The dental prosthetic status of psychiatric in-patients in South Wales

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Aim: To assess the dental prosthetic status of a sample of psychiatric in-patients in South Wales; the objectives were to evaluate the conditions of the dentures and to assess the patients’ satisfaction with the dentures. Design: Examination of patients was carried out in seven psychiatric hospitals in South Wales, and included the prosthetic status and presence of oral pathology. Patients were also questioned regarding satisfaction with their dentures. Subjects: The total patient population of the hospitals involved in the study was 429, and 326 subjects (70%) took part. The mean age of the subjects was 71.1 years, with 265 long stay and 61 short-stay patients. Forty-seven per cent of patients had a psychiatric diagnosis of dementia, 23% of schizophrenia and 19% of depressive illness. Results: Of the 326 subjects, 63% were edentulous, and of these, 32% of subjects were wearing dentures. Forty-two per cent of the dentures were judged to be clean, and 66% of dentures did not have identification marks. Soft tissue lesions were identified in 17% of the edentulous subjects. Eighty-four per cent of the patients were happy with their dentures and did not want any treatment. Conclusions: A high proportion of the study population was edentulous, and approximately one third of these were wearing dentures. A large majority of patients were happy with their dentures and did not want treatment of any kind. A moderate number of soft tissue lesions were found in the edentulous subjects.

Key words: Psychiatric patients, treatment needs, oral health, dentures, and residential care

Introduction

Many reports have indicated that the dental status of people with mental illness is generally poor (Barnes et al., 1988; Stiebel et al., 1990; Vigild et al., 1993; Angelillo et al., 1995; Hede, 1995; Whyman et al., 1995).

Since the 1950s there has been a change in philosophy regarding mental illness, and the emphasis now is on community care for people with psychiatric disorders. The result of this change is that patients have been discharged in large numbers from long-stay institutions. The highest number of patients resident in these institutions in England and Wales was 148,100, recorded in 1954 (Barham, 1992) yet, by 1996, the population had dropped to approximately 36,000 (Department of Health, 1998). In Wales, the population of such institutions has reduced from 7,500 in 1973, to 4,159 in 1985, and in 1996 there were only 2,481 patients in long-stay hospitals (Welsh Office, 1998).

The length of stay in these hospitals has also changed with the different admission patterns that are adopted today. Patients used to spend many years in such hospitals. In Wales, in 1992, 11 per cent of these patients had been resident for more than 20 years, but this proportion had fallen to 3 per cent by 1993 (Welsh Office, 1994). Patients are now admitted for short periods, until the acute phase of their illness is controlled, and then they are discharged. However, the proportion of patients admitted for short periods is increasing. In 1993, 50 per cent of patients had been in hospital for less than one year, but by 1996 the proportion had increased to 69 per cent (Welsh Office, 1998).

There has been a considerable improvement in the oral health of the general population in the last 20 years. The number of sound and untreated teeth has increased from 13.0 in 1978 to 15.3 in 1998, and the proportion of people with total tooth loss has reduced significantly over the same period of time, from 30 per cent in 1978 to 13 per cent in 1998 (Adult Dental Health Survey, 1999).

A recent study carried out on psychiatric in-patients in South Wales showed that the oral hygiene of the dentate population was poor but that there was little evidence of periodontal disease (Lewis et al., 2001). Treatment needs were mainly for debridement and plaque removal. Comparison of the data on DMFT with the general population revealed a similar level of decay, less filled teeth and more missing teeth. This represents a considerable improvement in dental health compared with a study on a similar population carried out in 1973 by Jones when 4.7 decayed teeth were recorded, compared with 0.9 decayed teeth in 1997.

There is little information available on the current prosthetic status of psychiatric in-patients. The aim of this study...
Material and method

Study population

The survey was conducted in seven hospitals in South Wales, with a total patient population of 469, of whom 326 residents were available for study.

Ethical approval and consent

Ethical approval for the study was obtained from the Local Research Ethics Committees, and the consent of the consultant psychiatrists in all of the hospitals was also obtained prior to the start of the study. Consent for a dental examination to be undertaken was obtained from patients whenever possible. Some patients were not able to give consent because of their mental condition, and in these situations their carers or next-of-kin were asked to agree to an examination.

Data collection

All data were entered onto data collection forms. The examining dentist recorded demographic information including age, sex and date of birth from the hospital notes. The date of the first admission to hospital was noted, as was the number of admissions. Patients were designated as acute or chronic, related to their length of hospital stay. Pragmatically, acute patients were generally short-stay, (duration of stay less than two years), and chronic patients were generally long-stay (duration of stay more than two years). A record was made of the medical condition and also the psychiatric diagnosis for each subject as recorded in the hospital notes. A list of medications being taken was obtained from the current medication chart, and these were classed as those prescribed for psychiatric conditions or those prescribed for other conditions. The number of medications, in each group, was also recorded.

