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Published version

PORRITT, Jenny, JONES, K and MARSHMAN, Z (2016). Service evaluation of a nurse-led dental anxiety management service for adult patients. British Dental Journal, 220, 515-520.

Service evaluation of a nurse-led dental anxiety management service for adult patients

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Key words: *service evaluation, dental anxiety management, patient experience, integrated care pathway*

Objective: Evaluate patients' and professionals' experiences of a Nurse-led Dental Anxiety Management Service (NDAMS). ***Design:*** Service evaluation. ***Setting:*** The NDAMS operates as part of Sheffield Salaried Primary Dental Care Service. ***Subjects and methods:*** Questionnaire survey of anxious patients and qualitative interviews with patients and professionals ***Interventions:*** Dental nurses delivered low-level psychological interventions as part of an Integrated Care Pathway (ICP) for dental anxiety***. Main outcome Measures:*** Dental anxiety and oral health-related quality of life (OHRQoL) questionnaires were completed by patients prior to and following NDAM. ***Results:*** A total of 187 patients were assessed as suitable for NDAM (mean age= 33.7, 77% female) and 33 had completed it at the time of the service evaluation. Of those patients who had completed the intervention significant improvements in dental anxiety and OHRQoL were reported. Professionals highlighted the importance of integrated working, adequate support and training and assessing the suitability of patients for NDAM. ***Conclusion:*** ICPs that combine pharmacological and psychological management approaches can help meet the needs of dentally anxious patients, however, early identification of patients most likely to benefit from psychological intervention should be a priority.

Introduction

The impacts of dental anxiety are well-recognised with dentally anxious adults reporting worse oral health and quality of life than their non-anxious counterparts.[1 2] Highly

anxious patients are often referred for pharmacological interventions such as conscious sedation to help them accept dental treatment. However, pharmacological approaches are not as effective as psychological interventions in helping patients manage their dental anxiety.[3 4] Dental services need to use care pathways that combine the use of pharmacological approaches for patients with urgent or high treatment need with psychological interventions to help patients better manage their anxiety longer term.[5-7]

Cognitive Behavioural Therapy (CBT) is an evidence-based treatment for a number of anxiety-based conditions[8 9] and effective at reducing dental fear in adults.[3 4 10] However, the demand for CBT practitioners and psychological services often outweighs the resources available.[11] One solution has been to use a stepped care model of CBT delivery which utilise 'low intensity' approaches, such as brief or guided CBT delivered by non-experts and 'high intensity' approaches, which deliver an expert-led service over a longer time period.[11 12] Dental nurses are particularly well placed to delivery low level psychological interventions because they are based in dental clinics and have access to dental equipment used in behavioural exposure interventions.

A previous service evaluation, which investigated the experiences of dentally anxious adult patients in Sheffield, [7] reported a lack of psychological services/support for this group of patients. Therefore, an integrated care pathway (ICP) for dentally anxious patients was developed and implemented in 2011. ICPs are standardised multidisciplinary care plans of the services that patients with a specific problem should receive.[13] The ICP aimed to increase psychological support for patients with dental anxiety and reduce demand for pharmacological intervention through the development and implementation of a nurse-led dental anxiety management service (NDAMS) (see Figure 1).

Two dental nurses were trained in the delivery of cognitive and behavioural techniques and were provided with access to regular supervision with a CBT therapist. A telephone triage service, run by the trained dental nurses, assessed patients' suitability for the NDAMS. During the triage appointment the dental nurse would i) explain the service to

patients ii) collect information related to the patient's previous medical history and iii) assess patient's dental concerns and needs. If patients revealed additional or complex psychological issues this was discussed then they were signposted or referred to the most appropriate service. No formal clinical assessment tools were used for screening patient's mental health. Dentally anxious patients were assessed as suitable for the NDAMS if they were i) willing to engage with the service ii) had no urgent dental treatment needs and ii) did not disclose any additional or complex mental health problems which would prevent them from engaging with or benefiting from the NDAMS. In situations where patients had urgent treatment needs (e.g. reported pain/swelling) the patient was referred back to the referring general dental practitioner. In cases where patients had been referred from a general medical practitioner they were referred directly to the community dental service for a dental assessment.

