

Orofacial pain symptoms and associated disability and psychosocial impact in community-dwelling and institutionalized elderly in Hong Kong

K. Y. Wan¹, A. S. McMillan² and M. C. M. Wong³

¹Postgraduate student, Oral Rehabilitation; ²Professor of Oral Rehabilitation, ³Associate Professor, Dental Public Health, Faculty of Dentistry, University of Hong Kong, Hong Kong SAR

Objective: The study investigated the experience of orofacial pain (OFP) symptoms and associated disability and psychosocial impact in community dwelling and institutionalized elderly people in Hong Kong. **Methods:** A community-based cross-sectional survey involving elders aged 60 years and above. Participants were recruited at social centres for the elderly and homes for the aged throughout Hong Kong. Elders who reported OFP symptoms in the previous four weeks took part. Standard questions were asked about OFP conditions in the previous month and the Manchester Orofacial Pain Disability Scale (MOPDS), the Oral Health Impact Profile (OHIP-14) and the General Health Questionnaire (GHQ-12) were administered. The MOPDS was translated and validated for use in Chinese elders. **Results:** 200 community dwelling and 200 institutionalized elders participated. Toothache was the most common symptom (62.0%) and burning sensation in the tongue was least common (0.5%). The distribution of pain symptoms, pain duration and severity and pain ratings were similar in both groups. The MOPDS (Chinese elders version) had good reliability and construct validity. The MOPDS and OHIP-14 summary scores was significantly higher in the institutionalized elderly ($p < 0.001$ and $p < 0.013$, respectively). Psychological distress (GHQ-12 score ≥ 4) was more common among the institutionalized elderly (11%) than the community dwelling elderly (4.0%, $p = 0.002$). **Conclusions:** Orofacial pain symptoms were associated with significant disability and had a detrimental impact on psychological distress level and quality of life, particularly in the institutionalized elderly. There is a need to improve access to professional care and health-related outreach services generally for elderly people in Hong Kong.

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

Introduction

Orofacial pain (OFP) is an important clinical symptom of a wide range of conditions ranging from simple dental pain to more complex temporomandibular disorders and neuropathic pain. Numerous studies worldwide have demonstrated that OFP symptoms affect a significant portion of adult populations with prevalence rates ranging from 14% to 42% (Lipton *et al.*, 1993; Locker and Grushka, 1987; Macfarlane *et al.*, 2002a; McMillan *et al.*, 2006).

Orofacial pain is described as a sensation, a “subjective psychological state” that may affect emotional and psychosocial behaviour (Aghabeigi, 2002). The association between OFP symptoms and quality of life has been investigated extensively and a significant adverse impact on the daily living activities of individuals revealed (John *et al.*, 2008; Locker and Grushka, 1987; Murray *et al.*, 1996; Wong *et al.*, 2008). A recent study in Brazil further demonstrated that OFP symptoms have a substantial impact on functional and psychological well-being (Barros *et al.*, 2009). In Hong Kong, the negative impact of OFP in the adult population has been shown to be significant with 60% of those with OFP symptoms worried about their oral and dental health (Wong *et al.*, 2008). In a cross-sectional survey involving community dwelling elderly Hong Kong Chinese people with OFP, substantial associ-

ated psychological distress and impairment of quality of life was revealed (Luo *et al.*, 2007).

In general, the oral health of older people is quite poor, especially those living in institutions, and whilst there is demand for dental health services there is considerable unmet need (Katz *et al.*, 1996). The institutionalized elderly frequently have untreated oral diseases that may seriously affect their quality of life (Hassel *et al.*, 2006). In Hong Kong, a higher prevalence of dental disease and more untreated dental conditions has been observed among the institutionalized elderly compared with community-dwelling elderly people (Hong Kong Oral Health Survey, 2002; McMillan *et al.*, 2003). Given that the frail, functionally dependent elderly in institutions have a greater level of disability and poorer oral health than community-dwelling elderly people, it is likely that OFP symptoms are more common and have a greater adverse effect on the well-being of the institutionalized elderly. However, potential differences in the experience of OFP symptoms and associated disability and psychosocial impact have seldom been investigated in institutionalized and community dwelling elderly people.

