PainDETECT: a suitable screening tool for neuropathic pain in patients with painful post-traumatic trigeminal nerve injuries?


Abstract. The PainDETECT questionnaire (PD-Q), originally developed and validated in a multicentre study of neuropathic pain (NeP) patients with back pain, is increasingly being applied to other pain conditions. The present study assessed whether the PD-Q would be a suitable screening tool for detecting NeP in patients with post-traumatic inferior alveolar nerve injury (IANI) and lingual nerve injury (LNI). A prospective cohort of patients with clinically diagnosed neuropathy was given the PD-Q at their clinic appointment, or it was sent to them after their consultation. Eighty-nine patients (IANI = 56, LNI = 33) were included in the study, 75 of whom suffered from painful neuropathy. Of the patients who completed the questionnaire fully (n = 56), allowing a summary score to be calculated, 34% were classified as having ‘likely NeP’ according to the PD-Q; 41% of patients scored in the uncertain classification range and the remaining quarter in the ‘likely nociceptive’ classification. There was a significant association between PD-Q scores and pain intensity levels across the sample, with those classified as likely NeP reporting high levels of pain. The results suggest that the PD-Q in its current format is not a suitable screening tool for NeP associated with IANI or LNI.

Key words: PainDETECT; trigeminal neuropathic pain; lingual nerve; inferior alveolar nerve; post-traumatic sensory neuropathy.

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Chronic pain (pain of more than 3-month duration) can be a lasting problem for patients with iatrogenic inferior alveolar nerve injury (IANI) or lingual nerve injury (LNI). The most common causes of these injuries include third molar surgery, routine exodontia, complications of root canal treatment, and the placement of dental implants. A large proportion of these patients’ injuries give rise to symptoms with a neuropathic component, as indicated by complaints of burning pain, allodynia, tingling, and/or paraesthesia that are uncontrollable by non-steroidal anti-inflammatory drugs. These symptoms are debilitating and have substantial repercussions, such as the emotional impact of pain and long-term sensory
deficits, which may directly affect the individual’s coping mechanisms and responses to stress, distress, anxiety, depression, treatment expectations, and motivation to improve.

Still a matter of debate, the International Association for the Study of Pain (IASP) defines neuropathic pain (NP) as ‘pain initiated or caused by a primary lesion or dysfunction in the nervous system’. While increasing evidence supports abnormal central pain processing in chronic cases, the diagnosis of NP remains clinical, based on a characteristic symptom profile (e.g., pins and needles, electric shock-like sensations), somato-sensory abnormalities (e.g., hyperalgesia, hypoesthesia, allodynia), and, sometimes, ancillary tests. The PainDETECT questionnaire (PD-Q) screening tool was developed with a view to simplifying the diagnosis of NP for clinicians, namely because it does not require a clinical examination. It was originally developed and validated in German, in a multicentre study of chronic low back pain patients, and appears to be a reliable screening tool in this diagnostic group: it has a sensitivity of 85%, specificity of 80%, and positive predictive value of 83%. The PD-Q has subsequently been translated into 22 languages, with various forms of delivery (for a review, see Bennett et al.).

In orofacial pain conditions, the diagnosis of NP remains challenging, preminantly because of the absence of associated clinical and radiographic abnormalities. Although confirmation of NP in orofacial pain conditions can be made with some existing neurological tests, these tests have reduced accuracy in identifying subtle neuronal abnormalities and tend to be costly. Further, quantitative sensory testing (QST), which depends on expensive equipment and is time-consuming, is not always helpful in the differential diagnosis; and QST abnormalities cannot be taken as a conclusive demonstration of neuropathic pain. Thus, there is a significant need in this clinical population for efficient screening methods or tools providing a systematic approach to assessing NP. A simple questionnaire-based measure, such as the PD-Q, has the potential to alleviate some of the financial burden and impact of persistent pain by early identification in neuropathic conditions, and thus may facilitate more timely administration of appropriate therapy.

