMCHS female students and employees were considered as Dependent variables.

A self-administered questionnaire (on-line questionnaire) of 15 questions was employed to collect data from the target group. A team of three conducted this study. Each member was responsible for three groups of the targeted individuals. One member collected the results from the female students, the second from the male employees and the third from the female employees. All questionnaires were delivered and collected in person. Each member of the group was had sufficient copies of the

questionnaire paper to cover all the participating individuals. Sufficient and convenient time was assigned to the targeted individuals to fill out the questionnaire forms followed by the collection of the questionnaire forms by the assigned member of the group after ensuring that all copies were returned, fully answered and without any omission of any question. A time period of one month was assigned for the examination of polls.

All variables in the survey were entered and the participants' reactions were coded for ease of investigation. All factors were inspected to locate the missing quality and duly tabulated. The examiners utilized the SPSS programming. Paired sample (t-test) was used to find the significant differences between the age groups, gender groups and level of education.

RESULTS AND DISCUSSION

The study involves 253 respondents which consists of 212 females (83.8%) and 41 males (16.2%). The age range of the respondents was 15-24 years (158 individuals), 25-34 years (39

individuals), 35-44 years (30 individuals), 45-55 years (19 individuals) and older than 55 years (7 individuals). (see figure 1) Marital status was reported as married by 58 respondents (22.9%) and as single was 195 respondents (77.15%). Economic status reported monthly income of 0-3000 SR by 150 individuals (59.3%) and 3001-7000 SR by 25 individuals (9.9%), 7001 – 15000 SR by 35 individuals (20.9%), more than 15001 SR by 25 individuals (9.9%). Level of education of the respondent group was reported as postgraduate by 82 individuals (32.4%), undergraduate 171 individuals (67.6%). The total number of respondents who did not know the type of their fillings was (21.7%), and those who did not know that the amalgam filling contained mercury was (39.1%) of respondents. 27.3% was the percentage of respondents who did not know whether or not mercury was harmful. 24.1% was the percentage of those who did not know whether or not the mercury in the amalgam fillings was harmful (see figure 2).

