Scottish Prisons
Dental Health Survey 2002

SCOTTISH EXECUTIVE

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Scottish Prisons' Dental Health Survey 2002

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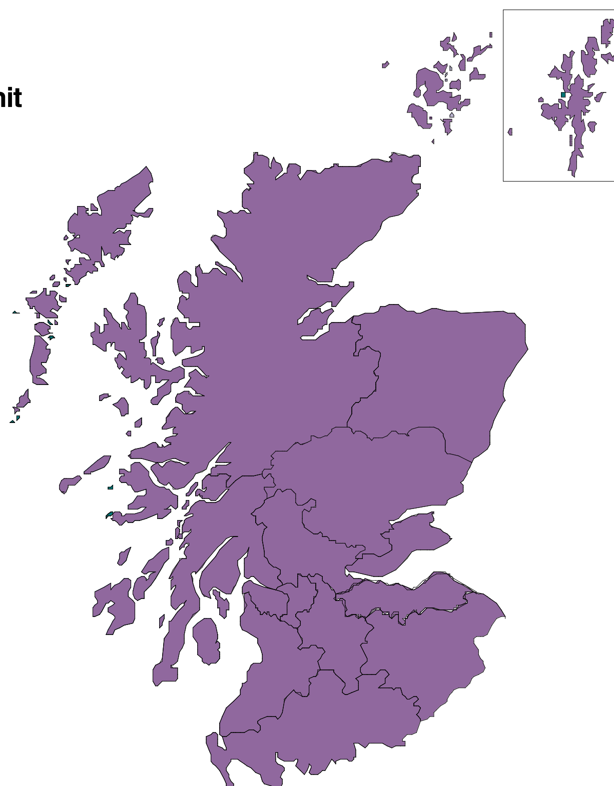

EXECUTIVE SUMMARY, SCOTTISH PRISONS, DENTAL HEALTH SURVEY 2002

This survey of the dental health and attitudes of the Scottish prison population was commissioned by the Scottish Executive Health Department.

Aim

The aim of the survey was to provide accurate and up-to-date information on the dental health of the Scottish prison population. The findings will help to plan appropriate & effective oral health services in prisons across Scotland.

Method

The fieldwork for this cross sectional prevalence survey was co-ordinated by the Scottish Consultants in Dental Public Health. Three dentists with experience of epidemiological fieldwork in previous national Adult Dental Health Surveys carried out the dental examinations. The survey consisted of a structured interview followed by dental examinations of a random sample of the Scottish prison population. Three prisoner groups were identified: females, male young offenders and adult males. The objectives were to interview and carry out dental examinations of approximately 750 subjects. The survey protocol followed the 1998 UK Adult Dental Health Survey methodology thus allowing direct comparison to the Scottish population. Ethical approval for the survey was granted by the Scottish Prison Healthcare Policy Group and the Multi-centre Research Ethics Committee for Scotland (MREC).

Study Timetable

The fieldwork was carried out in April/May 2002. The Dental Health Services Research Unit, University of Dundee carried out data cleaning & statistical analysis.

Results

559 prisoners participated in the survey, a 75% response rate.

The results showed that on average the prison population had more decayed but fewer filled teeth than the Scottish population. The severity of tooth decay was also considerably worse in the prison population, especially for female prisoners. Reported length of stay data showed that it took two years to improve the dental health of prisoners. No other more serious pathology (e.g. suspected malignancy) was found in any subject.

CONCLUSIONS AND RECOMMENDATIONS;

1 Oral health/public health

1.1 Dental Health was significantly worse in prisoners than in the general population. A major determinant of poor oral health within the general population is the socio-economic circumstances in which individuals live (Daly et al 2002).

i) Prisoners had significantly more decayed teeth, fewer filled teeth and fewer natural teeth than the general population.

ii) The prevalence of severe decay, as defined by teeth with decay which extends into the dental pulp (usually requiring extraction of the tooth), was three times higher in the prison population than in the general population.

iii) In female prisons, pulpal decay was fourteen times more prevalent than in the general female Scottish population.

1.2 Poor oral health is also linked to the abuse of opiates, and other drugs. Prolonged drug abuse is often associated with self-neglect and the adoption of a diet which promotes tooth decay (Titsas & Ferguson 2002). The 1999/2000 Scottish Prisons Service annual report, recorded that 74.5% of the mandatory drug tests which were carried out were positive (SPS 2001).

Recommendations

1.3 The Scottish Executive should ensure that appropriate public health measures are in place to reduce inequalities in the general health and dental health of the Scottish population.

1.4 All prescribers of methadone should take steps to limit the adverse dental health effects of methadone in the community. Harm minimisation by prescription of sugar free preparations to recovering drug addicts in the general Scottish population is recommended. This may be developed through Local Prescribing Protocols.

1.5 Pharmacists should promote the use of sugar-free methadone, and by linking with dental professionals and HEBS raise awareness of the detrimental impact of sugared methadone on dental health.

1.6 All staff including the Scottish Prison Medical Services involved in the care of recovering addicts should be aware of the adverse effects of sugared methadone on teeth.

1.7 The Scottish Prison Service should continue to ensure that sugar-free methadone is prescribed to recovering addicts in prisons.

2 Prevention and registration

2.1 Almost all prisoners with natural teeth reported that they carried out toothbrushing at least once a day.

2.2 The reasons that prisoners reported for visiting a dentist were very different from those reported by the Scottish population. Fewer attended for a regular dental check-up and significantly more attended because of toothache or other trouble with their teeth. As the prison population is, in general, inclined to wait until they have pain from their teeth before treatment is sought, removal of diseased teeth is a far more likely treatment option than restorations.

2.3 Nearly 4 out of 5 prisoners seen in the survey required dental care or advice.

Recommendations

2.4 Suitable toothbrushes and fluoride toothpaste should continue to be made available free of charge to all prisoners

2.5 The Scottish Prison Service should consider redesigning prison dental services to make better use of the skills of dental hygienists and therapists in the delivery of preventive dental care.

2.6 Oral health promotion aimed at improving dental health (oral hygiene, self care & dietary advice) should be expanded as an integral part of general health promotion already present in the prison system.

2.7 The development of oral health promotion by peers within the long-term prison community may be a model of improving oral health suitable for the prison population.

3 Service availability and access

3.1 Almost 70% of prisoners had visited a prison dentist and a similar proportion reported it was difficult to get an appointment and that the dentist was not present in the prison frequently enough.

3.2 The results of the survey show considerable unmet dental need in the prison population compared to the Scottish adult population. A considerable expansion (estimated at two to three times) of the prison dental service is required to meet the dental needs of the prison population.

3.3 It was shown to take up to 2 years for the dental health of prisoners to show sustained improvement. Changes to the prison induction system to include questions about dental attendance may help to get prisoners treated more quickly.

3.4 Attempts to improve the effectiveness and efficiency of the Prison Dental Service may render the prison population dentally fit more speedily.

Recommendations

3.5 Screening for dental disease should form part of the induction process for those entering Scottish prisons, perhaps by an appropriate algorithm being developed to support dental screening on induction to Scottish prisons.

3.6 A system of care which allows stabilisation of dental disease as soon as possible after admission to prison should be adopted by the Scottish Prison Service

3.7 The Scottish Prison Service should link to any future national guidelines for triaging dental patients into routine and emergency categories.

3.8 Local Protocols for the referral of prisoners to dental specialists (eg Oral & Maxillofacial surgery, general anaesthesia, sedation etc) should be formally developed.

4 Quality and Standards

4.1 The Scottish Prison Service Health Care Standard 9;

"To provide dental treatment within prisons to a standard that would normally be available under NHS contract, to a civilian population. To provide either within prison, or without, access to a dental surgery, equipped and decorated to current proper standards."

4.2 A greater proportion of prisoners have full and partial dentures than does the general population and clinicians working in the prison service may require more expertise than general dental practitioners in this area of care.

4.3 As prisoners had significantly more decayed teeth, and as the prevalence of severe decay (as classified by teeth with decay which extends into the dental pulp) was three times higher in the prison population (14-fold in the female prisoners) dentists with significant oral surgery training may be required to meet the needs of the prison population.

Recommendations

4.4 The training needs of dentists and Professionals Complementary to Dentistry working in the Scottish Prison Service should be acknowledged. SPS should continue to encourage participation in regular postgraduate training by prison dental personnel

4.5 Prison dental surgeries should continue to be subject to local Primary Care Trust practice inspection programmes.

4.6 Prison dental services should develop an accreditation programme for prison dental practices in Scotland, modelled on future national quality standards

5 Responsive services

5.1 Female prisoners had significantly higher levels of self-reported anxiety about visiting a dentist than male prisoners.

5.2 Up to 77% of prisoners report long waiting times for routine dental treatment whilst in prison.

Recommendations

5.3 The Scottish Prison Service should consider expansion of the current dental service to meet the high levels of need identified in this report

5.4 The Government requires NHS Boards to provide arrangements for providing access to Out-of-Hours dental emergency care. Advice should be available and urgent cases should be assessed within 24 hours. To match NHS standards, the Prison Service will need to provide an equivalent quality of out of hours or emergency care.

5.5 The Scottish Prison Service should consider more flexible use of clinical facilities in prisons to treat unmet dental needs.

6 Human resources and teamworking

6.1 General Dental Practitioners are often reluctant to spend more than a few sessions away from their own practices as their overheads still accrue. Therefore, expansion of services may require employment of more than one GDP in any prison, with or without hygienists and therapists, or a move to a salaried service

Recommendations

6.2 Alternative methods of employing prison dentists should be explored. For instance, employing a full time dentist to serve prisons located within distinct geographical localities should be considered

6.3 Expanded dental teams, utilising the skills of dental hygienists and therapists should be considered

7 Infrastructure and Resources

7.1 Dental clinics should meet the same quality standards as in general dental practice in Scotland. This is best achieved by inclusion of prison dental services in the dental practice inspection programmes organised in each health Board area.

Recommendations

7.2 The dental services in the Scottish Prison Service should be resourced at a level which reflects the very high levels of dental need which exist in Scottish prisons.

7.3 The Scottish Prison Service must ensure that the quality of the supporting infrastructure is fit for purpose. Prison dentists must highlight relevant professional issues to the SPS.

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1. INTRODUCTION

1.1 Background

The Scottish Executive Health Department commissioned the Scottish Consultants in Dental Public Health to undertake a dental survey of the prison population.

The aim of the survey is to provide accurate and up-to-date information on the condition of people's teeth in the Scottish prison population. The findings of the survey will help to plan appropriate & effective oral health services in prisons.

Four previous surveys of the dental health of adults have been carried out: in 1968 England & Wales (Gray et al 1970); in 1972 Scotland (Todd and Whitworth 1974); in 1978, the UK (Todd and Walker 1980); in 1988, the UK (Todd and Lader 1991); in 1998, the UK (Kelly et al 2000). The sample frames for each of these surveys excluded the prison population.

A review of the literature reveals that there have been few studies or reports on the dental health of prisoners and thus, their oral health needs and attitudes are largely unknown.

1.2 Aims of the survey

The survey aims were to:

- investigate by questionnaire reported dental experiences, attitudes and knowledge, availability of dental care and oral hygiene;

- identify, by questionnaire, those who have total loss of natural teeth and investigate their reported use of complete denture(s);

- establish, by clinical examination, the condition of the natural teeth;

- establish, by clinical examination and interview, the prevalence of denture(s) worn in conjunction with natural teeth.

