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Development and validation of the Manchester orofacial pain disability scale

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Abstract – *Objective:* To design and validate a self-administered instrument for assessing orofacial pain related disability in the general population. *Methods:* The 32-item questionnaire was developed by open-ended interviews with patients attending dental hospital clinics and was subsequently tested on 171 community subjects with self-reported orofacial pain and 48 dental hospital patients. *Results:* Construct validity of the instrument was demonstrated in three ways. First, levels of reported disability were greater in dental hospital patients than for community subjects reporting orofacial pain. Secondly, the instrument was able to detect differences in disability levels reported by community subjects who did and did not consult with a healthcare professional and those who had acute and chronic pain. Thirdly, amongst community subjects with pain, disability scores increased with higher pain intensity, pain duration and were greater amongst subjects who had sought a consultation. Results of factor analysis identified two constructs: physical and psychosocial disabilities, associated with orofacial pain. The Cronbach's alpha score was 0.78 and 0.92 for the physical and psychosocial constructs, respectively, and this along with item correlation values between 0.43 and 0.80 confirmed the internal consistency. *Conclusion:* We have therefore designed a valid instrument for assessing the impact of painful orofacial conditions in both community and clinic settings.

Key words: community; disability; epidemiology; orofacial pain; validation

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Numerous instruments have been developed over the last 15 years to measure the impact of common oral conditions on well-being and quality of life (1–8). All these instruments are self-report measures concerned with functioning, symptoms and social and psychological well-being. However, different oral conditions may affect different functions and lead to different physical and emotional problems. Previous instruments have not been specifically designed to measure the impact associated with orofacial pain. Relatively, few studies have used these instruments to assess the functional and psychosocial impact of orofacial pain. A study by Murray et al. (9), used a shortened form of the Oral Health Impact Profile (OHIP) (1), to measure the quality of life of patients referred to a specialist Craniofacial Pain Clinic. The results of the study confirmed that orofacial pain appears to have a substantial impact on functional and psychosocial well-being. However, the results of this study cannot be generalized because it used a case series design on patients who were referred to a tertiary care treatment facility and were therefore more likely to represent the more severe or intractable cases of facial pain. In addition, the OHIP is not a disease specific instrument and is therefore unlikely to detect important influences of specific conditions such as orofacial pain. Further, it has been validated only in persons over 60 years old and therefore may not be suitable for measuring the impact of orofacial conditions in all age groups.

Overall, an orofacial pain specific disability index will allow the impact of the condition to be

more accurately determined. Further, epidemiological investigations of other regional pain syndromes have been more successful in identifying important aetiological factors for disabling pain conditions rather than investigating all persons who report pain at a specific site (10).

Therefore, the primary objective of our study was to develop an orofacial pain disability questionnaire for use in a population survey, which would be sufficiently sensitive to identify individuals with a range of disabilities associated with pain in their face.

Methods

Guyatt et al. (11) established a strategy for constructing instruments to measure quality of life and within-subject change over time which assumes that such instruments must be based on what patients feel is important. We adopted this strategy in the development of the orofacial pain disability questionnaire.

Development of the disability questionnaire

Item selection

In order to ensure that all areas of dysfunction were covered in developing the questionnaire, we interviewed patients with severe orofacial pain, both acute and chronic. Subjects with acute orofacial pain were recruited from the dental casualty department at the University Dental Hospital of Manchester, UK. Patients presenting at the emergency desk were asked to participate in the study and those agreeing to interview were asked how pain in their face, mouth or jaws had affected their lives. Chronic orofacial pain patients were similarly recruited from the temporomandibular joint and oral medicine clinics. All items of dysfunction elicited by interview were listed. Patients were specifically asked to report only those items of disability that were related to pain in their face, mouth or jaws and recruitment from all three departments was continued until newly recruited patients reported no new items of disability. Overall, 32 patients were interviewed which provided a total of 100 statements that described 33 disabilities.

