This is an author produced version of a paper published in Journal of Correctional Health Care. This paper has been peer-reviewed but does not include the final publisher proof-corrections or journal pagination.

Citation for the published paper:

Priwe, Christer; Carlsson, Peter. (2018). Oral Health Status of Male Swedish Citizens at Admission to Prison. Journal of Correctional Health Care, vol. 24, issue 4, p. null

URL: <https://doi.org/10.1177/1078345818792243>

Publisher: Sage

This document has been downloaded from MUEP (<https://muep.mah.se>) / DIVA (<https://mau.diva-portal.org>).

Oral health status of a male Swedish prison inmate population

CHRISTER PRIWE, DDS¹, PETER CARLSSON DDS, PhD¹

¹*Department of Cariology, Faculty of Odontology, Malmö University, Malmö, Sweden*

Oral health of male prisoners in Sweden

Corresponding author:

Christer Priwe

Department of Cariology

Faculty of Odontology

Malmö University

SE-205 06 Malmö

Sweden

Telephone: +46 406658550

Email: christer.priwe@mah.se

Acknowledgements

This study was performed in collaboration with the Swedish Prison and Probation Service. The authors would like to thank the staff at Fösie imprisonment for any assistance in connection with the execution of the study.

Abstract

The aim of the study was to describe oral health status as well as risk factors related to the oral health in a prison inmate population. 186 men admitted to one of Sweden's prisons were examined and interviewed to collect information. The results indicate a high prevalence of untreated oral disease and oral health risk factors in the sample. Only 11 % of the inmates had an incarceration time above 24 months, which is the limit for entitlement to basic dental treatment (except emergency). It can be postulated that the incarceration period would offer an opportunity to treat ongoing oral disease and promote oral health in a vulnerable group. However, the present regulations are not facilitating this for the majority of the inmates.

Key Words: Drug abuse, prisoner, oral health, dental caries, periodontal disease

Introduction

Epidemiological studies of the general population show that oral health in Sweden has improved in recent decades (Hugoson et al., 2005). Adult Swedes have today less tooth decay and retain more of their own teeth. Dental services in Sweden are well developed and accessible to the majority of the Swedish population. The majority of adults attend regular dental check-ups (Lundegren, Axtelius, & Akerman, 2011). However, in Sweden as in other western countries, there are vulnerable individuals with special dental needs, to whom the traditional dental services are not adapted and the availability is limited (Glassman & Subar, 2008). This group includes, among others, psycho-socially disadvantaged individuals, who are over-represented among the inmates at several of the country's prisons. While dental health has improved in Sweden in total, one finds that the dental health of the "worst" third has strongly deteriorated over the last twenty years (Nordenram, 2012).

Sweden has a government dental insurance which consists of an annual dental subsidy, especially aimed at younger (20 - 30 years) and older (>75 years) and a reimbursement system that covers a part of the cost of large and expensive treatments. The National Audit Office estimates that dental subsidies have not yet been an effective mean to achieve the goal of preventive dental care in the younger age range. The reimbursement system does not benefit individuals with low incomes and large dental needs who only visit the dentist for emergency needs.

According to the Dental Care Act, each county should offer a good dental care to those who are residing in the county. A county council may enter into an agreement with other care providers to perform the tasks which are the county council's responsibility. The county council should plan dental care based on the needs of the population and ensure that sufficient resources are available for patients with special needs of dental operations and that patient groups with special needs are offered dental care. Prisoners are a well-defined group of

patients and within the correctional services individuals are readily available, drug-free and often motivated to participate in health promotion programs.

Sweden has 49 prisons with three different security classifications. Every year about 9000 individuals are imprisoned at these institutions for longer or shorter sentences for various types of serious crimes. 90 % of individuals entering into the Swedish prisons are male. About 30 % are foreign nationals, i.e. both those living in Sweden without Swedish citizenship and visitors that have committed crimes in Sweden. About 35 % of the inmates are between 20 and 30 years, about 25 % are between 30 and 40 years and about 20 % are between 40 and 50 years.