The study was designed so that the results could be compared with corresponding data from the 1998 Office for National Statistics (ONS) UK Adult Dental Health Survey of individuals resident in private households. (Kelly et al 2000). Diagnostic dental criteria of oral health included in this survey were identical to those used in the 1998 National Adult Health Survey.

2. THE SURVEY TIMETABLE

Preparation/pilot study: Winter 2001

Main study: April / May 2002

3. PROJECT MANAGEMENT ARRANGEMENTS

3.1 The Survey Team

The Scottish Consultants in Dental Public Health co-ordinated the study. Three dentists experienced in dental epidemiology were recruited for the survey.

3.2 Experience

The Scottish Consultants in Dental Public Health Group has wide experience in dental epidemiological surveys. The dental examiners and their recorders had extensive experience of carrying out large-scale dental surveys, including the 1978, 1988 and 1998 UK Surveys of Adult Dental Health.

3.3 Coverage

The survey covered the whole of Scotland. Recorders and the dentist used the same protocols and questionnaires, with appropriate modifications, as used in the ONS UK Adult Dental Health Survey in 1998. (Kelly et al 2000).

3.4 Key Staff

3.4.1 The Scottish Consultants in Dental Public Health

Mr C Jones, Consultant in Dental Public Health for Highland Health Board and Mrs M McCann, Deputy Chief Dental Officer were the principal research managers for the survey. Highland Health Board is registered under the Data Protection Act.

4. SURVEY COMPONENTS

The survey fieldwork consisted of two elements; a face-to-face questionnaire interview and a clinical oral examination using standardised methods and equipment.

4.1 Location of fieldwork

All the interviews and dental examinations were carried out in the prisons selected for the survey.

4.2 Field visits

Two recorders administered the questionnaires and accompanied a dentist, to act as recorder for the dental examination. The examination took place on the same day that the questionnaires were administered.

4.3 Recruitment of the dental examiners

The dental examiners were recruited from the Dental Public Health and Community Dental Service through the Scottish contact for the British Association for the Study of Community Dentistry (BASCD) co-ordinated NHS epidemiology programme. The examiners had experience of epidemiological fieldwork through involvement in previous national studies, local oral health surveys co-ordinated by BASCD and the 1998 Adult Dental Health Survey.

4.4 Funding

The Scottish Consultants in Dental Public Health received funding from the Scottish Executive Health Department Primary Care Development Fund. The study involved no direct cost to the Prison Service.

5. CONFIDENTIALITY

Strict confidentiality was maintained whereby no information about an identifiable individual was passed outside the National Health Service.

The main steps to preserve confidentiality and security during fieldwork and afterwards were:

- data on the portable computers used by recorders were at all times stored in password-protected form;
- names and other similar information which could give clues to a person's identity, did not form part of datafiles available to anyone outside the NHS. **NB** The NHS does not include the Prison Medical or Dental Service.

6. ETHICAL ISSUES

6.1 Types of research

The research is non-therapeutic. The survey was carried out in order to gain further knowledge of the dental health and dental health related to behaviour of the prison population. Although the survey does involve "interference with the subject", the procedures involve less than "minimal risk" falling within the category defined as "risk so small that it can be ignored" outlined in the ethical guidelines produced by the Royal College of Physicians (1990).

6.2 Recruitment to the survey and the dental examination

A letter, giving a brief outline of the nature and purpose of the survey, was given to all the sampled individuals in advance of the survey (appendix 1). The survey was voluntary and the recorders were trained to give respondents a full explanation of the nature and purpose of the survey, including the voluntary nature of their participation. Individuals who agreed to participate still had the opportunity to refuse to answer any question, to opt out of the dental examination and to withdraw from either the questionnaire or examination at any time.

Individuals who reported that they had one or more natural teeth had the dental examination explained to them and they were asked if they would be willing to have their mouths examined by a dentist. Those who consented had the dental examination on the same day. The respondent signed a form giving their written consent before any examination was undertaken (appendix 2).

6.3 Consent

Respondents were given clear explanations, both verbally and in writing of the purpose of the survey and the dental examination, and how information about them would be used. Express written consent was required before each dental examination (appendix 2). The steps taken to ensure informed consent, without pressure or inducements, are described in 6.2 above. No incentive or reward was offered to participants.

Separate consent (appendix 3) was sought from the respondents for information to be sent to the prison medical officer in the event of any serious oral pathology being identified (see 6.5).

6.4 Indemnity

The project is an epidemiological study of the prison population in Scotland. For the part of the study which involves a dental examination, NHS indemnity provided by the dentist's employing Trust applied to the examiners. The recorders were dental nurses who assist the dentists and are covered by the same NHS indemnity.

6.5 Handling professional questions during the dental examination and reporting pathology

The dental examiners did not make any comment about what was seen during the examination. If the participants asked about their dental health, and if questions related to the standard of previous dental care arose, the response was that the survey is not designed to collect the sort of information on which treatment can be planned, and that visiting a general dental practitioner or prison dentist is the best way of ensuring a thorough dental check-up.

The only exception to this was if the examining dentist noticed a lesion which he/she considered may be serious and potentially life-threatening (such as a suspected malignancy). Examiners were very unlikely to encounter such potentially serious pathology, as the incidence of these lesions is very low. The examination was not a screening exercise and did not involve examination of the oral soft tissues. However, it is possible that such a lesion may have been noticed and, as the implications are serious, a protocol to deal with this eventuality was in place.

6.6 Protocol for reporting serious pathology.

In the extremely unlikely event that such a lesion was noted, the examiner was obliged to follow a set protocol designed to make sure that the prison medical service was informed, whilst not causing the participant unnecessary worry.

The examiner should inform the participant using an appropriate form of words. As experienced clinicians, the examiners may wish to vary the approach or the tone they use to ensure good communication, but the basis of the wording should be the same in all cases. The dentist would usually want to introduce the subject, usually by asking whether or not the lesion causes any discomfort, and then state that "it is survey policy that a brief report of any ulcers or inflamed areas is passed to the Prison Medical Service. If the participant says that they will arrange to see the Prison Medical Service themselves then they should be encouraged to do this and it is left at that point. If the participant asks what the dentist thinks the lesion is, the dentist should answer honestly that they do not know, before re-iterating standard survey policy as above.

If the participant agreed to the dentist reporting their findings to the prison doctor, the dentist would record the site and nature of the suspect lesion and details of the nearest specialist unit where appropriate investigations could be undertaken (appendix 3). This would be passed on immediately, along with the signed consent form, to the prison doctor.

It is most unlikely that any such lesions will be found and it is also unlikely that even those which are reported will turn out to be serious. It is the responsibility of the examiner not to alarm the participant unduly.

7. SAMPLING

7.1 The sample design

The survey covered all prisons in Scotland but only 8 prisons were visited.

The prisons were divided into three groups related to the majority of prisoners in three categories in each institution:

Female **1 prison (Cornton Vale) - sampled**
Male Young Offenders **3 institutions (Dumfries, Glenochil & Polmont) - sampled**
Male **12 from which four were selected at random**

With the limited resources available, it was not be possible to visit every prison. The main female prison and the three Young Offender Institutions were sampled. A two stage sampling process was used to select the male sample; four prisons were selected from the fourteen male prisons (Dumfries and Glenochil also house young offenders). The unique status of Zeist prison excluded it from the sample

The sampling structure is shown in table 1 below. Please note that these figures were only used for planning the survey. The actual sample drawn for the survey was based on the day list of prisoners present on the survey days.

TABLE 1 - Sampling method of the prison population in Scotland

Establishments	M	F	Total	Sample	N	Sample fraction	Days Exam
Aberdeen	155	6	161				
Barlinnie	958		958	**Y**	80	1 in 11	2
Castle Huntly	135		135				
Cornton Vale		150	150	**Y**	150	all	4
Edinburgh	680		680				
Glenochil	480		480	**Y**	80	1 in 6	2
Greenock	238		238				
Inverness	118	4	122				
Kilmarnock	512		512				
Low Moss	294		294				
Noranside	119		119				
Perth	438		438	**Y**	80	1 in 5	2
Peterhead (inc Unit)	292		292	**Y**	80	1 in 4	2
Shotts (inc Special Unit)	488		488				
Shotts: National Induction Centre	31		31				
Zeist	1		1	**n/a**			
Young Offenders Institutions							
Cornton Vale		37	37	**Y**	37	all	1
Dumfries	129	5	134	**Y**	80	2 in 3	2
Glenochil	125		125	**Y**	80	2 in 3	2
Polmont	402		402	**Y**	80	1 in 5	2
Total	**5595**	**202**	**5797**	**9**	**747**		**19**

A random sample of 4 adult male prisons (2 days in each) should yield 320 subjects.

7.2 Power calculation and sample size

The UK adult dental health survey in 1998 found that 58% of Scottish adults had at least one decayed or unsound tooth.

The prevalence of decay in the Scottish prison population is unknown. Using preliminary results for a survey carried out in the North West of England, they found that 75% of their prison population had untreated decay. We can use this estimate as the likely prevalence of untreated decay in the Scottish prison population. Using the known disease prevalence in the Scottish adult population (58%) and the estimated prevalence in the Scottish prison population (75%) at an alpha level of 5% and a power of 90% to detect a significant difference in prevalence, the sample size is 172 in each group using the method described in the text book; Medical Statistics by Armitage, Berry and Matthews(2002). With three groups the final sample size needed was 516 completed dental examinations.

The survey took place over 4 weeks, taking 20 working days. It was anticipated that there was 4 hours maximum survey time in each day (10.00am – noon and 2.00pm – 4.00pm). The questionnaire was completed in less than ten minutes and the dental examination was completed in less than five minutes. With two recorders, it was estimated that 10 subjects would be seen in an hour. This gave a daily rate of 40 interviews and dental examinations.

7.2.1 Female Prisons

The female prison, Cornton Vale, was surveyed over four days, which should have allowed a full sample (circa 232 less refusals etc.). The other three prisons housing a minority of female inmates were only included in the sample if they arose by chance (Aberdeen, Dumfries & Inverness). The day list of prisoners, produced by the prison, was used to obtain the sample of prisoners.

7.2.2 Young Offenders Institutions (male)

The three Young Offenders Institutions were surveyed for two days each, which provided a sample of 80 from each prison (240 in total). The sample drawn was boosted by 25% to allow for refusals. The day list of prisoners, produced by the prison, was used to obtain the sample of prisoners. The subjects were selected using random numbers. The proportion required to produce the sample for each particular prison was applied, e.g. if the proportion required was 1 in 3, then starting from a random number between 1 and 3, every 3rd prisoner was selected until the sample size in the prison was reached.

7.2.3 Male

Four prisons were selected from the twelve adult male prisons. These prisons were surveyed for two days each, which should have provided a sample of 80 from each prison. The samples drawn were boosted by 25% to allow for refusals. The day list of prisoners, produced by the prison, was used to obtain the sample of prisoners. The subjects were selected systematically. The proportion required to produce the sample for each particular prison was applied, e.g. if the proportion required was 1 in 20, then starting from a random number between 1 and 20, every 20th prisoner was selected until the sample size in the prison has been reached. Table 1 (above) summarised the sample design and expected sample sizes in each prison.

Where possible, the survey team tried to achieve 40 dental examinations per day. Table 2 shows the sample frame and planned sample numbers.

TABLE 2 - Summary of sample frame and sample sizes. Please note that these figures were only used for planning.