Reduction of number of items

The initial interview stage yields many more items than can be included in the final questionnaire. Important criteria for retaining items include the number of patients who listed them as a problem (item frequency), the importance attached to the items and the potential responsiveness of the items, i.e. the items ability to detect change if it is present (11). In addition, we omitted disability items that were not a direct result of orofacial pain, e.g. 'I can't stand loud music or television' and 'I am afraid of seeing the dentist'. This reduced the questionnaire to 30 disability statements/items. Finally, the scale was reviewed by one of the authors (JMZ), an expert on orofacial pain. This resulted in the addition of two items: 'I have lost earnings' and 'I feel I no longer take pleasure in life' based on clinical experience of the perceived importance of these items. These items were recorded subsequent to the dental hospital survey and are therefore recorded as 'not on questionnaire' in Table 1.

Validity

Before it can be considered a suitable instrument, the questionnaire must be shown to have content, construct and criterion validity as well as reliability and internal consistency (12). To satisfy validity requirements, the proposed orofacial pain disability questionnaire should:

- include items which subjects perceive to be relevant and important (face validity);
- reflect the domain under investigation, i.e. orofacial pain related disability (content validity);
- be able to discriminate between people who would be expected to have different levels of disability (construct validity);
- correlate well with a gold standard (criterion validity);
- contain items whose individual scores correlate well with each other and with the total questionnaire score (internal consistency).

Face and content validity of our questionnaire was achieved in the method of questionnaire development outlined above, i.e. by developing the questionnaire using responses of patients who have orofacial pain, we can be certain that the instrument will indeed be measuring disability associated with orofacial pain. The simplest way of validating a questionnaire is by measuring its criterion validity, i.e. how closely its results match a gold standard. However, a gold standard is unavailable and one must therefore rely on construct validity. To examine whether our questionnaire has construct validity, we hypothesized that clear differences should be observed between: (a) people with pain in a specialist clinic or emergency setting and (b) persons with pain in

Table 1. Number of subjects reporting disability for each item of the scale (percentages in parentheses). Only those community subjects who completed full questionnaires are included

Disability associated with orofacial pain reported on at least some days	Dental hospital clinics $n = 48$ [n (%)]	Community subjects with orofacial pain $n = 171$ [n (%)]	P-value (χ^2-test)
Difficulty speaking	20 (42)	21 (12)	<0.001
Cannot open mouth as wide	24 (50)	32 (19)	<0.001
Cannot touch face	14 (29)	17 (10)	0.001
Difficulty falling asleep	37 (77)	83 (49)	<0.001
Wake up at night in pain	34 (71)	79 (46)	0.003
Difficulty in sleep position	33 (69)	58 (34)	<0.001
Cannot eat hard food	44 (92)	50 (29)	<0.001
Longer to finish meals	40 (83)	46 (27)	<0.001
Have fewer meals	28 (58)	23 (14)	<0.001
No longer enjoy food	29 (60)	32 (19)	<0.001
Difficulty walking in cold	20 (41)	35 (21)	0.003
Sore to kiss	15 (31)	11 (6)	<0.001
Difficult to smile or laugh	25 (52)	25 (15)	<0.001
Uncomfortable to move jaws	30 (63)	63 (37)	<0.001
People are sympathetic	31 (65)	107 (63)	0.799
Been advised to seek help	37 (77)	68 (40)	<0.001
I am difficult to live with	20 (42)	61 (36)	0.447
I have taken time off work	21 (44)	28 (16)	<0.001
I have lost earnings	Not on questionnaire	12 (7)	–
Difficult to concentrate	34 (71)	103 (60)	0.180
Cannot do household tasks	19 (40)	62 (36)	0.673
Rather be by myself	28 (58)	80 (47)	0.157
Difficult to talk for long time	27 (56)	43 (25)	<0.001
Cancelled holidays and socials	18 (38)	33 (19)	0.008
Unable to eat in restaurants	23 (48)	25 (15)	<0.001
I feel weary/tired	33 (69)	108 (63)	0.475
I am irritable/angry/frustrated	28 (58)	95 (56)	0.732
Cannot stop crying	9 (19)	22 (13)	0.301
Worried I have serious illness	16 (33)	28 (16)	0.010
Feel embarrassed/conscious	19 (40)	27 (16)	<0.001
Feel depressed	26 (54)	69 (40)	0.088
Little pleasure in life	Not on questionnaire	29 (17)	–

