ORAL DISEASES

**Oral Diseases (2011) 17** (Suppl. 1), 99–104. doi:10.1111/j.1601-0825.2011.01795.x

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## ORIGINAL ARTICLE

# An international survey of oral medicine practice: Proceedings from the 5th World Workshop in Oral Medicine

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**OBJECTIVES: (i) To define the current state of oral medicine clinical practice internationally, and (ii) to make recommendations for future modeling of the practice of oral medicine.**

**MATERIALS AND METHODS: A survey was designed by an international panel of oral medicine experts to assess the current state of oral medicine practice internationally. The survey was sent to oral medicine experts across the world, and responses were electronically stored and analyzed using descriptive statistics.**

**RESULTS: Two hundred respondents completed the survey representing 40 countries from six continents. The two most common settings for an oral medicine practice were in a hospital and a dental school. More than 88% of respondents considered management of oral mucosal disease, salivary dysfunction, oral manifestations of systemic diseases, and facial pain in the definition of oral medicine.**

**CONCLUSIONS: (i) Oral medicine clinicians diagnose and manage a wide variety of orofacial conditions; (ii) There are significant differences in the definition of oral medicine clinical practice from country to country; (iii) India has the largest expansion of oral medicine services as defined by escalating numbers of clinicians within the specialty as compared with other countries; (iv) oral medicine practitioners have a wide range of professional responsibilities.**

*Oral Diseases* (2011) **17** (Suppl. 1), 99–104

**Keywords:** World Workshop; oral medicine; clinical practice

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Received 13 December 2010; revised 05 January 2011; accepted 07 January 2011

## Introduction

Oral disease is a major global public health issue, and may represent up to 10% of public health expenditure in industrialized nations (Petersen *et al*, 2005; Watt, 2005). Global and regional patterns of oral disease reflect demographic risk profiles, including socioeconomic and environmental factors (Petersen *et al*, 2005; Ramirez *et al*, 2010).

Emerging evidence suggests a relationship between chronic oral disease and systemic disease, including cardiovascular diseases, cancer, respiratory disease, and diabetes (Mignogna and Fedele, 2006; Griffin *et al*, 2009). Oral medicine specialists (OM specialists) provide clinical care to patients with a wide variety of orofacial conditions, including oral mucosal diseases, orofacial pain syndromes, chemosensory disorders, salivary gland disorders, oral manifestations of systemic diseases as well as providing, in some countries, dental care for medically complex patients (Miller *et al*, 2001). The

need for OM specialists has been well-documented, and clinical services provided by these specialists often have a profound impact on the overall health and quality of life for many patients (Sardella *et al*, 2007; Farah *et al*, 2008; Harrison and O'Regan, 2010; Riordain and McCreary, 2010; Riordain *et al*, 2010).

The objectives of this study were to: (i) describe the present status of oral medicine practice amongst oral medicine experts on a global scale and compare oral medicine practice in different countries, and (ii) make recommendations, irrespective of specialty, for future modeling of the practice of oral medicine, focusing on excellence for patient care.

## Materials and methods

An international panel of oral medicine experts was selected to design an online survey to assess the present status of global oral medicine practice. The initial draft of the survey was distributed for review to consultants across several geographical regions with expertise in oral medicine practice. The final version of the survey was then reviewed and approved by the Carolinas Medical Center Institutional Review Board [Charlotte, NC, United States of America (USA)] under expedited review prior to distribution. To enable accurate distribution of the survey and to obtain a representative sample of global oral medicine experts, contact was made with international and national oral medicine organizations for aid in distributing the survey, including the European Association of Oral Medicine (EAOM) and American Academy of Oral Medicine (AAOM). In addition, where a national oral medicine society was not identified in any particular region, key personal contacts were identified. Upon receiving the email invitation to participate in the survey, the individual was instructed to reply to a specific administrative email address if (s) he chose to complete the survey. Upon receipt of the affirmative email response, the survey administrator provided a username, password and email address to the individual to complete the survey. The individual would then log on to a secure website using the information provided to complete the survey in the English language.

