TITLE: A qualitative study on patient perspectives of how conventional and implant-supported dentures affect eating.

Introduction

Though the proportion of the population who have lost all their natural teeth is declining[1], the 'edentulous predicament'[2] remains a common experience for a significant proportion of older people in many countries. The nature of this predicament may, however, be seen in rather different ways by patients and health professionals. Whilst much of the work on edentulousness from a dental perspective has focused upon the techniques of prosthetic rehabilitation and overcoming functional problems, extensive tooth loss has been increasingly seen in the context of its wider health implications. Most obviously, edentulousness has been seen in terms of its impact upon dietary intake and, through this, upon general health [3,4,5]. Edentulousness may not only impact upon diet and nutrition [6], but also affect psychosocial well-being and oral health related quality of life (OHRQoL) [7.]

Studies into different techniques of prosthetic rehabilitation usually focus on the quantitative evaluation of clinical outcomes. Implant supported removable overdentures (ISODs) have been shown to overcome some of the limitations of conventional dentures, particularly in the mandible where edentulous patient most frequently experience problems [8]. ISODs have been largely successful with reported reductions in pain and instability [9]. Complementary to the clinical measures, several other quantitative instruments have been devised to measure patient satisfaction and oral health related quality of life [10]. The Oral Health Impact Profile (OHIP) [11], for example, is commonly used to measure individuals' subjective perception of their oral health status. Instruments for assessing patient satisfaction and quality of life commonly use survey techniques, such as Likert or visual analogue scales (VAS), that yield readily quantifiable data[12, 13]. Patient satisfaction

levels and oral health-related quality of life have been reported as greater for ISODs than for conventional dentures [12, 13, 14].

Though critically important in terms of attempting to establish the relative merits of different treatments, such quantitative methods only give a limited representation of the patient experience. Moreover, measures of OHRQoL and questionnaires designed by professionals to assess dietary intake share with clinical outcome surveys the presuppositions of professional groups. The professional discourse of nutritionists and dietitians, for example, tends to construct the 'eating problems' of the edentulous in terms of their inability to consume appropriate nutrition, However reasonable and well founded these professional preoccupations may be, they remain normative assumptions whose salience to patients deserves to be investigated.

There is limited in-depth evidence on patient perceptions of the impact of edentulousness and prosthetic rehabilitation, upon their ability to enjoy food and eating as a normal social activity as opposed to a functional necessity for life [15,16]. More flexible and responsive qualitative, patient-centred approaches are therefore necessary to explore the impact of edentulousness and patient satisfaction with prosthetic rehabilitation. Qualitative semi-structured interviewing can pick up issues which elude forced response and scaling approaches to gathering data; they can bring a level of understanding and interpretation that cannot be achieved with quantitative analysis .

The current investigation is part of an ongoing research programme into the impact of different forms of prosthetic rehabilitation upon diet and health. The objective of this study was to obtain qualitative data from patients on the impact of edentulousness and common prosthetic rehabilitation techniques on issues surrounding eating (emotional, social and functional). as a preliminary to investigating receptivity to and designing appropriate targeted nutritional advice. It aimed to explore the significance of any limitations upon eating behaviour, not in

terms of a check-list of items, nor in terms of nutritional values, but rather focusing on patients' own perceptions of their condition and its management through prosthesis provision.

METHOD

A favourable ethical opinion was obtained for the study from the Local Research Ethics Committee and written consent was obtained from all subjects. Edentulous patients, identified from a database of those having received either replacement conventional dentures or ISODs at the Dental Hospital, Newcastle upon Tyne, UK, were recruited as part of the wider nutritional study alluded to in the introduction.

Semi-structured interviews were conducted by the sociologist attached to the project. Interviews were conducted prior to a nutritional intervention delivered as part of the wider study. Interviewees were made aware of the interviewer's specific role, i.e. as neither a dentist nor a dietitian, but as a researcher, outside the clinical team, interested in their perspective on dentures and eating. A semi-structured question schedule was adopted to balance broad comparability of questioning for all interviewees, with the flexibility to probe responses and allow developing insights to inform inquiry. Whilst the interview schedule remained largely unaltered, probes within the interview were modified in light of previous interviews and their emergent themes. The question schedule focused attention upon problems encountered with eating as a result of edentulousness and the patients' experiences of prosthetic rehabilitation.