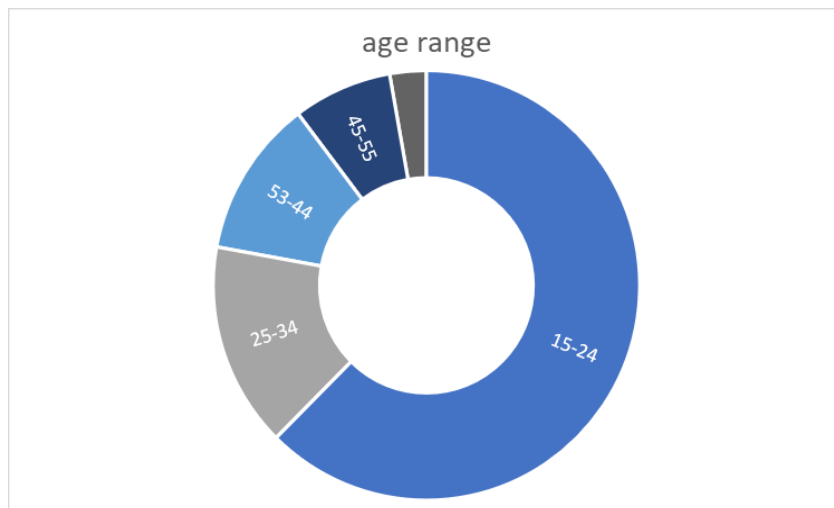


Fig. 1: Age demographics of the subjects

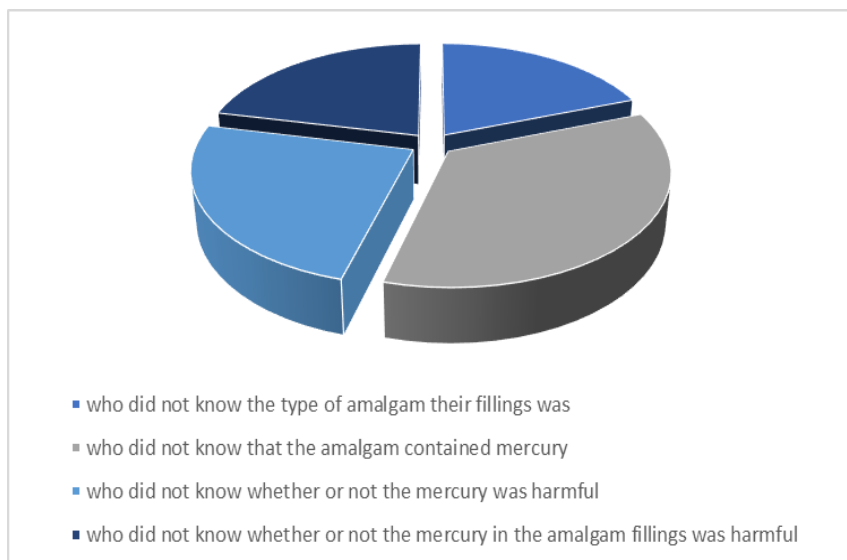


Fig. 2: Knowledge on amalgam fillings in the subjects

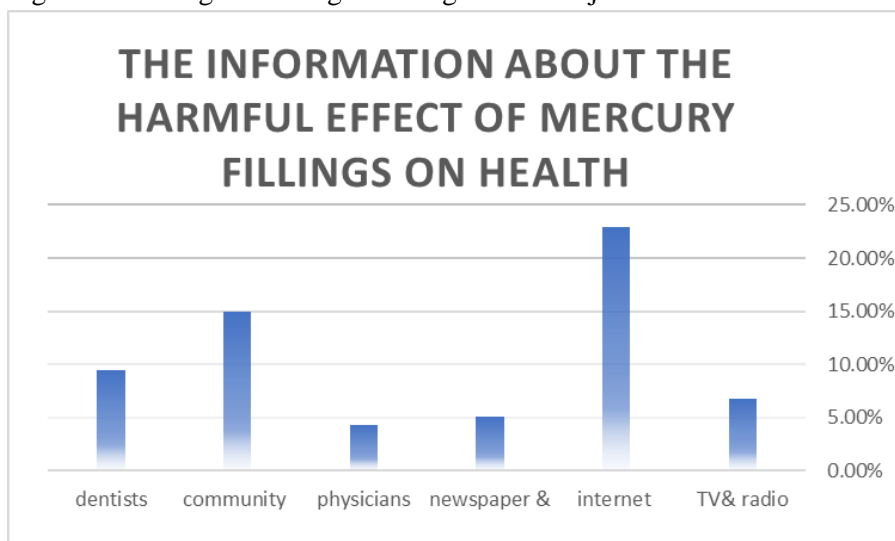


Fig 3: Information on the mercury fillings about health safety

When the respondents were asked about the source of their information about the harmful effect of mercury fillings on health, 6.7% said from TV & radio, 22.9% from internet, 5.1% from newspapers and magazines, 4.3% from physicians, 15% from community, 9.5% from dentists. (see figure3) In this study the team focused on the level of awareness about dental amalgam fillings among PSMCHS employees and female students. The team suggests the following:

First, there is a significant difference in the level of awareness between nursing students and RC students at PSMCHS.

From the below table, the study showed descriptive statistics such as mean and standard

deviation for level of awareness, in respect of mercury amalgam filling. The study has also showed significant difference (since p-value < 0.05) between the level of awareness of Respiratory care and nursing students by administrative independent sample t-test.

Second, there is a significant difference in the level of experience between PSMCHS male employees and female employees. From the below table the study showed descriptive statistics such as mean and standard deviation for level of awareness, in respect of mercury amalgam filling. The study has also showed that there is no statistically significant difference (since p-value > 0.05) between the level of awareness of male and female

employees by administrative independent sample t-test.

Table 1: Level of awareness of with respect to mercury amalgamation in fillings

	N	Mean	Std. Deviation	Std. Error Mean
Student Department (T- test = 5.043; P-value = 0.000)				
Respiratory Care	20	2.4000	.75394	.16859
Nursing	39	3.4103	.71517	.11452
Employees (P-value = 0.864 for gender; 0.726 for age)				
Male	33	3.0303	1.28659	.22397
Female	49	2.9796	1.33057	.19008
Age below 35	29	3.0690	1.33446	.24780
Age above 35	53	2.9623	1.30033	.17861
Student Study Level (P-value = 0.830)				
Pre-Clinical	32	2.9375	.84003	.14850
Clinical	139	2.9784	.99613	.08449

Third, there is a relationship between PSMCHS employees who are older than 35 years and those who are under 35 regarding dental amalgam fillings. From the above table, the study showed descriptive statistics such as mean and standard deviation for level of awareness, in respect of mercury amalgam filling. The study has also showed no statistically significant difference (since p-value > 0.05) between the level of awareness of age below 35 and age above 35 employees by administrative independent sample t test.

Forth, there is a significant difference in the level of information among PSMCHS between pre-clinical students and the seniors regarding dental amalgam fillings. From the above table, the study showed the descriptive statistics such as mean and standard deviation for level of awareness, in respect of mercury amalgam filling. The study showed that there is no statistically significant difference (since p-value > 0.05) between the levels of awareness of Pre-clinical and clinical (seniors) students by administrative independent sample t-test.

