

# Orofacial Pain Conditions and Impact on Quality of Life in Community-Dwelling Elderly People in Hong Kong

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**Aims:** To determine orofacial pain (OFP) characteristics, associated disability, and effect on quality of life in elderly community-dwelling Chinese people. **Methods:** A cross-sectional survey involving elderly people registered with the Family Medicine Unit of the University of Hong Kong served as the sampling frame. Elderly people with recent OFP symptoms and a comparison control group without OFP participated. Standard questions were asked about OFP conditions in the previous month and the Oral Health Impact Profile (OHIP-14), General Health Questionnaire (GHQ-12), and pain-related disability questions were administered prior to a standard clinical examination. **Results:** Ninety-five people with OFP and 100 people without OFP participated. The median number of pain symptoms per subject was 2.0. Toothache was the most common symptom (58.9%); shooting pain across the face and muscle tenderness were the least common (6.3%). More than half of the pain participants described moderate to severe OFP. The prevalences of patients with neurological/vascular (NV), musculoligamentous/soft tissue (MST), or dentoalveolar (DA) OFP were 35.8%, 33.7%, and 30.5%, respectively. Chronic OFP was common (80%). The mean OHIP-14 summary score was significantly higher in OFP subjects than controls ( $P < .001$ ) and significantly higher in the MST and DA subgroups than in the NV subgroup ( $P < .001$ ). GHQ scores of  $\geq 4$ , indicating greater psychological distress, were more common in OFP subjects than controls ( $P < .01$ ). Twenty percent of OFP subjects indicated that their conditions interfered with daily life activities, and in 9.9% it affected ability to work. **Conclusion:** OFP had a substantial detrimental impact on daily life activities, psychological distress level, and quality of life in Chinese elders. MST and DA conditions had the greatest adverse impact on quality of life. J OROFAC PAIN 2007;21:63–71

**Key words:** disability, elderly Chinese, orofacial pain, psychological distress, quality of life

Orofacial pain (OFP) represents an important clinical pain issue. Orofacial pain conditions ranging from simple dental pain to temporomandibular disorders to classical neurological OFP such as trigeminal neuralgia can have a significant burden on the community.<sup>1</sup> In a Canadian study, 53% of participants had experienced some pain or discomfort in the orofacial region in the previous 4 weeks. The majority of pain reports were tooth or gum related, whereas pain in the jaws, face, and oral mucosa were less common.<sup>2</sup> In a study conducted in the United Kingdom, a quarter of the adult population experienced facial pain symptoms over the past month, and 17% had had to take time off work or were unable to carry out normal activities because of pain.<sup>3</sup>

The most common approach in studies of the epidemiology of OFP in large population samples is to collect information on OFP symptoms and associated factors by means of a questionnaire without confirming patient self-reports by clinical assessment.<sup>4</sup> However, using this approach, there is a risk that patient-described pain symptoms may be misinterpreted and pain symptoms due to multiple, coexisting conditions go unrecognized. In an investigation of the relationship between self-reported and clinically diagnosed temporomandibular disorders, the correlation between clinical examination outcome and perceived signs and symptoms was found to be low.<sup>5</sup>

A systematic review of OFP studies revealed that most have focused on predominantly Caucasian cohorts.<sup>6</sup> A recent study in Korean elders indicated that the prevalence of OFP was high in this ethnic group and significant disability was associated with the OFP conditions, particularly toothache, joint pains, and burning mouth symptoms.<sup>7</sup> The prevalence of OFP pain reports in adult Chinese people in Hong Kong (1-month period prevalence of 24%) is comparable with prevalence estimates in western cohorts.<sup>8</sup> However, there is presently very little information on the characteristics and impact of OFP in Chinese people.

The hypothesis tested in the present study was that the OFP conditions may cause significant disability and psychological distress and have adverse effects on quality of life among elderly Chinese people in Hong Kong. The study aimed to investigate pain characteristics in community-dwelling elderly people with OFP and the impact on quality of life.