An increasing proportion of prison inmates are drug user. In 2013 this group constituted 70 % of the total prison population. About 10 000 individuals who have more or less pronounced problems with drugs are cared for daily by the Swedish Prisons and Probation Service. In recent years investments have been made in an expanded drug therapy to face the problem of an increase in abuse. In 2013 just over one-fifth of the inmates with substance abuse completed a treatment program before they were released. The role of dental care in the rehabilitation process is neglected and underrated. The drugs or the effects of the drugs affect the structures of the oral cavity but lifestyle factors with disorderly living conditions in the community is probably the main factor behind the deteriorating health of the teeth (Brand, Gonggrijp, & Blanksma, 2008; Cho, Hirsch, & Johnstone, 2005; Darling & Arendorf, 1992; Donaldson & Goodchild, 2006; Rosenstein, 1975; Schulz-Katterbach, Imfeld, & Imfeld, 2009). The relationship between dental disease and certain systemic diseases is well documented (Demmer & Desvarieux, 2006; Lamster, Lalla, Borgnakke, & Taylor, 2008). Poor dental health reinforces abusing identity, causes a poorer self-esteem and complicates a return to a normal social life.

Since drug abuse began to spread in western countries during 1960's drug addicts have often been considered difficult to manage in public dental health care (Fung & Giannini,

2010). Beside financial obstacles this client group lacks motivation and cooperation (Robinson, Acquah, & Gibson, 2005). A variety of studies have been published over the years that confirm deteriorated dental health (Angelillo, Grasso, Sagliocco, Villari, & D'Errico, 1991; Johnson, Hearn, & Barker, 2008; Molendijk, Ter Horst, Kasbergen, Truin, & Mulder, 1996), limited access to dental care and unmet dental needs (Metsch et al., 2002) among drug addicts, a negative attitude towards this patient group among dental personnel (Dawkes, Sparkes, & Smith, 1995) as well as the need for more developed cooperation between dental care and other health care providers and funders (Charnock, Owen, Brookes, & Williams, 2004; Laslett, Dietze, & Dwyer, 2008).

A prison sentence can range from 14 days to lifetime. The incarceration period, the actual time a prisoner spends in prison, is usually two-thirds of the sentence. The task of the prison service is to promote the prisoner's adjustment to society. One part of this task is dental care, which can be provided during the incarceration period by involvement of the correctional system. Until 2007 all inmates with an incarceration period over 6 months were entitled to free basic dental care (dental caries treatment, prevention, filling of frontal tooth gaps). In 2007 the rules for dental care for inmates changed. All prisoners are now still entitled to emergency care while basic dental care is provided only for those with an incarceration period exceeding 24 months. All dental care including emergency care is now also subject to a fee, which must be paid for by the inmate himself. Emergency dental care is intended to remedy pain caused by caries, trauma and acute infection of the teeth, jaws and tooth attachment. Because of these changed rules about 40 % of the prison inmates lost their right to free dental care. Today only 20 % of prison inmates are entitled to basic dental care. The reason the rules were changed was referred to in the so called normalization principle, which means that the same conditions that apply for the people in the society at large, as far as possible apply for the inmates. Other aspects of prison's normalization efforts are self-management (inmates are responsible for cleaning, household budget and cooking) and participation in organized

activities in- and outside the institution. The difference is that these activities usually entail no costs to the inmates. Similarly 35 000 medical visits take place every year in the prisons, all of which are free for the inmates. A number of rehabilitation programmes are also offered to the prisoners.

In prisons there is a plentiful supply of sweets and soft drinks as well as tobacco products for sale. Arrangements have been made for tobacco prevention, while, for example information about the harmful effects of frequent carbohydrate intake does not occur.

About 20 of the country's 49 prisons have fully equipped dental clinics with dental personnel contracted who have the motivation, experience and skills to treat an often difficult to manage category of clients. These opportunities are used only to a limited extent.

Dental health in prison populations has previously been studied in a number of countries in the world, but so far not in Sweden (Walsh, Tickle, Milsom, Buchanan, & Zoitopoulos, 2008). Taken together, these studies show a poorer oral health in the target group than among non-institutional populations and neglected oral health needs. The aim of this epidemiological cross-sectional study was to describe the clinical and self-perceived oral health and treatment needs in a Swedish male prison population as well as risk factors related to their oral health.

Material and methods

Study population

The study was conducted during the period March 2012 to March 2013 at Fösie Prison in Malmö, a mid-class security prison with capacity for 101 inmates. The prison consists of four general departments and five departments for inmates with special needs for mental care. The recruitment flow chart and exclusion of subjects is shown in Fig 1. Reasons for exclusion were immediate transfer to other prisons, serving a second sentence and thus already included in the study, serving the sentence at department for special needs for mental care and non-Swedish citizens.