In line with the further development of effective screening tools that can be utilized easily in the clinical arena in an accurate and cost-effective manner, the rationale for this study was to explore for the first time, whether or not the PD-Q is a useful tool for identifying NP elements in two different known nerve injuries of the orofacial region.

Materials and methods
Design
This was an observational clinical study assessing the suitability of using the PD-Q to screen for neuropathic pain components amongst patients with iatrogenic nerve injury.

Participants
A prospective cohort of patients with clinically diagnosed neuropathy was given the PD-Q at their clinic appointment, or it was sent to them after their consultation. Patients were included in the study if they presented to the clinical setting with reported sensory changes due to iatrogenic IANJ or LNI, and could read and write in English sufficiently well to complete the questionnaire. The clinical diagnosis of neuropathic pain was ascertained by obtaining a pain history from each patient and confirming allodynia, hyperalgesia, or spontaneous neuropathic pain using several clinical neurosensory tests, as well as by recording the fact that their pain was unresponsive to non-steroidal anti-inflammatory drugs. The pain was recorded within a proven area of focal neuropathy corresponding to the trigeminal nerve branch damaged by the surgical intervention. Prior to completing the PD-Q, all patients underwent a trigeminal nerve examination carried out by the principal investigator (which included a series of neurosensory tests), whereby trigeminal nerve injury was confirmed and neuropathy was diagnosed. Patients were excluded if they had chronic orofacial pain caused by other conditions. This study had the required ethical approval.

The PainDETECT questionnaire (PD-Q)
The PD-Q includes three 11-point numerical rating scales (NRS) dedicated to the evaluation of a patient’s reported current pain level and its strongest and average levels during the past month. The PD-Q also contains nine other items, of which seven relate to sensory responses and two to the temporal and spatial characteristics of the pain pattern. By rating the seven items from never (0) to very strongly (5) on a category scale and summing these with the scores for temporal (−1 to +1) and spatial characteristics (0 or +2), a summary score (minimum = −1, maximum = 38) was obtained. A total score of <13 indicates that a neuropathic component is unlikely, whereas a score of >18 indicates that a neuropathic component is likely. The online version of the questionnaire is available at: http://www.virtualmedical-centre.com/calc_pfizer_pain_detect.asp.

Statistical analysis
Summary statistics for the overall sample and for the IANI and LNI patient subgroups were calculated and presented in the form of means and standard deviations for quantitative variables, and frequencies and percentages for qualitative variables. Differences between the two diagnostic subgroups on pain-related and PD-Q indicators were measured using one-way analysis of variance (ANOVA) or non-parametric equivalent for quantitative variables (according to data distribution) and χ² for qualitative variables. Associations between PD-Q NP classifications and measures of pain intensity (current, 4-week strongest, and 4-week average strength) were evaluated considering the whole sample by one-way ANOVA models with post hoc (pairwise) examinations for significant results. To assess for correlations between the total PD-Q score and 4-week average pain intensity in each of the IANI and LNI groups, Spearman’s rank-coefficient tests were used. The criterion for statistical significance was set at P < 0.05, with no adjustments for multiple comparisons given the descriptive nature of the study. All statistical analyses were completed with IBM SPSS Statistics for Windows, version 19.0 (IBM Corp., Armonk, NY).

Results
Sample characteristics
Altogether, 91 patients completed the PD-Q, 16 at their clinic appointment and 75 via questionnaires posted to them after their consultation. Two questionnaires were completed anonymously, so these patients’ data could not be included in the analyses. Eighty-nine iatrogenic nerve
Table 1. Aetiology of injury in patients with inferior alveolar nerve injury (IANI) and lingual nerve injury (LNI).