## Materials and Methods

### Study Sample

The sampling frame of this community-based study was elderly people aged 55 to 74 years registered as patients at the Family Medicine Unit (FMU) of the University of Hong Kong. The FMU is the Faculty of Medicine's major primary care teaching facility and is structured as a general medical practice that is sociodemographically representative of the population of Hong Kong.

Data from a recent population-based telephone survey in Hong Kong showed that 24% of adult people reported OFP in the previous 1-month period.<sup>8</sup> Thus, in order to recruit 100 patients with OFP, 400 patients needed to be contacted. When a 50% response rate was taken into consideration, it

was decided to contact 800 patients. For the purpose of obtaining a balanced design, a comparison control group comprising 100 persons with no OFP was recruited.

Initial information on the nature of the study was provided in the form of an information sheet mailed to 800 elderly patients (400 men and 400 women). They were randomly selected from the FMU patient pool after being stratified by gender. Thereafter, they were contacted by phone by a trained interviewer and invited to participate in a short telephone questionnaire survey to see whether they had experienced OFP symptoms within the last 4 weeks. The screening questionnaire incorporated 10 questions on different kinds of OFP, viz, (1) toothache, (2) pain in the jaw joints, (3) pain in the face just in front of the ears, (4) pain in or around the eyes, (5) pain when opening the mouth wide, (6) pain in the jaw joint(s) when chewing food, (7) pain in and around the temples, (8) tenderness of muscles at the side of the face, (9) prolonged burning sensation in the tongue or other parts of the mouth, and (10) shooting pain in the face or cheeks. When the elderly people responded affirmatively to at least 1 question and agreed to participate, they were invited to attend the FMU clinic to take part in the definitive study that involved completion of a more detailed questionnaire and a clinical assessment. Elderly people who did not have OFP symptoms were also invited to participate as controls in the main study.

The study was approved by the Institutional Review Board of the University of Hong Kong/Hospital Authority Hong Kong West Cluster. Participants who attended the FMU provided written, informed consent.

### Questionnaire Interview

Participants completed the questionnaire assisted by a trained interviewer. For participants who had reported OFP symptoms in the previous 4 weeks, the questionnaire included questions about various types of OFP experienced (qv), the commencement of pain and its frequency, pain intensity, duration of pain episodes, professional treatment-seeking, and whether they had taken self-prescribed medication for the orofacial conditions. The response choices for pain commencement were within 3 months, more than 3 months ago, and don't know. For pain frequency in the previous month, the response choices were 1 to 5 days, 6 to 10 days, 11 to 15 days, 16 to 20 days, and more than 20 days. For duration of pain episodes the response choices were less than half an hour, half

an hour to 1 hour, 1 to 4 hours, 5 to 8 hours, 9 to 12 hours, and more than 12 hours. Pain severity was measured in 2 ways. It was measured on a 4-point category scale with the options mild, moderate, severe, and very severe. It was also measured on a numeric rating scale ranging from 0 (no pain) to 10 (pain as bad as it could be). For professional treatment-seeking, the choices were doctor, dentist, and/or traditional Chinese medicine (TCM) practitioner.

Participants who reported OFP were asked to choose the sentence which best described disability associated with their pain, from “I can usually ignore the pain” to “The pain is so bad it interferes with all activities and complete rest or bed rest is necessary.” People with OFP were also asked whether they had taken time off work or been unable to carry out their usual activities.

Psychological distress was measured using the 12-item General Health Questionnaire (GHQ-12).<sup>9</sup> Scores ranged from 0 to 12, with a higher score indicating a higher level of distress. It has been suggested that a cutoff point of 4 is optimal for screening mental disorders,<sup>10</sup> and patients scoring 4 or more were operationally defined as GHQ cases, ie, as having probable nonpsychotic psychiatric disorders. The Chinese version of GHQ-12 was used in this study and had been validated previously.<sup>11,12</sup>

The short-form Oral Health Impact Profile (OHIP-14) was used to evaluate the impact of pain-related oral conditions on quality of life. This 14-item questionnaire covers 7 domains of oral health impact: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap.<sup>13</sup> The measure has been used in a number of oral health impact studies globally.<sup>14–16</sup> The Chinese version of OHIP, which was translated and validated for use in Hong Kong, was adopted.<sup>17</sup>

Participants who did not report any OFP symptoms (controls) were only administered the parts of the questionnaire that did not include questions about OFP conditions and related impacts. Sociodemographic data were obtained for all participants.