The 204 enrolled clients were informed about the purpose and the approach of the study, first orally by the examiner, after which a written information sheet was handed over. 186 individuals agreed to participate in the study, while 18 individuals (9 %) abstained. Fig 2 shows the total number of enrolled and the proportion of participating and abstaining individuals in each age group.

The study has been approved by the Regional Ethical Review Board at Lund University.

Data collection

After written consent was obtained the inmates were interviewed face-to-face using a specially designed interview form, this was followed by the clinical examination using a plain mouth mirror, explorer and a periodontal ball-pointed probe recommended by the World Health Organization (WHO). Bite-wing radiographs were taken when indicated. Both the interview and the examination were performed in the prison's dental clinic and conducted by the author. The WHO caries diagnostic criteria for decayed, missing and filled teeth (DMFT) and its components DT, MT and FT were used to evaluate dental caries status. Periodontal health status was assessed using the criteria of the Community Periodontal Index (CPI) as recommended by the WHO. The mouth is divided into sextants defined by tooth numbers 18-14, 13-23, 24-28, 38-34, 33-43, 44-48. One tooth in each sextant is recorded. Three indicators of periodontal status were used for this assessment: completely healthy gum, bleeding by probing and pockets deeper than 4 mm. The worst sextant indicates the individual's periodontal health status (World Health Organization, 1997).

Data- analysis

Dental caries (DMFT) as a function of the independent variables age and substance abuse was analysed using two way ANOVA with subsequent post hoc analysis using Scheffe's test for contrasts between groups. A p value < 0.05 was considered significant.

Results

Incarceration periods

The incarceration period was less than 6 months for 45 % of the study population, between 6 and 24 months for 44 % and over 24 months only for 11 % of the study population.

Demographic and socioeconomic data

Fifty-six percent of the study population were born in the Nordic region, 23 % were born in Europe outside the Nordic region and 21 % were born outside Europe.

73 % of the study population lacked employment and 37 % lacked housing at admission.

Drug habits

The drug habits among the inmates are shown in Table I. Percent frequencies of the preferred drugs for the drug users are shown in Fig 3.

Self-reported general and mental health

Physical symptoms or discomfort was indicated by 56 % of the inmates. The distribution of physical symptoms or discomfort is shown in Table II.

Mental illness or discomfort (anxiety, depression, sleeping disturbance) was indicated by 51 % of the inmates.

Diet habits

Daily intake of fermentable carbohydrates between meals was indicated by 64 % of the inmates.

Self-reported oral health and oral health habits

All participants stated that healthy teeth are very important. Discontent with dental status was indicated by 73 %. The distribution for reasons for discontent with dental health is shown in Table III. The time since last dental attendance for check-up and restoration (except emergency visits) was more than 5 years for 49 % of the inmates, 2-5 years for 32 % and less than 2 years for 19 % of the study population.

77 % of the inmates reported daily tooth brushing. 13 % reported regular dental check-ups. Reasons for lack of regular dental check-ups are shown in Table IV.

Clinical oral health

Fig 4 shows the distribution of healthy periodontal tissues, bleeding by probing and pockets more than 4 mm in the different age groups of the population. (21 individuals refused probing or lacked teeth in more than four sextants).

Table V presents the epidemiological indices of dental caries for the different age groups and for the whole study population. 6 % of the study population was completely caries free (DMFT=0). 7 of these were below 30 years, which represent 9 % of the age group 20-29 years.

The distribution of subjects according to number of teeth with untreated caries (DT) is shown in Fig 5. 66 % of the study population showed at least one tooth with untreated caries. 34 % showed 1-3 teeth, 16 % showed 4-6 teeth and 17 % showed more than 6 teeth with untreated caries. Among the 20-29 years olds 59 % showed at least one tooth with untreated caries. 7 % in this age group showed more than 6 teeth with untreated caries.

The distribution of subjects according to number of missing teeth (MT) is shown in Fig 6. 48 % of the inmates retained all their teeth. 22 % of the inmates missed more than 14 teeth. Among the 20-29 years olds 70 % retained all their teeth. 29 % in this age group missed 1-5 teeth and 1 % missed more than 5 teeth.

Mean DMFT of the different age groups related to drug use/no drug use and drug use according to preferred drug are demonstrated in Table VI.