<table>
<thead>
<tr>
<th></th>
<th>IANI (n = 56)</th>
<th>LNI (n = 33)</th>
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<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Third molar surgery (TMS)</td>
<td>19</td>
<td>33.9</td>
</tr>
<tr>
<td>Implant placement under LA</td>
<td>12</td>
<td>21.4</td>
</tr>
<tr>
<td>Chemical injury from the LA</td>
<td>5</td>
<td>8.9</td>
</tr>
<tr>
<td>Extraction of mandibular tooth/teeth (apart from TMS)</td>
<td>9</td>
<td>16.1</td>
</tr>
<tr>
<td>Restorative (e.g., endodontic) treatment</td>
<td>3</td>
<td>5.4</td>
</tr>
<tr>
<td>Trauma (non-surgical, e.g., assault)</td>
<td>2</td>
<td>3.6</td>
</tr>
<tr>
<td>Pathological excision</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>Apicectomy</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>7.1</td>
</tr>
<tr>
<td>Unknown</td>
<td></td>
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</tbody>
</table>

LA, local anaesthetic.

Injury patients were therefore included in the study, 56 with IANI and 33 with LNI. Most patients were female (68.5%). The mean ± standard deviation (SD) age of participants was 44.26 ± 13.57 years (range 24–85 years), although IANI patients tended to be older than LNI patients (IANI 47.02 ± 13.64 years; LNI = 39.58 ± 12.26 years; t(87) = 2.58, P = 0.012). The mean duration of nerve injury was 18.50 ± 28.50 months (range 1–216 months), with the majority sustaining their injury more than 6 months prior to the study commencing (n = 54 or 60.7%; IANI = 35 and LNI = 19). A little more than half of all patients’ nerve injuries were sustained during third molar surgery (TMS; 51.7%), although this was more likely for the LNI than IANI patients (81.8% and 33.9%, respectively; P < 0.001), with IANI arising from a wider range of procedures (Table 1).

A minority of the patients were receiving one or more prescription medications at the time of the study (19 or 21.3%; IANI = 14 or 25.0%, LNI = 5 or 15.2%); six (5 IANI and 1 LNI) were taking two or more different medication classes. Of those receiving medications, nine (7 IANI and 2 LNI) were taking antiepileptic medications (pregabalin, gabapentin, carbamazepine, or oxcarbazepine), nine (7 IANI and 2 LNI) were receiving analgesics (lidocaine, benzocaine, tramadol, or paracetamol), eight (5 IANI and 3 LNI) were taking antidepressants (tricyclic antidepressants or selective serotonin reuptake inhibitors), one (LNI) was taking a tranquilizer (benzodiazepine), and one (IANI) was on a course of cortisone. Seven patients (7.9%; IANI = 1 or 1.8%, LNI = 6 or 18.2%) had previously undergone surgery intended to resolve their nerve injury.

### Pain intensity

Patients indicated low levels of pain using the visual analogue scale (VAS) scores. Notably, 12 patients (7 IANI and 5 LNI) reported a zero average pain in the last 4 weeks, indicating that they had not recently experienced pain as part of their condition, while two patients did not respond to the average pain intensity item. For those patients reporting pain, the mean 4-week average strength of pain was moderate for both IANI (4.17 ± 2.56) and LNI patients (4.46 ± 2.70). The mean pain intensity at the time of questionnaire completion was 3.66 ± 2.71 for IANI patients and 3.93 ± 3.11 for LNI patients, while the mean strongest pain levels reported within the previous 4 weeks were 5.49 ± 2.87 for IANI patients and 6.15 ± 2.92 for LNI patients. Reported pain levels were not significantly different between the IANI and LNI patient groups (for all comparisons, P > 0.340). Pain levels (4-week average) were not related to whether patients were receiving medication for pain (anti-epileptic and/or analgesic medication; n = 14; mean 4.43 ± 2.50) or not (n = 61; mean 4.25 ± 2.64; P = 0.752), or if patients had undergone surgery for nerve injury (n = 7; mean 4.86 ± 2.61) or had not (n = 68; mean 4.22 ± 2.61; P = 0.532).