Category	Sample frame total	Sample total	Sample %
Adult prisons - male	4934	320	6.5%
Adult prisons & young Offenders Institutions - female	202	187	93%
Young Offenders Institutions - male	661	240	36%
Totals	**5797**	**747**	**12.8%**

From Statistical Bulletin Criminal Justice Series (CrJ/2000/7) November 2000 (Table 4, average daily population)

8. THE QUESTIONNAIRE

One of the main survey aims was to produce data comparable to that collected in the Office for National Statistics 1998 UK Adult Dental Health Survey. The modified questionnaire is attached at appendix 5. The interview was expected to take no more than 10 minutes for each participant. The interview included questions on current dental health and hygiene, experience of treatment, dentures, and possible barriers to seeking treatment.

9. THE DENTAL EXAMINATION

Clinical criteria

There was a requirement to ensure that the clinical criteria were the same as those used for the 1998 UK Adult Dental Health Survey. As with the questionnaire, the examination was kept consistent. The protocol for the Clinical Criteria is attached at appendix 4. The clinical examination was only carried out on people who reported they had some natural teeth.

The following data was collected.

- The number of natural teeth present and the condition of their crown surfaces. This included an assessment of arrested and both cavitated and non-cavitated lesions, type of restorative materials used & the presence of any crowns and/or bridges and spaces.
- A record of dentures currently worn.
- Any significant conditions with treatment implications not covered elsewhere, for example, hypodontia, developmental anomalies of hard tissues, clefts of the lip and/or palate, trauma, soft tissue pathology.

The procedures and precautions taken for the clinical examination are described in the Clinical Criteria at appendix 4.

10. THE TRAINING AND ORGANISATION OF THE DENTAL TEAM

The Scottish Consultants in Dental Public Health took the lead in questionnaire design, training interviewers, carrying out fieldwork and analysis. The training of the dentists was undertaken by the Dental Schools of Birmingham, Dundee, Newcastle and Wales, as part of the 1998 UK Adult Dental Health Survey.

Equipment

Each survey dentist required the following equipment:

- Purpose-built (Daray) lamp plus protective foam for G-clamp, incorporating standard safety features
- No. 4 plane mouth mirrors
- Straight probes (blunted to 0.3 mm diameter)
- Rubber gloves
- Cotton buds / sterile wipes
- Yellow bags for disposal of waste
- Extension lead & circuit breaker

11 RESULTS

The fieldwork was carried out between 3rd April and 22nd May 2002 by three experienced dental examiners. Table 3 shows the intra-examiner reliability.

The Kappa Scores of their reliability of the DMFS Index varied between 0.93 – 0.97 indicating excellent reliability.

TABLE 3 - Intra examiner variation

	Kappa, DMFS
Examiner 1 (CJ)	0.93
Examiner 2 (BM)	0.97
Examiner 3 (DT)	0.93

A total of 559 subjects were included in the survey which is an estimated 8.6% of the total prison population (6484 on 26/4/02, Personal communication, Prison Statistical Unit, Scottish Executive). Table 4 shows the establishments visited and the numbers seen.

The 110 female subjects represented 41.5% (110/265) of the total Scottish female population.

A total of 149 young offenders were seen which is 16.8% (149/887) of this population. 300 adult males were seen which is 5.4% (300/5368) of the adult male prison population.

Weighted Results

The samples drawn in the survey allow results for each group to be presented separately. However, unequal proportions of prisoner populations are included for each prisoner group and a simple mean figure would be unrepresentative of the total population. To produce a figure for all male prisoners the results from either group (adult male and young offenders) have to be weighted in proportion to the sample size of the group and to the proportion of each group in the total male prison population. As adult males were a much larger group of the total, the weighting process produces a "weighted mean" closer to the adult male results. Similarly the weighted mean results for the entire prison population (male and female) is closer to the male figure as they are a larger proportion of the total prison population than the female prisoners.

TABLE 4 - Scottish Prisons Dental Survey 2002, responses

		Classification	Prison population	Planned sample	Number interviewed
1	Perth	Adult male	505	80	90
2	Barlinnie	Adult male	1313	80	50
3	Peterhead	Adult male	296	80	67
4	Dumfries	Adult male	121	80	58
5	Glenochil YOI	YOI	57	57	48
6	Polmont YOI	YOI	430	80	79
7	Dumfries YOI	YOI	56	80	22
8	Cornton Vale	Female	258	187	102
	Total		**3513**	**747**	**559**

TABLE 5 - Age of Prisoners seen

	Males Adult	Males YOI	All Male (Weighted)	Female	All (Weighted)
Sample Size	300	149		110	
Mean Age	33.6	18.8	31.6	27.5	31.4
Minimum Age	16	15		16	
Maximum Age	71	21		58	

The average age of the total sample was 31.4 years (see table 5). The average age of adult males was 33.6 years, Young Offenders were 18.8 years and female prisoners had a mean age of 27.5 years. For male prisoners overall they had a mean age of 31.6.

Edentulousness (Prisoners with no natural teeth)

Table 6 shows that 6.2% of the total sample had no natural teeth. This varied from 7.3% of the adult males, 3.6% of the females to none of the young offenders having no natural teeth.

TABLE 6 - Prisoners with no teeth

	Number	Percentage
Male Adult	22	7.3%
Male YOI	0	0
Male (Weighted*)		6.2%
Female	4	3.6%
All Weighted		6.2%

* weighted to reflect the total prison population.

Denture use in the Prison Population

Table 7 shows that 88% (23/26) of prisoners without natural teeth reported they had both upper and lower dentures. Two prisoners had only a full upper denture and one had only a lower full denture.

TABLE 7 – No weighting, subjects with no teeth but with full dentures

Denture Category	Percentage	Number
Dentures (upper and lower)	88%	(23)
Upper Only	8%	(2)
Lower Only	4%	(1)

Of the 25 patients with an upper denture 22 (88%) reported that they wore it. Of the 24 with a lower denture only 14 (58%) reported that they wore it. Of those prisoners with full dentures of some type, 81% reported cleaning the denture every night but only 46% reported leaving their denture out at night, the recommended action to maintain oral health (Table 8). Prisoners who reported no natural teeth did not receive a clinical examination in this survey.

TABLE 8 - Cleaning and nocturnal wearing of complete dentures.

Clean dentures every day (n = 26)	81% (21)
Remove dentures at night (n = 26)	46% (12)

Table 9 shows the number of respondents with a denture of any description. A total of 18% of the total sample had a denture of any type. Of these subjects with dentures 93%, had a partial or full upper denture.

TABLE 9 - Type & combination of dentures found in survey

Type of denture	N	% of respondents	% sample (559)
F/F*	22	22%	4%
F/P	8	8%	1%
P/P	11	11%	2%
F/-	11	11%	2%
P/-	42	42%	8%
-/F	1	1%	0.2%
-/P	5	5%	1%
All	100	100%	18%

*F = Full Denture; P = Partial Denture

Of those with a denture of any type (both full and partial) 88% reported cleaning their denture at least once a day and 54% reported that they removed their denture(s) at night.

TABLE 10 - Unweighted. Comparison of upper and lower denture wearing

Comparison of wearing upper versus lower dentures						
		Yes	Sometimes	No	N	P
Upper Denture	Full	87	0	13	45	**0.009**
Lower Denture	Full	57	4	39	23	
Upper Denture	Partial	70	6	24	82	**<0.001**
Lower Denture	Partial	33	7	60	30	

Statistically significantly more prisoners wore their upper complete or partial denture than their lower denture. This reflects the pattern of denture wearing found in the general population (Table 10).

11.2 Dental Health

TABLE 11 - Dental Health of Prisoners

	Males Adult	Males YOI	Male (Weighted)	Female	All (Weighted)
Number examined	275	149		106	
Mean No. decayed teeth DT	2.5	2.9	2.5	3.8	2.56
Mean No. filled teeth FT	4.9	2.7	4.6	3.9	4.55
Mean No. decayed & filled teeth DFT	7.4	5.6	7.1	7.7	7.11
Standing Permanent Teeth	23.2	27.2	23.8	23.5	23.79

All of the young offenders had some natural teeth. Four of the females and 22 of the adult male prisoners had no natural teeth. A total of 530 of the remaining 533 subjects had a dental examination. (Table 11)

Table 11 shows the mean numbers of teeth which were decayed or filled in each prisoner group. In adult males the mean number of decayed teeth was 2.5, in the young offenders it was nearly three teeth (2.9) and the female prisoners had almost 4 decayed teeth (3.8). In contrast adult males had an average of 4.9 filled teeth, in the young offenders group it was nearly three teeth (2.7) and the female prisoners had almost 4 filled teeth (3.9). Two thirds of all prisoners had untreated tooth decay.

TABLE 12 – Normative Treatment Needs of Prisoners (Percentages)

	Males Adult	Males YOI	Male (Weighted)	Female	All (Weighted)
Percentage with decayed teeth	60	75	62	73	62.7
Percentage with severe decay	28	32	28	42	28.8

Table 12 shows the percentage of prisoners who had decayed teeth and also severe decay. Severe decay is defined as destruction of tooth substance that is so severe that extraction of the remains is often the only satisfactory treatment.

In adult males 60% had decayed teeth, in the young offenders it was three quarters (75%) of the total sample and for the female prisoners it was 73%. Those with severe decay were 28% of adult males, 32% of the young offenders and 42% among the female prisoners.

TABLE 13 - Attendance at a Prison Dentist

% of Sample	Males Adult	YOI	Male (Weighted)	Female	All (Weighted)
Ever visited prison dentist	74%	48%	70%	63%	69.8%
Dentist not here enough	77%	49%	73%	68%	73.3%
Appointment difficult	77%	84%	77%	62%	76.9%

Of the total, 69.8% reported they had attended a prison dentist at some stage. Over 70% of all prisoners reported that dentists did not spend enough time treating patients in the jails and over three-quarters reported difficulty in getting an appointment to see the dentist. (Table 13). It is interesting to note that only 48% of young offenders reported a visit to a prison dentist, yet 84% reported it was difficult to get a dental appointment. Clearly for many young offenders this cannot be based on direct experience. In contrast adult male and female prisoners had similar levels of both attendance and difficulty in getting an appointment. Responses to question 29(d) and (e) cannot be quantified because a baseline denominator cannot be calculated. (See Appendix 5) Some prisons use a written request form while others rely on a verbal referral. Further comments were requested from prisoners on the prison dental service and are listed below.

Qualitative responses

Many comments centred on the availability of dental care and illustrate the finding that 77% of prisoners reported difficulty in getting an appointment:

“The waiting lists for routine dental care are too long. “

“New dentist needed and more regular visits.”

“The wait between appointments is too long.”
“Slow to complete treatment.”
“Dentists should come to the prison more often.”
“More dentists are needed.”
“Have to go into Perth for a dentist.”“
“We (prisoners) should be able to go to the dentist at any time.”
“Waiting list is too long – the service is provided during visiting hours.”“
“Waiting too long – rush job when in the dental chair.”
“Case records lost, too short appointments.”
“The dentist should be here more often.”
“More time at the dentist per patient.”
“Dentist doesn’t spend enough time with each patient.”
“Dentists should be here more often and private care should be available.”
We need a full-time dentist.”

There were many comments about the quality and availability of toothbrushes and other oral hygiene aids. Some prisoners also requested more information on maintaining oral health:

“Should be able to sell toothbrushes, toothpaste.”
“Toothbrushes not good quality.”
“Better quality of toothbrushes needed.”
“Get decent toothbrushes and floss.”
“Poor quality toothbrushes, wants mouthwash.”
“More information on eating things, and toothpaste.”
“Don’t get steredent (a denture cleaner) - have to buy it”
“More preventive advice should be available.”