Discussion

90 non-Swedish citizens were excluded from the study for communication reasons and 78 inmates with special needs for mental care had to be excluded for security reasons. The non-Swedish citizens as well as the inmates with special needs for mental care represent a vulnerable group in terms of oral health. Exclusion of these inmates, who together make up about 45 % of the total prison population, of course, affects the study results significantly.

The drop out of 9 % is evenly distributed between the different age groups. None of the 18 subjects who opted not to participate in the study provided a reason for this.

Among the study subjects, there were a wide range of factors that may have affected the oral health negatively. Examples of such risk factors are poor socio-economic background, foreign origin, mental illness and stress, smoking and consumption of drugs, deficiencies in diet, oral hygiene and dental care habits (Jacobsson, Koch, Magnusson, & Hugoson, 2011; Nordenram, 2012; Petersen, 2004; Sheiham & Watt, 2000; Watt, 2012). Regular dental check-ups were rare among the prisoners compared to the normal population (Lundegren et al., 2011). Together with financial shortcoming and disorderly living conditions the most common reason for non-regular check-up was the view that there was no need for dental care. Dental fear as a reason for non-regular check-ups was stated by less than a fifth of the inmates.

In the study population only 11 % had an incarceration period exceeding 24 months and were thus entitled to basic dental care according to the current regulations.

To get an idea of how the dental health of prison inmates is related to a non-institutionalized population, the results of a study of a normal population conducted in southern Sweden during 2007-2008 of 451 subjects aged 20-89 years, The Skåne Study (Lundegren, Axtelius, & Akerman, 2012), are shown alongside the different caries indices of

the study population in Fig 7,8,9 and 10. The Skåne Study includes both men and women, but no significant difference existed between the sexes regarding the clinical findings. Compared to a normal population, the study population showed a similar caries prevalence (DMFT) in the corresponding age groups. However, in the prison inmate population the DMFT was largely made up by the DT and MT components while the FT component only constitute a minor fraction in all groups. In contrast, mean FT stayed at a low level in the target group while it increased with age in the normal population. These results clearly indicate that the decayed teeth in the target group are left untreated until they are eventually extracted. In the normal population however, the average DT was consistently below FT in all age groups, a finding that corresponds with data from other contemporary Swedish populations (Hugoson et al., 2005; Lundegren et al., 2012). It is of interest that this pattern of untreated carious lesions, which corresponds with the reported irregular pattern of seeking dental care, was actually not related to a higher caries prevalence. Apparently, maintaining the habit of daily tooth brushing, reported by two thirds of the study group, was a sufficiently effective health behavior to maintain the oral health at the same level as the normal population.

Within the group of addicts, the amphetamine users stands out as a high caries prevalence group which is in accordance with studies pointing out this association (Donaldson & Goodchild, 2006; Laslett et al., 2008; Rommel, Rohleder, Wagenpfeil, Haertel-Petri, & Kesting, 2015). As the present group does not allow for a detailed analysis of the cause of this association, it can only be speculated that the amphetamine users are exposed to more caries risk factors than for example the cannabis and cocaine users.

As a result of the harsh Swedish drug laws many addicts end up in prison once or several times during the drug career, often at a young age. The age group 20-29 years constitutes the largest group in the study population and 70 % of these inmates indicate the use of drugs. The majority of this age group retains all their teeth and 9 % are completely caries free. The relatively well preserved oral health in this group is an effect of the free child and youth

dental care in Sweden. Meanwhile, 59 % of these inmates have at least one tooth with untreated caries, while only 9 % are entitled to dental care regardless of treatment needs according to the present regulations. Furthermore, 50 % did not have a dental check-up for more than five years, which means that a significant amount of dental subsidies has not been used.

Only 4.9 % of the population was assessed with completely healthy periodontal tissues in all sextants. A majority of the clients (68.5 %) were assessed with gums bleeding by probing as the worst diagnosis of one or more of the sextants, indicating the need of oral hygiene instruction. Pockets deeper than 4 mm were assessed in a quarter of the study population. This was lower as a whole and even in each age group except 60+ than in a Swedish normal population (Hugoson et al., 2005).