### Clinical Examination

A noninvasive clinical assessment of the face and mouth was undertaken by a trained clinician for all participants after they had completed the questionnaire. The examiner used a standard history form and clinical examination technique.<sup>18</sup> Diagnostic criteria for the different conditions were those proposed by the International

Association for the Study of Pain.<sup>19</sup> The final diagnoses were aggregated into 1 of 3 broad subgroups: musculoligamentous/soft tissue (MST), dentoalveolar (DA), and neurological/vascular (NV), based on the classification of Hapak et al,<sup>20</sup> which has been used previously in the assessment of orofacial pain.<sup>4,21,22</sup>

### Data Analysis

Statistical analyses were made using SPSS 11.5. Overall response rate to the survey was calculated. Descriptive statistics were produced to analyze characteristics of OFP. For comparisons between pain and control groups, or between pain diagnostic subgroups, the chi-square test was used to test for differences in categorical variables. For continuous variables, a 2-sample *t* test or Mann-Whitney test was used to assess the differences between pain and control groups; 1-way ANOVA or Kruskal-Wallis test was used to assess differences among the 3 pain diagnostic subgroups. Whenever statistically significant differences were found among pain diagnostic subgroups, 3 pairwise comparisons were performed using the Mann-Whitney test, and the statistical significance level was adjusted to 0.017 ( $=0.05/3$ ) in order to achieve an overall level of significance of .05.

## Results

### Response Rate and Group Profile

Of the 800 elderly people randomly selected from the FMU patient pool, 350 could not be contacted, either because the telephone number available was wrong or invalid ( $n = 159$ ) or because there was no response after 3 attempts ( $n = 191$ ). Four hundred fifty patients were successfully contacted by phone, and 291 completed the screening questionnaire, for a response rate of 64.7%. Among the 291 elderly who completed the telephone questionnaire, 123 reported having OFP, and 168 had no OFP. One hundred five persons with OFP and 110 without OFP agreed to attend the clinic. The participation rates of those agreeing to attend the clinic were 85.4% and 65.5%, respectively. Since 10 persons in each group did not show up in the clinic, 95 patients with OFP and 100 with no pain finally participated in the study. For those people who refused to participate in the project, the reasons commonly cited were having no time due to working or taking care of family, physical disability, poor general health, and having regular dental checkups in government clinic or private dental practice.

**Table 1** Prevalence of Pain Symptoms Among Participants with Pain in the Past Month (n = 95)

| Symptom                                                           | %    | 95% CI    |
|-------------------------------------------------------------------|------|-----------|
| Toothache                                                         | 58.9 | 48.4–68.9 |
| Pain in the jaw joint(s)                                          | 15.8 | 9.1–24.7  |
| Pain in the face in front of the ear                              | 13.7 | 7.5–22.3  |
| Pain in and around eyes                                           | 30.5 | 21.5–40.8 |
| Pain in the jaw joints while opening the mouth wide               | 9.5  | 4.4–17.2  |
| Sharp shooting pain across the face and cheeks                    | 6.3  | 2.4–13.2  |
| Pain in the jaw joint(s) when chewing                             | 13.7 | 7.5–22.2  |
| Pain in and around the temples                                    | 52.6 | 42.1–63.0 |
| Tenderness of the muscles at the side of the face                 | 6.3  | 2.4–13.2  |
| Prolonged burning sensation in the tongue or other parts of mouth | 21.1 | 13.4–30.6 |
| Number of subjects with multiple symptoms ( $\geq 2$ )            | 56.8 | 46.3–67.0 |

Median of 2.0 pain symptoms per subject (range, 1 to 9).