For many years, dental amalgam has been regarded as the material of choice for tooth restoration following the removal of caries and

is considered a lifelong material. However, some groups and studies have contested the safety of dental amalgam and expressed their concern about its harmful effect on human health. In contrast, most studies affirm that there is no evidence that dental amalgam causes any threat to human health (Takefuji, 2019).

The results obtained from some countries such as the USA, showed that 76% of Americans do not know that the mercury is the primary component of dental amalgam fillings. In Nigeria, a study showed that only 35% of its people know that amalgam fillings contained mercury (Bamise et al., 2012). Patients with amalgam fillings around the toxicity of mercury were visualized in dental amalgam. As for Turkey, the result showed that around 40% of Turks know that amalgam fillings contain mercury (Bahsi, 2016). This study was also conducted in Saudi Arabia and showed that 45% of Saudi respondents know that amalgam fillings contain mercury. This study also showed that around 60.9% of Saudis know that amalgam fillings contain mercury (Doumani et al., 2017). The results of studies conducted in America, Nigeria, Turkey and Saudi are almost

similar, but in this research the awareness is higher than the other studies.

The finding from this study suggested that the level of awareness of toxicity of mercury in dental amalgam fillings among PSMCHS female students and male female employees is low related to the level of education. This study is similar to a study by Faraj in which he also found that the level of awareness about mercury toxicity is low regarding to level of education (Faraj B, 2015). In contrast to the study done by Emrullah Bahsi in which he suggested that the level of awareness in Diyarbakir region was high related to high level of education and socio economic status.

There are some limitations in this study such as time restriction, low participation on the behalf of the targeted respondents and the incorporation of the researchers of the other studies.

LIMITATIONS

- Insufficient time to read many of the literature's reviews and questionnaires.
- Difficulty to locate the author and a challenging task to get his permission and approval.

CONCLUSION

Amalgam is the most popular and the most common material used in dental clinics for posterior restorations. The level of awareness of harmful mercury was slightly low among the respondents studied. The team suggested that the results obtained were based on specialty, age, and gender. The level of acceptance toward amalgam appeared to be related to economics, specialty, age, and gender.

REFERENCES

1. Statement on Dental Amalgam. (2019). Retrieved from [https://www.ada.org/en/about-the-ada/ada-](https://www.ada.org/en/about-the-ada/ada-positions-policies-and-statements/statement-on-dental-amalgam)

[positions-policies-and-statements/statement-on-dental-amalgam](https://www.ada.org/en/about-the-ada/ada-positions-policies-and-statements/statement-on-dental-amalgam)

2. Pant, V., Rathore, M., & Singh, A. (2012). The dental amalgam toxicity fear: A myth or actuality. *Toxicology International*, 19(2), 81. doi: 10.4103/0971-6580.97191
3. Aljammali, Z. M., (2015), Survey on types of dental amalgam in medicine. *International Journal of Orthodontics & Research*, 1(1), 1-6.
4. Johnston, S., & Sanderson, S. (2012). Casting the runes. *British Dental Journal*, 213(7), 329-330.
5. Faraj, B. (2015). The Changes in Dentists' Perception and Patient's Acceptance on Amalgam Restoration in Kurdistan-Iraq: A Questionnaire-based Cross-Sectional Study. *Journal of Clinical and Diagnostic Research* doi: 10.7860/jcdr/2015/13028.5790
6. Takefuji, Y. (2019). Illogical dental amalgam policy by WHO and UNEP. *British Dental Journal*, 226(4), 241-241. doi: 10.1038/s41415-019-0038-8
7. Bamise, C., Oginni, A., Adedigba, M., & Olagundoye, O. (2012). Perception of Patients with Amalgam Fillings about Toxicity of Mercury in Dental Amalgam. *The Journal Of Contemporary Dental Practice*, 13(3), 289-293. doi: 10.5005/jp-journals-10024-1139
8. Bahsi, E. (2016). What do patients think about Mercury in Dental Amalgam? Findings from Southeast part of Turkey. *Advances In Dentistry & Oral Health*, 2(5). doi: 10.19080/adoh.2016.02.555600
9. Doumani, M., Habib, A., Hatshan, A. R., Alnofiai, S. R., Alqahtani, F. M., Sadeka, M. A., & Alasmari, H. A. (2017). Saudi patients' knowledge and awareness about mercury in dental amalgam. *IOSR J Dental Medical Sci*, 16(8), 68-70.