Caries and periodontal disease are chronic diseases that both worsen if left without treatment. The diseases proceed quietly and cause symptoms only at an advanced stage when the need for care has become extensive. Emergency dentistry treats pain caused by trauma, caries lesions and infections of teeth, jaws or tooth attachment. An emergency treatment is mostly temporary and a permanent treatment must be done in the near future. A majority of the study population showed at least one tooth with untreated caries and a fifth showed more than six teeth with untreated caries. Dental caries is thus the most common disease in the study population compared to the self-reported general health (followed by chronic hepatitis C among 30 % of the subjects). Unlike other medical conditions, it is the length of the incarceration period that determines whether inmates should be entitled to the treatment of dental disease and this treatment involves a cost to the inmate. In the study population only 11% had an incarceration period exceeding 24 months and were thus entitled to basic dental care according to the current regulations. It is noteworthy that individuals in Sweden today, detained for up to two years, lack the possibility of disease-related basic dental care at least at a cost that is appropriate to their current financial situation.

One purpose of this study was also to describe the study population's own perception of their dental health and dental healthcare needs. All the inmates stated that healthy teeth are very important. Three quarters of the study population were dissatisfied with their teeth. Esthetic-functional factors was the most common reason for their discontent, i.e. that the teeth deviate from an ideal in terms of color, regularity and number. This is a normal attitude in an appearance-oriented culture where the norm is to have a full dentition with regular, white teeth, and where even a small deviation from this norm is considered a handicap. Unmet fillings or periodontal treatment needs was indicated among a fifth of the unsatisfied and tooth ache only by 11 %.

Conclusion

The results demonstrate a high prevalence of untreated oral disease and oral health risk factors in the sample. It can be postulated that the incarceration period would offer an opportunity to treat ongoing disease and promote oral health in a vulnerable group. However the present regulations are not facilitating this for the majority of the prisoners.

Acknowledgements

This study was performed in collaboration with the Swedish Prison and Probation Service. The authors would like to thank the staff at Fösie Prison for any assistance in connection with the execution of the study.

References

- Angelillo, I. F., Grasso, G. M., Sagliocco, G., Villari, P., & D'Errico, M. M. (1991). Dental health in a group of drug addicts in Italy. *Community Dentistry and Oral Epidemiology*, 19(1), 36-37.
- Brand, H. S., Gonggrijp, S., & Blanksma, C. J. (2008). Cocaine and oral health. *British Dental Journal*, 204(7), 365-369. doi:10.1038/sj.bdj.2008.244 [doi]
- Charnock, S., Owen, S., Brookes, V., & Williams, M. (2004). A community based programme to improve access to dental services for drug users. *British Dental Journal*, 196(7), 385-388. doi:10.1038/sj.bdj.4811193 [doi]
- Cho, C. M., Hirsch, R., & Johnstone, S. (2005). General and oral health implications of cannabis use. *Australian Dental Journal*, 50(2), 70-74.
- Darling, M. R., & Arendorf, T. M. (1992). Review of the effects of cannabis smoking on oral health. *International Dental Journal*, 42(1), 19-22.
- Dawkes, M., Sparkes, S., & Smith, M. (1995). Dentists' responses to drug misusers. *Health Trends*, 27(1), 12-14.
- Demmer, R. T., & Desvarieux, M. (2006). Periodontal infections and cardiovascular disease: The heart of the matter. *Journal of the American Dental Association (1939)*, 137 Suppl, 14S-20S; quiz 38S. doi:137/suppl_2/14S [pii]
- Donaldson, M., & Goodchild, J. H. (2006). Oral health of the methamphetamine abuser. *American Journal of Health-System Pharmacy : AJHP : Official Journal of the American Society of Health-System Pharmacists*, 63(21), 2078-2082. doi:63/21/2078 [pii]