The hypothesis tested was that OFP symptoms are common in the elderly and have an adverse effect on well-being and quality of life, especially in the institutionalized elderly. The study aimed to investigate and compare the

experience of OFP symptoms and associated disability and psychosocial impact in community dwelling and institutionalized elderly people in Hong Kong.

Materials & methods

This study design was a community-based cross-sectional survey. It involved two groups of elderly people aged 60 years and above: the institutionalized and community-dwelling elderly. Participants were recruited in homes for the aged and at social centres for the elderly. To ensure a balanced design, 200 institutionalized elderly people resident in the homes for the aged and 200 community dwelling elderly people attending social centres for the elderly were planned to be recruited. Simple random sampling was used to select the homes for the aged and social centres for the elderly separately from the list of 187 homes and 41 centres (The Government of the Hong Kong SAR, 2002). The randomly selected homes and centres were approached, the random sampling then continued until enough homes and centres agreed to participate to recruit the subjects. At the end, 33 homes and six centres were selected; eight homes and five centres agreed to participate; 200 institutionalized elderly people resident in the homes for the aged and 200 community dwelling elderly people attending social centres for the elderly were recruited. Elderly people with communication difficulties, psychiatric disease including dementia, those who were non-Cantonese speaking and non-Chinese people were excluded from the study.

Initial information about the study was in the form of an information sheet that was provided at elderly homes and social centres. Elderly people in their respective centres or homes were invited to take part after explaining the study to them. Those who were agreeable to be involved in the study then took part in an initial, short screening survey to determine if they had experienced orofacial pain symptoms in the previous four weeks. First of all they were asked if they had pain in the face, mouth or jaws which had lasted for one day or longer during the past month. They were then asked if they had experienced various kinds of OFP during this period, namely, 1) toothache, 2) pain in the jaw joint/s, 3) pain in the face just in front of the ear, 4) pain in and around the eyes, 5) pain in the jaw joint/s while opening the mouth wide, 6) sharp shooting pains across the face and cheeks, 7) pain in the jaw joint/s when chewing, 8) pain in and around the temples, 9) tenderness of the muscles at the side of the face, and 10) a prolonged burning sensation in the tongue or other parts of the mouth. When the elderly person responded affirmatively to at least one of the 10 questions on different types of OFP, they were then invited to take part in the definitive questionnaire survey.

The study was approved by the Institutional Review Board of the University of Hong Kong/Hospital Authority Hong Kong West Cluster. Participants who took part in the screening survey and those who took part in the definitive questionnaire survey provided written, informed consent.

Participants who had reported OFP in the previous four weeks took part in the questionnaire survey which was administered in the form of a structured interview by a trained interviewer because many of the participants were illiterate. Interviews took place in homes for the aged and elderly social centres.

The questionnaire included questions about various types of orofacial pain symptoms experienced (described above), the commencement of the pain and its frequency, pain intensity and duration of pain episodes, professional treatment seeking and whether they had taken self-prescribed medication for the OFP conditions. The response choices for pain commencement were within three months, more than three months ago and don't know. For pain frequency (days) in the previous month the response choices were 1-5, 6-10, 11-15, 16-20 and more than 20 days. For duration of pain episodes the response choices were less than half an hour, half an hour to one hour, 1-4, 5-8, 9-12 and more than 12 hours. The severity of pain was measured in two ways. One consisted of a four-point category scale with options: mild, moderate, severe, and very severe. The other was a numerical 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 were also asked whether they had been bothered by widespread pain (pain in other parts of the body) in the previous four weeks. This aspect was rated on a 5-point Likert scale (0 = not at all to 4 = an extreme amount).