Intra-examiner reliability

The criteria to be used for the examinations were developed beforehand, and examinations of volunteers were undertaken to familiarise the examiner and the dental surgery assistant both with the examination technique, and with the recording of the information. Examinations of five volunteers were carried out using the same criteria, and the examinations repeated to check that the criteria were being applied consistently.

Examination

One dentist carried out all the examinations. Subjects were examined, where possible in a treatment room, or in a designated area of the ward, sitting in an upright chair. Where this was not possible, examination took place with the patient either sitting in their own chair, or lying in their bed. The light source for the examinations was a portable electric light or a hand-held torch for those patients who were non-ambulant.

It was noted whether the patient was wearing dentures, and if present, the denture/dentures were removed. The denture/dentures were examined for food debris, either soft or hard; the debris was recorded as soft if it could be removed easily with a probe and as hard if it could not. It was also noted whether there was any damage to the denture, such as fractures or missing teeth. Finally it was noted whether the denture was marked with the patient’s name or other identifying mark. Patients were asked to give the age of their dentures, approximately.

Patients were asked if they were happy with their present dentures. If the reply was in the negative, they were asked to say what was their main complaint regarding their dentures, e.g. problems with the fit or appearance of the denture, or difficulty with eating. Patients who were happy with their dentures were considered to have no prosthetic needs, provided there were no soft tissue lesions, which could have been caused by the dentures.

The oral cavity and mucosa were examined using mouth mirrors to reflect light and retract the tissues. Any pathological, or developmental lesions found were coded by their clinical appearance using the WHO Application of the International Classification of Diseases to Dentistry and Stomatology (WHO, 1993). Dentures were not reinserted into the patient’s mouth if soft tissue lesions of the oral mucosa were noted and thought to be denture-related.

Data analysis

Analysis of the data was performed using the Survey Plus data analysis package (1990) and the Statistical Package for Social Sciences (SPSSX, 1988).

Statistical analysis of frequency data was undertaken using chi-squared tests.

Results

Response rate

The total patient population of the seven hospitals involved in the study was 469 of whom 326 subjects (70 per cent) took part in the study. The remaining 143 patients either refused to participate in the study or were absent from the ward at the time of examination.

Demographic details

The mean age of the patients examined was 71.1 years (S.D. 18.5). There were 143 males and 183 females (Table 1). A large proportion (60 per cent), of the patient population was aged between 70 and 90 years. There were far more females than males in the oldest age groups. In the 80–90 age group there were 69 females and 34 males, and in the
over 90 age group there were eighteen females and four males.

The average length of hospital stay was 9.1 years (S.D. 14.7), and the average number of hospital admissions for each patient was 2.3 (S.D. 2.9). The main psychiatric diagnosis of the patients is presented in Table 2. Forty seven per cent of patients were diagnosed with dementia, 25.5 per cent with schizophrenia, 19.9 per cent with depression, and the remainder had a variety of other disorders or were undiagnosed. The majority of patients (87 per cent) were receiving psychiatric medication. Some patients were taking many different types of medications both for psychiatric and other medical conditions.

**Table 1. Age and sex distribution of psychiatric in-patients**

<table>
<thead>
<tr>
<th>Age</th>
<th>Male %</th>
<th>Female %</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–19</td>
<td>1 0.03</td>
<td>5 1.5</td>
<td>6 1.8</td>
</tr>
<tr>
<td>20–29</td>
<td>16 4.9</td>
<td>1 0.03</td>
<td>17 5.2</td>
</tr>
<tr>
<td>30–39</td>
<td>3 0.9</td>
<td>5 1.5</td>
<td>8 2.4</td>
</tr>
<tr>
<td>40–49</td>
<td>10 3.1</td>
<td>6 1.8</td>
<td>16 4.9</td>
</tr>
<tr>
<td>50–59</td>
<td>14 4.3</td>
<td>6 1.8</td>
<td>20 6.1</td>
</tr>
<tr>
<td>60–69</td>
<td>20 6.1</td>
<td>21 6.4</td>
<td>41 12.6</td>
</tr>
<tr>
<td>70–79</td>
<td>41 12.6</td>
<td>52 15.9</td>
<td>93 28.5</td>
</tr>
<tr>
<td>80–89</td>
<td>34 10.4</td>
<td>69 21.2</td>
<td>103 31.6</td>
</tr>
<tr>
<td>90–100</td>
<td>4 1.2</td>
<td>18 5.5</td>
<td>22 6.7</td>
</tr>
<tr>
<td>Total</td>
<td>143</td>
<td>183</td>
<td>326</td>
</tr>
</tbody>
</table>