- Fung, E. Y., & Giannini, P. J. (2010). Implications of drug dependence on dental patient management. *General Dentistry*, 58(3), 236-41; quiz 242-3.
- Glassman, P., & Subar, P. (2008). Improving and maintaining oral health for people with special needs. *Dental Clinics of North America*, 52(2), 447-61, viii.
doi:10.1016/j.cden.2007.11.002 [doi]
- Hugoson, A., Koch, G., Gothberg, C., Helkimo, A. N., Lundin, S. A., Norderyd, O., . . . Sondell, K. (2005). Oral health of individuals aged 3-80 years in jonkoping, sweden during 30 years (1973-2003). II. review of clinical and radiographic findings. *Swedish Dental Journal*, 29(4), 139-155.
- Jacobsson, B., Koch, G., Magnusson, T., & Hugoson, A. (2011). Oral health in young individuals with foreign and swedish backgrounds--a ten-year perspective. *European Archives of Paediatric Dentistry : Official Journal of the European Academy of Paediatric Dentistry*, 12(3), 151-158. doi:11.16 [pii]
- Johnson, D., Hearn, A., & Barker, D. (2008). A pilot survey of dental health in a group of drug and alcohol abusers. *The European Journal of Prosthodontics and Restorative Dentistry*, 16(4), 181-184.
- Lamster, I. B., Lalla, E., Borgnakke, W. S., & Taylor, G. W. (2008). The relationship between oral health and diabetes mellitus. *Journal of the American Dental Association (1939)*, 139 Suppl, 19S-24S. doi:139/suppl_5/19S [pii]
- Laslett, A. M., Dietze, P., & Dwyer, R. (2008). The oral health of street-recruited injecting drug users: Prevalence and correlates of problems. *Addiction (Abingdon, England)*, 103(11), 1821-1825. doi:10.1111/j.1360-0443.2008.02339.x [doi]

- Lundegren, N., Axtelius, B., & Akerman, S. (2011). Self perceived oral health, oral treatment need and the use of oral health care of the adult population in skane, sweden. *Swedish Dental Journal*, 35(2), 89-98.
- Lundegren, N., Axtelius, B., & Akerman, S. (2012). Oral health in the adult population of skane, sweden: A clinical study. *Acta Odontologica Scandinavica*, 70(6), 511-519. doi:10.3109/00016357.2011.640279 [doi]
- Metsch, L. R., Crandall, L., Wohler-Torres, B., Miles, C. C., Chitwood, D. D., & McCoy, C. B. (2002). Met and unmet need for dental services among active drug users in miami, florida. *The Journal of Behavioral Health Services & Research*, 29(2), 176-188.
- Molendijk, B., Ter Horst, G., Kasbergen, M., Truin, G. J., & Mulder, J. (1996). Dental health in dutch drug addicts. *Community Dentistry and Oral Epidemiology*, 24(2), 117-119.
- Nordenram, G. (2012). Dental health: Health in sweden: The national public health report 2012. chapter 16. *Scandinavian Journal of Public Health*, 40(9 Suppl), 281-286. doi:10.1177/1403494812459620 [doi]
- Petersen, P. E. (2004). Challenges to improvement of oral health in the 21st century--the approach of the WHO global oral health programme. *International Dental Journal*, 54(6 Suppl 1), 329-343.
- Robinson, P. G., Acquah, S., & Gibson, B. (2005). Drug users: Oral health-related attitudes and behaviours. *British Dental Journal*, 198(4), 219-24, discussion 214. doi:4812090 [pii]
- Rommel, N., Rohleder, N. H., Wagenpfeil, S., Haertel-Petri, R., & Kesting, M. R. (2015). Evaluation of methamphetamine-associated socioeconomic status and addictive

behaviors, and their impact on oral health. *Addictive Behaviors*, 50, 182-187.

doi:10.1016/j.addbeh.2015.06.040 [doi]

Rosenstein, D. I. (1975). Effect of long-term addiction to heroin on oral tissues. *Journal of Public Health Dentistry*, 35(2), 118-122.

Schulz-Katterbach, M., Imfeld, T., & Imfeld, C. (2009). Cannabis and caries--does regular cannabis use increase the risk of caries in cigarette smokers? *Schweizer Monatsschrift Fur Zahnmedizin = Revue Mensuelle Suisse D'Odonto-Stomatologie = Rivista Mensile Svizzera Di Odontologia E Stomatologia / SSO*, 119(6), 576-583.

Sheiham, A., & Watt, R. G. (2000). The common risk factor approach: A rational basis for promoting oral health. *Community Dentistry and Oral Epidemiology*, 28(6), 399-406.

Walsh, T., Tickle, M., Milsom, K., Buchanan, K., & Zoitopoulos, L. (2008). An investigation of the nature of research into dental health in prisons: A systematic review. *British Dental Journal*, 204(12), 683-9; discussion 667. doi:10.1038/sj.bdj.2008.525 [doi]

Watt, R. G. (2012). Social determinants of oral health inequalities: Implications for action. *Community Dentistry and Oral Epidemiology*, 40 Suppl 2, 44-48. doi:10.1111/j.1600-0528.2012.00719.x [doi]

World Health Organization. (1997). *Oral health surveys. basic methods* (4th ed.). Geneva: World Health Organization.