Among the 195 participants, there were 88 men (45%) and 107 (55%) women. The age ranged from 55 to 74 years, with a mean of 62.7 years (SD 5.1). One hundred seventeen or 60% (59% in pain group versus 61% in control group,  $P = .770$ ) had received primary school education only or no formal education. The monthly household income was below HKD 15,000 (US \$1,900) for about half (46%) of the participants (42% in pain patients versus 50% for controls,  $P = .269$ ).

### Characteristics of Pain Symptoms

The prevalence of OFP symptoms among pain patients in the month before the examination is shown in Table 1. Among the 95 pain participants, toothache (58.9%) was the symptom most frequently reported, and shooting pain across the face or cheeks (6.3%) and muscle tenderness (6.3%) were the least often reported. The median number of pain symptoms per subject was 2.0 (range, 1 to 9 symptoms). More than half (56.8%) experienced multiple symptoms, 23% experienced 2 symptoms, 19% had 3 symptoms, and 15% reported 4 to 9 symptoms.

Most of the participants (80%) reported that their pain symptoms had started more than 3 months ago (Table 2). Forty percent of the pain participants had experienced pain for more than 16 days in the past month, and more than a quarter of them (27.4%) had had pain episodes lasting more than 12 hours. Approximately 21% rated their pain as severe or very severe, and 15.8% gave their pain a severity score of 7 to 10 on the numeric rating scale.

Less than one third of the participants (27%) who reported OFP had sought professional advice. The majority of these had sought advice from their

medical practitioner (58%), about a quarter had sought treatment from a dentist (28%), and 24% consulted a TCM practitioner. Of the total subjects with pain, 58% had taken medication for pain, with Western-style medicine most commonly used (52%).

### Diagnosis of OFP

The classification and specific diagnoses of OFP are presented in Table 3. The most common OFP conditions were those of NV origin (35.8%), followed by MST (33.7%) and DA (30.5%) conditions. Tension headache (20%) was the most common diagnosis in the NV group. In the MST group, the most common diagnosis was temporomandibular disorder pain (15.8%). In the DA group, the most common diagnosis was pain of dentinal origin (11.6%).

### Disability Associated with Pain

When asked to describe disability associated with pain, 21.9% of the participants stated that they could ignore the pain, while 23.1% needed complete rest or were unable to carry out normal daily activities because of pain (Table 2). There was no significant difference in pain-related disability among the 3 diagnostic subgroups ( $P = .937$ ).

### Impact of Orofacial Pain on Quality of Life

Pain in the face and/or mouth was associated with high GHQ-12 scores (Table 4). Mental distress (GHQ-12 score of  $\geq 4$ ) was more common among participants with OFP than those without (11.6% versus 5.0%;  $P = .009$ ). The MST subgroup tended to have more GHQ-12 scores  $> 3$  compared with

**Table 2** Description of Pain Characteristics (n = 95)

| Pain characteristics                                                                                 | %    |
|------------------------------------------------------------------------------------------------------|------|
| First pain episode                                                                                   |      |
| Less than 3 months ago                                                                               | 17.9 |
| More than 3 months                                                                                   | 80.0 |
| Do not know                                                                                          | 2.1  |
| Time experienced pain during past month (d)                                                          |      |
| 1 to 5                                                                                               | 35.8 |
| 6 to 15                                                                                              | 24.2 |
| 16 or more                                                                                           | 40.0 |
| Duration (h)                                                                                         |      |
| Less than 1 hour                                                                                     | 49.5 |
| 1 to 4                                                                                               | 12.6 |
| 5 to 12                                                                                              | 10.5 |
| More than 12                                                                                         | 27.4 |
| Severity                                                                                             |      |
| Mild                                                                                                 | 48.4 |
| Moderate                                                                                             | 30.5 |
| Severe to very severe                                                                                | 21.1 |
| Pain scale rating (for past 4 weeks)                                                                 |      |
| 0 to 3                                                                                               | 49.5 |
| 4 to 6                                                                                               | 34.7 |
| 7 to 10                                                                                              | 15.8 |
| Disability associated with pain                                                                      |      |
| I can usually ignore the pain                                                                        | 21.9 |
| The pain cannot be ignored but it does not interfere with daily activities                           | 34.1 |
| The pain cannot be ignored but only interferes with my ability to concentrate                        | 20.9 |
| The pain interferes with many daily activities except for basic things like taking care of myself    | 15.4 |
| The pain is so bad that it interferes with all activities and complete rest or bed rest is necessary | 7.7  |
| Pain interfered with daily living activities                                                         | 19.8 |
| Pain affected ability to take part in recreational, social, and family activities                    | 11.0 |
| Pain affected ability to work (including housework)                                                  | 9.9  |