**Table 2. Main psychiatric diagnosis of in-patients (%)**

<table>
<thead>
<tr>
<th>Main psychiatric diagnosis</th>
<th>Dentate patients (n=121)</th>
<th>Edentulous patients (n=205)</th>
<th>All patients (n=326)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dementia</td>
<td>31.4</td>
<td>56.1</td>
<td>46.9</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>24.8</td>
<td>25.0</td>
<td>25.5</td>
</tr>
<tr>
<td>Depression</td>
<td>28.9</td>
<td>14.7</td>
<td>19.9</td>
</tr>
<tr>
<td>Personality disorder</td>
<td>0.8</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Other</td>
<td>9.1</td>
<td>2.4</td>
<td>4.9</td>
</tr>
<tr>
<td>Undiagnosed</td>
<td>5.0</td>
<td>0.5</td>
<td>2.1</td>
</tr>
</tbody>
</table>

**Table 3. Prosthetic status of dentate and edentate psychiatric in-patients (%)**

<table>
<thead>
<tr>
<th>Wearing denture/s</th>
<th>Not wearing denture/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dentate (n=121)</td>
<td>18.2</td>
</tr>
<tr>
<td>Edentate (n=205)</td>
<td>32.0</td>
</tr>
<tr>
<td>All (n=326)</td>
<td>27.0</td>
</tr>
</tbody>
</table>

**Assessment of dentures**

Less than half of the dentures were judged to be clean (42 per cent), with 54 per cent and 3 per cent having soft and hard debris present, respectively. A large proportion (66 per cent) of the dentures had no identifying markings, and almost half (49 per cent) of the dentures were believed to be more than ten years old.

An assessment of dentures by the patients revealed that a large majority (85 per cent) were happy with their dentures. Of the eleven patients who were not happy with their dentures, ten reported that the fit of the dentures was the main complaint.

**Treatment needs**

The prosthetic needs, as determined by the examiner, were very few (Table 4). A large proportion (95 per cent), were considered not to need any prosthetic treatment. Five patients were considered to be in need of new dentures, and the same number required an adjustment to their denture.

**Soft tissues**

Examination of the soft tissues revealed a total of eleven lesions (16.6 per cent of the edentulous patients). The lesions were identified as denture hyperplasia (four lesions),
denture stomatitis (two lesions) and frictional/functional keratosis (five lesions). All the lesions were found in edentulous patients.

**Discussion**

The seven hospitals involved in the study housed the total psychiatric in-patient population in two health authorities in South Wales, (prior to 1996, Mid Glamorgan Health Authority).

At the time of the study 60 per cent of the population received regular dental examinations from a hospital-based dentist, and treatment was available on request. The other 40 per cent were seen on an emergency basis only, but until a few years prior to the study these patients also had been examined regularly. The service was reduced at this time due to changes in policy of the health authority in respect of dental care of patients in long-stay hospitals.

The principle findings of the present study were that, whilst 63 per cent of subjects were edentulous, only half of these subjects were wearing dentures. The condition of the dentures was generally poor, with many being both old and dirty, and 66 per cent had no identification marks. Eighty four per cent of the denture wearers were satisfied with their dentures.

The response rate in this study (70 per cent) is lower than in other studies of in-patients with mental illness. Vigild *et al.* (1993) recorded a response rate of 94 per cent in their study of elderly patients in Danish institutions, and Hede (1995) recorded a response rate of 83 per cent but in a younger group of hospitalised, psychiatric patients. There was a significantly better response rate from the long-stay/chronic patients compared with short-stay/acute patients in the present study. A possible reason for this difference, in accordance with the studies of Hede (1995) and Whymar *et al.* (1995), is that some patients were familiar with a member of the survey team, either the examining dentist or the dental surgery assistant. In addition, patients suffering from an acute phase of mental illness may not have been well enough to take part in the survey.

A high percentage of edentate patients in the present study was anticipated because of the elderly nature of the population. However, the proportion of edentate subjects is considerably less than that reported previously by Manderson and Ettinger (1975), and also by Whittle *et al.* (1987) who recorded prevalences of edentulousness of approximately 90 per cent in their studies. The sample population of Manderson and Ettinger (1975) were in residential care, but not all had psychiatric illness, and that of Whittle *et al.* (1987) were all diagnosed as having pre-senile dementia.