All interviews were audio-taped, transcribed and imported into NVivo software (QSR 2002) for qualitative analysis. The software allows for the coding of text in any quantity and according to multiple classification categories. Some of these may be pre-determined whilst others emerge in the process of analysis. Use of NVivo facilitated thematic content analysis and the identification of emergent themes across answers to individual questions [18, 19.]

Indicative quotations from the 66 interviewees are coded according to study number (P01 to P74; 8 numbers unused), whether fitted with ISODs or CDs, male/female (m/f) and age at recruitment to the study.

RESULTS

103 edentulous patients were initially invited to participate in the broader programme of research including a nutritional intervention study the results of which are to be reported elsewhere. Of these 66 attended for interview: 33 patients (48-84 yrs; mean 70.6) had received replacement conventional dentures within the last 5 years; 33 patients (age range 44-82 yrs; mean 65.4) had received ISODs, most within the last 5 years. The recorded interviews lasted between 15 and 20 minutes. Interviews with conventional denture wearers tended to be shorter with a word count of approximately 2000, while those of implant restored patients were approximately 3000 words in length. The mean word count of all transcripts was 2494.

The experience of edentulousness

In recounting their experience of edentulousness, approximately one third indicated they had always had significant difficulties wearing dentures. Of this group , a minority reported having had *very* serious problems with eating from the outset. Another third said their eating difficulties only really emerged after what often amounted to decades of denture-wearing. A typical story was that of a patient who had worn dentures for over 30 years:

> "Initially I didn't have any problems either with hard or crunchy things to eat. As I became older, the gums have shrunk; therefore the denture doesn't fit so comfortably, so I've had a little bit more problem there." (P10-ISOD-f61)

The public constraint

One of the key underlying themes that emerged from patients, was the way lack of

confidence with dentures and dissatisfaction with their functioning, affected what patients ate in public. The limitations of dentures stopped people eating the foods they wished to in company. Typical examples were:

> "I'm very careful that I don't have anything that I feel that I may not be able to eat while I'm outside. I don't bother at home … but when I'm out I tend to be a little bit careful. If I think I may have a little difficulty, well I'll not bother with that." (P08-CD-f81)
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> "I might eat rice and stuff at home, but I wouldn't eat it out." (P73-CD-f83)
>
> "there's no way would I accept an apple off someone. Even with the fixative I'm still conscious because I think the dentures I had in the past I had sort of lost them eating a bacon sandwich, lost them. So I do tend to eat, I've got to be honest, to suit my dentures. It's not a case of what I like and don't like, cos sometimes in my own house I would sit and peel an apple into slices and, you know, eat it like that, I like apples, but I wouldn't sit in front of you now and eat that apple because I feel conscious. … it's outside they have stopped me eating things. I would never choose chicken: to pick a chicken up and eat it in a pub – no way!" (P09-CD-f51)
>
> "Such as carrots, greens and all, you're supposed to eat plenty of - being a diabetic. But I can't bite them, unless I can mash them. There again, if you go out to a meal, you cannot sit mashing them, it doesn't look good. But at home it doesn't matter."

A more drastic effect was described by patients, when they tried to eat certain foods in social settings. In some cases this resulted in a limitation of social contact; even with family members:

> "They're terrible, it's the worst thing that's ever happened to us in my life …. I prefer to stay in than go out. And if I do go out, I always buy something mushy, you know, something very soft that you can swallow quick and you don't have to chew on." (P51-CD-f68)

> “I couldn’t go out socially for a meal, my teeth were not right. I couldn’t eat just anything, they just didn’t feel right at all.” (P11-ISOD-f76)
>
> “I couldn’t enjoy anything because they used to rattle around in my mouth, you know. I couldn’t go out for a meal; I wouldn’t even go to my own family’s.” (P39-ISOD-f74)

Attitudes varied from acute self-consciousness to indifference, but avoiding embarrassment over loose dentures was a common theme. This embarrassment commonly restrained freedom of choice and limited social participation.

The impact of replacement conventional dentures on issues surrounding eating

Patients who had received replacement conventional dentures often told quite a blurred story of the impact of the latest CD on a range of issues surrounding eating.