The Manchester Orofacial Pain Disability Scale (MOPDS) was used to evaluate OFP-related disability (Aggarwal *et al.*, 2005). The disability measure is a 32-item questionnaire covering two domains, namely, physical and psychosocial disabilities. Responses are recorded using a 3-point scale, i.e. 0 = none of the time, 1 = on some days, 2 = on most/everyday(s). For example, a participant was asked, during the past month because of pain in my face, jaws and mouth "I cannot open my mouth as wide as I could" and "I find it difficult to talk for long periods of time". As the questionnaire was developed for all age groups, four questions which were not applicable to the elderly in Hong Kong were omitted ("I have difficulty walking when the weather is cold", "I find it sore to kiss", "I have had to take time off work", "I have lost earnings"). A summary score was then derived as the sum of the scores of each disability item (range 0-56) with a higher score indicating greater disability. Since a validated Chinese version of the measure was not available; the measure was translated into Chinese by the authors and then back translated into Chinese and English by two dentists fluent in Chinese and English who were not involved in the study. The backward translated English version was compared to the original English version to check for accuracy and equivalence. Discussions and clarification of the interpretation of the questions was undertaken with the authors of the original measure to ensure that the translated version reflected the same item content as the original version. A convenience sample of 10 OFP patients attending for routine dental care at the oral rehabilitation clinic of the Prince Philip Dental Hospital, Hong Kong was used for the pilot test of the translated Chinese questionnaire. Modifications to the questionnaire were made according to the comments given by these patients. In order to test the reliability and validity of the translated MOPDS, methods suggested by the original authors were followed.

The short form Oral Health Impact Profile (OHIP-14) was used to evaluate the impact of pain-related oral conditions on oral health-related quality of life (Slade,

1997). The Chinese version of OHIP-14 that has been translated and validated for use in Hong Kong was used (Wong *et al.*, 2002).

Psychological distress was measured using the 12-item General Health Questionnaire© (GHQ-12) [Goldberg and Williams, 1988]. The summary score ranged from 0 to 12 with a higher score indicating a higher level of distress could be obtained. A cut-off point of 4 has been advocated as optimal for screening mental disorders (Holi *et al.*, 2003). Thus, patients who scored 4 or more were defined as having probable non-psychotic psychiatric disorders. The Chinese version of GHQ-12 was used in this study and had been validated previously (Chan and Chan, 1983).

Following the interview, information on demographic background (age, gender, educational level, and receipt of government social security assistance) and the timing of the last visit to dentist were also obtained.

Distributions of the socio-demographic profile, OFP symptoms and characteristics of the participants were reported. For comparisons between the institutionalized and community dwelling groups, chi-square tests were also performed to compare differences in the distributions. Summary scores of the MOPDS, OHIP and GHQ were obtained. Independent samples t-tests were used to compare the differences in the means of the summary scores between the two elderly groups. The level of statistical significance was set at 0.05, and where multiple comparisons were made, the level of statistical significance was adjusted to 0.01. Statistical analyses were carried out using SPSS software 16.0.

The construct validity of the translated MODPS was assessed by comparing the difference in the mean disability scores in relation to professional treatment seeking and commencement of pain using independent samples t-tests. Linear regression was used to determine the association between levels of pain intensity and disability score. The internal consistency was assessed by Cronbach's alpha statistic. A Cronbach's alpha coefficient >0.7 was considered acceptable for an instrument's internal reliability.

Results

A total of 400 out of 408 elderly people took part in the definitive survey (response rate 98%).

The socio-demographic profile of the institutionalized and community dwelling groups is shown in Table 1. The institutionalized elderly group had more males, was generally older, with less formal education and more reliance on social security assistance than the community dwelling group ($p < 0.05$).

The distribution of pain symptoms among the community dwelling and institutionalized elderly groups in the four weeks prior to the interview is shown in Table 2. Toothache (62.0%) and pain in and around the temples (21.5%) were the most frequently reported symptoms. Sharp shooting pain across the face and cheeks and prolonged burning sensation in the tongue or other parts of the mouth were the symptoms least often reported (0.5%). Most of the elderly reported only one symptom (94.5%), with only 5.5% of them having two or more symptoms. There were no statistically significant differences in the reporting of pain symptoms between the two groups ($p > 0.01$, multiple comparisons made).