Other responses have been grouped around comments on, treatment, organisation of services or other specific issues:

“Treatment should be more relaxed.”
“Not happy with treatment received.”
“Prison dentist had poor cross-infection control.”
“More sensitive to patients’ needs proper cross infection.”
“We want fillings, dentist just wants to extract teeth.”
“Dentist takes out teeth rather than filling teeth.”
“Better pain control (choice of treatment e.g. sedation).”
“The dentist is a butcher, not enough time for the local anaesthetic to work.”
“Dental health education and polishing.”
“You should be able to get a scale and polish whenever you want.”
“General anaesthesia should be available on premises.”
“Sedation should be available.”
“Take more care.”

TABLE 14 - Percentage with unmet dental needs.

Hierarchical need	Male Adult	Male YOI	Male Weighted	Female	All Weighted
endodontics	28	32	28	42	28.8
filling	29	42	31	28	31.1
filling repair (no decay)	2	1	2	2	2.1
trauma repair	1	1	1		1.1
oral hygiene instruction (bleeding gums)	16	9	15	16	14.7
No (recognised) need	24	15	23	11	22.3

Table 14 shows the normative treatment needs of the prison population. The data is presented hierarchically, so the most serious problem takes precedence. The weighted result shows that 22.3% had no recognised dental need, so 77.7% had a recognised need to visit a dentist.

TABLE 15 - Reported Attitudes and Behaviour, statistical comparisons.

% of Sample	Males Adult	YOI	P	Male (Weighted)	Female	P	All (Weighted)
Bleeding gums	42	41	n.s.	42	58	**0.003**	42.4
Any denture	34	10	**<0.001**	31	20	**0.031**	30.6
Ever visited prison dentist	74	48	**<0.001**	70	63	n.s.	69.8
Do not like visit to dentist	52	58	n.s.	53	60	n.s.	53.2
Brush teeth	92	95	n.s.	92	95	n.s.	92.6

Table 15 shows that 42% of adult male prisoners; 41% of male young offenders and 58% of females reported bleeding gums. The difference between the two male groups was not significant but significantly more females (58%) reported bleeding gums on both brushing and eating compared to the male prison population (42%).

The adult male prisoners had more dentures and were more likely to have visited a prison dentist than the young offenders. These differences were statistically significant. More male than female prisoners had a denture.

Similar numbers 52%, 58% and 60% reported they did not like visiting a dentist either in prison or elsewhere. 92% of adult males with teeth and 95% of young offender males reported brushing their teeth at least once a day. 95% of female prisoners with teeth reported regular tooth brushing at least once a day.

Table 16 shows that there were significant differences between the percentages of adult male and young offenders percentages reporting having ever had a tooth extracted or crowned. This is most likely to be due to the age difference between the two male groups. A significantly greater percentage of female prisoners reported receiving sedation for dental care.

TABLE 16, Reported dental treatment ever received (not just prison dentist)

% of Sample	Males Adult	YOI	P	Male (Weighted)	Female	P	All (Weighted)
Ever had filling or restoration	87	87	1	87	92	n.s.	87.5
Ever had a tooth extracted	91	79	**<0.001**	90	92	n.s.	89.7
Ever had crown or tooth capped	38	15	**<0.001**	35	30	n.s.	34.7
Ever had a scale & polish	64	54	n.s.	62	59	n.s.	62.2
Ever had orthodontic care	11	13	n.s.	12	10	n.s.	11.5
Ever had sedation for dental care	53	43	n.s.	51	65	**0.018**	51.9

Attitudes to Dental Treatment

Table 17 shows that 42% of adult male prisoners were nervous about visiting the dentist or could not be bothered attending a dentist. (This includes all dentists not just prison dentists). Young offenders reported lower levels of anxiety about visiting a dentist than adult males. Female prisoners reported higher levels of anxiety than males. Both differences were statistically significant.

TABLE 17 - Attitudes to Dental Attendance

% of Sample	Males Adult	YOI	P	Male (Weighted)	Female	P	All (Weighted)
Reported feelings about dental treatment			**<0.001**			**<0.001**	
I am nervous about going to the dentist	38	32		37	57		37.8
I cannot be bothered	4	15		6	1		5.7
going to the dentist visiting the dentist does not worry me	58	52		57	42		56.6

Treatment preferences

Table 18 compares the reported preferences of the male, young offender and female prisoners when asked,

> *"If you went to a dentist with an aching back tooth would you prefer to have it taken out or filled (supposing it could be filled)?"*
>
> and
>
> *"If a dentist said that a front tooth would have to be extracted (taken out) or crowned, what would you prefer?"*

The differences between the percentages of adult males, young offenders and females were not statistically significant. Female prisoners reported the highest preference for saving rather than extracting teeth which reflects the gender differential found in the general population.

TABLE 18 – Reported treatment preferences by prisoner group

% of Sample	Males Adult	YOI	P	Male (Weighted)	Female	P	All (Weighted)
Fill back tooth rather than extract	69	62	n.s.	68	71	n.s.	67.9
Crown front tooth rather than extract	87	90	n.s.	88	94	n.s.	87.9

Table 19 records the percentages reporting their last trip to a dentist. Once again there is no statistically significant difference between the two male sub-groups, or between the male and female prisoners. Although not statistically significant a higher percentage of females reported visiting a dentist in the previous 12 months which again reflects findings in the general population.

TABLE 19 - Time since last dental visit. (Any dentist including prison dentist).

% of Sample	Males Adult	YOI	P	Male (Weighted)	Female	P	All (Weighted)
When did you last visit the dentist			n.s.			n.s.	
< 1 year	65	63		65	71		65.3
1-2 years	13	20		14	9		13.8
2-5 years	10	13		11	15		10.8
>5 years	11	4		10	5		9.9
Never	0.3			0.2			0.3

Table 20 shows that there was a statistically significant difference in the reason for their last attendance at a dentist between adult males and male young offenders. Female prisoners reported they were least likely to attend for a check-up and young offenders most likely, although this difference was not significant. Young offenders were also the most likely to attend because of trouble with their teeth.

TABLE 20 - Reason for last dental visit by prisoner group.

% of Sample	Males Adult	YOI	P	Male (Weighted)	Female	P	All (Weighted)
Why did you go?			**0.035**			n.s.	
Trouble with teeth	58	62		59	56		58.5
check-up	17	23		18	15		17.8
other reason	24	13		22	27		22.4
Cannot remember	1	1		1	2		1.4

12 The influence of length of time in prison

This section of the report looks at changes in dental health over the length of time spent in prison. We have included only subjects who have served at least 6 months and have at least 10 teeth (N = 245, unweighted data). Prisoners serving less than 6 months may not

access the prison dental service, except perhaps for emergency dental care, and they were excluded from this part of the analysis.

Following time trends in the level of decay and restorations gives some indication of the time taken to render a prisoner dentally fit and the overall provision of dental care in Scottish prisons.

The decayed, missing and filled tooth index (DMFT index) is the sum of the number of decayed teeth (DT), missing teeth (MT) and filled teeth (FT) of each individual. Individual scores can be averaged to give a mean score for a population.

Spearman's rho is a measure of rank correlation and is used as the two variables "length of time in prison" and "DMFT" may not be normally distributed. Using Spearman's correlation coefficient there is a statistically significant relationship between the length of time spent in prison and the number of decayed teeth and filled teeth (Table 21). The number of decayed teeth falls and the number of filled teeth increases. The number of missing teeth is not significantly correlated with length of time in prison.

The Care index is the proportion of total DMFT, which is filled, expressed as a percentage (FTx100/DMF). It shows the overall level of operative care received and using the correlation analysis, this also increases with length of time in prison.

TABLE 21 - Correlations of length of time in prison and dental health

Correlations - Spearman's rho						
		DT	MT	FT	DMFT	Care Index %
Length of time in prison	Correlation Coefficient	-0.21	0.06	0.19	0.08	0.18
	P value (2-tailed)	**0.0008**	n.s.	**0.0027**	n.s.	**0.0042**
	N	245	245	245	245	242

The average number of decayed teeth of prisoners serving 6 to 12 month sentences was 2.38 teeth (Table 22). Over the next 12 months there was a 37% reduction in mean DT to 1.49 and a further reduction over the next 12 months to around about a mean figure of 1 tooth. This is then reasonably stable for the inmates in prison for up to 4 years. This shows that it takes two years for the needs of dental prisoners to be successfully reduced to a sustainable level. The number of filled teeth also increases for the first two years of a prisoner's sentence suggesting (on average) a 2-year lag from entering prison to finishing a course of dental treatment.

Although this is a somewhat crude analysis, it shows that it takes two years for the dental needs of prisoners to be addressed and is an area where improvements to the service could be made to provide more timely dental care.

TABLE 22 - DMFT index and components with reported length of time served in prison

Length of time in prison		DT	MT	FT	DMFT
6-12 months	Mean (N = 91)	2.38	5.67	4.46	12.52
13-24 months	Mean (N = 68)	1.49	5.60	5.19	12.28
25-36 months	Mean (N = 29)	0.90	4.62	5.21	10.72
37-48 months	Mean (N = 29)	0.90	7.72	4.03	12.66
over 4 years	Mean (N = 28)	1.29	5.50	8.04	14.82

13 Comparisons of the dental health of the prison population to the Scottish Population.

The largest, most recent data set available for the adult population of Scotland was the 1998 UK ADHS and this section compares the dental health, attitudes and behaviour of the prison population to the Scottish population from the 1998 UKADHS. The age and gender distribution of the prison population does not match that of the Scottish population and the data from the 1998 national survey has been reweighted to match the Prison population and allow direct comparisons. As the national survey used only the categories of male and female, the male prison population (adults and young offenders) has been amalgamated into a single male group for comparison to Scottish males.

If the sample of 559 subjects on which this study is based had been drawn at random from the prison population, too few women and young men in YOI institutions would have been included to allow analyses of these groups. Therefore, young men and women were deliberately over-sampled. When these groups are combined to describe all male prisoners or the whole prison population, weights were applied as shown in Appendix 7.

As described in the statistical appendix that accompanied the 1998 report of this survey, men and younger age groups were under-represented in both the overall survey and the sub-group who agreed to dental examination. Therefore, this sample is not the ideal comparator for a younger, male prison sample. Very large weightings were applied to create a Scottish sample with the same sex ratio and a similar age breakdown to the sample of prisoners. All statistics based on the comparisons with UKADHS should be treated as weak and only for general discussion purposes.

Comparisons of Prison Population to the 1998 UK Adult Dental Health Survey

Reported treatment preferences

Table 23 compares the reported preferences of the male and female prisoners to the Scottish population. When asked,

> *"If you went to a dentist with an aching back tooth would you prefer to have it taken out or filled (supposing it could be filled)?"*

The percentage of male prison respondents who preferred a filling to the extraction of a back tooth was slightly lower but not significantly different from the Scottish population. The female prisoners again reported a lower figure in favour of restoring a back tooth which was not significant. Overall any differences between all prisoners and the population were not statistically significant. (Table 23).

When the treatment option was,

> *"If a dentist said that a front tooth would have to be extracted (taken out) or crowned, what would you prefer?"*

The percentage of male prison respondents who reported they would prefer a crowned front tooth to an extraction was again slightly lower but not significantly different from the Scottish population. The female prisoners also reported a lower figure in favour of crowning a front tooth which was not statistically significant.

TABLE 23 - Proportion of respondents in prisoner group reporting preferences

	Males (%)			Female (%)			All		
	Prison	UKADHS (weighted)	P	Prison	UKADHS (weighted)	P	Prison	UKADHS (weighted)	P
Fill back tooth rather than extract	67	69	n.s.	71	80	n.s.	67.4	71.2	n.s.
Crown front tooth rather than extract	88	91	n.s.	94	98	n.s.	89.3	92.4	n.s.