The survey was formulated with MEDVIEW, which was developed by The Institute of Odontology, Göteborg University, and Department of Computing Science, Chalmers University of Technology, Sweden. In principle, this program generates a database based on formalized and harmonized criteria, where information can be retrieved, visualized, and analyzed (Jontell *et al*, 2005).

The responses were collated electronically and held securely at the Oral Medicine Department, Institute of Odontology, Sahlgrenska Academy, Göteborg University, Sweden. The survey was distributed in three phases from March to October 2010, and simple descriptive statistics were employed for data analysis. Analyses were performed with the SAS statistical program (SAS Institute Inc., Cary, NC, USA).

## Results

A total of 286 individuals responded to email invitations to participate in the survey and usernames and passwords were distributed. A total of 200 respondents completed the survey representing 40 countries from six continents (86 respondents did not complete the survey after receiving a username and password). Figure 1 lists the 16 countries that had at least three respondents, with 10 or more respondents from Brazil, Italy, The Netherlands, Sweden, United Kingdom (UK), India, and the USA.

*Practitioner characteristics*

The mean age (s.d.) of oral medicine practitioners was 46.0 (11.2) years with an average of 16 (10.5) years in practice. The average number of hours spent in practice per week was 16 (11.2) h. When asked how many colleagues practice with you in a hospital setting, the mean figure reported was 5.6 (5.5). Similarly, the mean number of full-time equivalent, fully trained OM specialists reported was 2.5 (2.1).

There was a wide range of oral medicine practitioner age by country with a mean age of less than 40 years in Australia, India, Thailand, and Italy. Countries with a mean age above 50 years included The Netherlands, USA, Sweden, Spain, and Israel. Respondents from Brazil, India, Israel, and Croatia reported more than 20 h per week in practice with India reporting a high of 27 h per week.

*Oral medicine training and qualifications*

Survey participants reported obtaining oral medicine training in 31 different countries, and when asked 'Do you hold a formal qualification in oral medicine?', 38 (19%) reported no, 51 (26%) reported an oral medicine fellowship from a University or Royal College, 21 (11%) had an MSc, 37 (19%) had a PhD, and 51 (26%) had a fellowship or equivalent by a board examination. In response to the query 'Are you certified in oral medicine?', 63 (32%) reported no, 115 (58%) reported yes with examination certification after formal training, and 20 (10%) reported yes with examination certification without formal training. In response to the query 'How

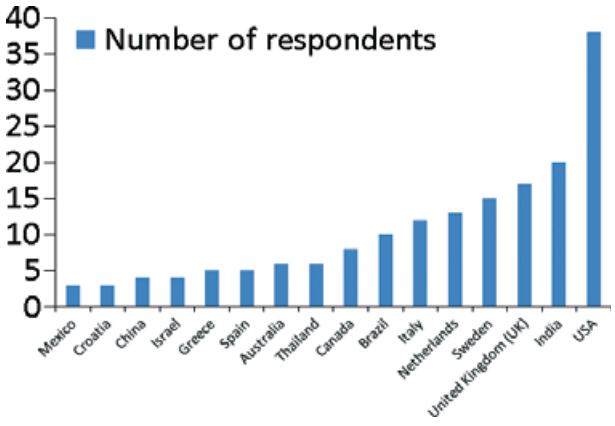


**Figure 1** Number of respondents by country

was your oral medicine training funded?', 89 (45%) responded that no funding was obtained and training was self-funded/tuition, whereas 108 (55%) reported training was funded through government agencies or hospital. Countries with greater than 80% of trainees receiving support from the government or hospital included China, UK, and Croatia. Countries with 80% or more of training self-funded/tuition included Australia, Greece, India, and Spain.

*Professional responsibilities*

The percentage of time spent with administrative duties was reported as less than 25% for 163 (81%) of respondents. Teaching duties of less than 25% of the time was reported by 141 (71%) of respondents. Time spent with research was the least with less than 25% of time reported by 167 (84%) of respondents. The most time was spent with patient care with less than 25% of time reported by 51 (25%) of respondents, whereas more than 50% of time was spent with patient care by 78 (39%) of respondents.