Patients that were assessed as suitable for the NDAMS were offered a course of CBT-based management delivered by the trained dental nurses. Appointments lasted between 30 minutes and 1 hour and dental nurses and patients had access to dental clinics for behavioural exposure interventions as required. Patients who missed NDAM appointments were contacted by phone/letter and given an opportunity to re-book. On completion of NDAM, patients were offered dental treatment delivered by a salaried dentist in the community dental setting. Dental nurses accompanied patients to these dental appointments and the level of clinical input required at this stage was determined by the clinical needs of the patient.

On completion of NDAM it was the patient's perceived ability to cope with dental treatment (rather than their anxiety level) which determined the subsequent care they were offered. Patients who felt they needed additional support prior to being able to accept dental treatment were referred to the psychotherapy service or for sedation, which is in line with a stepped care model of anxiety treatment.[12] Once patients completed their course of dental treatment they were referred back to their general dental practitioner (GDP) or able to register with the community dental service (if appropriate). Figure 1 provides an overview of the ICP for patients with dental anxiety.

Aim and Objectives

The aim of this service evaluation was to explore patients' and staff perspectives of the NDAMS. The objectives of the service evaluation were to:

1 Describe the flow of patients through the NDAMS.

2 Investigate the influence of NDAM on the dental anxiety and oral health-related quality of life (OHRQoL).

3 Explore patients' perspectives of the NDAMS.

4 Explore healthcare professionals' perspectives of the NDAMS.

Method

Design and sample

Permission from the Clinical Director of the Salaried Dental Services of Sheffield Teaching Hospitals Foundation Trust was obtained prior to the commencement of the service evaluation. The service evaluation was conducted by those not involved in the provision of the NDAMS. Referral and appointment information was collected by the NDAMS. Data related to the patients' dental anxiety and OHRQoL were collected at the initial assessment appointment and following completion of the nurse-led support.

Semi-structured interviews were conducted over the telephone with a purposive sample of patients. All patients contacted had provided permission to be approached during initial triage. Patients were purposively sampled using a maximum variation approach (based on age, gender and differing levels of engagement with the NDAMS). Topic guides were designed to explore patients' experiences of the NDAMS and examine the perceived benefits and limitations of the service, the facilitators and barriers related to engagement and their recommendations for service improvement (e.g. 'Please could you tell me a bit about your experience of the dental anxiety management service?' 'Can you tell me why you think it has/hasn't changed your dental anxiety?' 'What do you think could have been done differently to have improved the care you received?').

A mixture of one-to-one interviews and small focus groups were undertaken with dental professionals involved in the NDAMS. General Dental Practitioners, who could refer patients into the NDAMS, and dental professionals who had experience treating patients as part of the ICP were invited to participate in the study. Topic guides were used to obtain information on professionals' perspectives of the dental anxiety care pathway, their experiences of referring into or working within the NDAMS and their recommendations for service improvement.

No formal sample size calculation was undertaken due to the qualitative methods employed, however, data collection continued until data saturation was achieved.

Main outcome measures

Dental anxiety was measured using the previously validated five-item Modified Dental Anxiety Scale which incorporates a five-item Likert response scale (1=not anxious to 5=extremely anxious).[14] Referrals of patients with MDAS scores of 19 or above (high dental anxiety) were accepted into the service. Referrals of patients who had borderline levels of severe of dental anxiety (17-18 MDAS score) and/or needle phobia (patient reported being 'extremely anxious' in response to the item 'If you were about to have a local anaesthetic injection in your gum, above an upper back tooth, how would you feel?') were also accepted if referral letters had indicated patients were unable to accept treatment from the referring practitioner due to their anxiety/phobia.