the community setting. Within the group of subjects with pain in the community, we hypothesized that there would be differences between consulters/non-consulters and subjects with acute/chronic pain. We also hypothesized that for those community subjects reporting higher values of pain intensity on a Visual Analogue Scale (range: 0–10), the corresponding disability scores would also be higher. To investigate this relationship, we used linear regression. Disability scores for each item were determined on a Likert scale with three options: 'none of the time' (score 0), 'on some days' (score 1) and 'on most/everyday' (score 2) (Appendix). The total disability score was the sum of the scores of each disability item on the scale. Because the distribution of disability scores was highly skewed, and the fact that the disability score could be '0' we used logarithm (disability score + 1) as the dependent variable in our linear regression model, with pain intensity as the predictor variable in the same model.

To validate the above constructs we identified two groups of people. The first was 48 patients from orofacial pain clinics (dental casualty, oral medicine and temporomandibular joint clinic) at the University Dental Hospital of Manchester. The second group comprised people who were followed up approximately 4 years after participation in a population-based postal questionnaire survey (13), and who reported orofacial pain at the time of follow-up. Ethical approval for the survey of dental hospital patients was obtained from The University of Manchester Committee for the Ethics of Research on Human Beings and approval for the community survey was granted by the

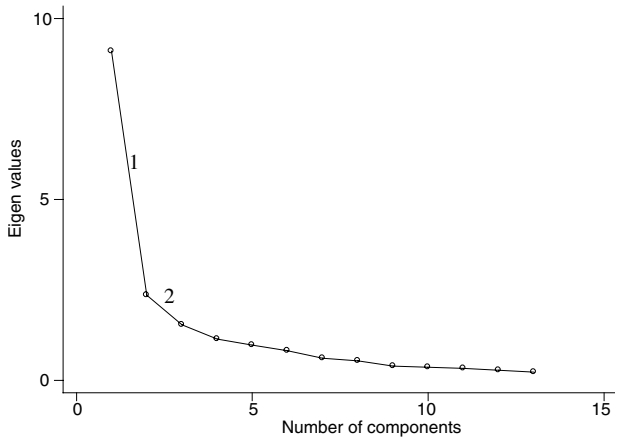

Fig. 1. Scree plot of disability scale components. The graphs show that two principal components (1 and 2) explain almost all the variation in the original disability items. Individual item scores for each factor are described in Tables 4 and 5.

Macclesfield Research Ethics Committee, East Cheshire NHS Trust.

Factor analysis

We performed a factor analysis using community subjects with pain. This enabled us to determine whether items in the questionnaire could be combined into separate components representing different aspects of orofacial pain related disability. Factor analysis attempts to describe the variation of the variables in a set of multivariate data, e.g. our disability questionnaire, as parsimoniously as possible. This is done using a set of derived uncorrelated variables, each of which is a particular linear combination of those in the original data (14). A scree plot (Fig. 1) was used to determine the number of distinct components that explained variation in disability. Having selected the appropriate number of factors, a varimax rotation was applied to the data in order to maximize the contribution of each item to one factor, whilst minimizing its contribution to the other factors.

Internal consistency

Finally we assigned each item to a scale, based on the factors produced by the factor analysis, and checked the internal consistency of the scales. This involves testing for the extent to which items in the questionnaire relate to same construct. Internal consistency is determined by measuring inter-item correlation and using Cronbach's alpha statistic, which produces an estimate of reliability based on all correlations between the items within an instrument. Inter-item correlation was measured using item-test correlation (correlation of each item with scale total score) and item-rest correlation (correlation of each item with scores of all other items combined).

All statistical analysis was carried out using STATA 7.0 (StataCorp., Texas, TX, USA, 2001) statistical software package.

Results

The survey participation rates were 80% (48/60) for those who attended the dental hospital clinics. Of these patients, 46% were males while the mean age was 42 years (range: 17–73). Overall, a total of 1680 persons participated in the population survey giving an adjusted participation rate of 81% [after excluding those that were not registered with the practice anymore ($n = 394$), deceased or who were not able to complete the questionnaire because of illness or disability ($n = 21$) or expressed a wish at baseline not to be contacted again ($n = 3$)]. The full study questionnaire was completed by 1510 participants (90% of all participants).