*Oral medicine practice characteristics*

The two most common settings for oral medicine practice were hospitals and dental schools with 40% spending less than 10% in both of these locations, whereas 34% and 38% more than 25% of the time. The medical school setting was the least common location for oral medicine practice with 90% of respondents noting that less than 10% of patient care took place in this type of setting. Similarly, 85% reported less than 10% of time spent in a public health clinic setting. The private practice (non-dental/medical school or hospital) setting was utilized by 66% of respondents less than 10% of the time, whereas 14% of respondents spent more than 25% of their time in a private practice.

Sources of funding for patient care were also assessed. Government funding for more than 50% of patients seen was reported by 74 (37%) of respondents. The next most common source for patient reimbursement was by self-pay with no insurance – 45 (23%) reported this occurred more than 50% of the time. Medical insurance reimbursement by more than 50% of patients was reported by only 31 (16%) of respondents and dental insurance even less common with 14 (7%) respondents reporting more than 50% of their patients paid via dental insurance reimbursement. The highest percentage of government-funded patient care was reported in Sweden, UK, and Croatia, whereas this was the least likely source in Spain, India, and Israel.

*Definition of oral medicine*

More than 88% of respondents considered management of oral mucosal diseases, salivary dysfunction, oral manifestations of dermatoses, HIV, gastrointestinal, and rheumatic disease, and facial pain in the definition of oral medicine (Figure 2). Fewer considered management of chemosensory disorders, general dentistry for medically complex and management of dental and orofacial problems in patients with physical and mental disabilities in the definition of oral medicine.

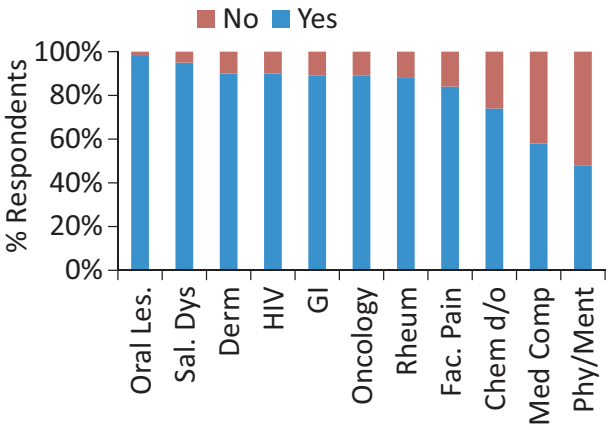


**Figure 2** Definition of oral medicine by patient category. This figure represents the types of orofacial conditions that constitute the definition of oral medicine as per survey respondents. For example, in the category of oral lesions, approximately 98% of survey respondents stated that diagnosis and management of this condition is within the definition of oral medicine. By contrast, approximately 48% of survey respondents stated that management of orofacial problems associated with physical and mental disabilities are within the definition of oral medicine. Oral Les., oral lesions; Sal Dys., salivary dysfunction; Derm, oral manifestations of dermatoses; HIV, oral manifestations of human immunodeficiency virus; GI, oral manifestations of gastrointestinal disease; Rheum, oral manifestations of rheumatologic disease; Fac. Pain, orofacial pain; Chem d/o, chemosensory disorders; Med Comp, medically complex or special needs patients provided with dental care; Phy/Ment, facial problems related to physical/mental disabilities

There was significant variability in the definitions of oral medicine between different countries. Less than 60% of respondents from China, Greece, Israel, and Sweden considered management of facial pain in the definition of oral medicine. Similarly, less than 60% of respondents from China, Greece, Italy, Mexico, The Netherlands, and Sweden defined oral medicine as the management of patients with chemosensory disorders. A wider range of responses were found regarding whether general dentistry for the medically complex patient is considered in the definition of oral medicine, with less than or equal to 40% of respondents from Greece, Mexico, The Netherlands, UK, China, and Australia reporting a yes to this question (Figure 3).