OHRQoL was measured using the Oral Health Impact Profile-14[15] which comprises 14 items to capture impacts related to functional limitations, physical pain, psychological discomfort, physical, psychological and social disability and handicap. Responses are coded on a five-item Likert scale (0=never to 4=very often) and the measure has good internal consistency (Cronbach's alpha = 0.88). The additive method was used to calculate total OHIP-14 scores (range 0-56). A high OHIP score indicates worse OHRQoL.

Analysis

Descriptive data were presented to provide an overview of the number of patients referred into the ICP and who engaged with NDAMS. Related t-tests and repeated measures ANOVAs were conducted to investigate changes in dental anxiety and OHRQoL of patients. For the inferential analysis missing baseline MDAS scores (MDAS at the assessment appointment) were replaced with MDAS scores on referral to the NDAMS and where patients had not completed MDAS/OHIP questionnaires immediately following completion of the NDAMS their MDAS/OHIP scores on discharge from the care pathway were used.

All interview data were anonymised and thematic analysis[16] was conducted on the interview data to establish themes and sub themes. Inductive coding was undertaken on the data and initial themes were identified by two researchers independently (using a coding notebook). These themes were then compared during analysis meetings and refined in agreement with both researchers.

Results

Flow of patients through the NDAMS

Between July 2011 and December 2013, 253 patients were referred into the NDAMS (see Figure 2). Contact had not been able to be made with 33 of these patients and therefore 220 people were successfully triaged. Thirty three patients were deemed unsuitable for the NDAMS for a variety of reasons (e.g. urgent dental treatment, complex mental health problems, refusal, need for general anaesthesia) and 187 patients were assessed as suitable for nurse-led support (77% female, mean age= 33.7, SD =12.4).

Eighty-three patients attended the NDAMS, 52 patients failed to attend the service, 51 patients were still on the waiting list at the time the service evaluation was conducted and one patient indicated they no longer required the service. At the time of the service evaluation 33 patients had completed NDAM (63.6% female, mean age=39.5,

SD=14.6). The mean number of appointments people attended was 5.7 (SD=3.8, range=1-18). The waiting list for the nurse-led support was approximately 12 months.

The influence of the NDAMS on dental anxiety and oral health-related quality of life

Dental anxiety

The mean MDAS score for the group of patients referred into the NDAM was 22.6 (SD=2.4, range=9-25) and the mean MDAS score for patients who attended the NDAM service was 22.3 (SD=2.7, range=15-25).

Of the 33 patients who completed NDAM, thirty-two patients had completed both triage/assessment and follow-up MDAS questionnaires. A Repeated Measures ANOVA revealed a significant decrease in MDAS scores between assessment (mean=21.9, SD=2.9, range=16-25) and completion of NDAM (mean=13.5, SD=4.4, range=6-22) ($F(1,29)=8.21$, $p<0.01$, Partial eta squared=0.22, 95% CI=7.0-9.8). There were no significant interaction effects between gender and time ($F(1,29)=1.9$, $p=0.18$) or age and time ($F(1,29)=3.3$, $p=0.08$).

Oral Health-related Quality of Life

Of the 33 patients who completed NDAM, 23 patients had completed both triage/assessment and follow-up OHIP questionnaires. A Related t-test revealed that there was a significant reduction in OHIP scores between assessment (mean=21.6, SD=13.1) and completion of NDAM (mean=14.6, SD=10.6) ($t=3.5$, $df=22$, $p<0.01$, 95% CI=2.8-11.3).

Patients' experiences and perspectives

Seven patients participated in the service evaluation (four females and three males). Individuals were aged between 21 and 57 years old (mean age=36.4yrs) and had attended a mean of five appointments (range=1 to 10). The five themes which emerged

from the data were 'desire to change' 'developing relationships' 'differences in anxiety' and 'service delivery and flexibility'.

