

A preliminary comparative study on dental health between convict and non-convict people within Erbil, Kurdistan of Iraq

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ABSTRACT

This investigation involved determination of prevalence range of dental caries and hygiene study among convicts and general population within Erbil, Kurdistan of Iraq. Ages, gender, education level and smoking habit have been taken in consideration for both group of samples (convict and non-convict). The study dealt with a total of 153 person from both group and they were sampled from Erbil Central Prison and Erbil Juvenile Prison, as well as from various location within Erbil district as control group. The results indicated that prisoners have more dental problem than others and it was found that number of smokers are much more within jails and generally they have lower standard of education. However a qualified dental team should be prepared to provide an optimum dental treatment to prisoners. More detail investigation in this respect is needed for dental aspects of the country.

Keywords: Dental health, Caries, Smokers, Convict people, Erbil Prison.

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Introduction

According to World Health Organization (WHO), the oral health regarded as a key indicator of general health, comfort and quality of life. It comprises a range of diseases and conditions that include dental caries, Periodontal disease, Tooth loss, Oral cancer, Oral manifestations of HIV infection, Oro-dental trauma, Noma and birth defects such as cleft lip and palate. However, the Global Burden of Disease Study in 2017 had expected that oral diseases may affect 3.5 billion people world-wide, in fact, the untreated dental caries were among the most prevalent non-communicable diseases (WHO, 2018).

Almost all oral health services in Iraq provided either by the Dental Schools or National Health Service (NHS), and private sectors. In fact, such services were developed significantly in Iraq mainly after 2003. During 2010, it was found that there were more than 5,900,000 dental visits in the primary dental care of the NHS. However all treatment were for securing the oral health which include, prevention, restoration, prosthodontics, orthodontic & surgical treatments (ALBUJEER & TAHER, 2017).

Oral health of people in general regardless being convict or not, nowadays are concerned with dental caries or cavities, also known as tooth decay which is a breakdown of teeth due to acids that result from bacterial activity (Silk, 2014). The cavities may possess a range of different colors from yellow to black (Laudenbach & Simon, 2014). Symptoms may include pain and difficulty with eating (WHO | Oral Health, 2012; Laudenbach & Simon, 2014). Complications may include inflammation of the tissue around the tooth, tooth loss, and infection or abscess formation (Venes, 2013). The present study were performed in order to find out the variation of different dental hygiene between convict and other people, taking in consideration the age as well as the gender, and the level of education of two groups of samples from prisoner and outside prisoner.

In general, prisoners everywhere have high rates of chronic and blood-borne diseases, mental and psychological illnesses and dental diseases (Reddy et al., 2012). They usually come from disadvantaged groups with less education, higher unemployment rates and lower chances of adopting healthy practices, finally they are among

people who have no or a very little access to health care. Furthermore, their disease risk increases because of health damaging practices such as the use of tobacco, alcohol and substance abuse (Heidari et al., 2007). Therefore it is logic to find out that the time of their admission to prison, convicts usually are already present with a considerable amount of unmet dental treatment needs (Heidari et al., 2007; Walsh et al., 2008) which are unlike to receive the required attention. This latter situation could be attributed to many factors such as a lack of resources for dental treatment in the prison health care system and legality, or perhaps to the difficulties that face dentists to deal with the high security constraints in the prison environment. In addition, doctors in general are usually attracted to the more financially rewarding through private practice environment (Nobile et al., 2007; Walsh et al., 2008).

In fact the aim of the study mainly was, to determine the extent of distribution and prevalence of dental caries as well as oral hygiene status among convicts and general population in Erbil, Kurdistan region, Iraq. For the best of our knowledge, this study is the first attempt to fill up the existing gap

of dental information in this respect within Kurdistan that will be definitely follow by more details investigation in coming years.

Methods

The present investigation was carried out for a period of fourteen month (November 2018 – January 2020). Samples were taken randomly from two groups of people (convict and non-convict people) each with not less than 75 people making up the total investigated people to 153 person. Samples of convict group were taken from Erbil main two prisons where as members of the second group involved random samples from different location within Erbil district.