the DA and NV subgroups (18.8%, 10.4%, and 5.9%, respectively), but the difference did not reach statistical significance ( $P = .229$ ).

Table 5 shows the distribution of responses to the OHIP-14 items, using “very often” or “fairly often” as the cutoff point for the response to identify those subjects whose lives were compromised on a constant or frequent basis. The data indicated that participants with OFP more frequently reported negative impacts on their daily life compared with controls. The differences were statistically significant for the following items: discomfort during eating (18.9% versus 6.0%,  $P = .008$ ), having sore spots (17.9% versus 0%,  $P < .001$ ), being miserable (8.4% versus 0%,  $P = .003$ ) or worried (12.6% versus 3.0%,  $P = .015$ ), having to interrupt meals (17.9% versus 6.0%,  $P = .014$ ), feeling food has less flavor (10.5% versus 3.0%,  $P = .045$ ), and being upset (8.4% versus 1.0%,  $P = .016$ ). Among OHIP 14 domains “social disabili-

**Table 3** Distribution of Subjects by Diagnosis and Classification Group (n = 95)

| Diagnosis                               | %           | 95% CI           |
|-----------------------------------------|-------------|------------------|
| <b>Musculoligamentous/soft tissue</b>   | <b>33.7</b> | <b>24.3–44.1</b> |
| Temporomandibular disorder pain         | 15.8        | 9.1–24.7         |
| Oral mucosal disease/soft tissue trauma | 8.4         | 3.7–15.9         |
| Atypical/idiopathic facial pain         | 6.3         | 2.4–13.2         |
| Burning mouth syndrome                  | 2.1         | 0.3–7.4          |
| Atypical odontalgia                     | 1.1         | 0.03–5.7         |
| <b>Dentoalveolar</b>                    | <b>30.5</b> | <b>21.5–40.8</b> |
| Dentinal                                | 11.6        | 5.9–19.8         |
| Periodontal                             | 6.3         | 2.4–13.2         |
| Tooth mobility                          | 5.3         | 1.7–11.9         |
| Pulpal                                  | 3.2         | 0.7–8.9          |
| Cracked tooth syndrome                  | 2.1         | 0.3–7.4          |
| Pericoronitis                           | 1.1         | 0.03–5.7         |
| Dry socket                              | 1.1         | 0.03–5.7         |
| <b>Neurological/vascular</b>            | <b>35.8</b> | <b>26.2–46.3</b> |
| Tension headache                        | 20.0        | 12.5–29.5        |
| Migraine                                | 7.4         | 3.0–14.6         |
| Trigeminal neuralgia                    | 3.2         | 0.7–8.9          |
| Unknown neurological pain               | 3.2         | 0.7–8.9          |
| SUNCT*                                  | 1.1         | 0.03–5.7         |
| Glossopharyngeal neuralgia              | 1.1         | 0.03–5.7         |

\*Short-lasting, unilateral, neuralgiform headache attacks with conjunctival injection and tearing.

ity” and “handicap” were the least likely to be reported by either pain or no pain subjects.