A description of pain characteristics in the study groups is given in Table 3. 41.7% of the elderly participants reported their pain symptoms had started more than three months previously. There was a statistically significant difference in the timing of first pain reports between groups ($p < 0.001$). However, it is noteworthy that a significant number of the community dwelling (10.5%) and institutionalized elderly (24.5%) could not remember when the first episode occurred. 44.8% of the elderly participants had experienced pain for 1-5 days in the past month. There was a statistically significant difference in the number of pain days reported between groups with more institutionalized elderly (50.0%) than community dwelling elderly (39.5%) reporting symptoms that lasted 1-5 days ($p < 0.002$). For the majority of participants, the duration of pain episodes was less than one hour (67.5%),

Table 1. Socio-demographic features of the survey sample

%	Overall n=400	CDE n=200	IE n=200	p
Gender				
Male	22.8	16.5	29.0	0.003
Female	77.2	83.5	71.0	
Age (years)				
60-69	9.5	16.0	3.0	<0.001
70-79	40.3	58.0	22.5	
80-89	39.2	25.0	53.5	
>90	11.0	1.0	21.0	
Educational attainment				
No formal education	49.0	40.0	58.0	0.001
Primary education	38.2	46.5	30.0	
Secondary or above	12.8	13.5	12.0	
Receipt of social security assistance				
Yes	39.5	25.5	53.5	<0.001
No	60.5	74.5	46.5	

CDE = Community dwelling elderly; IE = institutionalized elderly

*p-values for independent chi-square tests; comparisons between CDE and IE groups

Table 2. Distribution of pain symptoms among community dwelling and institutionalized elderly groups

<i>Symptom (%)</i>	<i>Overall n=400</i>	<i>CDE n=200</i>	<i>IE n=200</i>	<i>p[#]</i>
Toothache	62.0	67.5	56.5	0.023
Pain in the jaw joint(s)	3.5	3.0	4.0	0.586
Pain in the face in front of the ear	1.5	1.0	2.0	0.685*
Pain in and around the eyes	13.2	12.0	14.5	0.461
Pain in the jaw joints while opening the mouth side	0.8	0.5	1.0	1.000
Sharp shooting pain across the face and cheeks	0.5	1.0	0.0	0.499*
Pain in the jaw Joint(s) when chewing	1.2	1.0	1.5	0.686*
Pain in and around the temples	21.5	19.5	23.5	0.330
Tenderness of the muscles at the side of the face	1.5	1.5	1.5	1.000*
Prolonged burning sensation in the tongue or other parts of mouth	0.5	0.5	0.5	1.000*
Number of subjects with multiple symptoms(2)	5.5	6.5	4.5	0.380

CDE = Community dwelling elderly; IE = institutionalized elderly

[#] p-values for independent chi-square tests; comparisons between CDE and IE groups; level of significance adjusted to 0.01 because of the multiple comparisons performed

* >20% of cells have expected count less than 5, therefore Fisher Exact test was used

^{##} p-value for chi-square test; comparison between CDE and IE groups

Table 3. Description of pain characteristics among community dwelling and institutionalized elderly groups

<i>Pain characteristics (%)</i>	<i>Overall n=400</i>	<i>CDE n=200</i>	<i>IE n=200</i>	<i>p</i>
First pain episode				
Less than 3 months	40.8	45.0	36.5	0.001
More than 3 months	41.7	44.5	39.0	
Do not know	17.5	10.5	24.5	
Time experienced pain during last month (days)				
1 to 5	44.8	39.5	50.0	0.002
6 to 15	25.2	33.0	17.5	
16 or more	30.0	27.5	32.5	
Duration (hours)				
Less than 1 hour	67.5	66.0	69.0	0.377
1 to 4	23.5	23.0	24.0	
More than 5	9.0	11.0	7.0	
Severity				
Mild	65.2	64.5	66.0	0.933
Moderate	21.8	22.5	21.0	
Severe to very severe	13.0	13.0	13.0	
Pain scale rating (for past 4 weeks)				
0 to 3	81.8	86.0	77.5	0.063
4 to 6	14.0	10.0	18.0	
7 to 10	4.2	4.0	4.5	