The widest variability in the definition of oral medicine was with management of orofacial problems in patients with physical and mental disabilities. Sixty percent or more of respondents from Canada, India, Spain, Sweden, and the UK agreed that this patient population is part of the definition of oral medicine, whereas 50% or less of respondents from other countries agreed with this definition.

As a follow-up to the definition of oral medicine, survey participants were asked to estimate the percentage of their patient population who had specific types of oral conditions (Figure 4). The most common types of conditions seen in oral medicine practice were mucosal lesions with more than 40% of respondents reporting this condition in their practice more than 25% of the time. Twenty-five percent of respondents reported facial pain patients in their practice more than 25% of the

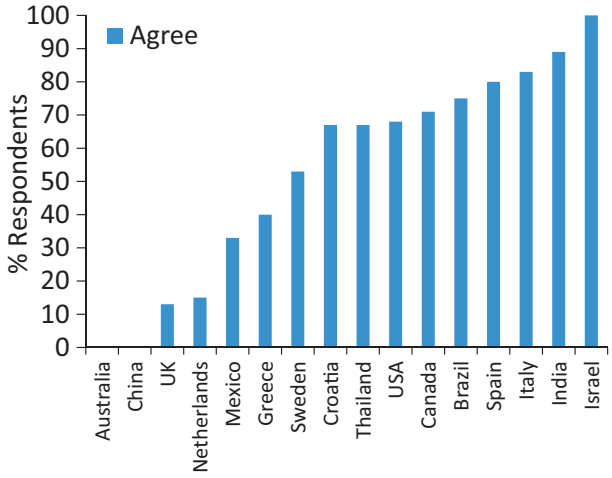


**Figure 3** Response to general dentistry for medically complex patients by country in the definition of oral medicine

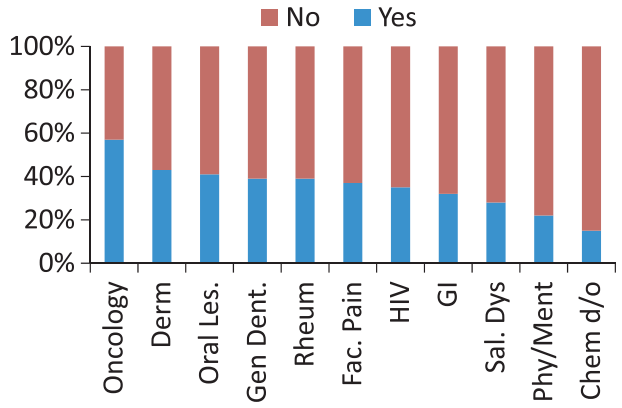


**Figure 5** Utilization of multidisciplinary clinics by type of oral medicine patient. This figure represents the percentage of survey respondents who utilize multidisciplinary clinics for management of specific patient populations in oral medicine. For example, in the category of oncology, approximately 57% of survey respondents stated they utilize multidisciplinary clinics for management of these patients. By contrast, approximately 15% of survey respondents stated they utilize multidisciplinary clinics for management of patients with chemosensory disorders. Dermatosis, oral manifestations of dermatoses; Oral Les., oral mucosal lesions; Gen Dent., dentistry for medically complex or special needs patients; Rheum, patients with rheumatologic disease; Fac. Pain, orofacial pain; HIV, patients with human immunodeficiency virus; GI, patients with gastrointestinal disease; Sal Dys., salivary dysfunction; Phy/Ment, patients with physical and mental disabilities; Chem d/o, chemosensory disorders

time, whereas more than 25% of time was spent with management of oral manifestations of dermatoses. Fifteen percent of respondents stated that greater than 25% of their time was devoted to providing management of oral manifestations of dermatoses as well as dentistry for medically complex patients.