The procedure used for present study was involved clinical examination for caries assessment for every person using WHO criteria 15 and the Decayed, Missing, and Filled Permanent Teeth parameter (DMFT) was recorded. A disposable probe was used for this test. The second procedure was questionnaire as it shown down below through a direct interview with all members involved in the present study. It includes information about age, gender, education level, smoking, accessibility

to case, and oral health problem in general and dental primary bleeding.

Data Analysis

Using Chi square, the two groups were compared regarding background variables (age and education), cigarette smoking, using chewing tobacco, caries experience, dental pain, problems affecting daily activities, perceived need for treatment, bleeding on brushing, having decayed, and missing, filled teeth. Significance level was set at 5% ($P \leq 0.05$). Statistical analysis was done using SPSS version 22

Results

Questionnaire and clinical examination data were prepared for 153 people i.e.

75 prisoners and 78 non-convict people in the comparison group (control group). However, some prisoners refused to complete some items in the questionnaire. These unanswered items were dropped during data analysis. The results indicated that the groups were nearly similar and clear to each other in respect to age, gender ($P= 0.236$ and $P= 0.234$ respectively). In fact, the total male people were only 103 within both groups whereas female represent 50 people only (Figure 1). However, in respect to the age it was found that more than 65% of the samples were between 29-59 years old and their total number was 102 out of the total 153 person enrolled during the present project.

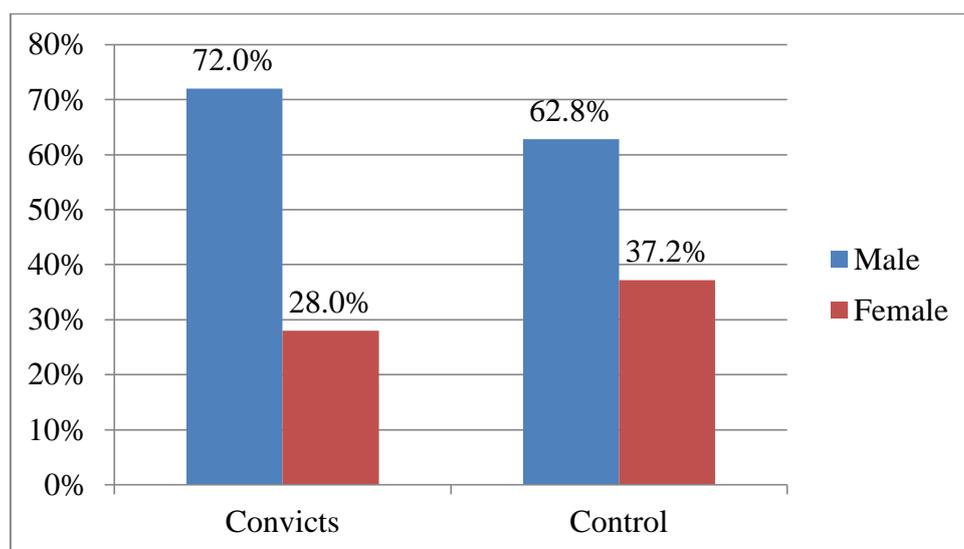


Figure 1: Comparison between the two study groups in gender.

Regarding educational level of both groups it was found that there was a significant difference ($P < 0.0001$) in case of group one (convict sample) half of them were either illiterate or only preliminary certificate holders whereas the number decline significantly within samples in group two (non-convict people). The trend of the result change

when considering higher level of education, the number decreased in case of convict group when contrasted with non-convict group, the comparison between the two study groups in education level is summarized in Figure 2