CDE = Community dwelling elderly; IE = institutionalized elderly

*p-values for independent chi-square tests; comparisons between CDE and IE groups

the pain severity was mild (65.2%) and the pain scale ratings ranged from 0 to 3 (81.8%). There were no statistically differences in pain duration, severity or pain ratings between the elderly groups ($p > 0.05$). 27.5% of community dwelling and 30.0% of institutionalized elderly reported being bothered by widespread pain symptoms (moderate amount/quite a bit/extreme amount), with no statistical difference between groups ($p = 0.581$).

Around one third (31.2 %) of the elderly had sought professional treatment for OFP symptoms. Significantly more community dwelling elderly (36.5%) than institutionalized

elderly (26.0%) had sought professional care ($p = 0.023$). The majority (64.0%) had sought treatment from a medical doctor, 38.4% from a dentist and 7.2% had consulted a TCM practitioner. More community-dwelling (15.5%) than institutionalized elderly (8.5%) had sought care from a dentist ($p = 0.031$). A third (35.5%) of the elderly had taken medication for pain. Significantly more community dwelling (42.5%) than institutionalized elderly (28.5%) had taken pain medication ($p = 0.003$). Among those who had used pain medication, the majority had used western-style medicine (89.4%) and only a small proportion had taken

traditional Chinese medicine (13.4%). Significantly more community dwelling than institutionalized elderly had taken western-style medicine (38.0% versus 25.5%) and TCM (7.0% versus 2.5%) respectively ($p < 0.05$).

Those elderly people who had sought professional treatment for OFP had significantly higher disability scores obtained using the MOFDS (mean=9.18; SD=8.02; range 0-35) than those who had not sought treatment (mean=6.75; SD=6.61, range 0-31) [$p=0.003$]. In addition, the elderly people who reported chronic pain symptoms (≥ 3 months) also had significantly higher disability scores (mean=9.05; SD= 7.68; range 0-35) than those with acute pain (mean=6.25; SD=6.54, range 0-29) [$p < 0.001$]. There was also a significant association between pain intensity and disability. Linear regression showed that for every unit increase in severity, there was an increase of 1.13 in the disability score ($p < 0.001$). The internal consistency of the translated disability scale, as assessed by the Cronbach's

alpha, was 0.90. Thus, the construct validity and reliability of the translated MOFDS were supported.

Pain disability scores obtained from the MOFDS was significantly higher in the institutionalized elderly (mean=8.75; SD=7.72; range 0-35) than the community dwelling elderly group (mean= 6.27; SD= 6.32; range 0-34) [$p < 0.001$] indicating greater pain-related disability in the institutionalized elderly group.

Impact of orofacial pain

Table 4 shows the distribution of responses to the OHIP-14 items for community dwelling and institutional elderly groups, with "very often" or "fairly often" used as the response cut-off to identify participants who experienced negative impacts. The data indicated that the elderly participants with OFP symptoms frequently reported adverse impacts on their daily life. The adverse effect was greater in the institutionalized elderly compared with the

Table 4. Percentage of negative impacts (very/fairly often) in response to OHIP-14, OHIP-14 and GHQ-12 summary scores in community dwelling and institutionalized elderly groups

<i>OHIP-14 (Negative impacts, %)</i>	<i>CDE n=200</i>	<i>IE n=200</i>	<i>p</i>
Functional limitation			
difficulty chewing	22.5	34.5	0.008 [#]
trouble pronouncing	5.0	9.5	0.083 [#]
Physical pain			
uncomfortable to eat	15.0	24.5	0.017 [#]
sore spots	10.0	18.5	0.015 [#]
Psychological discomfort			
worried	7.0	16.0	0.005 [#]
miserable	6.0	14.0	0.008 [#]
Physical disability			
less flavor	12.0	20.5	0.021 [#]
interrupt meals	13.5	11.5	0.545 [#]
Psychological disability			
upset	7.5	12.0	0.129 [#]
embarrassed	3.5	9.5	0.015 [#]
Social disability			
avoided going out	2.0	8.0	0.006 [#]
irritable	0.5	6.5	0.001 [#]
Handicap			
unable to function	3.5	11.0	0.004 [#]
unable to work	4.5	10.0	0.034 [#]
<i>OHIP-14 summary score, mean (SD)</i>			
additive			
simple count	10.06(10.47)	12.93(12.43)	0.013 [*]
	1.13(2.23)	2.06(3.15)	0.001 [*]
<i>GHQ-12 summary score (%)</i>			
0	90.0	77.0	0.002 ^{##}
1-3	6.0	12.0	
4-12	4.0	11.0	