In the population study, 295 (19%) reported pain in their face, mouth or jaws for more than 24 h in the past month of whom 171 fully completed the disability questionnaire and these subjects will be used for further analysis. Amongst these participants with orofacial pain, 35% were males while the mean age was 46 years (range: 23–67). Of those who provided information on chronicity ($n = 154$), 77 (50%) reported chronic pain (pain for 3 months or longer) and 77 (50%) had acute pain. In addition, of those who provided information on consultations ($n = 168$), 100 (60%) had consulted a healthcare professional for their pain and 68 (40%) had not. Finally, the mean pain intensity (on a 0–10 Visual Analogue Scale), available for 170 (99%) of subjects reporting orofacial pain, was 4.8 (SD 2.3).

Reported disability

The percentage of people with orofacial pain who responded positively to disability items is detailed in Table 1. The data for subjects attending the different dental hospital clinics have been combined. For the purpose of comparison of reported disability, statements 'on some days' and 'on most/everyday' were also combined. Overall, for all items of the scale, the percentage of people with a disability was greater for the dental hospital patients than community subjects with pain and for

21 items the differences were statistically significant (chi-squared test, $P < 0.05$). The greatest difference was with respect to the item 'cannot eat hard foods' with 92 and 29% of dental hospital and community subjects, respectively, reporting this on at least some days.

Disability according to consulting status and duration of pain

A comparison of responders from the community general medical practice survey with orofacial pain who had ($n = 100$) and who had not ($n = 68$) consulted a healthcare professional for orofacial pain is shown in Table 2. In all cases, but one ('I am irritable/angry/easily frustrated'), those who consulted a healthcare professional reported greater disability and for 10 of the 32 disability items the differences were statistically significant (chi-squared test, $P < 0.05$). For example, of those who sought professional help, 37% reported that they could not eat hard foods while 18% of those who did not seek advice reported this disability.

Disability according to intensity and chronicity

Using linear regression, we found a significant association between levels of pain intensity and disability score. For every unit increase in intensity, disability score increased by a fraction of 1.22 (95% CI: 1.16–1.28).

Furthermore, we found that community subjects who reported chronic pain (pain for 3 months or longer) had significantly higher disability scores [median = 10; inter-quartile range (IQR): 5–16] than those with acute pain (median = 8; IQR: 4–12) ($P = 0.013$, Wilcoxon's rank-sum test).

Table 2. Number of community subjects reporting disability according to consulting status. Only subjects who had completed full questionnaires are included

Disability associated with oro-facial pain reported on at least some days	Consulted		
	Yes: $n = 100$ [n (%)]	No: $n = 68$ [n (%)]	P-value (χ^2-test)
Difficulty speaking	16 (16)	5 (7)	0.198
Cannot open mouth as wide	25 (25)	7 (10)	0.040
Cannot touch face	14 (14)	3 (4)	0.106
Difficulty falling asleep	50 (50)	31 (46)	0.699
Wake up at night in pain	51 (51)	25 (37)	0.032
Difficulty in sleep position	34 (34)	22 (32)	0.470
Cannot eat hard food	37 (37)	12 (18)	0.025
Longer to finish meals	35 (35)	10 (15)	0.014
Have fewer meals	15 (15)	8 (12)	0.658
No longer enjoy food	23 (23)	8 (12)	0.150
Difficulty walking in cold	23 (23)	10 (15)	0.057
Sore to kiss	10 (10)	1 (2)	0.078
Difficult to smile or laugh	18 (18)	6 (9)	0.166
Uncomfortable to move jaws	40 (40)	22 (32)	0.596
People are sympathetic	72 (72)	32 (47)	0.002
Been advised to seek help	58 (58)	8 (12)	<0.001
I am difficult to live with	41 (41)	19 (28)	0.221
I have taken time off work	20 (20)	6 (9)	0.009
I have lost earnings	7 (7)	4 (6)	0.190
Difficult to concentrate	62 (62)	38 (56)	0.266
Cannot do household tasks	38 (38)	21 (31)	0.044
Rather be by myself	46 (46)	31 (46)	0.176
Difficult to talk for long time	28 (28)	13 (19)	0.106
Cancelled holidays and socials	21 (21)	9 (13)	0.001
Unable to eat in restaurants	19 (19)	5 (7)	0.072
I feel weary/tired	65 (65)	40 (59)	0.295
I am irritable/angry/frustrated	54 (54)	38 (56)	0.286
Cannot stop crying	15 (15)	6 (9)	0.284
Worried I have serious illness	20 (20)	7 (10)	0.180
Feel embarrassed/conscious	17 (17)	8 (12)	0.034
Feel depressed	43 (43)	23 (34)	0.052
Little pleasure in life	19 (19)	9 (13)	0.464