Time since last visit the Dentist?

Comparisons of the length of time prisoners reported since they had last visited a dentist (whether a prison dentist or not) were not statistically different from the Scottish population (Table 24).

TABLE 24 - Percentage of prisoner groups reporting length since last visit a Dentist (including a prison dentist)

	Males (%)			Female (%)			All		
	Prison	UKADHS (weighted)	P	Prison	UKADHS (weighted)	P	Prison	UKADHS (weighted)	P
< 1 year	65	65	n.s.	71	71	n.s.	65.9	66.2	n.s.
1-2 years	15	10		9	12		14.2	10.4	
2-5 years	11	18		15	13		11.8	16.7	
>5 years	9	7		5	4		8.1	6.6	

Reason for your last visit to the dentist

However, the reasons prisoners reported for their last visit to a dentist (either in prison or not) were very different from the Scottish population. In all cases (male, female and overall) fewer attended for a regular dental check-up and significantly more attended because of toothache or other trouble with their teeth (Table 25). This shows that the prison population are inclined to wait until they have pain from their teeth, making removal of a tooth the more likely treatment option. They also do not attend for regular check-ups. Regular dental attendance means small cavities can be identified and restored before they cause pain. Early gum disease can be treated before the teeth become loose and fall out, and dental emergencies can be prevented.

TABLE 25 - Proportions of groups reporting reason for last visit to the dentist (including a prison dentist)

	Males%			Female%			All%		
	Prison	**UKADHS (weighted)**	**P**	**Prison**	**UKADHS (weighted)**	**P**	**Prison**	**UKADHS (weighted)**	**P**
trouble with teeth	60	40	**<0.001**	57	35	**<0.001**	59.7	39.0	**<0.001**
check-up	19	57		15	63		18.5	58.6	
other reason	20	3		28	2		21.8	2.4	

The results shown in tables 24 and 25 seem to contradict each other. How can fewer prisoners attend for dental check-ups and yet there is no difference in the length of time since their last dental visit, between prisoners and the Scottish population? The contradiction can be explained by the frequency of dental pain. If people who do not attend for check-ups get toothache, then they are usually forced to attend a dentist for relief of symptoms. This can often occur within a 12-month period and gives the result of similar attendance patterns over time, but for different reasons. Typical visits are for regular check-ups for the Scottish population, but for relief of pain in the prison population.

Reported dental treatment previously received.

Table 26 compares the types of dental care previously received by prisoners and the Scottish population respectively. There were no differences between the percentages reporting receiving fillings, and those having sedation for dental treatment. A larger percentage of female prisoners reported having had an extraction but this difference was not statistically significant.

A consistent finding across both genders, and overall, was a significantly lower percentage of prisoners of all categories who had had orthodontic treatment. Orthodontics is an outpatient speciality of dentistry concerned with the correction of malocclusion and dentofacial anomalies which may range from major craniofacial discrepancies, such as cleft lip and palate, to minor irregularities of the teeth. Treatment usually involves the wearing of orthodontic appliances (braces), with or without the extraction of teeth. Although incidence of malocclusion is homogenous throughout the child population, there is a recognised social class gradient of patients who have received orthodontic treatment. This finding may simply reflect the social background of the prison population.

TABLE 26 – Proportions of groups reporting dental treatment previously received.

	Males%			Female%			All%		
	Prison	**UKADHS (weighted)**	**P**	**Prison**	**UKADHS (weighted)**	**P**	**Prison**	**UKADHS (weighted)**	**P**
Had filling	87	88	n.s.	92	92	n.s.	88.2	89.0	n.s.
Had extraction	87	86	n.s.	92	84	n.s.	88.0	85.7	n.s
Had orthodontic Rx	12	24	**<0.001**	10	28	**<0.001**	11.4	24.8	**<0.001**
Had sedation	49	49	n.s.	65	56	n.s.	52.4	50.7	n.s.

Comparison of percentages with teeth, dentures or both

Table 27 compares the distribution of people with only natural teeth, only dentures and a combination of them both. In all cases a smaller percentage of the prison population had

only natural teeth. Greater proportions of prisoners had dentures either in combination with natural teeth or dentures alone. In all categories this was statistically significant and reflects an increased need for the prison dental service to provide a greater proportion of dentures to prisoners, especially to younger prisoners.

TABLE 27 - Comparison of proportions of groups with teeth, dentures or both.

	Males%			**Female%**			**All%**		
	Prison	**UKADHS (weighted)**	**P**	**Prison**	**UKADHS (weighted)**	**P**	**Prison**	**UKADHS (weighted)**	**P**
Teeth	73	89	**<0.001**	74	90	**<0.001**	73.3	89.0	**<0.001**
Both	22	8		23	7		22.0	8.2	
Dentures	5	3		4	3		4.7	2.8	

Comparison of dental decay, Males

Table 28 compares the male prison population with the UKADHS results. There was no statistical difference in the mean number of decayed teeth but the prison males had fewer filled teeth. Male prisoners also had fewer standing teeth.

The % D4T>0[*] (severe decay into pulp, probably requiring tooth extraction) was 3 times higher in the prison population compared to the Scottish population confirming unmet need, neglect and greater severity of decay.

TABLE 28 - Males, dental decay

	Male prisoners	**UKADHS (weighted)**	**P**
DT	2.59	2.46	ns
FT	4.13	5.73	**<0.001**
DFT	6.72	8.19	**<0.001**
Standing Permanent Teeth	24.6	26.9	**<0.001**
%D4T>0(severe decay)	29	10	**<0.001**

Comparison of dental decay, Females

Table 29 compares the female prison population with the UKADHS results. There were statistical differences in the mean number of decayed, filled and standing teeth showing considerably higher levels of dental decay.

The percentage with decayed teeth was significantly higher among female prisoners and the severe decay (% D4T>0) was 14 times higher in the prison population compared to Scottish females. This is a finding which confirms huge unmet need, dental neglect and markedly greater severity of decay. The natural history of tooth decay means that individuals arrive in prison with already high levels of dental decay and severe decay.

[*] % D4T>0, this is the percentage of group with decay at the pulpal level (D4 level) which was greater than zero.

TABLE 29 - Females, dental

	Female prisoners	UKADHS (weighted)	P
DT	3.77	1.42	**<0.001**
FT	3.91	6.71	**<0.001**
DFT	7.68	8.13	ns
Standing Permanent Teeth	23.5	26.9	**<0.001**
%DFT>0	98	94	ns
%DT>0	73	48	**<0.001**
%D4T>0(decay in pulp)	42	3	**<0.001**

Comparison of dental decay, all prisoners

Table 30 compares all the prison population with the UKADHS results. As expected there are statistical differences in the mean number of decayed, filled and standing teeth, with the prisoners having fewer filled teeth.

The severe decay (% D4T>0) was 3 times higher in the prison population compared to the Scottish population confirming unmet need and higher severity of decay.

TABLE 30 - Dental decay, all prisoners

	All prisoners	UKADHS (weighted)	P
DT	2.83	2.26	**0.010**
FT	4.08	5.93	**<0.001**
DFT	6.91	8.18	**0.001**
Standing Permanent Teeth	24.4	26.9	**<0.001**
%DFT>0	96	93	ns
%DT>0	67	57	**0.002**
%D4T>0(decay in pulp)	32	9	**<0.001**

14 Oral Health Impact Profile in a Prison Population

Introduction

Slade and Spencer (1994) published a device for measuring peoples' perceptions of the impact of dental conditions on their lives: Oral Health Impact Profile or OHIP. It uses responses to a set of standard questions to quantify the impact of an individual's oral health on their subjective feelings.

Their original version consisted of 49 questions, which was shortened to 14 measuring 7 dimensions of wellbeing in the short form OHIP-14. This instrument was used in both the 1998 ADHS and in the current survey (with one obvious change). Question 12 (15 in the prison questionnaire) was "In the past 12 months have you had difficulty doing your usual job because of problems with your teeth or dentures?" for the ADHS but **"job"** was replaced with **"activities"** for the prison survey. All of the current survey participants answered the OHIP questionnaire, but only those with teeth were included in the analyses comparing the prison with the ADHS Survey. This is because in the ADHS, only those with teeth were asked the OHIP questions.

Results were compared using linear chi-square analysis with Bonferroni's correction. As with all of the comparative results the ADHS samples were weighted to match the prison sample in age distribution and gender ratio. As the necessary weightings were very large, this comparison is statistically weak and the results should be treated with caution. The male prison sample, when compared with the female prison sample, was weighted to correct for the over-sampling of YOI inmates.

Results and Discussion

The answers from the OHIP 14 were combined and compared between groups. There were no statistical differences between adult males and male young offenders. Overall, females were more likely then males to report they suffered from problems. These involved painful aching in the mouth, feeling self conscious, tense, embarrassed, irritable, psychological discomfort, psychological disability and social disability (Appendix 8, Table A). The male/female difference in the prison population was not found in the ADHS.

The prison population is more dissatisfied with their dental health than the general population as represented by the ADHS survey for Scotland. The results suggest that the differences are more extreme for the female sample (Appendix 8, table B). The percentage of female prisoners reporting problems in response to the OHIP questions was statistically higher than the female ADHS population in every case. For male prisoners it was higher for pain, feeling tense, unsatisfactory diet, interrupted meals, difficult to relax, embarrassed, irritable, usual activities, life less satisfying, disability, physical handicap, psychological/social disabilities and handicap.

Further analyses were undertaken comparing groups with and without dental problems. Only those with teeth were included in this analysis (Appendix 8, Table C). Overall, those with disease in the upper incisors or with fewer standing teeth tended to report more problems. Disease in the upper incisors appeared to impact more strongly than loss of teeth on women's OHIP scores.

15 Survey Conduct

The success of this survey was entirely reliant on the co-operation of prison staff and prisoners. The clearest example of this was when Barlinnie prison staff were seconded to Shotts Prison to deal with unrest, the survey stopped

An improved response was obtained by the survey team visiting the Residential Halls as opposed to bringing subjects to a central point.

The visit to HMP Peterhead coincided with a hastily convened meeting of prison officers which reduced the final number of prisoners seen.

The poor response in Glenochil was reported to be due to recent DNA testing of prisoners to try to link them by forensic evidence to unsolved crimes. The dental examination was reported to be seen as a clandestine method of taking a buccal cheek scraping. Also the use of the word "sample" as in "sample of prisoners" in the information letter for prisoners may have been misinterpreted.

A small incentive such as a free toothbrush might have helped to improve participation in the survey although the response rate overall was satisfactory. This was not included in the study design as we were aware that it may have reduced the takings of the prison shop.

16 Conclusions

The results of the survey show considerable unmet dental need in the prison population compared to the Scottish Adult population.

1 Compared to the general population, prisoners had significantly

- fewer standing teeth
- more decayed teeth,
- fewer filled teeth and

2 The prevalence of severe decay, as classified by teeth with decay which extends into the dental pulp, was three times higher in the prison population than in the general population.

3 In female prisons severe decay prevalence, as classified by teeth with decay which extends into the dental pulp, was fourteen times higher than the female Scottish population.

4 It was shown to take up to 2 years for the dental health of prisoners to improve to a stable level.

5 More prisoners have dentures than the general population.

6 Prisoners report they are less likely to attend for regular check-ups than the general population.

7 Compared with the general Scottish population there was no difference in the proportion of prisoners who reported that they had received fillings, extractions or sedation for dental treatment, but a significantly lower percentage of prisoners had received orthodontic treatment than the general population.