When considering all patients who reported pain (secondary to their nerve injury), the most frequently selected pain patterns were ‘persistent pain with slight fluctuations’ (46.5%) and pain attacks characterized by pain-free intervals (28.2%; Fig. 1). Although LNI patients tended to report their course of pain as being persistent with pain attacks more than patients with IANI (25.9% vs 11.4%), and, conversely, IANI patients more often described their pain pattern as pain attacks with pain between them than did LNI patients, there was no significant difference in the distribution of pain type choices between the IANI and LNI patient groups (χ²(3) = 3.38, P = 0.337). Of note, 13 patients experiencing pain did not respond to the item concerning the presence of radiating pain and four failed to indicate the pattern of their pain.

### Frequency of sensory symptoms

Seven questions of the PD-Q addressed the quality and intensity of specific neuropathic symptoms, namely burning, pricking, allodynia, attacks, thermal sensitivity, numbness, and pressure. The patients could rate the perceived severity

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**Fig. 1.** Pain pattern by nerve injury: IANI = inferior alveolar nerve injury; LNI = lingual nerve injury.
of each of these symptoms from 0 to 5 (never, hardly noticed, slightly, moderately, strongly, very strongly). Figure 2 shows the frequency of the sensory disturbances that were regarded as clinically relevant, i.e., if the patients marked a score of >3 (strongly or very strongly).

IANI and LNI patients indicated clinically relevant numbness at comparably high frequencies. Sixteen (28.6%) patients with IANI indicated clinically relevant allodynia, a proportion that was significantly greater than that reported by LNI patients. Likewise, clinically relevant thermal sensitivity was indicated by 14 (25.5%) patients with IANI, as opposed to only two LNI patients. These results suggest that these sensory symptoms included in the PD-Q are more prevalent in IANI patients.

Detection of NeP using the PD-Q in IANI and LNI patients experiencing pain

The purpose of the PD-Q is to classify whether a person’s (lower-back) pain is likely to have a neuropathic or non-neuropathic component. Specifically, the PD-Q screens patients into three pain groups: ‘likely nociceptive’, ‘unclear’, and ‘likely neuropathic’. The utility of the tool in its original form was examined in those trigeminal nerve injury patients who reported pain as part of their condition (n = 75). Unfortunately, a number of patients (19 or 25.3%; IANI = 12 or 25.5%; LNI = 7 or 25.0%) did not complete all items necessary to calculate a final score on the PD-Q (predominantly because they failed to respond to either one or both items concerning the presence of radiating pain and the pain pattern). Non-completers were not distinguishable from those who completed the PD-Q in any way. Questionnaire completion was not linked to reported pain levels, with 4-week average intensity scores comparable for non-completers (n = 19; mean 4.42 ± 2.52) and completers (n = 56; mean 4.23 ± 2.64; P = 0.731), and no demographic or nerve injury-related variable predicted non-completion of the PD-Q.

The mean PD-Q scores and associated NeP classifications of the 56 PD-Q completers are shown in Table 2. Patients with IANI had higher PD-Q scores than LNI patients, although the group difference only approached significance. Importantly, only 19 (33.9%) of all patients were classified in the ‘likely neuropathic’ category. Twenty-three (41.1%) patients scored in the midrange in which the NeP classification is reportedly uncertain, while the remaining quarter (14 patients) fell in the ‘unlikely NeP’ classification. Compared with LNI patients, a greater proportion of IANI patients scored above the NeP cut-off and a lower proportion had scores indicating unlikely NeP, although none of the proportion differences were significant. In summary, the questionnaire failed to identify all patients with NeP associated with post-traumatic trigeminal neuropathy in this patient cohort.