Desire to change

Patients talked about the negative experiences they had endured as a result of their dental anxiety (e.g. oral health problems, feeling embarrassed) which contributed to their motivation to seek support for their anxiety problem:

> *'Total joy because you just think you're locked into this miserable experience really so you think when somebody can offer you something, maybe a way out yeah it is very good'*

Developing relationships

The development of the relationship between patients and dental professionals seemed to be crucial to the success of the intervention. Within the 'developing relationships' theme the sub-themes 'trust and patience' 'communication, information and normalisation of anxiety' and 'fear of leaving' were identified.

Trust and patience

Patients discussed the importance of developing trust over time with the dental care professionals/team delivering their treatment:

> *'It was them having the patience and understanding and giving me the tools that I needed…they had all the time in the world'*

Communication, information and normalisation of anxiety

Having access to equipment which is used within dental treatments was felt to be hugely beneficial and patients talked of how familiarisation with the procedures and environments to which they would be exposed during dental treatments played a key role in helping overcome their fears. The importance of effective communication was stressed by patients:

> *'She's broken everything down into minutest detail for me and that has been really, really helpful, the equipment that they use, what happens when I get there, what everything is on the dentist's chair, who will be there'*

Fear of leaving

Anxieties about leaving the NDAMS and receiving care from a different dentist were reported. However, a number of patients had made this transition or were optimistic about being able to make this change in the future. Some patients felt that if GDPs were made aware of a patient's dental anxiety and history, this might help them respond to the patient's needs more sensitively.

> *'I think at the end of it going to the same dentist in the same room with the same chair with the same music and the same squeeze ball was great…and then all of the sudden they're like "Alright you can't become dependent on the same dentist you've got to learn to go to a different dentist" that was quite scary and daunting but it had to be done'*

> *'Because my treatments are now going to be in the same building they will still be aware that I have been to the surgery for all this anxiety'*

Differences in anxiety

While the intervention may have made patients more aware generally they reported a reduction in their dental anxiety since using the service.

'I didn't believe it would work but it did…I can go to the dentists and have whatever done and it doesn't bother me, completely cured'

Patients also talked about how their experience with the NDAMS had increased their confidence in looking after their teeth and their children's teeth:

'I'm a lot more proactive…I'm using interdental brushes, I'm brushing my teeth properly, I'm using the right toothpaste, I can brush my teeth properly…I've got a lot more confidence'

Service delivery and flexibility

Patients reported there was a time commitment required to attend appointments, however, patients felt that the service had been delivered in a flexible way to facilitate their engagement with the service and meet their needs.

'They did try and fit me in around the school holidays or the last appointments and things like that I think it was more of a commitment from them than from me…because they were giving generous amounts of time I didn't mind giving my time'

Experiences and perspectives of healthcare professionals

Five General Dental Practitioners (GDPs) participated in a focus group, two GDPs participated in a mini focus group and one GDP was interviewed alone. One-to-one interviews were undertaken with the two CBT dental nurses, the clinical director, the lead CBT therapist, two consultants and two dental officers working in the salaried service. Therefore, in total sixteen professionals were interviewed. The representation of themes and subthemes which emerged from interviews with the healthcare professionals can be seen in Table 1.

Integration of services within the ICP

The importance of integrated working was highlighted. It was proposed that the pathway would only continue to be successful if all practitioners involved (e.g. nurses, sedationists and psychotherapists) continued to work closely together. Within this theme there were five subthemes which included flexibility, communication, skill-mix, resources and support and training.

Flexibility

The need for staff to be able to adapt to the needs of patients and make judgments about how and when the NDAMS and pharmacological interventions should be delivered was highlighted. Whilst the pathway determines the order in which a patient should be involved with the different services, there was the view that sometimes patients may need to move in and out of different services to prevent them from getting 'stuck' in the pathway.

> *'The boundaries are incredibly grey and I think the other thing about the pathway is it doesn't take those grey areas into account enough…I think that setting something up you need to be rigid, you need to have clear ideas about what you want and communicate those ideas clearly I then think that when it's been running for a while and people have got those clear ideas you can then introduce a little bit of flexibility'*

Communication

It was felt that it was important to have an effective feedback mechanism so that referring dentists could be informed of the outcome of their referral and also made aware of their patient's experience following referral (e.g. whether they completed NDAMS, whether they needed sedation etc.).