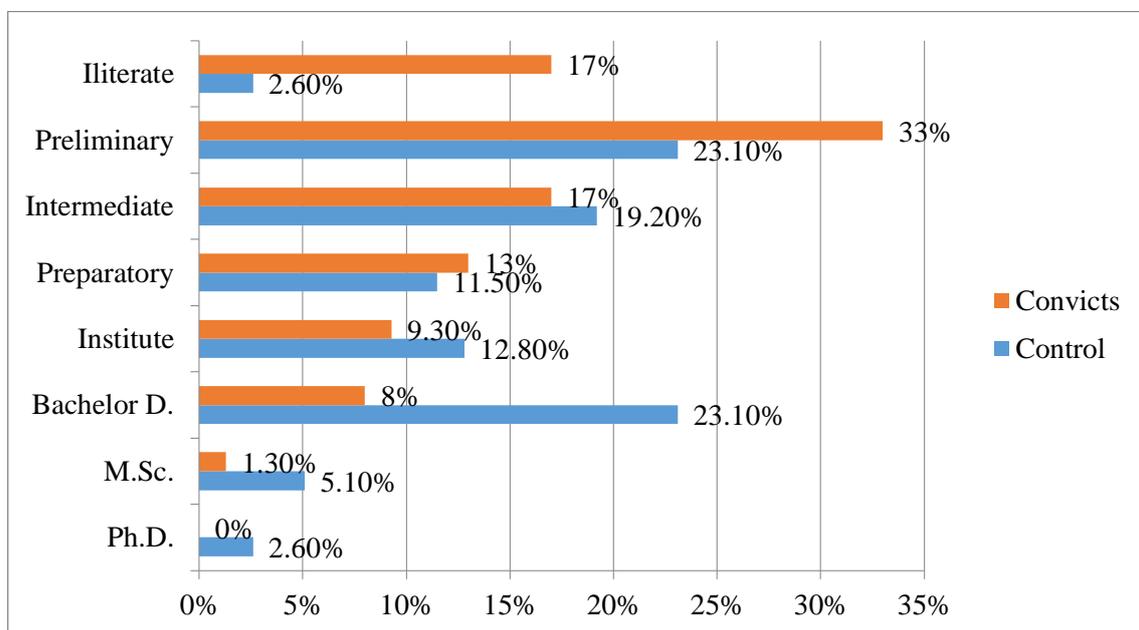


Figure 2: Comparison between the two study groups in respect to education level.

. Oral hygiene

In respect to oral hygiene investigation results indicate that daily smoking of cigarettes was higher within members of prisoners' group than the control group ($P < 0.00001$). In which most of the convicts group were smoker

(74.7%) 56 out of 75 samples examined whenever considering the absolute number, it seems that total number of smoker are quite close to non-smoker people (Table 1) while in comparison with control group only (29.5%) were found to be smoker (Table 1).

Table 1: Comparison between the two study groups as with regards regard to smoking.

Smoking	Cases type						P value
	Convicts		Control		Total		
	no.	(%)	no.	(%)	no.	(%)	
Yes	56	(74.7)	23	(29.5)	79	(51.6)	0.00001
No	19	(25.3)	55	(70.5)	74	(48.4)	
Total	75	(100)	78	(100)	153	(100)	

Caries experience

Table 2 shows the comparison between the two study groups in caries experience. The percentage of comparison group (within non-convict) with carries was higher than the convicts group, but these differences

were not statistically significant ($P=0.542$). Regarding the missing teeth, the results was contrary to the caries experience, in which the missing tooth was higher in convicts group than the comparison group but these differences was not statistically significant ($P=0.089$).

Table 2: Comparison between two study groups regarding dental problems.

D. problem	Groups	P value	No. of cases	No. of cases with D. problem	Std.	
					Mean	Deviation
Caries	Convicts	0.542	75	69	5.7067	4.64052
	Control		78	72	6.1667	4.67771
Missing tooth	Convicts	0.089	75	47	3.2133	4.84431
	Control		78	32	2.0128	3.78477

Correlation between smoking and dental caries

Although there are noticeable differences among smokers and non-

smokers regarding dental carries, the results showed no significant differences among the two groups ($P=0.374$) (Table 3).

Table 3: comparison among smokers and non-smokers regarding dental carries.