In addition, there has been a fall in the rate of edentulousness since the time of these studies (Adult Dental Health Survey, 1998), which may explain the differences between these and the present study. Jones (1973) examined psychiatric in-patients (mean age 58 years) in the same geographical area as the present study, 54 per cent were edentate.

Thirty-two per cent of the edentate in-patients were wearing dentures. Previous studies have reported far higher proportions of denture-wearing subjects than identified in the present study. For example, Manderson and Ettinger (1975) and Whittle *et al.* (1987) reported that 92 per cent and 90 per cent of their study populations were wearing dentures, respectively. However, as mentioned previously, the groups are not directly comparable.

Dental treatment was available for the study population and so several factors could explain why so many of the subjects in the present study were not wearing dentures: patients that are severely mentally disturbed may not be in a condition to insert their dentures without help. It is likely that the more co-operative patients would have their dentures inserted by the nurses or carers and the more difficult patients would not. Dentures lost on the ward may not be replaced. This may have been because the ward staff did not think it likely that the patient would wear dentures, or it may have been too difficult for a dentist to construct dentures because of insufficient co-operation from the patient. In addition, there is no social stigma attached to being edentate in many psychiatric wards, and the patients may not have been concerned about their appearance.

It was estimated that nearly half (49 per cent) of the patients were wearing dentures that were more than ten years old. This proportion is similar to another study of a comparable population where the age of dentures was estimated by a similar means of patient enquiry (Hoad-Reddick *et al.*, 1987). However, approximately 50 per cent of the study samples were diagnosed as having dementia and therefore this information should be treated with caution.

Elderly people in particular, are often reluctant to change their dentures even if the dentures are very old. The fact that a denture is more than ten years old may not be a reason for replacement. The patient may be unable to adapt to new dentures, and other treatment may be more appropriate, for example re-lining the existing dentures, or it may be appropriate to do nothing, as discussed later, providing the patient is examined regularly to ensure no problems ensue.

In view of the estimated age and poor hygiene of the dentures in the present study it is perhaps surprising that relatively little denture-related pathology was identified.

**Table 4. Prosthetic needs of psychiatric in-patients (number of patients and %)**

<table>
<thead>
<tr>
<th>Prosthetic needs</th>
<th>Number of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>271</td>
<td>95.4</td>
</tr>
<tr>
<td>Clean</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Re-line</td>
<td>3</td>
<td>1.1</td>
</tr>
<tr>
<td>Repair</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Re-make</td>
<td>5</td>
<td>1.8</td>
</tr>
<tr>
<td>Ease</td>
<td>5</td>
<td>1.8</td>
</tr>
<tr>
<td>Total</td>
<td>284</td>
<td></td>
</tr>
</tbody>
</table>
However, as many of the patients in the hospitals involved in the study were examined at regular intervals, any pathology should have been identified at an early stage and treatment arranged.

In the present study the means of determining whether the dentures were clean was simple but highly subjective. However, similar methods have been used in other studies of similar populations (Vigild et al., 1993; Whittle et al., 1987). A large proportion (58 per cent) of the dentures were considered to be dirty, but this standard of hygiene was better than reported in other studies. Vigild (1987a) investigated denture hygiene in institutionalised elderly people and found that only 10 per cent of the dentures were free of plaque. Whittle et al. (1987) also found the cleanliness of dentures to be poor. People with mental illness may be unable to care for their own dentures and, therefore, need help to clean them. A previous study has already shown that there was a low level of denture hygiene in this study group (Lewis et al., 2001). The poor standard of denture hygiene reported in this study further suggests that insufficient assistance was being given to the subjects.

One third of the dentures in the present study had identification marks. Dentures are often lost or mislaid by hospitalised people. The loss of a denture presents a problem for the patient and very often for the dentist. It may be impossible to replace the dentures because the patient is not sufficiently co-operative, or because he or she may not be able to adapt to new dentures. Marking of the dentures with the patient’s name is a simple procedure that would ensure that mislaid dentures were returned to their owner.

The number of soft tissue lesions found in the present study was smaller than in any of the other similar studies that have investigated the oral health of people with mental illness (Vigild, 1987b; Vigild et al., 1993; Whittle et al., 1987). In those studies 25-50 per cent of patients were found to have some type of oral pathology related to denture wearing. However in the present study, of the total population, only eleven patients (3.4 per cent) were found to have soft tissue lesions. This represented 16.6 per cent of edentulous subjects. The lesions identified were denture hyperplasia, denture related stomatitis and frictional/functional keratosis. Arrangements were made for these patients to receive appropriate treatment.