New conventional dentures could sometimes effect significant improvement. One patient reported:

> “..the most comfortable dentures I’ve ever had … they’re fantastic, they are brilliant. And as for eating, I eat anything I want and it doesn’t affect us… I can manage it no problem at all with these dentures.” (P47-CD-m59)

For a few patients the improvement achieved with replacement CDs did allow them to draw a clear contrast between the way these and previous dentures impacted upon their enjoyment of food and eating:

> “I didn’t like to eat in company, you see. Friends of mine, … I’m going out to lunch with them now. I wouldn’t, I would have made some excuse not to go before when my teeth weren’t right, but now I don’t mind.” (P70-CD-f78)

The most common response was of achieving a degree of functional improvement and comfort, even if they continued to have some eating-related problems:

> “I would say about 90% better, yeah. I would say so. I’ve no bother chewing and what not, no bother whatsoever. Sometimes on the bottom just a little bit it might, you know, catch, but apart from that I’m champion.”. (P66-CD-m74)

> “But these are pretty good, … I can go now and I get through a meal in a restaurant sometimes with no bother, but I’ve got to be careful what I eat.” (P21-CD-m76)

Patients often expressed a carefully nuanced sense of satisfaction with their latest CDs. Recognition of the inherent limitations of dentures was quite common. In practical terms CD patients often accepted some restrictions on eating but nonetheless this still impacted upon food choices when socialising:

> “Obviously if you eat figs or something you get some seeds under them and I get some food under them sometimes. But you know when I‘m at home I can go up to the bathroom, wash them and clean them and that, and they’re reasonably satisfactory.” (P65-CD-f78)

> “...if I’m on my own I don’t bother so much do I cos it doesn’t matter. But if I’m at a social affair or something like that it really does matter, doesn’t it? …. if you’re jumping up from the table someone’ll wonder, ‘What’s the matter with him? He must have a weak bladder or something.’ [laughter]” (P21-CD-m76)

> “…when I go out for a meal I would never dream of ordering steak. I would have something softer, fish or chicken or a stew of some sort, casserole… I love steak and I have it at home but … I would never order in public anything that would be the least bit difficult. … other than that I don’t say that I have any difficulties.” (P43-CD-f84)

There were a few patients for whom no conventional denture seemed to work, or at

least not for long, and their acceptance of limitations had become resignation:

> "I put up with them and I'm more or less getting used to the plight I'm in." (P02-CD-m81)

> "Well I manage to eat but not very well. They're moving all the time, it's not easy. I would feel embarrassed if I had to eat a meal with strangers, oh I would feel very embarrassed, but my wife is used to me now." (P58-CD-m79)

The impact of ISODs on issues surrounding eating

In contrast to conventional denture treatment, patients usually offered a clear narrative of the impact of ISOD provision on their enjoyment of eating.

All ISOD patients, bar one, reported improvement in eating function compared to their experience of conventional dentures. The stories of improvement brought about by ISODs were often dramatic:

> "Well I couldn't eat meat and stuff like that, you know, apples and that, I couldn't even tackle them or anything like that. But really I can eat anything now." (P12-ISOD-f66)

> "… eating is what you need to do to live and I think if you're having problems with that your life's miserable. I mean every week I was buying stuff for me mouth and rinsing it and every meal time I had to go to the bathroom and take me teeth out and put them back in. It was just a nightmare. But I mean since then [ISODs] I don't even think about it now." (P06-ISOD-m66)

The impact upon food choice of receiving ISODs was that patients felt more able to eat the range of foods they wished to in the company of others:

> "I really have got my life back, … because I wouldn't go out anywhere to dinners, ... it was so embarrassing so I just didn't. It was really bad. But

after this I go out, you know, I've got so much confidence." (P62-ISOD-f64)

"… basically it's changed my whole way of life, …. to take a sandwich used to be embarrassing when I was say not in the house, somewhere. That's why I hated restaurants, cafés, things like that …so I just didn't go out because I got into problems, you know. But I can just eat anything." (P63-ISOD-m68)

Not everybody was so absolutely satisfied in all respects. One patient was experiencing continued eating difficulties with the ISODs and described how this affected his social life:

"I was at… my brother's daughter's wedding … and all I could have was soup. Everybody's sitting there with everything and that's the only way I could go. And then I actually after the reception I left and went back home. But it has, it's affected my social life, there's no doubt about that." (P25-ISOD-m70)

Another had developed problems with eating after being very satisfied for nine years and three described their ISODs as very successful but as only a partial solution to their eating difficulties. Three reported eating difficulties which arose because of loose attachments. One immediately commented on the social impact of the problem, and of the solution:

"They were absolutely wonderful at keeping the denture in for about a year and then they became so slack that they were rattling around in my mouth and I did find that food got underneath and it wasn't very pleasant, especially the rattling around. For a couple of month I didn't quite like to go out to dinner or anything, you know, just in case they came out. But now I've got new like grabbers on the denture itself and they're brilliant, absolutely brilliant. I can eat anything, I can talk, as you can tell. I can even laugh loudly." (P16-ISOD-f62)