The mean OHIP summary score (OHIP-14 additive score) was significantly higher among pain subjects (mean, 9.94; SD, 9.66) than controls (mean, 2.91; SD, 4.78;  $P < .001$ ). Mean OHIP-14 simple count scores, which were calculated for each subject by counting the number of items to which they responded “very often” or “fairly often,” were higher among the OFP group than controls (1.24 versus 0.31,  $P < .001$ ). When the OHIP-14 simple count score (range, 0 to 14) was used as an indicator, the distribution among the 3 subgroups, ie, 0, 1–3, 4+, was significantly different between OFP and control groups ( $P < .001$ ).

Associations between the OFP subgroup classification and quality of life are shown in Table 5. Overall, subjects in the MST and DA subgroups more commonly experienced negative impacts on their quality of life than the NV subgroup.

**Table 4 Comparison of GHQ-12 Summary Scores**

| GHQ-12 summary score | Control<br>(n = 100) | Pain<br>(n = 95) | MST<br>(n = 32) | DA<br>(n = 29) | NV<br>(n = 34) |
|----------------------|----------------------|------------------|-----------------|----------------|----------------|
| 0                    | 80.0*                | 60.0*            | 50.0            | 72.4           | 58.8           |
| 1–3                  | 15.0                 | 28.4             | 31.2            | 17.2           | 35.3           |
| 4–12                 | 5.0                  | 11.6             | 18.8            | 10.4           | 5.9            |

\*Statistically significant difference between pain and control groups ( $P < .05$ ).**Table 5 Percentage of Negative Impacts (Very/Fairly Often) in Responses to OHIP-14, Mean OHIP-14 Score, and OHIP-14 Score Grouping**

| OHIP-14                             | Control<br>(n = 100) | Pain<br>(n = 95) | MST<br>(n = 32)            | DA<br>(n = 29)            | NV<br>(n = 34)           | Multiple<br>comparisons   |
|-------------------------------------|----------------------|------------------|----------------------------|---------------------------|--------------------------|---------------------------|
| Functional limitation               |                      |                  |                            |                           |                          |                           |
| Difficulty chewing                  | 7.0                  | 13.7             | 21.9 <sup>†</sup>          | 20.7 <sup>†</sup>         | 0 <sup>†</sup>           | MST, DA > NV <sup>‡</sup> |
| Trouble pronouncing                 | 2.0                  | 2.1              | 3.1                        | 3.4                       | 0                        |                           |
| Physical pain                       |                      |                  |                            |                           |                          |                           |
| Uncomfortable to eat                | 6.0*                 | 18.9*            | 34.4 <sup>†</sup>          | 24.1 <sup>†</sup>         | 0 <sup>†</sup>           | MST, DA > NV <sup>‡</sup> |
| Sore spots                          | 0*                   | 17.9*            | 15.6 <sup>†</sup>          | 34.5 <sup>†</sup>         | 5.9 <sup>†</sup>         | DA > NV <sup>‡</sup>      |
| Psychological discomfort            |                      |                  |                            |                           |                          |                           |
| Worried                             | 3.0*                 | 12.6*            | 21.9                       | 6.9                       | 8.8                      |                           |
| Miserable                           | 0*                   | 8.4*             | 12.5                       | 13.8                      | 0                        |                           |
| Physical disability                 |                      |                  |                            |                           |                          |                           |
| Less flavor                         | 3.0*                 | 10.5*            | 15.6 <sup>†</sup>          | 17.2 <sup>†</sup>         | 0 <sup>†</sup>           | MST, DA > NV <sup>‡</sup> |
| Interrupt meals                     | 6.0*                 | 17.9*            | 18.8                       | 17.2                      | 17.6                     |                           |
| Psychological disability            |                      |                  |                            |                           |                          |                           |
| Upset                               | 1.0*                 | 8.4*             | 12.5                       | 10.3                      | 2.9                      |                           |
| Embarrassed                         | 2.0                  | 3.2              | 3.1                        | 6.9                       | 0                        |                           |
| Social disability                   |                      |                  |                            |                           |                          |                           |
| Avoided going out                   | 1.0                  | 4.2              | 6.3                        | 3.4                       | 2.9                      |                           |
| Irritable                           | 0                    | 1.1              | 0                          | 3.4                       | 0                        |                           |
| Handicap                            |                      |                  |                            |                           |                          |                           |
| Unable to function                  | 0                    | 1.1              | 0                          | 3.4                       | 0                        |                           |
| Unable to work                      | 0                    | 4.2              | 6.3                        | 3.4                       | 2.9                      |                           |
| OHIP-14 summary score, mean (SD)    |                      |                  |                            |                           |                          |                           |
| Additive                            | 2.91 (4.78)*         | 9.94 (9.66)*     | 12.13 (10.55) <sup>†</sup> | 13.24 (9.65) <sup>†</sup> | 5.06 (6.61) <sup>†</sup> | MST, DA > NV <sup>‡</sup> |
| Simple count                        | 0.31 (0.76)*         | 1.24 (2.15)*     | 1.72 (2.40) <sup>†</sup>   | 1.69 (2.67) <sup>†</sup>  | 0.41 (0.78) <sup>†</sup> | DA > NV <sup>‡</sup>      |
| OHIP-14 simple count by subgroup, % |                      |                  |                            |                           |                          |                           |
| 0                                   | 83.0*                | 58.9*            | 53.1                       | 48.3                      | 73.5                     |                           |
| 1–3                                 | 17.0                 | 29.5             | 28.1                       | 34.5                      | 26.5                     |                           |
| 4+                                  | 0                    | 11.6             | 18.8                       | 17.2                      | 0                        |                           |