Table I. Drug habits among the prison inmates

Smokers	84 %
Average age for smoking onset	14 years
Alcohol abuse	13 %
Average age for first intoxication	13 years
Drug use	71 %
Drug use daily	55 %
Intravenous drug use	32 %
Average age for onset of drug use	16 years
Average time for duration of drug use	18 years

Table II Distribution of self-reported physical symptoms or discomfort in the study population

Infectious diseases (chronic hepatitis)	30 %
Diseases of the musculoskeletal system	15 %
Diseases of the circulatory system	5 %
Diseases of the respiratory system	5 %
Diseases of the digestive system	5 %
Endocrine diseases (diabetes)	5 %
Diseases of the nervous system	5 %
Diseases of the skin and subcutaneous system	1 %
Diseases of the genitourinary system	1 %
Neoplasms	1 %

Table III. Reasons for discontent with oral health

Appearance or masticatory dysfunction	55 %
Cavities, fractures or suspicion of cavities	23 %
Tooth ache	14 %
<u>Periodontal (tartar, bleeding gums)</u>	<u>8 %</u>

Table IV. Reasons for the lack of regular dental check-ups

No subjective needs	27 %
Economy	25 %
Life style	25 %
Fear	15 %
Other reasons	7 %

Table V. The different epidemiological indices of dental caries in the different age groups and for the whole study population.

Age group	DT	MT	FT	DMFT
20-29 (N=76)	2.1 (3.0)	0.6 (1.5)	3.6 (2.9)	6.3 (4.6)
30-39 (N=43)	3.7 (3.8)	3.4 (5.5)	3.3 (3.3)	10.3 (7.4)
40-49 (N=36)	3.7 (3.5)	5.1 (6.6)	5.4 (4.0)	14.2 (6.7)
50-59 (N=25)	4.3 (5.8)	8.8 (9.2)	4.2 (5.2)	17.3 (8.7)
60- (N=6)	1 (1.3)	17.6 (11)	2.2 (3)	21.0 (8.2)
Total (N=186)	3.0 (3.8)	3.7 (6.7)	3.9 (3.7)	10.7 (7.8)

Table VI. Mean DMFT of the different age groups of the study population according to no drug use and preferred drug among drug users

	20-29		30-39		40-49		50-59		60-		Total	
	N	DMFT(SD)	N	DMFT(SD)	N	DMFT(SD)	N	DMFT(SD)	N	DMFT(SD)	N	Total
No drug use	17	5.3(3.3)	17	7.2(7.3)	8	11.4(3.8)	6	7.7(5.5)	6	20.7(8.2)	54	8.8(7.3)
Cannabis	35	6.1(4.7)	8	12.6(7.6)	3	73(1.5)	2	17.5(9.2)	0		48	7.8(6.1)
Amphetamine	7	9.6(2.9)	8	12.5(9)	15	18(7)	11	21.3(7)	0		41	16.4(8)
Opiate	9	7.8(6.2)	6	12.2(5.4)	7	13.4(7.3)	5	18(8.1)	0		27	12.1(7.3)
Cocaine	4	2.5(3.8)	3	12.7(3.2)	0		0		0		7	6.9(6.3)
Benzo	1	2	1	8	0		0		0		2	5(4.2)
Other	3	8.7(3.2)	0		3	11(2)	1	28	0		7	12.4(7,3)
Total drug user	59	6.6(4.8)	26	12.3(6.8)	28	15(7.2)	19	20.4(7,2)	0		132	11.5(7.9)

Fig 1. Recruitment flowchart

Fig 2. Distribution of numbers of study subjects and abstaining individuals in each age group of the study population

Fig 3. Frequencies of preferred drugs among drug users

Fig 4. Distribution of periodontal indices in the different age groups of the study population

Fig 5. Distribution of frequencies of subjects according to number of DT of the study population

Fig 6. Distribution of frequencies of subjects according to number of MT of the study population

Fig 7. Mean DMFT of the different age groups of the study population related to a normal population

Fig 8. Mean DT of the different age groups of the study population related to a normal population

Fig 9. Mean number of MT of the different age groups of the study population related to a normal population

Fig 10. Mean FT of the different age groups of the study population related to a normal population