> "I've been eating some nougat this morning and that's got nuts in, but it was soft nougat, you know. But at one time you couldn't eat toffee, otherwise it got all stuck on your teeth and you couldn't chew it, you see, but I can do it now." (P14-ISOD -f72)

DISCUSSION

Trulsson et al illustrate the richness of the insights to be gained through a small scale qualitative study into patients' perspectives on edentulousness and oral rehabilitation using a fixed implant prosthesis [16]. However, no comparator group of patients with conventional dentures was used, and, all contrasts drawn between treatment modes were based upon retrospective accounts. This may possibly induce bias.

The social role and importance of eating has been previously identified in a group of elderly patients, where dental problems including being edentulous were seen to reduce the ability of patients to enjoy these aspects of their life. Whilst this research identified that dental problems may impact on quality of life in this way, it did not look at the problems faced by edentulous patients in isolation [15].
In the current study, many patients told similar stories about the underlying eating problems associated with edentulousness and the impact of conventional dentures on their enjoyment of eating. Pain and acute discomfort in eating were self-evident problems, but the data indicated that eating difficulties impacted more broadly upon quality of life. These findings are supported by a previous study which identified that the most common oral impacts on quality of life were on eating and speaking; a quarter of elderly patients reporting a severe impact of eating on their quality of life and 42% reporting a daily impact [20] . The use of qualitative methods as employed in the current study removes the restrictions of purely professional perspectives and assumptions, and allow a richer picture to develop in relation to the very real issues of eating with dentures as patients see them. Concerns about

not being able to eat particular foods with dentures were seldom related to nutrition, but were related to eating satisfaction, the enjoyment of a variety of foods and the social aspects of eating. The ability to exercise a reasonable degree of dietary choice – whether it is for “nougat or apples” – was seen as an essential quality of life issue. Patients were often concerned to avoid embarrassment when eating amongst strangers, friends or even family. This commonly meant not consuming certain foods ‘in company’; minor limitations were acceptable but if this became an extensive list then examples of social withdrawal were described.

Patients who had received ISODs were much more likely to claim a significant improvement in what they could eat and how they felt about eating, particularly in social situations. The impact which improving their dentures through implant support had upon these patients’ enjoyment of eating– and thus to their overall well-being – was often considerable. The feeling, sometimes expressed in “got my life back” language, was of significant improvement achieved.

Treatment outcome have historically often been judged by clinicians from a technical perspective. More recently, an emphasis has been placed on patient centred questionnaires outlined above. Extending this theme of change, data presented here provide a unique insight into the patient’s perspective of the impact of edentulousness and prosthetic rehabilitation upon eating, the enjoyment of eating and the social significance of eating. From their perspective, a functional difficulty in eating can readily be perceived as a social handicap that may restrict social intercourse. In all but a few patients with the most intractable difficulties in eating, the majority of problems were related to eating in a social context. A few CD patients do tell a story of major improvement in enjoyment of eating through the provision of a new conventional denture. In contrast, however, this is almost the normal script for implant patients. In the view of most patients who received them, ISODs – although not a perfect solution – are very successful: they make a real problem one that is manageable and that reopens social opportunities to them.

In the management of chronic conditions such as edentulousness, identifying management strategies that enhance quality of life whilst responsibly allocating limited resources is central. The study identified patient-centred perception of very real quality of life issues focused around the enjoyment of eating. The findings broaden the research question beyond nutrition arguments for prosthetic rehabilitation – with all their implicit assumptions about an appropriate diet- and focus upon patients' priorities and concerns. Simply put, what patients experience is a loss of choice in relation to food selection, often within a social context. Previously these issues have not been emphasised in analyses of the effects of oral rehabilitation. The concept of 'eating related quality of life', has been identified by the patients within this study. For many edentulous patients restored by conventional prosthetic techniques, this is a dominant theme that is central to their quality of life. Moreover, the extended impacts on a variety of social interactions are significant but may be trivialised by health care professionals whose focus may be directed towards achieving adequate dietary goals. The patient centred instruments currently available may not adequately focus on issues surrounding food and enjoyment of eating.

Conclusion

In conclusion, issues surrounding eating are a major concern for edentulous patients.

The main impacts of edentulousness are limitation of social participation and food choice (not necessarily linked to healthy food selection).

The improvements in eating function and increased social confidence that ISODs can provide, have a beneficial impact on the enjoyment of eating.

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