8 Female prisoners had significantly higher levels of self-reported anxiety about visiting a dentist than male prisoners.

9 Almost all prisoners with teeth reported they carried out toothbrushing at least once a day.

Acknowledgements

Joseph (Lenny) Allen, Jack Bonnar, Lyndon Braddick, Lisa Colston, Paul Cushley, Graham Eadie, Tom Ferris, Frank Gibbins, Heather Keir, Diane Lawson, Mairi MacLeod, David McColl, Kenny McGeachie, Robert Maxwell, John Peatie, Nigel Pitts, John Porter, Eileen Stewart, Carol Stirling, Patrick Sweeney, Carolyn Thompson, Gail Topping, Evelyn Tosh, David Trotter, Mr Keith Woods, The Prisoners and The Prison staff.

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Highland NHS Board

Information for volunteers
You may keep this information sheet.

Version 2
18 December 2001

Dr John Wrench, Director
Public Health & Health Policy
Assynt House
Beechwood Park
Inverness, IV2 3HG
Telephone: 01463 717123
Fax: 01463 717666
Textphone users can contact us via
Typetalk: Tel 0800 959598
www.show.scot.nhs.uk/hhb/

Appendix 1

Your Ref:
Our Ref: CMJ/CS/
Enquiries to: Mr Colwyn Jones
Extension: 4817
Direct Line: 01463 704992
Email: Colwyn.Jones@hhb.scot.nhs.uk

SCOTLAND PRISONS
DENTAL HEALTH SURVEY 2002

We need your help with the Scotland prisons dental health survey 2002.

The Scottish Executive Health Department has asked the Consultants in Dental Public Health to collect up-to-date information on the state of people's teeth in Prisons. We plan to see 600 people the information is confidential and the results will help to make sure that the Dental Service in Prisons can provide good dental care for anyone who needs it.

We would like to talk to you for about 10 minutes. We will ask questions about you and your past dental treatment. Following this, if you agree, a dentist will carry out a quick 2 or 3 minute examination of your mouth to look at the condition of your teeth. The examination will not be a full dental examination and, if you are worried about your mouth for any reason, you should arrange to have a proper dental check-up. We will not examine anyone who has lost all their natural teeth, although we will still want to interview them. We would appreciate your help.

In the unlikely event of the dentist finding something seriously wrong with your mouth, they will tell you. They will ask you if you would like them to inform the Prison Medical Service so that arrangements can be made for you to be seen by a specialist.

If you have any questions, please ask the interviewer when you see them. You may refuse to participate or withdraw from the study at any time without giving a reason, and your dental care or prison care will not be affected. If you are harmed by taking part in this study there are no special compensation arrangements. If you are harmed due to negligence then you may have grounds for legal action but you may have to pay for it. If you wish to complain about any aspect of the way you have been treated during the study, the normal Health Service complaint mechanism may be available to you. The information is confidential and will be published in a report by the Scottish Executive so that individuals cannot be identified.

Thank you for taking time to read this information sheet.

Colwyn Jones BDS FDS DDPH MSc
Consultant in Dental Public Health

Highland NHS Board

Dr John Wrench, Director
Public Health & Health Policy
Assynt House
Beechwood Park
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Version 2
18 December 2001

Your Ref:
Our Ref:

	CMJ/CS/
Enquiries to:	Mr Colwyn M Jones
Extension:	4817
Direct Line:	01463 704992
Email:	Colwyn.Jones@hhb.scot.nhs.uk

Appendix 2

CONFIDENTIAL

SCOTLAND PRISONS DENTAL HEALTH SURVEY 2002

CONSENT TO DENTAL EXAMINATION

Prison **Prisoner's I.D. no.**

Name...

Date of birth DAY MTH YR

I consent to………………………(qualified dentist) carrying out a dental examination of my mouth.

The purpose and procedure have been explained to me and I have had the opportunity to discuss them. I have received a written explanation of these matters (information sheet version 2, dated 18/12/01).

SIGNATURE

Signed .... Date.................................

Interviewer use only **Ring one code**

Consent to examination given	1
Consent to examination refused	2

Highland NHS Board

Dr John Wrench, Director
Public Health & Health Policy
Assynt House
Beechwood Park
Inverness, IV2 3HG
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Version 2
18 December 2001

Appendix 3

Your Ref:
Our Ref: CMJ/CS/
Enquiries to: Mr Colwyn M Jones
Extension: 4817
Direct Line: 01463 704992
Email: Colwyn.Jones@hhb.scot.nhs.uk

SCOTLAND PRISONS DENTAL HEALTH SURVEY 2002

CONSENT TO DENTIST INFORMING PRISON MEDICAL SERVICE OF ORAL CONDITIONS FOUND WHICH MIGHT AFFECT MY GENERAL HEALTH

Prison……………………………………………… **Prisoner's I.D. no.**

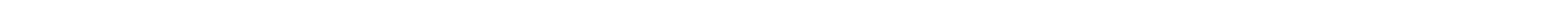
Name...

Date of birth DAY MTH YR

I consent to _________________________________(qualified dentist) informing the prison medical service of any dental or oral conditions he has found that may affect my general health. The reasons for this have been explained to me and I have had the opportunity to discuss them.

SIGNATURE

Signed .... Date.................................



NHS
Highland

For the urgent attention of the
Prison Medical Officer

DATE:

Dear Doctor

Re: ***Name....................................*** **Prisoner's I.D. no.**

Prison....................................

The above patient was examined as part of the Scottish Prisons Dental Health Survey 2002

on.....………………....*(date)* by ………………………………………………….*(dentist)*

The patient was found to have the following condition(s):

In view of these findings, I recommend that the patient should be referred <u>urgently</u> to your local hospital Oral and Maxillofacial Surgery department. Your nearest department is

.........................………………………...………………………………………………..

If you have any questions about this, please contact me directly.

Yours sincerely

Contact telephone number:…………………………………………………………..

Headquarters: Assynt House, Beechwood Park, INVERNESS IV2 3HG

Chairman: Caroline Thomson
Chief Executive: Dr Roger Gibbins BA MBA PhD
Highland NHS Board is the common name of Highland Health Board

Appendix 4 Clinical Criteria for dental examination

Dentist's instructions on how to handle professional questions in the dental examination

In most circumstances the dental examiners do not make any comment about what they see during the examination. If the participant asks about their dental treatment need, or if questions related to the standard of previous dental care arise, the response will be that the survey is not designed to collect the sort of information on which a treatment can be planned, and that visiting a dentist is the best way of ensuring a thorough dental check-up. This is not only a way of deflecting potentially difficult questions, it is also absolutely true.

However, the interviewer is permitted to say, when recruiting participants, that as a dentist, you may be able to offer them some advice on the best way of looking after their mouth or teeth. If after the examination the subject wishes to know about their mouth you can give an indication of whether there is room for improvement in terms of the general oral hygiene/cleanliness and/or a general statement along the lines of:

"The best way of getting information about any treatment you might need is by seeking advice from a dentist".

The Prison Medical Service can advise the prisoner on how to get an appointment.

If you are asked to comment on specific aspects of oral hygiene, we would suggest that you respond, if appropriate, by identifying areas for improvement but say that they will need more specific advice from a dentist or a dental hygienist since there are many ways of achieving this. It is very important that you are not too prescriptive and that you adhere to general principles as there should be no scope for oral hygiene advice being given which conflicts with previous hygiene advice. You should preface this by saying:

"What I generally tell people is.........".

If you are asked to comment on specific aspects of past treatment, you need to say:

"This survey is limited and you need to see a dentist for specific advice and/or treatment".

The only exception to this protocol is if the examining dentist notices a lesion that he/she considers may be serious and potentially life threatening (such as suspected malignancy). Examiners are very unlikely to encounter such potentially serious pathology; the incidence of these lesions is very low. The examination is not a screening exercise and does not involve examination of the oral soft tissues. However, it is possible that such a lesion may be noticed and, as the implications are serious, a protocol to deal with this eventuality is in place.

Signed consents required

The following signed consents need to be sought:

For every respondent – to carry out the oral examination and in very rare circumstances, to inform the Prison Medical Officer of any serious oral pathology. You are unlikely to encounter this.

Returning the signed consent forms

For each person recruited to the survey you must complete and return a consent form for the examination.

Age of consent

Young people aged 16-17 years – can give signed consent for themselves. Anyone younger than 16 years of age will not be examined.

Please ensure that the necessary signatures are given in the correct places on the form. We recommend that you indicate, with a cross, the places where signatures are required – and whose signature is required at the place.

Please check that all signatures on all consent forms are dated at the time they are signed.

Interviewer – procedures for oral health examination

The oral health examination will take less than five minutes; it will not involve any treatment to the teeth and nor will any x-rays be taken. It will be carried out in the prison by a trained dental examiner and you will act as a 'recorder'; recording the condition of various teeth and tooth surfaces as they are examined. This recording will be done onto a lap-top computer.

The only adults who will **not** be asked to participate in an examination will be those **with no natural teeth.**

You need:

- oral health examination consent form
- Prisoner,s I.D. number

You must obtain signed consent from the respondent before starting a dental examination.

SECTION 1 OF THE DENTAL EXAMINATION: TOOTH CONDITION

Tooth Codes

There are five surfaces to most teeth. These are:

- Distal (D)
- Occlusal (missing on incisors) (O/I)
- Mesial (M)
- Buccal (B)
- Palatal (P)

There are two types of code that can be entered at this section on tooth condition;
TOOTH CODES refer to the condition of the whole tooth e.g. the tooth is missing. If a TOOTH CODE is entered, the programme automatically enters the same tooth code for all the surfaces of that tooth.

The TOOTH CODES are:

6 missing
7 missing (orthodontic extraction)
G sound all surfaces
U Unerupted
9 Excluded

CODE G: In this part of the examination the dentist may say “sound on all surfaces”; to avoid your having to separately enter the code for sound surface (G) for every surface of that tooth, on entering a G the programme will automatically enter code ‘G’ (sound surface) for all surfaces of that tooth.

SURFACE CODES refer to the condition of each surface of the tooth and so a code is entered for each surface.

The SURFACE CODES are:

G sound
1 caries
2 dentine
3 unrestorable
4 filled and decayed
F filled and no decay
R filled, needs replacing
C Crown/advanced procedure
9 Excluded

Every tooth must have either a TOOTH CODE or a SURFACE CODE on every surface in Section 1of the examination.

SECTION 2 OF THE EXAMINATION: ROOT CONDITION

The root condition assessment is made for all teeth using the same codes for tooth condition.

SECTION 3: FINISHING QUESTIONS

These questions only apply to respondents with one or more denture. The first question asks if the respondent has a denture and it is routed accordingly.

Paper representation of the dental examination

This representation is close to how the examination will appear on the screen. Paper forms will be used **ONLY** in training.