Relationship between PD-Q scores and pain severity

A number of previous studies have reported positive associations between pain intensity and PD-Q scores.3,10,14 The relationship between pain severity and the PD-Q results was first investigated by dividing all nerve injury patients into

Table 2. Detection of neuropathic pain using the PainDETECT questionnaire (PD-Q) in inferior alveolar nerve injury (IANI) and lingual nerve injury (LNI) patients experiencing pain.

<table>
<thead>
<tr>
<th></th>
<th>IANI (n = 35)</th>
<th>LNI (n = 21)</th>
<th>IANI vs LNI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD-Q score (−1 to 38; excludes those reporting no pain in the last 4 weeks), mean ± SD</td>
<td>17.91 ± 7.20</td>
<td>14.33 ± 7.24</td>
<td>3.24</td>
</tr>
<tr>
<td>NeP prevalence using cut-off scores, n (%)</td>
<td></td>
<td></td>
<td>( \chi^2 )</td>
</tr>
<tr>
<td>Number of people below the neuropathic pain cut-off (score ≤12)</td>
<td>6 (17.1)</td>
<td>8 (38.1)</td>
<td>3.07</td>
</tr>
<tr>
<td>Number of people indicating uncertain neuropathic classification (score 13–18)</td>
<td>15 (42.9)</td>
<td>8 (38.1)</td>
<td>0.12</td>
</tr>
<tr>
<td>Number of people above the neuropathic cut-off (score ≥19)</td>
<td>14 (40.0)</td>
<td>5 (23.8)</td>
<td>1.54</td>
</tr>
</tbody>
</table>

Notes: SD = standard deviation. Group comparison analysis for PD-Q scores and prevalence using cut-off scores performed using one-way analysis of variance (ANOVA) and \( \chi^2 \) tests, respectively.
Fig. 3. Association between intensity measures of pain and the neuropathic pain classification according to the total score on the PainDETECT questionnaire (PD-Q). Strongest pain and average pain were reported for the past 4 weeks. Mean scores are shown for each PD-Q classification: PD-Q <13 (n = 14), PD-Q 13–18 (n = 23), PD-Q >18 (n = 19). Error bars represent the standard error of the mean. Pairwise group comparisons were made for each measure: an asterisk (*) indicates a significant difference from the PD-Q <13 group, a double asterisk (**) indicates significant differences from the PD-Q <13 and PD-Q 13–18 groups.

three groups in accordance with the classification system of Freynhagen et al.\(^9\) and comparing intensity scores on all three pain measures. For all pain measures, there was a clear linear trend on increasing severity for those scoring less than 13 on the PD-Q, those scoring 13–18, and those with total scores that were greater than 18 (Fig. 3). Kruskal–Wallis tests demonstrated a significant difference among the three classification groups of patients for strongest pain during the last 4 weeks (P = 0.008) and average pain intensity during the past 4 weeks (P = 0.032), but differences in current pain intensity narrowly missed significance (P = 0.069). Post hoc (pairwise) analyses showed that patients scoring more than 18 on the PD-Q had significantly higher pain severity scores than did patients scoring less than 13 across all measures (for all comparisons, P < 0.042), while differences between those scoring greater than 18 and those scoring between 13 and 18 were significant for strongest pain only (P = 0.011). There were no significant differences between patients scoring between 13 and 18 and those scoring less than 13 (for all comparisons, P > 0.050). Correlation analyses using continuous questionnaire scores also revealed a significant relationship between PD-Q scores and reported 4-week average pain intensity (rs(55) = 0.33, P = 0.012). Figure 4 shows a positive correlation between PD-Q scores and average pain intensity in both the IANI and LNI patient groups, although this relationship was significant only in the IANI group (rs(34) = 0.39, P = 0.022); the relationship was weaker in the LNI group (rs(20) = 0.24, P = 0.306).