Information on consulting status missing for three cases.

Factor analysis

Based on the scree plot in Fig. 1, a two-component solution was extracted which accounted for 67% of the variance in the original disability items for the community subjects. The first component accounted for 53% of the variation whilst the second component represented a further 14% of the variation in the disability scale. After rotation to maximize the separation between the factors, the coefficients of the factors revealed a clustering of items of the scale (Table 3). On closer examination these represented two separate types of disability namely physical and psychosocial. Items with factor scores of 0.4 or greater and with a difference in factor loadings between the components of at least 0.1 were assigned to their respective physical or psychosocial disability components (Table 3). Therefore, nineteen items were assigned as principally psychosocial, seven items as principally physical and six items were excluded because they did not feature strongly as physical or psychosocial disabilities (Table 3). This resulted in a final 26-item questionnaire (Appendix). Further analysis on physical and psychosocial disabilities revealed that subjects who reported chronic pain (pain for 3 months or longer) had significantly higher psychosocial disability scores compared with those reporting acute pain ($P = 0.02$, Wilcoxon's rank-sum test).

Level of agreement and internal consistency

The Cronbach's alpha calculations for the physical and psychosocial disability components of the scale are shown in Tables 4 and 5, respectively. The seven items, which represented the physical disability component, produced a reliability coefficient of 0.78 indicating strong internal consistency (Table 4). Furthermore, Table 4 also shows the Cronbach's alpha score for each item when that item was dropped from the scale. The alpha score remained high at 0.72–0.76 for each item showing

Table 3. Rotated factor analysis: coefficients of the individual items of the orofacial pain disability scale

	Rotated factor loadings for each item		
Item	1	2	Disability component assigned
Difficulty speaking	0.404	0.339	None
Cannot open mouth as wide	0.018	0.595	Physical
Cannot touch face	0.141	0.498	Physical
Difficulty falling asleep	0.546	0.246	Psychosocial
Wake up at night in pain	0.405	0.234	Psychosocial
Difficulty in sleep position	0.433	0.297	Psychosocial
Cannot eat hard food	0.014	0.704	Physical
Longer to finish meals	0.144	0.707	Physical
Have fewer meals	0.332	0.393	None
No longer enjoy food	0.276	0.539	Physical
Difficulty walking in cold	0.226	0.197	None
Sore to kiss	0.005	0.533	Physical
Difficult to smile or laugh	0.232	0.539	Physical
Uncomfortable to move jaws	0.305	0.351	None
People are sympathetic	0.299	0.264	None
Been advised to seek help	0.261	0.283	None
I am difficult to live with	0.615	0.132	Psychosocial
I have taken time off work	0.601	0.102	Psychosocial
I have lost earnings	0.639	0.146	Psychosocial
Difficult to concentrate	0.674	0.047	Psychosocial
Cannot do household tasks	0.751	0.043	Psychosocial
Rather be by myself	0.606	0.059	Psychosocial
Difficult to talk for long time	0.641	0.217	Psychosocial
Cancelled holidays and socials	0.661	0.060	Psychosocial
Unable to eat in restaurants	0.551	0.370	Psychosocial
I feel weary/tired	0.691	0.159	Psychosocial
I am irritable/angry/frustrated	0.669	0.113	Psychosocial
Cannot stop crying	0.564	0.005	Psychosocial
Worried I have serious illness	0.593	0.104	Psychosocial
Feel embarrassed/conscious	0.562	0.193	Psychosocial
Feel depressed	0.702	0.120	Psychosocial
Little pleasure in life	0.604	0.094	Psychosocial