CDE = Community dwelling elderly; IE = institutionalized elderly

[#] p-values for independent chi-square tests; comparisons between CDE and IE groups; level of significance adjusted to 0.01 because of the multiple comparisons performed.

^{*} p-values for independent sample t-tests; comparison between CDE and IE groups.

^{##} p-value for chi-square test; comparison between CDE and IE groups.

community dwelling elderly for six of the 14 statements ($p < 0.01$, multiple comparisons made). The mean OHIP summary scores (additive and simple counts methods) were also significantly higher in the institutionalized elderly group ($p < 0.013$).

Orofacial pain symptoms in the elderly were associated with high GHQ-12 scores in a relatively small number of the elderly participants (Table 4). Psychological distress (GHQ-12 score ≥ 4) was more common among the institutionalized elderly (11%) than the community dwelling elderly (4.0%, $p = 0.002$).

Discussion

This survey provided new information on the experience of OFP symptoms and related disability and psychosocial impact in community-dwelling and institutionalized elderly Chinese people in Hong Kong. Participants were recruited at social centres for the elderly and homes for the aged throughout Hong Kong. In order to achieve a representative sample of community dwelling and institutionalized elderly, random sampling was used to select the social centres and homes for the aged. For the study to be feasible, active participation and cooperation of the selected centres and homes was required. Only one of the selected social centres refused to participate, thus, the source of community dwelling participants was considered broadly representative. However, many of the elderly homes contacted declined to participate. The main reason was that the carers were very protective of the institutionalized elderly, many of whom were frail and debilitated, and did not wish to disrupt their routine especially as no treatment was being offered. Thus, the institutionalized elderly participants may not have been representative. Nonetheless, in the homes and centres that did take part, very few elderly people who were invited to take part in the study declined to participate. Thus, the sample should be considered as a convenience one and caution exercised when interpreting the findings as they may not necessarily be generalizable to the elderly population of Hong Kong who have OFP symptoms. It should also be noted that whilst there were face-to-face interviews, no clinical assessment took place. Therefore, it is possible that some of the pain symptoms described by the elderly participants may have been misinterpreted. The possibility of interviewer bias should also be considered. Acquiescence responding may occur when participants are tempted to respond the way the interviewer may expect (Bowling, 2009). To reduce the potential response bias, the interviewer was not involved in any aspect of the general or dental care of the participants. There were also some differences in socio-demographic profile between the community dwelling and institutionalized elderly study groups viz. the institutionalized were older and received more social assistance, as would be expected. Such differences have been noted previously between community-dwelling and institutionalized elderly Hong Kong people (McMillan *et al.*, 2003). However, the participants as a whole were generally of low socio-economic status which is in agreement with the known link between OFP experience and deprivation in populations worldwide (Aggarwal *et al.*, 2003).

Toothache was the most common OFP symptoms in both community-dwelling and institutionalized elderly groups and pain in and around the temples and eyes was also common. This pattern mirrors previous findings in elderly community-dwelling Hong Kong Chinese (Luo *et al.*, 2007). There was no difference in the distribution of symptoms between groups which was unexpected given that the institutionalized elderly in Hong Kong have been shown to have a higher prevalence of dental disease and more untreated dental conditions (McMillan *et al.*, 2003). However, most OFP symptoms investigated were of non-dental origin, which could explain, at least in part, the lack of difference in OFP symptoms between the community-dwelling and institutionalized elderly. The characteristics of pain symptoms were also similar in community-dwelling and institutionalized elderly groups. Chronic OFP symptoms (≥ 3 months) were common in both groups although it is noteworthy that a substantial number of participants, in particular the institutionalized elderly, could not remember when the pain first occurred. Thus, it is possible that chronic pain experience may have been underestimated, although multiple pain problems which are an indicator of chronic pain (Ng *et al.*, 2002) were relatively rare.