*Use of multidisciplinary clinics*

The use of multidisciplinary clinics for different patient populations was queried on the survey as well (Figure 5). More than 50% of respondents reported participating in a multidisciplinary clinic for oncology patients. Less than 30% of respondents reported the presence of multidisciplinary clinics for patients with salivary dysfunction, physical/mental disabilities, and chemosensory disorders.

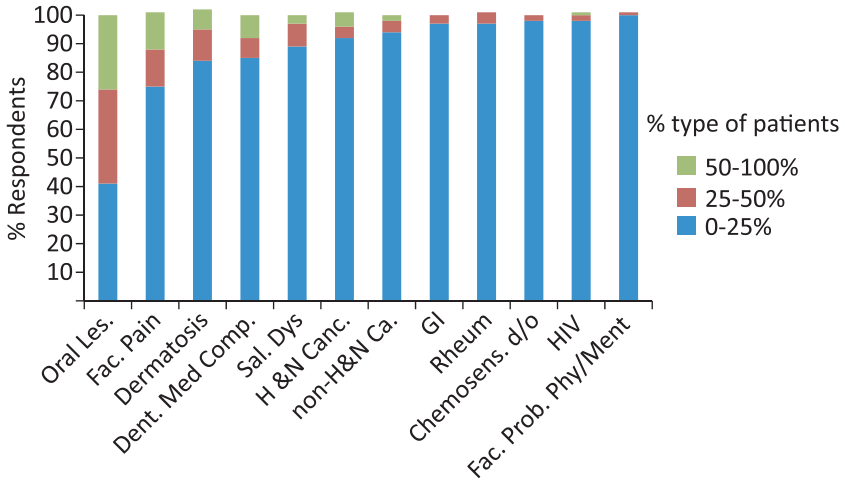


**Figure 4** Percentage of patients with specific orofacial conditions in oral medicine practice. This figure represents the types of orofacial conditions that constitute oral medicine clinical practice as per survey respondents. For example, in the category of oral lesions, approximately 40% of survey respondents stated that diagnosis and management of this condition constitutes 0–25% of their clinical practice, approximately 35% of survey respondents stated this condition constitutes 25–50% of their clinical practice, and approximately 25% of survey respondents stated this condition constitutes 50–100% of their clinical practice. By contrast, approximately 100% of survey respondents stated that management of orofacial problems associated with physical and mental disabilities constitutes only 0–25% of clinical oral medicine practice. Oral Les., oral lesions; Fac. Pain, orofacial pain; Dermatosis, oral manifestations of dermatoses; Dent. Med Comp, medically complex or special needs patients provided with dental care; Sal Dys., salivary dysfunction; H&N Canc., head and neck cancer; non-H&N Ca., oral problems related to cancer outside of the head and neck; GI, oral manifestations of gastrointestinal disease; Rheum, oral manifestations of rheumatologic disease; GI, oral manifestations of gastrointestinal disease; Rheum, oral manifestations of rheumatologic disease; Chemosens. d/o, chemosensory disorders; HIV, oral manifestations of human immunodeficiency virus; Fac. Prob. Phy/Ment, facial problems related to physical/mental disabilities

*Follow-up/continued care of patients*
When asked what percent of patients in oral medicine practice have follow-up visits, 16% reported that less than 25% of patients are seen on follow-up, whereas 32% of respondents reported greater than 50% of patients had follow-up visits. The highest levels of follow-up with more than 70% of patients were reported in Australia, Israel, UK, USA, and Croatia, with the highest level of reported follow-up in the USA. The lowest levels of follow-up, with 25% or less of respondents, was found in Spain and Greece reporting greater than 50% of patients had follow-up visits.

## Discussion

This survey is the first recorded attempt to analyze the practice of oral medicine on a global scale. One major finding is that oral medicine practitioners are involved in the diagnosis and management of a wide variety of orofacial conditions. However, there are significant differences in the definition of oral medicine clinical practice. More than 88% of survey respondents defined the practice of oral medicine as diagnosis and management of oral lesions, salivary gland disorders, and oral manifestations of dermatologic, gastrointestinal, and HIV diseases and facial pain, which are consistent with previous reports that have attempted to delineate the scope of services provided by OM specialists – albeit at a national, rather than international level (Miller *et al*, 2001; Farah *et al*, 2008; Harrison and O'Regan, 2010; Riordain *et al*, 2010).