Table 4. item correlations and Cronbach's alpha for the physical disability items on the scale ($n = 171$)

Item	Item-test correlation	Item-rest correlation	Cronbach's alpha
Cannot open mouth as wide	0.64	0.47	0.75
Cannot touch face	0.55	0.43	0.76
Cannot eat hard food	0.80	0.64	0.72
Longer to finish meals	0.78	0.63	0.72
No longer enjoy food	0.66	0.51	0.74
Sore to kiss	0.55	0.45	0.76
Difficult to smile or laugh	0.57	0.44	0.76
Test scale			0.78

Table 5. Item correlations and Cronbach's alpha for the psychosocial disability items on the scale ($n = 171$)

Item	Item-test correlation	Item-rest correlation	Cronbach's alpha
Difficulty falling asleep	0.64	0.58	0.91
Wake up at night in pain	0.51	0.44	0.92
Difficulty in sleep position	0.55	0.48	0.92
I am difficult to live with	0.65	0.59	0.91
I have taken time off work	0.59	0.54	0.92
I have lost earnings	0.63	0.59	0.91
Difficult to concentrate	0.69	0.64	0.91
Cannot do household tasks	0.75	0.70	0.91
Rather be by myself	0.64	0.58	0.92
Difficult to talk for long time	0.67	0.63	0.91
Cancelled holidays and socials	0.65	0.61	0.91
Unable to eat in restaurants	0.61	0.57	0.92
I feel weary/tired	0.74	0.69	0.91
I am irritable/angry/frustrated	0.71	0.66	0.91
Cannot stop crying	0.55	0.51	0.92
Worried I have serious illness	0.60	0.56	0.92
Feel embarrassed/conscious	0.61	0.56	0.92
Feel depressed	0.73	0.68	0.91
Little pleasure in life	0.62	0.57	0.92
Test scale			0.92

that none of the items was adversely affecting the internal consistency of this component of the scale, i.e. the items were measuring the same construct (physical disability related to orofacial pain). In addition, item-test and item-rest correlations ranged from 0.43 to 0.80 (Table 4) showing, as desired, moderately high correlations. These moderate correlations again indicate that each item is measuring a similar construct to the others but that the correlations are not so strong that the construct could be measured by a single item. Similarly, the 19 items that measured psychosocial disability had very good internal consistency with Cronbach's alpha score of 0.92 and item-test and item-rest correlations ranging from 0.44 to 0.75 (Table 5).

Discussion

There are currently no instruments, which focus on orofacial pain related disability, and none that have been designed for use in the general population. The proposed orofacial pain disability questionnaire is quick and easy to complete. Clinic subjects were able to complete the questionnaire in 2–3 min and commented that it was self-explanatory and that the design (Appendix) allowed ease of completion. As people with orofacial pain participated in its initial design, the questionnaire can be considered to have good content validity. In addition, the questionnaire has been tested and validated on people who would be expected to have different levels of disability associated with orofacial pain. The questionnaire can, therefore, be used in a variety of clinic and population settings and data collected from different populations can now be compared.

The results revealed a definite grading in the levels of disability reported by each of the study groups. Patients attending the dental hospital clinics with orofacial pain had the highest proportion of disability compared with the community

subjects. It is reasonable to assume that people who recently consulted a healthcare professional because of orofacial pain would report greater disability than those who did not. Similarly, recurrent or persistent pain and pain with higher levels of intensity would be expected to be more debilitating than occasional or transitory pain. These assumptions are supported by the results of the study so strengthening the construct validity of the questionnaire.

A rotated factor analysis was used to examine whether the original 32 items on the disability questionnaire represented a smaller number of derived variables. The resulting two components, representing two constructs, physical and psychosocial disabilities, reflect disabilities associated with orofacial pain and are broadly in line with expectations. In addition our finding that subjects with chronic orofacial pain reported higher levels of psychosocial disability is in agreement with the findings of other researchers who advocate antidepressant drugs for the treatment of chronic orofacial pain conditions (15).