Around one third of the elderly people sought professional care for OFP symptoms which is comparable with previous studies of elderly Chinese people and lower than reports in western populations (Locker and Grushka, 1987; Luo *et al.*, 2007; Macfarlane *et al.*, 2003; McMillan *et al.*, 2006). Fewer institutionalized elderly sought professional care which may be indicative of greater barriers, physical and financial, to obtaining treatment in this frail elderly group. The number of people who had sought care from a dentist was lower than that reported previously in the United Kingdom (38% versus 51%; Macfarlane *et al.*, 2003).

Pain and disability are strongly associated and instruments such as the Pain Disability Index have been used to measure pain-related disability in pain conditions throughout the body (Gronblad *et al.*, 1993). Recently, the MOPDS, an OFP-specific disability measure that is considered to reflect the impact of OFP conditions and range of pain-related disabilities, has been developed and tested in the United Kingdom (Aggarwal *et al.*, 2005). In order to use the MOPDS in elderly Chinese people, it was necessary, first of all, to translate and validate the measure. With the knowledge that a health-related instrument should be culturally relevant (Allison *et al.*, 1999), care was taken in the translation and validation process. Four statements were excluded from the Hong Kong Chinese version because they were deemed inapplicable in elderly Chinese people. The internal consistency of the translated 28-item measure was similar to the original MOPDS (Aggarwal *et al.*, 2005) and there was also good reliability and construct validity. The measure revealed greater pain-related disability in the institutionalized elderly although pain characteristics were similar between community-dwelling and institutionalized elderly OFP sufferers. Thus, the MOPDS demonstrated the broader impact of OFP in terms of level of disability. This finding is pertinent in the management of OFP symptoms in elderly Chinese people, particularly those who are institutionalized. The MOPDS appears to be a valuable indicator of OFP-related disability in Chinese elders.

The OHIP-14 is increasingly being used to measure the impact of OFP on oral health-related quality of life (John *et al.*, 2008; Luo *et al.*, 2007; Murray *et al.*, 1996). The present findings indicated that OFP symptoms in the elderly had a significant adverse effect on functional and psychosocial well-being. The OHIP scores in the community-dwelling groups were comparable with a previous study in elderly community dwelling people with OFP (Luo *et al.*, 2007) whereas the scores in the institutionalized group were significantly higher indicating an even greater compromise in quality of life. It is noteworthy that when the OHIP data were compared with those of a population-based oral health survey of elderly Chinese people in Hong Kong (Hong Kong Oral Health Survey, 2002), the elderly with OFP reported more frequent negative impacts in all seven domains of the OHIP.

Orofacial pain symptoms were associated with significant psychological distress, as measured with the GHQ-12, in a number of the elderly people, especially the institutionalized, which supports previous studies in western and Chinese people (Luo *et al.*, 2007; Macfarlane *et al.*, 2002b). Higher levels of psychological distress are relatively common in OFP sufferers particularly when there is co-morbid widespread musculoskeletal pain (McBeth *et al.*, 2001). Such features should be taken into account in the holistic approach to treatment of OFP.

Whilst the limitations of the study have been described, to our knowledge, it is the first to investigate and compare OFP symptoms and associated disability and psychosocial impact in community dwelling and institutionalized elderly Chinese people. Orofacial pain symptoms were associated with significant disability and adversely affected quality of life, especially in the institutionalized elderly. Given the broad impact of OFP in elderly Chinese people and the low rate of professional care seeking, there is a need to improve access to professional care and health-related outreach services generally for elderly people in Hong Kong.

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