Nearly 50% of respondents consider provision of dental treatment for medically complex patients within the scope of oral medicine practice. There are significant regional variations concerning the issue of whether treatment for the medically complex is within the scope of oral medicine practice, (e.g. the UK where the regulatory authority, the General Dental Council, has recently defined a new specialty of Special Care Dentistry).

It is difficult to determine if the aforementioned conditions are indicative of a higher prevalence of these diseases in certain countries, differences in training among countries, or if it represents the conditions oral medicine clinicians select as part of their practices. Nevertheless, a more concise definition of oral medicine practice would be beneficial to help specifically determine scope of practice and to educate healthcare professionals and patients as to what services oral medicine practitioners are willing and able to provide.

The diversity of oral medicine practice, as interpreted through the responses from this survey, is not surprising in view of the heterogeneity of settings and systems of health care across the world and differences in training programs. Overall, India was noted to have the largest increase in the number of oral medicine services as defined by escalating numbers of clinicians within the specialty as compared with other countries. This could be due to the role of the oral medicine practitioner serving as an initial point of health screening for patients attending their many dental schools and hospitals throughout the country. Currently, the Indian Academy of Oral Medicine and Radiology (IAOMR) reports having more than 1100 members, which includes qualified full-time oral medicine consultants who work in academic institutions and post graduate trainees (personal communication).

With regard to professional responsibilities, at least 70% of survey respondents have senior administrative and/or teaching roles within their institutions in addition to their clinical responsibilities, which have been previously identified in the literature (Atkin, 2006).

Another finding revealed that 84% of respondents spent less than 25% of their overall work time engaged in research activities. The development of practice-based dental research networks, which were designed to carry out clinical trials to solve issues directly related to clinical practice, has given clinicians an opportunity to increase their involvement in oral health and dental research (Mjor, 2007). The results of our survey demonstrate that at this time, a majority of oral medicine clinicians are not engaged in concerted research activities, which may have important implications on the advancement of research and clinical care in various aspects of oral medicine.

There were limitations to this study that could potentially have affected survey outcomes. Overall, the number of survey responses was small, and the results may not accurately reflect the true nature of international oral medicine practice. Referral patterns (e.g. type of practitioner referral to oral medicine), and percentage of total salary as it relates directly to oral medicine practice, were not addressed by this survey. This information might have provided more data helpful for accurately describing the current state of oral medicine practice and providing recommendations for future modeling.

Several recommendations regarding future, more detailed surveys of oral medicine practice internationally may be drawn from this survey. First, an effort should be made in future surveys to obtain a more inclusive international census definition of oral medicine practice and its potential as a full-time clinical practice, rather than chiefly a part-time practice by specialists in academic institutions. It is also reasonable to develop an international study to determine the effect of the presence of a trained oral medicine practitioner on the level of care provided for patients with a variety of diseases including oral mucosal disease, facial pain disorders, salivary gland disease, as well as oral health care for medically complex patients. In addition, it is advisable to develop a global strategy to promote the clinical practice of oral medicine amongst patients and all other healthcare professionals to increase awareness of the specialty. Future efforts at defining the scope of the field and its practice on a global scale could be utilized to incentivize dental students to pursue oral medicine as a career.

## Author contributions

Eric T. Stoopler has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

Penelope Shirlaw has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

M Arvind has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

Lucio Lo Russo has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

Cristina Bez has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

Scott De Rossi has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

Adi Garfunkel has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

John Gibson has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

Hongwei Liu has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

Qing Liu has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

Kobkan Thongprasom has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

Qintao Wang has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

Martin Greenberg has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

Michael Brennan has made substantial contributions to the research design, acquisition and analysis of data, and to drafting the paper and revising it critically.

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