Of note, PD-Q sensitivity in trigeminal nerve injury patients improved by applying a relevant threshold based on reported pain severity,\(^10\) although the considered sample diminished. For example, if PD-Q classifications were made for only those patients reporting 4-week average pain intensity of ≥4 (n = 29), then those classified with ‘likely neuropathic’ pain increased to 44.8%. Raising the threshold further to a reported pain intensity of ≥6 (n = 20) yielded 55% of patients in the ‘likely neuropathic’ classification and another 35% in the ‘uncertain’ classification – thus only 10% falling in the ‘unlikely NeP’ classification. There were no differences across PD-Q classification groups with respect to either age (P = 0.327) or duration of injury.

![Graph](image1)

Fig. 4. Relationship between PainDETECT questionnaire (PD-Q) scores and reported average strength of pain during the past 4 weeks for patients with inferior alveolar nerve injury (n = 35) and lingual nerve injury (n = 21).
For nerve injury patients experiencing pain, the sensitivity of the PainDETECT questionnaire in detecting neuropathic trigeminal pain in this study was 34%. Notably, 24% of LNI patients with pain were classified as having ‘likely neuropathic’ pain from the PD-Q, compared to 40% of IANI patients with pain, a (numerical) difference attributable to the latter’s greater propensity to suffer from allodynia and sensitivity to thermal stimuli.1 To the extent that patients in this study were reporting pain secondary to their nerve injury, and had been diagnosed with neuropathy as a result of the injury, it is highly likely that their pain had a significant neuropathic component. The low rate of classification of neuropathic pain using the PD-Q (originally developed and validated in patients with back pain) therefore suggests that the use of the PD-Q as a tool to detect neuropathic pain in the trigeminal nerve injury patient sample is not appropriate in its current form.

Despite the apparent low sensitivity of the PD-Q, there was a modest but significant correlation between PD-Q scores and 4-week average strength of pain, although this relationship was more obvious in the group of patients with IANI. Across all patients, comparisons of pain intensity levels between NeP classification groups indicated significantly higher NRS pain scores amongst patients with PD-Q scores of greater than 18, thus showing some advantage of using the PD-Q to screen for NeP components in trigeminal nerve injury patients suffering from higher levels of pain.

Previous studies examining the utility of the PD-Q in various chronic pain populations have adopted thresholds at the outset for pain intensity.10,20 In the present study, reported 4-week average pain intensity levels for trigeminal nerve injury patients (mean 4.3, SD 2.6) were relatively low in comparison with those found in other NeP populations, such as patients with painful diabetic peripheral neuropathy.11 When thresholds for pain intensity of ≥4 and ≥6 (on a 0–10 NRS) were applied to the sample here, those classified with ‘likely neuropathic’ pain increased from 33.9% to 44.8% and 55.0%, respectively, a notable improvement, although still indicative of poor sensitivity. However, as almost half the patients with painful neuropathy secondary to trigeminal nerve injury in this study reported pain levels that averaged less than 4, applying these thresholds is likely to be of limited value.

Only one other study has assessed the utility of the PD-Q in orofacial pain. Ukwas et al.21 evaluated the diagnostic ability and reproducibility of the PD-Q in a sample of patients suffering from orofacial pain. They reported that the PD-Q had limited accuracy in detecting NeP (as measured against clinical diagnosis) and yielded a low reproducibility over time. These findings are broadly consistent with those of the present study, in which the PD-Q showed poor sensitivity in the identification of neuropathic elements in orofacial pain associated with post-traumatic neuropathy, and suggest that the validity and reliability of the PD-Q in orofacial pain is not satisfactory. Although the PD-Q may suggest the presence of NeP components in orofacial pain, these are not typical NeP lesions, and may be considered a distinct subtype with unique patterns of symptomatology.22 As such, we cannot assume that those patients with post-traumatic trigeminal neuropathy scoring 18 or less on the PD-Q do not experience neuropathic pain.