\*Statistically significant difference between pain and control groups ( $P < .05$ ).<sup>†</sup>Statistically significant difference among the 3 pain subgroups ( $P < .05$ ).<sup>‡</sup>Statistically significant difference between the pain subgroups ( $P < .017$ ).

Significant differences were observed in the problems of difficulty chewing ( $P = .015$ ), uncomfortable to eat ( $P = .001$ ), having sore spots ( $P = .012$ ), and feeling food has less flavor ( $P = .043$ ). As anticipated, the mean OHIP-14 additive scores were higher among those in the MST and DA subgroups compared with the NV subgroup ( $P < .001$ ). The mean OHIP-14 simple count scores were higher in the DA subgroup than the NV subgroup ( $P = .012$ ).

## Discussion

This study provided essential new data on the nature of OFP conditions and the functional and psychosocial impact of OFP in community-dwelling elderly Chinese people in Hong Kong. In contrast to previous studies of OFP in community settings,<sup>2,3</sup> all participants in the main study received a clinical assessment after completion of the questionnaire, thereby improving the reliability and value of the data. In addition, as a comparison group without OFP was involved, direct compar-

isons could be made, and clearer insight was obtained into putative OFP-related adverse impacts on quality of life. It is nonetheless acknowledged that for practical recruitment reasons, rather than use a population-based random sampling technique, the study group was a convenience group selected from patients registered with a general medical practice in Hong Kong. With a limit on available resources, it was planned to recruit a total of 200 elderly people, and the initial number of elderly patients selected from the patient pool (800) was derived in order to achieve this sample size. At the end of the recruitment, 95 elderly people with OFP and 100 elderly people without OFP had been successfully recruited for this study. When the sociodemographic characteristics of the study group were compared with the general population for the same age group,<sup>23</sup> the gender ratio was very close, and the education and household income levels for the study participants were quite similar to those of their counterparts in the general elderly population. Thus, the study sample appeared to be broadly representative of the elderly population in Hong Kong.