PAPER FORM FOR DENTAL EXAMINATION

	Yes	No
ASK ALL		
Medical History clear	1	2
Natural teeth in both arches?	1	2
IF NO:		
Natural teeth in upper arch only?	1	2
Natural teeth in lower arch only?	1	2

TOOTH CONDITION:

Tooth Condition P	L	D	D M	0/I	O M	M	M M	B	B M	P	P M
UPPER RIGHT 8											
UPPER RIGHT 7											
UPPER RIGHT 6											
UPPER RIGHT 5											
UPPER RIGHT 4											
UPPER RIGHT 3											
UPPER RIGHT 2											
UPPER RIGHT 1											

Tooth Condition P	L	D	D M	0/I	O M	M	M M	B	B M	P	P M
UPPER LEFT 1											
UPPER LEFT 2											
UPPER LEFT 3											
UPPER LEFT 4											
UPPER LEFT 5											
UPPER LEFT 6											
UPPER LEFT 7											
UPPER LEFT 8											

Tooth Condition P	L	D	D M	0/I	O M	M	M M	B	B M	P	P M
LOWER LEFT 8											
LOWER LEFT 7											
LOWER LEFT 6											
LOWER LEFT 5											
LOWER LEFT 4											
LOWER LEFT 3											
LOWER LEFT 2											
LOWER LEFT 1											

Tooth Condition P	L	D	D M	0/I	O M	M	M M	B	B M	P	P M
LOWER RIGHT 1											
LOWER RIGHT 2											
LOWER RIGHT 3											
LOWER RIGHT 4											
LOWER RIGHT 5											
LOWER RIGHT 6											
LOWER RIGHT 7											
LOWER RIGHT 8											

ROOT CONDITION:

Root Condition	Root	Root M
UPPER RIGHT 8		
UPPER RIGHT 7		
UPPER RIGHT 6		
UPPER RIGHT 5		
UPPER RIGHT 4		
UPPER RIGHT 3		
UPPER RIGHT 2		
UPPER RIGHT 1		

Root Condition	Root	Root M
UPPER LEFT 1		
UPPER LEFT 2		
UPPER LEFT 3		
UPPER LEFT 4		
UPPER LEFT 5		
UPPER LEFT 6		
UPPER LEFT 7		
UPPER LEFT 8		

Root Condition	Root	Root M
LOWER LEFT 8		
LOWER LEFT 7		
LOWER LEFT 6		
LOWER LEFT 5		
LOWER LEFT 4		
LOWER LEFT 3		
LOWER LEFT 2		
LOWER LEFT 1		

Root Condition	Root	Root M
LOWER RIGHT 1		
LOWER RIGHT 2		
LOWER RIGHT 3		
LOWER RIGHT 4		
LOWER RIGHT 5		
LOWER RIGHT 6		
LOWER RIGHT 7		
LOWER RIGHT 8		

DENTURES

	Yes	No	
Is there a denture present in the mouth?	**1**	**2**	

IF YES:

Is the denture upper, lower or both?	**Upper**	**Lower**	**Both**

IF UPPER OR BOTH:

What is the upper denture type?	***Part Full**	**Complete**	**Implant**
What is the upper denture base material?	**Metal**	**Plastic**	
What is the upper denture support?	***ToothBorne**	**TissueBorne**	**Both**
What is the status of the upper denture?	**Intact**	**Repair**	

IF LOWER OR BOTH:

What is the lower denture type?	***Part Full**	**Complete**	**Implant**
What is the lower denture base material?	**Metal**	**Plastic**	
What is the lower denture support?	***ToothBorne**	**TissueBorne**	**Both**
What is the status of the lower denture?	**Intact**	**Repair**	

***Complete**	**=**	**Complete Overdenture**
Implant	**=**	**Implant Retained**
Both	**=**	**Both Tooth and Tissue Borne**

APPENDIX 5

SCOTTISH PRISONS ORAL HEALTH SURVEY 2002

The purpose of this questionnaire is to help us to plan and provide appropriate dental services for the Scottish Prison Population. It is therefore important for us to have as many replies as possible. Please answer the questions as completely as you can and return the questionnaire. Your reply will be totally confidential.

Prison name ☐

Full Name	

Today's date			

Date of Birth			

How long ago did you begin your prison sentence? ☐ Years ☐ Months

Are you ….

Male	☐	1
Female	☐	2

Question 1. Adults can have 32 natural teeth but over time lose some of them. How many natural teeth, including crowns, have you got? (Please tick one box.)

I have no natural teeth.	☐	1
I have fewer than 10 natural teeth.	☐	2
I have between 10 & 19 natural teeth.	☐	3
I have 20 or more natural teeth.	☐	4

If you have some or all of your natural teeth, we would like you to answer the following questions. If you do not have any natural teeth, please go to **Question 5**.

Question 2. Do your gums bleed when you brush your teeth or eat? (tick one box)

YES	☐	1
NO	☐	2
DON'T KNOW	☐	3

Question 3. If you went to a dentist tomorrow do you think you would need treatment. (Please tick one box)

YES	☐	1
NO	☐	2
DON'T KNOW	☐	3

Please answer questions 6 to 19 as follows;
0 = never, 1 = hardly ever, 2 = occasionally, 3 = fairly often, 4 = very often

IN THE PAST 12 MONTHS HAVE YOU………

Question 4.	Had trouble ***pronouncing any words*** because of problems with your teeth mouth or dentures?	
Question 5.	Felt that your ***sense of taste*** has worsened because of problems with your teeth mouth or dentures?	
Question 6.	Had any ***painful aching*** in your mouth?	
Question 7.	Found it ***uncomfortable to eat any foods*** because of problems with your teeth mouth or dentures?	
Question 8.	Been ***self conscious*** because of problems with your teeth mouth or dentures?	
Question 9.	Felt ***tense*** because of problems with your teeth mouth or dentures?	
Question 10.	Has your ***diet been unsatisfactory*** because of problems with your teeth, mouth or dentures? (Question relates to function - not about quality of food in prisons)	
Question 11.	Had to ***interrupt meals*** because of problems with your teeth mouth or dentures?	
Question 12.	Found it ***difficult to relax*** because of problems with your teeth mouth or dentures?	
Question 13.	Been a bit ***embarrassed*** because of problems with your teeth mouth or dentures?	
Question 14.	Been a bit ***irritable*** with other people because of problems with your teeth mouth or dentures?	
Question 15.	Had difficulty ***doing your usual activity*** because of problems with your teeth mouth or dentures?	
Question 16.	Felt that ***life in general is less satisfying*** because of problems with your teeth mouth or dentures?	
Question 17.	Been ***totally unable to function*** because of problems with your teeth mouth or dentures?	

If you have lost some, or all your natural teeth, we would like you to answer the following question.

Question 18. Have you ever had any kind of denture?
(*False teeth which you can take out*) (Please tick one box)

YES		1
NO		2

IF YES , PLEASE ANSWER THE FOLLOWING,
IF NO, PLEASE GO TO QUESTION 22.

Question 19. What type of denture do you have?
(Please tick all relevant boxes)

	YES	NO		YES	NO	SOMETIMES
Full TOP denture.			Do you wear it?			
Full BOTTOM denture.			Do you wear it?			
TOP part denture.			Do you wear it?			

BOTTOM part denture.			Do you wear it?			

Question 20. When did you get your most recent denture?

(Please tick one box)

During last 2 years.		1
More than 2 years, up to 10 years ago.		2
More than 10 years ago.		3

All the remaining sections should be answered by everyone.

Question 21. How long ago was your last visit to a dentist? (Please tick one box)

Less than 1 year.		1
More than 1 year, up to 2 years ago.		2
More than 2 years, up to 5 years ago.		3
More than 5 years.		4
Never been to a dentist.		5

Question 22. **LAST TIME** you went to a dentist, what made you go? (tick one box)

Trouble with teeth or gums.		1
I went for a check-up.		2
I can't remember.		3
Other Reason.		4

If 'Other Reason' please explain:………………………………………………………………

Question 23. Which of the following types of treatment have you ever had, if any? (Please tick all boxes that apply)

a.	**Fillings.**		1
b.	**Teeth Extracted.**		2
c.	**Tooth crowned.**		3
d.	**Gum treatment including scale and polish.**		4
e.	**A brace to straighten teeth.**		5
f.	**Gas or an injection in the arm.**		6

Question 24. Have you ever been referred by a dentist for specialist dental advice and/or treatment at a hospital or health centre? (Please tick one box)

YES		1
NO		2
DON'T KNOW		3

Question 25. We would like to find out how you **FEEL** about attending the dentist. Please indicate which of the following applies **most** to you.

(Please tick one box)

a.	**Visiting the dentist doesn't worry me.**		1
b.	**I am nervous about going to the dentist.**		2
c.	**I cannot be bothered going to the dentist.**		3

Question 26. If you went to a dentist with an aching back tooth would you prefer to have it taken out or filled (supposing it could be filled)? (tick one box)

TAKE IT OUT	☐	1
FILL IT	☐	2

Question 27. If a dentist said that a front tooth would have to be extracted (taken out) or crowned, what would you prefer?

(Please tick one box)

EXTRACTED	☐	1
CROWNED	☐	2

Question 28. Have you ever been to a prison dentist? (Please tick one box)

YES	☐	Please answer question 29
NO	☐	Please skip to question 30

Question 29. Visiting the Prison Dentist - Do any of the following apply to you?

(Please tick all boxes that apply to you)

a.	**The dentist is not here enough.**	☐	1
b.	**Difficulty getting an appointment that suits me.**	☐	2
c.	**I have not found a dentist I like.**	☐	3
d.	**I have not been able to get the request form.**	☐	4
e.	**I have not been able to fill in the request form.**	☐	5
f.	**Other.**	☐	6

If **'Other reason'** Please explain……………………………………………………………

Question 30. Which of the following do you do **daily** to improve your dental and oral health? (Please tick all relevant boxes)

	HOME	**PRISON**
a. **Clean my teeth regularly with a toothbrush.**		
b. **Clean my dentures.**		
c. **Leave my dentures out at night.**		

Make sure consent form is signed!

Tooth charting

Upper right ... Upper Left

	8	7	6	5	4	3	2	1		1	2	3	4	5	6	7	8
D																	
O																	
M																	
B																	
L																	

Lower right Lower Left

	8	7	6	5	4	3	2	1		1	2	3	4	5	6	7	8
D																	
O																	
M																	
B																	
L																	

Comments………………………………………………………
…………………………………………………………………
…………………………………………………………………

Thank you very much for your help.

Appendix 6 Prison Survey Steering Group and survey timetable

Mr G Ball, Consultant in Dental Public Health, Fife Health Board

Mr L Braddick, Deputy Head of Health Care, Scottish Prison Service

Mr P Cushley, Prison dentist, Barlinnie/Shotts

Mr C M Jones, Consultant in Dental Public Health, Highland Heath Board

Mrs H Keir, Deputy Governor, HM Prison and YOI Cornton Vale

Mrs M McCann, Deputy Chief Dental Officer, Scottish Executive

Mr D McCall, Consultant in Dental Public Health, Greater Glasgow Heath Board

Mr M Merrett, Consultant in Dental Public Health, Tayside NHS Board

Dr Z Nugent, Chief Statistician, Dental Health Services Research Unit

Professor N Pitts, Dental Health Services Research Unit, Dundee Dental

Mr J Porter, Nursing Services Manager, Scottish Prison Service

Dr C Sayers, Medical Officer, HM Prison and YOI Cornton Vale

Mrs E Stewart, Clinical Manager, HM Prison and YOI Polmont

Mr P Sweeney, Consultant in Dental Public Health, Argyll & Clyde Health Board

Survey timetable

Name	Health Centre Manager	Dates of Examinations	Days
Perth	John Porter HMP Perth	2/3 May 02	2
Barlinnie	Frank Gibbins HMP Barlinnie	3/4 April 02	2
Peterhead	Jack Bonnar HMP Peterhead	19/20 April 02	2
Glenochil	Kenny McGeachie HMP Glenochil	24/25 April 02	2
Dumfries	Joseph (Lennie) Allen HMP Dumfries	21/22 May 02	2
Polmont	Eileen Stewart HMP Polmont	21/22 Mar 02	2
Glenochil	Kenny McGeachie HMP Glenochil	10/11 April 02	2
Cornton Vale	Heather Keir HMP Cornton Vale	8/9 May 02*	4