In previous studies of people with mental illness, the frequency of soft tissue lesions has been related to the proportion of subjects wearing dentures. In the studies of Manderson and Ettinger (1975) and Vigild et al. (1993) approximately 90 per cent of the study populations were wearing dentures and 50 per cent of the subjects in each study were reported to have soft tissue lesions. The studies of Jones (1973) and Whyman et al. (1995) reported smaller proportions of the subjects to be wearing dentures (39 per cent and 24 per cent respectively) and yet 25 per cent of subjects were found to have soft tissue lesions. In the present study, with a similar proportion of denture wearers (32 per cent), there was a much lower prevalence of soft tissue lesions.

Vigild (1987b) investigated oral lesions among institutionalised elderly people in Denmark and found that denture hygiene was the predominant factor influencing the presence of denture-related stomatitis. In that study 54 per cent of the elderly subjects with poor denture hygiene suffered from denture related stomatitis, compared with only 7 per cent of those with clean dentures. The prevalence of denture stomatitis was also related to the wearing of dentures at night, and to the age of the dentures. Older dentures are said to be more difficult to keep clean because of the greater tendency to porosities in the denture base (Budtz Jorgenson et al., 1995). Another Danish study (Vigild et al., 1993) also reported poor denture hygiene with 69 per cent of the dentures having moderate to large amounts of plaque, and a prevalence of denture stomatitis of 31 per cent. However, the observations of Whittle et al. (1987) were different. Although a large proportion (50–70 per cent) of that study population were found to have poor denture hygiene, the prevalence of denture related stomatitis was only 7 per cent.

It is surprising that very little denture related stomatitis was found in the present survey considering the poor hygiene of the dentures. The low prevalence of soft tissue lesions in the present study may be related to the regular examinations of many of the subjects, carried out by a hospital-based dentist. In other studies of people with mental illness, subjects were not examined regularly and therefore soft tissue lesions would be unnoticed. However, many of the authors emphasised the importance of regular examinations for edentulous people to ensure that any pathology was identified at an early stage.

Many different criteria have been used in the assessment of dentures, for example, Nyquist (1952), Bergman et al. (1964), Rayson et al. (1971), Rise and Heloe (1978) and Todd and Walker (1980). As well, some studies of the oral health of the elderly population have included an assessment of dentures in situ, e.g. Ritchie (1973), Giles and Murphy (1980), Smith and Shielham (1980), Fiske et al. (1990). However, the validity of the assessment criteria has been questioned. For example, Pinsent and Laird (1989) attempted to develop a set of reliable criteria for use in epidemiological studies. They concluded that it is unlikely that objective methods of assessment can be developed. Gordon (1991) maintained that the existing indices used to measure prosthetic treatment need are not valid or reliable, require high levels of ‘observer inference’, making comparisons between studies very difficult.

In the present study two assessment criteria were used to assess treatment need: the presence of denture-related pathology and the subject’s dissatisfaction with the dentures. The presence of denture-related pathology was used as an indication that treatment was needed. The dentures were then examined in the mouth, and the treatment options
considered, for example; easing, replacing, re-lining. The presence of soft tissue lesions as a major factor in indicating treatment need is supported by Smith and Sheilah (1980). The presence of soft tissue pathology was also taken as a major criterion for adjustment or replacement of dentures by Grabowski and Betram (1975) who developed a set of criteria for assessing prosthetic treatment needs.

In the study population, the other indication that prosthetic treatment was needed, was the subject's expressed dissatisfaction with the dentures. The assessment however, was made both by clinical judgement and the examiner's experience of treating people with mental illness. It is possible that patients may express dissatisfaction with their dentures and yet the dentures may be considered to be technically satisfactory. However in the present study this did not occur. All patients who expressed dissatisfaction with their dentures were judged to be wearing dentures that had technical deficiencies, and, for these people, prosthetic treatment was indicated.

Thus, in the present study even though no information was obtained on the technique of the dentures, the low incidence of denture-related pathology indicated that the majority of dentures being worn were not damaging the soft tissues. In addition most of the patients (84 per cent) were happy with their dentures.

Conclusions

The dental prosthetic status of psychiatric patients in a group of hospitals in South Wales has been described. It was found that 63 per cent of the patients were edentulous, and of these 32 per cent were wearing dentures. Forty two per cent of the dentures were considered to be clean, 66 per cent were found to have no identification marks and approximately half of the dentures were more than 10 years old. However, the majority of the patients (85 per cent) were happy with their dentures.

References


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