Smoking	no.	Carries mean	Std. Deviation	Std. Error Mean	P value
Yes	79	6.2658	5.07813	.57133	0.374
No	74	5.5946	4.15098	.48254	

Discussion

The results clearly shows that the two groups are quite similar in respect to gender and age and the both reflect the actual composition of population in this part of the world as no any significant different were observed between the convict and non-convict group as far as sex or age is concerned. However, the results indicate that more than 65% of the population in Erbil are between 29-51 years old where as people above 60 year contribute to less than 5% of the population. Whenever level of education taken in consideration, the finding become completely different as a significant different between members of the two group were evident ($P < 0.0001$), half of the prisoners (convict group) were either illiterate or only preliminary certificate holders (Figure 2) illustrate that as the standard of education increase the variation between two groups increase. In other hand, the investigation showed that the level of education is much lower between convict (prisoners) in comparison to

non-convict people. The present investigation were carried out in order to control the confounding effect of case type (convict and non-convict) on oral health problems/carries, through the stud design (matching) and partially through analysis (statistical).

In fact the prison population is a unique and challenging one with various health problems, including poor oral health. In developing countries, oral health problems of the prisoners had received almost no attention. The oral health needs of the prison population are much greater than those outside prison (WHO, 2018). WHO refer to that prisoner's exhibit a higher prevalence of missing tooth compared to the general population, with considerable unmet needs for treatment. According to many surveys, Haideri et al. (2007) have revealed that prisoners had significantly more decayed and missing teeth and fewer restorations than the general population (Heidari et al., 2007; WHO, 2018). In India central jails of Karnatka, Reddy et al. (2012)

showed that a high prevalence of different periodontal disease has been recorded among prisoners, such diseases generally are, exacerbated by the large number of prisoners who smoke, misuse substances and exhibit stress-induced parafunctional habits (Reddy et al., 2012; WHO, 2018). Current evidence supports the finding that these high levels of oral disease have an impact on prisoners' quality of life (Nobile et al., 2007; WHO, 2018). In present study, smoking habits were significantly more frequent among convicts than among comparison group. Almost all convicts smokers in current study sample started to smoke before imprisonment, and the majority of them seemed to be strongly addicted to nicotine at the time of the survey. Studies have shown that the prevalence of dental caries and periodontal disease is higher among substance misusers than in the general population (Molendijk et al., 1996; Nobile et al., 2007; Reddy et al., 2012). Other group of studies suggests that mental health illness (xerostomia) among prisoners is also associated with poor oral health issues and smoking (Dougall & Fiske, 2008; Reddy et al., 2012; Walsh et al., 2008).

The community of prisoners differs from other social groups in terms of psychosocial factors, the level of education, attitudes towards health, and lifestyle. All these factors account for the generally higher prevalence of tobacco smoking among prisoners, in comparison with a general population (Cropsey et al., 2004; Durrah, 2005; Sieminska et al., 2006; Young et al., 2005). The analysis of factors that aggravate smoking in the convicts group demonstrated the importance of the stress factor. On the other hand, in spite of specific stress resulting from imprisonment (Sieminska et al., 2006).

The prison population is a unique and challenging one with many health problems, including poor oral health. In developing countries, oral health problems of the prisoners had received negligible attention. Therefore the present investigation will undoubtedly enhance dentists and scientists to carry out more detailed study on various prisons in this part of the world in order to deal with various oral health problems in prisons.

The results of this study indicated that the prisoners surveyed were more likely to have dental problems than individuals from the general population. The administrators of

prisons should have a qualified dental team who is able to provide an optimum dental treatment to prisoners to maintain their oral health. Further studies are required to address the limitations of this study, to specifically investigate the range of individual risk factors affecting inmates, and to formulate preventive and interceptive plans to ensure the oral wellbeing of this group.

Conclusion

The present investigation showed that little attention has been given to oral health problem of prisons in Erbil as well as Iraq. The prison populations are unique and challenging one with various health problems. Smoking habits as well as oral health problem (bad oral health) is more common among prisoners. Generally standards of education within them are lower than other people (non-convict) in Erbil city.

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