* Two dentists and four recorders

Appendix 7, The reweighting of the Scottish population from the 1998 UKADHS

Statistics Objective Comparison	Prison			Adult Dental Health Survey		
	Male - Adult	Male - YOI	Female	Age Group	Male	Female
Prison Male vs Female	1.29	0.41	1		-	-
All Prisoners	1.54	0.49	0.21			
Prison vs ADHS (Male)	1	1	-	15-18	2.48	-
	1	1	-	19-20	5.19	-
	1	1	-	21-25	2.11	-
	1	1	-	26-30	1.20	-
	1	1	-	31-40	0.92	-
	1	1	-	41-50	0.43	-
	1	1	-	51-71	0.23	-
Prison vs ADHS (Female)	-	-	1	15-18	-	1.72
	-	-	1	19-20	-	5.35
	-	-	1	21-25	-	3.45
	-	-	1	26-30	-	2.40
	-	-	1	31-40	-	0.99
	-	-	1	41-50	-	0.19
	-	-	1	51-71	-	0.08
Prison vs ADHS	1	1	1	15-18	4.26	0.64
	1	1	1	19-20	8.90	1.98
	1	1	1	21-25	3.61	1.28
	1	1	1	26-30	2.06	0.89
	1	1	1	31-40	1.58	0.37
	1	1	1	41-50	0.74	0.07
	1	1	1	51-71	0.40	0.03
Prison vs ADHS (Male Clinical)	1	1	-	15-18	3.37	-
	1	1	-	19-20	6.80	-
	1	1	-	21-25	2.34	-
	1	1	-	26-30	0.99	-
	1	1	-	31-40	0.73	-
	1	1	-	41-50	0.38	-
	1	1	-	51-71	0.15	-
Prison vs ADHS (Female Clinical)	-	-	1	15-18	-	2.13
	-	-	1	19-20	-	5.71
	-	-	1	21-25	-	2.80
	-	-	1	26-30	-	1.64
	-	-	1	31-40	-	0.79
	-	-	1	41-50	-	0.15
	-	-	1	51-71	-	0.09
Prison vs ADHS (Clinical)	1	1	1	15-18	6.06	0.77
	1	1	1	19-20	12.2	2.06
	1	1	1	21-25	4.20	1.01
	1	1	1	26-30	1.78	0.59
	1	1	1	31-40	1.31	0.28
	1	1	1	41-50	0.69	0.05
	1	1	1	51-71	0.27	0.03

Appendix 8.

TABLE A

% of Sample		Males Adult	Males YOI	P	Males (Weighted)	Female	P
have had trouble pronouncing words							
	hardly ever	88	91	>.99	88	86	>.99
	occasionally	9	7		9	6	
	fairly often	3	2		3	8	
have felt sense of taste worsened							
	hardly ever	88	91	>.99	89	82	0.90
	occasionally	7	3		7	10	
	fairly often	5	5		5	8	
had painful aching in mouth							
	hardly ever	51	43	>.99	50	36	0.011
	occasionally	24	34		26	19	
	fairly often	25	23		25	45	
found it uncomfortable to eat any foods							
	hardly ever	64	61	>.99	63	52	0.16
	occasionally	18	24		19	16	
	fairly often	19	15		18	32	
been self conscious							
	hardly ever	73	79	0.99	74	47	<.001
	occasionally	12	11		12	17	
	fairly often	15	9		14	36	
have felt tense							
	hardly ever	75	77	>.99	76	58	0.001
	occasionally	14	12		14	16	
	fairly often	11	11		11	26	
had unsatisfactory diet							
	hardly ever	78	86	0.48	79	72	>.99
	occasionally	12	10		11	15	
	fairly often	11	4		10	14	
had to interrupt meals							
	hardly ever	82	84	>.99	82	70	0.043
	occasionally	10	11		10	14	
	fairly often	7	5		7	16	
found it difficult to relax							
	hardly ever	75	70	>.99	74	58	0.047
	occasionally	14	19		14	22	
	fairly often	11	11		11	20	
been embarrassed							
	hardly ever	76	79	>.99	77	51	<.001
	occasionally	12	13		13	15	
	fairly often	11	9		11	35	

have been irritable with others						
hardly ever	82	81	>.99	82	66	<.001
occasionally	12	11		12	13	
fairly often	7	8		7	21	
have had difficulty doing usual jobs / normal activities						
hardly ever	89	83	0.91	88	80	0.31
occasionally	8	11		9	11	
fairly often	3	6		3	9.1	
felt life in general less satisfying						
hardly ever	84	89	0.99	85	78	>.99
occasionally	8	7		8	14	
fairly often	8	4		7	8	
have been totally unable to function						
hardly ever	90	87	>.99	89	85	>.99
occasionally	7	11		8	10	
fairly often	3	3		3	5.5	
Functional limitation						
hardly ever	80	85	>.99	81	76	>.99
occasionally	12	9		12	12	
fairly often	8	6		7	12	
Physical pain						
hardly ever	45	42	>.99	45	33	0.026
occasionally	24	34		25	17	
fairly often	31	24		30	50	
Psychological discomfort						
hardly ever	63	67	>.99	63	38	<0.001
occasionally	17	16		17	18	
fairly often	20	17		20	44	
Physical disability						
hardly ever	73	76	>.99	74	61	0.28
occasionally	13	16		13	18	
fairly often	14	8		13	21	
Psychological disability						
hardly ever	62	59	>.99	62	41	<0.001
occasionally	19	25		20	16	
fairly often	19	16		19	44	
Social disability						
hardly ever	79	75	>.99	78	62	0.0004
occasionally	14	15		14	16	
fairly often	7	10		8	23	
Handicap						
hardly ever	81	82	>.99	81	76	>.99
occasionally	11	13		11	16	
fairly often	9	5		8	9	

Maximum OHIP score						
hardly ever	37	28	>.99	35	23	0.005
occasionally	24	38		26	16	
fairly often	40	34		39	62	
Sample Size	**300**	**149**			**110**	

Table A: Probabilities are corrected for 44 comparisons.

TABLE B

% of Sample	Males			Female		
	Prison	ADHS (weighted)	P	Prison	ADHS (weighted)	P
have had trouble pronouncing words						
hardly ever	89	94	0.15	88	97	0.0001
occasionally	8	5		6	3	
fairly often	3	1		7	0.4	
have felt sense of taste worsened						
hardly ever	89	92	0.92	83	94	<0.001
occasionally	6	7		10	5	
fairly often	5	2		7	1	
had painful aching in mouth						
hardly ever	47	70	<0.001	36	71	<0.001
occasionally	29	22		20	20	
fairly often	25	7		44	9	
found it uncomfortable to eat any foods						
hardly ever	63	68	0.043	53	75	<0.001
occasionally	20	25		16	17	
fairly often	17	7		31	8	
been self conscious						
hardly ever	75	74	>0.99	46	80	<0.001
occasionally	12	17		18	13	
fairly often	13	9		36	8	
have felt tense						
hardly ever	74	89	<0.001	57	86	<0.001
occasionally	14	8		17	9	
fairly often	11	3		26	4	
had unsatisfactory diet						
hardly ever	80	98	<0.001	73	96	<0.001
occasionally	12	2		15	3	
fairly often	8	1		12	1	
had to interrupt meals						
hardly ever	82	91	<0.001	71	93	<0.001
occasionally	11	9		14	5	
fairly often	7	1		15	2	

found it difficult to relax						
hardly ever	72	89	<0.001	58	87	<0.001
occasionally	16	9		23	11	
fairly often	12	2		20	3	
been embarrassed						
hardly ever	76	86	<0.001	50	86	<0.001
occasionally	13	10		15	9	
fairly often	11	3		35	5	
have been irritable with others						
hardly ever	81	90	0.003	65	91	<0.001
occasionally	12	7		13	6	
fairly often	7	3		22	3	
have had difficulty doing usual jobs / normal activities						
hardly ever	86	96	<0.001	79	96	<0.001
occasionally	10	4		11	3	
fairly often	4			9	0.4	
felt life in general less satisfying						
hardly ever	86	93	0.002	79	94	<0.001
occasionally	8	7		13	5	
fairly often	6	1		8	1	
have been totally unable to function						
hardly ever	88	99	<0.001	84	98	<0.001
occasionally	9	1		10	2	
fairly often	3			6	0.2	
Functional limitation						
hardly ever	82	88	0.081	77	92	<0.001
occasionally	11	10		12	7	
fairly often	7	2		10	1	
Physical pain						
hardly ever	43	59	<0.001	33	62	<0.001
occasionally	29	29		18	24	
fairly often	28	13		49	13	
Psychological discomfort						
hardly ever	63	71	0.024	37	75	<0.001
occasionally	17	19		19	15	
fairly often	20	10		44	10	
Physical disability						
hardly ever	73	90	<0.001	61	92	<0.001
occasionally	15	10		19	6	
fairly often	12	1		20	2	

Psychological disability						
hardly ever	59	80	<0.001	40	79	<0.001
occasionally	22	16		16	15	
fairly often	19	5		44	5	
Social disability						
hardly ever	77	89	<0.001	60	91	<0.001
occasionally	15	8		16	6	
fairly often	8	3		24	3	
Handicap						
hardly ever	81	93	<0.001	76	94	<0.001
occasionally	12	7		15	5	
fairly often	7	1		8	2	
Maximum OHIP score						
hardly ever	33	43	<0.001	23	54	<0.001
occasionally	30	36		16	27	
fairly often	37	21		61	19	
Sample Size	**420**	**408**		**106**	**481**	

Table B: Probabilities are corrected for 44 comparisons.

TABLE C

	% of Sample fairly or very often	**Males (weighted)**		**P**	**Females**		**P**
		No	Yes		No	Yes	
Top teeth pulped / missing	Functional limitation	3	15	0.0001	5	24	n.s.
	Physical pain	23	43	0.001	40	72	n.s.
	Psychological discomfort	18	27	n.s.	35	69	n.s.
	Physical disability	9	21	0.012	12	41	0.026
	Psychological disability	18	23	n.s.	34	72	0.013
	Social disability	7.8	8.2	n.s.	16	45	n.s.
	Handicap	6	12	n.s.	3	24	0.025
	Maximum OHIP score	32	51	0.004	53	83	n.s.
	Sample Size	290	134		77	29	
<25 standing teeth	Functional limitation	4	11	n.s.	7	14	n.s.
	Physical pain	23	39	0.016	37	63	n.s.
	Psychological discomfort	15	29	0.024	33	57	n.s.
	Physical disability	10	17	n.s.	14	27	n.s.
	Psychological disability	15	26	n.s.	28	63	0.009
	Social disability	6	10	n.s.	14	35	n.s.
	Handicap	5	13	n.s.	4	14	n.s.
	Maximum OHIP score	31	49	0.008	49	76	n.s.
	Sample Size	272	154		57	49	

Table C: Probabilities are corrected for 16 comparisons.

SCOTTISH PRISONS, DENTAL HEALTH SURVEY 2002

SCOTTISH HEALTH BOARDS' DENTAL EPIDEMIOLOGICAL PROGRAMME (SHBDEP*)

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**SHBDEP - The Scottish Health Boards' Dental Epidemiology Programme, is a joint venture between all fifteen Health Boards and the Dental Health Services Research Unit at the University of Dundee, carries out annual standardised dental surveys, with trained and calibrated dental examiners, based on core guidelines produced by the British Association for the Study of Community Dentistry.*

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