Skill-mix

Having the relevant skill-mix and confidence within the pathway team was highlighted as being extremely important. Dental nurses were seen to be ideally placed for delivering the psychological intervention due to the time they had available to spend with patients and their skill base. However, it was recognised that the dentists delivering the dental treatment also needed to have confidence, experience and knowledge of anxiety management approaches:

> *'Definitely need dentists at the end who can work to the same methodologies'*

Resources

One success of the NDAMS was the decrease in the IV sedation waiting list (which had previously been closed following a waiting time that had exceeded two years). However, there was the opinion that more resources were needed to reduce the waiting list for the NDAMS and there was concern that some patients' dental needs or pain levels could worsen whilst waiting long periods of time for an appointment.

> *'Here we are the best we have ever been in my experience of dealing with anxious patients in Sheffield this is a good as it's ever been except for the waiting list'*

Support and training

The importance of regular and consistent access to psychological supervision and support for the dental nurse was highlighted. It was suggested that there were training needs for referring practitioners so they could be more aware and knowledgeable about which patients they should be referring into the NDAMS.

CBT-based intervention

Within this second theme there were four additional subthemes which included perceived effectiveness and acceptability, suitability, expectations and impacts on staff.

Perceived effectiveness and acceptability

The general view held by the professionals working within the ICP was that the NDAMS was effective in reducing the anxiety of service users. Additional perceived *benefits* included increasing patients' long-term confidence levels and reducing their reliance on pharmacological interventions. Staff felt it was important to provide psychological support to those patients who were motivated to overcome their dental anxiety. The lack of information on the *cost-effectiveness* of the service was highlighted.

Suitability

Some referring practitioners felt the usefulness of the NDAMS may be limited due to the patient's reliance on sedation or unwillingness to try a psychological approach. Assessment of a patient's suitability for NDAMS was seen as very important, however, there was a general opinion that it was difficult to make this assessment:

> *'...if there are ways of identifying patients who aren't ready I think we've not got to be frightened of saying to those people you're not ready'*

Expectations

Staff acknowledged that in the early stages of working within the NDAMS they had experienced quite unrealistic expectations. It was felt that it was important that both staff and patients be realistic about the changes they could bring about and acknowledge that for some patients NDAM would not be appropriate.

> *'At first I tried to fix everyone but I'm getting better at recognising I can't'*

Impacts on staff

It was suggested that managing dentally anxious patients can be stressful for the dentists and dental nurses. The need to have at least two nurses providing the NDAMS to enable

peer support was raised. However the nurses felt the work was rewarding especially when the interventions were successful in reducing a patient's dental anxiety:

> *'Very very positive when you get through the treatment plan and send them out fully dentally fit'.*

Discussion

The results of this service evaluation suggest that patients who engaged with the NDAMS reported improvements in their OHRQoL and dental anxiety. Patients felt that trusting relationships and effective communication with the dental team had been fundamental to the success of the intervention. There is certainly evidence that would support the importance of patient trust and confidence in dental practitioners on patient-reported outcomes.[17] However, some patients did report reluctance or anxiety over leaving the NDAMS and returning to their GDP who may not understand their anxiety and their specific needs. Communication tools which encourage anxious patients to discuss their concerns and coping preferences with their GDP could help build up trust and understanding between the practitioner and the patient. Patient request forms, which document the individual's requests for emotional support, information and treatment, have been used successfully with dentally anxious paedatric patients,[18] however, there is not yet an equivalent communication tool for adults with dental anxiety. Therefore, patients could be supported to write a 'relapse prevention' report card (on their final appointment with the NDAM service) that they could take to their next appointment with their referring/new GDP, which summarised their coping/treatment preferences.