Suggested improvements to the PD-Q for orofacial pain

Amendment of the PD-Q is therefore necessary, not only to better detect trigeminal NeP, but also to improve compliance with answering all questions. The modest completion rate of the PD-Q (only 56 of the 75 patients experiencing pain responded to all PD-Q items) complicated the interpretation of the findings in this cohort and suggests that the face validity of the standard PD-Q is low in trigeminal nerve injury patients. In this instance, missing or invalid responses likely reflect the lack of relevance of specific items to trigeminal nerve injury patients. Suggested changes include image modification: the PD-Q image could depict simply the head and neck region, including inside the oral cavity (tongue, gingivae, and floor of the mouth). The patients also may not have a full understanding of ‘radiating’ pain corresponding to the original pain map from the Freynhagen et al.1 study. The image could represent the orofacial region on a larger scale and this may help to avoid confusion with pain from other areas. Modification to items pertaining to activity-elicited pain is likely to be beneficial also. For example, if the question concerning thermal stimuli, ‘Is cold or heat (bath water) in this area occasionally painful?’, is modified to ‘When washing your face with cold or hot water, is this area occasionally painful?’, more patients with orofacial pain may indicate the presence of neuropathy. Likewise, inclusion of a question related to pain upon having a hot/cold drink or food is likely to be more relevant to patients with orofacial NeP (particularly those with LNI). Recently, Hochman and colleagues13 modified items in the PD-Q, framing questions to ask about symptoms ‘in or around’ the worst affected knee, to better assess the NeP elements in a cohort of patients with knee osteoarthritis. The modified questionnaire was successful in identifying a quarter of osteoarthritis patients with NeP symptoms localized to the knee, and was suggested to be a clinically valid tool to determine NeP in adult knee osteoarthritis.20 A similar approach, with a focus on relating identified neuropathic symptoms to those neurosensory changes found at clinical assessment, may yield dividends in developing a valid questionnaire-based tool to detect NeP in orofacial pain.

Limitations

A small number of patients in the study were undergoing pharmacological treatment for their condition at the time of PD-Q administration. While there were no differences in PD-Q scores between those receiving medication and those who were not, treatment effects cannot be entirely ruled out. Also, questionnaires were administered to trigeminal nerve injury patients at consultation or later (via post), and there is the possibility that responses could have been influenced by the clinical consultation procedure and/or by other members of the household. More generally, patients with iatrogenic trigeminal nerve injuries often suffer from multiple symptoms that include NeP, numbness, and altered sensation,1,2,12 and this mixture of related symptoms may have confused the patients’ responses (with some patients interpreting the terms interchangeably). Patients may have benefited from completing the questionnaire within the clinic, as the clinician would have been able to provide aid when questions were not understood. However, the PD-Q is intended to be a self-administered measure and is purported to be easily understood and completed by the patient.9,10 The modest compliance rate in the present study suggests modification to specific items is warranted rather than
changes in PD-Q administration. Finally, a range of psychological factors are known to promote NeP symptoms, like catastrophizing, 24 anxiety and depression, 25,26 and the influence of these phenomena on PD-Q responding was not assessed here.

In conclusion, developing a simple and inexpensive method to screen for NeP in patients with orofacial pain conditions is likely to aid decisions regarding patient management and treatment strategies in a range of dental and oral health care settings. This study showed that the PD-Q tool had limited sensitivity for the neuropathic component of pain experienced by a sample of patients diagnosed with neuropathy secondary to trigeminal nerve injury. This suggests that the questionnaire in its present form is not an adequate screening measure in patients with orofacial pain. A PD-Q that is specifically modified for use in orofacial pain may better facilitate the identification of NeP in this group of patients.

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**Competing interests**

None declared.

**Ethical approval**

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**References**


**Address:**

Tara Renton
King’s College London Dental Institute
Denmark Hill Campus
Bessemer Road
London SE5 9RS
UK
Tel: +44 2032994255;
Fax: +44 (0)20 399 2313
E-mail: tara.renton@kcl.ac.uk