Compared with a community study conducted in the United Kingdom,<sup>3</sup> in which similar OFP definitions and time period (1-month prevalence) were adopted, the OFP conditions experienced by the elderly Chinese people were more severe. More participants experienced multiple symptoms, had pain episodes lasting more than 12 hours, could not ignore their pain conditions, and had to take complete rest or bed rest. The study also revealed the chronicity of OFP symptoms experienced by elderly Chinese in Hong Kong. The prevalence of OFP of more than 3 months duration was high (80%), greater than that reported by Macfarlane et al (62%).<sup>3</sup> Multiple pain problems are also an indicator of chronic pain.<sup>24</sup>

Although more than half of those with pain described its severity as moderate to very severe, only 27% had sought professional advice. This was lower than previous reports in Caucasian populations (40% to 46%).<sup>2,25</sup> The proportion of people who sought advice from a dentist (28%) was also lower than reported in the United Kingdom (51%).<sup>25</sup> It is noteworthy that 24% of those seeking treatment consulted a TCM practitioner. This proportion is substantially more than that noted in a recent population-based study of OFP in adult Chinese in Hong Kong, although the pain duration was generally much shorter in that study (1 to 5 days).<sup>8</sup> It has been observed previously that consulting a TCM practitioner is quite common in Chinese people with chronic pain.<sup>24</sup>

When the classification of pain diagnoses adapted from Hapak et al<sup>20</sup> was used, the prevalence of 3 subgroups of OFP conditions was similar. Pain of NV origin was the most common (35.8%), followed by MST (33.7%) and DA (30.5%) conditions. In contrast, Macfarlane et al<sup>4</sup> found that MST pain was most common (39%) and NV pain least common (28%). The difference in age range of the study cohorts (55 to 74 years versus 18 to 65 years) most probably accounted for the slight differences in prevalence of diagnostic subgroups. It should, however, be noted that the results may have been different if another classification system such as that of the International Headache Society<sup>26</sup> had been used.

Disability associated with pain conditions was obvious among those with OFP, with daily living activities affected in 1 in 5 of the subjects and ability to work affected in 1 in 10. Several studies on OFP have shown unemployment and decreased work effectiveness among affected patients.<sup>16,27-29</sup> The proportion of people unable to carry out some activities because of pain ranged from 14% for facial pain to 48% for severe headache in an epidemiologic study by Von Korff et al.<sup>30</sup> Need for bed rest and reduced social contacts have also been reported by people experiencing OFP.<sup>16,28</sup>

As in previous reports,<sup>31,32</sup> OFP was associated with significant psychological distress as measured with the GHQ questionnaire. With the limitation of the present cross-sectional design, it was not possible to reveal any cause-effect relationship. Nonetheless, it is possible that the psychological morbidity was secondary to the pain itself.<sup>32</sup> Alternatively, the psychological distress may have led to high levels of OFP perception and pain reports.<sup>31</sup> In either case, a combined dental/psychological intervention is recommended for those individuals in whom OFP produces a sustained health problem.<sup>31</sup>

This study is 1 of a few that have used a psychometric measure to assess the impact of OFP on quality of life.<sup>16,27,33</sup> The data suggested that OFP had a substantial adverse impact on functional and psychosocial well-being. To appreciate the extent to which the quality of life of those with OFP was compromised, their responses to OHIP-14 items were compared with those of a random sample of elderly people in Hong Kong who took part in a population-based oral health survey.<sup>34</sup> The comparison revealed that the OFP group reported more frequent negative impacts in relation to functional, physical, and psychosocial aspects. In the elderly population of Hong Kong as a whole, 4% reported physical pain due to sore spots and 6%

had to interrupt meals, compared with about 18% (for both items) in the OFP patients. Similarly, being worried because of oral conditions was reported by only 4% of the elderly Hong Kong population, whereas it was reported by 12.6% of the OFP patients.

In agreement with a previous study by Murray et al,<sup>16</sup> the OHIP-14 could differentiate between different diagnostic subgroups of patients with OFP. A higher proportion of patients with MST and DA reported problems in terms of functional limitation, physical pain, and physical disability. This likely reflects the characteristic pain symptoms experienced by the different subgroups. The short-form OHIP was clearly effective in discerning differences in impact between different OFP subgroups. Nonetheless, it is acknowledged that it is not a condition/disease-specific measure. The recently developed Manchester Orofacial Pain Disability Scale<sup>35</sup> has the potential, as a condition-specific measure, to reveal deeper insights into the impact of OFP on functional and psychosocial well-being.

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