Flexible integrated working, between all of the teams involved in the care pathway, was seen as essential to meet individual needs and ensure the continued success of the service. The view that the care pathway should be more flexible in order for it to function effectively and efficiently was expressed and it was suggested that a proportion of patients without an 'urgent' treatment need may still benefit from receiving some of their dental work prior to, or alongside, their engagement with NDAM to enhance their wellbeing or prevent significant deterioration of their oral health. The findings from this evaluation support the argument that dental professionals who deliver psychological

interventions to dentally anxious adults should have regular access to supervision and support from specialist psychological services.[5]

Referring practitioners and staff working within the NDAMS expressed concern over waiting times for patients and there was recognition that more in-depth assessment at triage and throughout treatment could help identify those patients who may not be suitable for the NDAMS earlier, reducing waiting lists and drop-out rates. Previous research suggests that non-attendance, poor engagement and drop-outs rates for CBT-based treatment can range between 20% and 50%, which highlights the importance of the early identification of patients most likely to benefit from CBT-based approaches.[19] [20] However, CBT services for dental anxiety have reported much high retention rates (85% completion rate).[21] Blenkiron[22] proposed a number of factors that should be considered when assessing patient's suitability for a CBT-based intervention which include their motivation for change, willingness/ability to attend regular sessions and ability to identify their own feelings. Some GDPs were sceptical of the value of CBT-based interventions which may have influenced how they introduced the service to patients and thus patients' treatment expectations and subsequent engagement with the NDAMS. Further education for GDPs in the evidence-base of psychological management of dental anxiety could help overcome this potential barrier.

There are a number of limitations associated with this service evaluation which should be recognised. Firstly, the aim of purposive sampling was to examine possible barriers to service engagement. However, we were unable to recruit patients who had not attended the NDAM service to the study (one patient interviewed had dropped out of the service after just one appointment). Therefore, while data saturation was reached it is possible that additional themes would have emerged had interviews been conducted with individuals who had not engaged with the service. Additionally, it should be acknowledged that there were some missing patient data which resulted from patients not returning or completing their questionnaires (particularly the OHIP measure) which could have influenced the findings of the evaluation.

One of the strengths of this service evaluation was that it explored a variety of stakeholder perspectives and experiences and employed a mixed methods approach resulting in a rich source of information which can be used to further develop the ICP. The main recommendations which arose from this service evaluation included i) that psychological support continue to be made available for dentally anxious patients ii) that more efficient ways of assessing suitability for NDAM be examined and developed iii) that there be increased flexibility in the referral process and care pathway in order to allow the services to fully meet the needs of a variety of patients who are referred into the system and that iii) effective communication between the patients, referring practitioners and professionals working within the integrated care pathway should be maximised.

The findings provide preliminary support for the role dental nurses can play in the psychological management of dental anxiety. While previous research has found that brief psychological interventions for anxiety can be effectively delivered by trained nurses [23 24] dental anxiety is different to many other anxiety conditions in that patient's may need to accept complex surgical interventions on completion of the psychological intervention. Therefore, it could be argued there is a need for the person administering the dental treatment to be the person who has delivered the CBT-based therapy; and thus gained the trust of the patient. Previous research has revealed, however, that dental anxiety can be effectively delivered by CBT professionals who work closely with the dental team.[25] Future research needs to examine the clinical and cost effectiveness of this particular method of management of dental anxiety.

Conclusion

The findings from this service evaluation highlight some of the potential successes, challenges and considerations associated with the development and implementation of a NDAMS within a dental anxiety ICP, which may be of use to commissioners and service providers hoping to develop similar services within their local area.

Acknowledgements

We would like to thank the patients and professionals who shared their perspectives and experiences of the care pathway, which enabled us to undertake this evaluation. We would also like to thank Rebecca Knapp for her help entering the data and Claire Egan, Lynn Roberts, John Davies and Peter Bateman for their work on the service evaluation steering group.

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Table 1. Themes which reflect the experiences and perspectives of healthcare professionals

Integration of services within care pathway	*CBT based intervention*
• Flexibility	• Perceived effectiveness and acceptability
• Communication	• Suitability
• Skill Mix	• Expectations
• Resources	• Impact on staff
• Support and training	