Although 295 community subjects reported orofacial pain, only 171 fully completed the disability questionnaire. Whilst there was no significant difference in gender (chi-squared test, $P = 0.169$), subjects who fully completed the disability questionnaire were significantly younger (t-test, $P < 0.01$) with a mean age of 46.1 years than those who partly filled it in (mean age 50.9 years). It is uncertain whether subjects who only partly filled the questionnaire ticked those disability items that were relevant to their pain or whether they truly missed out those questions that they did not answer. Further use of the disability scale in postal questionnaire surveys with follow-up interview of subjects with missing responses will help clarify this. If persons are missing out questions, which are not relevant to their pain, then solutions may include clearer layout of the instructions and questions. A further alternative would be to include a statement at the end of the questionnaire e.g. 'I have read and considered ALL of the above statements' (Appendix). If a participant has not responded to certain items on the scale but affirms to having read and considered each item, we can safely assume that the items omitted are not missing and indeed do not apply to that subject's pain.

Overall, using the orofacial pain disability questionnaire, it is possible to derive a case definition of disabling orofacial pain. For other regional pain syndromes like back and shoulder pain, the severity of pain is obvious as it manifests itself as reduced physical activity, for example, difficulty in walking or lifting items. The severity of orofacial pain, on the other hand, is more difficult to perceive and only becomes apparent when there is associated swelling for example. Often, even clinicians have underestimated the severity of a patient's facial pain. Our disability instrument may provide a useful means for patients to describe their pain more clearly by indicating the levels of associated disability. This should prove useful in epidemiological studies examining the aetiology of facial pain syndromes. In addition, the public health burden of specific orofacial pain conditions can be determined and resources can be focused on those conditions that are more disabling.

Future research needs to focus on using such a disability questionnaire in clinical trials to test its responsiveness to measure treatment outcomes, for example, in chronic facial pain patients whereby symptoms are not related to an organic cause and therefore the effectiveness of an administered treatment cannot be assessed in terms of structural improvement, i.e. elimination of infection or removal of diseased tissue. Rather, measurements of disability before and after treatment may provide important information on treatment outcomes, and therefore influence further management of the patient.

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Appendix: Disability questionnaire

Have you had any pain in your face, mouth or jaws for more than 24 h in the past month? Yes No

Have you sought professional advice for this pain? Yes No

Below are some statements about problems people have because of pain in their face, mouth or jaws.

For each statement, please indicate if this has applied to you in the past month.

If so, was this only on some days or on most or every day in the past month?

Because of pain in my face, jaws or mouth:	During the past month this has applied to me: (please tick on line under appropriate statement)		
	None of the time	On some days	On most/everyday(s)
I cannot open my mouth as wide as I could	—	—	—
I cannot touch my face	—	—	—
I have difficulty falling asleep			
I wake up at night in pain	—	—	—
I cannot find a comfortable position in which to sleep	—	—	—
I cannot eat hard foods like apples or toast	—	—	—
I take longer to finish my meals	—	—	—
I no longer enjoy my food	—	—	—
I find it sore to kiss	—	—	—
I find it difficult to smile or laugh	—	—	—
People find me difficult to live with	—	—	—
I have had to take time off work	—	—	—
I have lost earnings	—	—	—
I have found it difficult to concentrate	—	—	—
I have problems performing normal household tasks	—	—	—
I would rather be by myself	—	—	—
I find it difficult to talk for long periods of time	—	—	—
I have cancelled social activities and holidays	—	—	—
I am unable to eat out in restaurants	—	—	—
I feel weary/tired	—	—	—
I am irritable, angry and easily frustrated	—	—	—
I cannot stop crying	—	—	—
I am worried that I may have a serious illness	—	—	—
I feel embarrassed and self conscious	—	—	—
I feel depressed	—	—	—
I feel I no longer take any pleasure in life	—	—	—

I have read and considered ALL of the above statements —.