

## Post-residency fellowship training in Maxillofacial Prosthetics is needed in Pakistan

Syed Murtaza Raza Kazmi, Farhan Raza Khan

### Abstract

**Objectives:** To determine the spectrum of maxillofacial prosthetics services in Pakistan, to explore the need of a relevant fellowship training programme in the country, and to determine whether they contribute to tumour board of head and neck oncology.

**Method:** The cross-sectional online survey was conducted from March to June 2020 and comprised all prosthodontists registered on the portal of the Pakistan Prosthodontics Association. Using Google Forms, the survey questionnaire was sent via email. The survey form was self-generated. Data was analysed using SPSS 23.

**Results:** Of the 84 prosthodontists approached, 44(52.4%) responded. The overall median age was 39 years (range: 30-60 years), and 34(77.3%) subjects were males. Overall, 19(43.2%) subjects were from Punjab, 14(31.8%) Sindh, 6(13.6%) Khyber Pakhtunkhwa, and 5(11.4%) Islamabad. None of the participants had received any formal accredited training in maxillofacial prosthetics. Although 37(84.1%) respondents reported providing maxillofacial prosthetics services to their patients as they had learnt it during their prosthodontics residency. Only 3(6.8%) respondents were contributing to head and neck tumour board. An overwhelming majority 42(95.5%) stressed the need of structured training programmes in maxillofacial prosthetics.

**Conclusion:** There is no accredited maxillofacial prosthetics training centre and an obvious lack of prosthodontists with formal training in the professional area. The participation of prosthodontists in the head and neck tumour board was negligible.

**Keywords:** Prosthodontics, Maxillofacial prosthetics, Maxillectomy, Cleft lip, Cleft palate. (JPMA 70: S-4 [Suppl. 1]; 2021)

### Introduction

The defects of head and neck can be broadly divided into congenital and acquired. The latter may be due to trauma, surgery, disease and infection etc.<sup>1,2</sup> Both categories of defects can be managed either conservatively using prosthetic means, or definitively with the help of surgical reconstruction.<sup>2,3</sup> The surgical reconstruction is considered the definitive treatment modality, but there are situations in which prosthetic management is unavoidable.<sup>4,5</sup> It is established that prosthetic management could yield predictable outcomes in situations where surgical intervention could not achieve the desired results amongst cleft repair patients.<sup>6</sup> The maxillofacial prosthetics (MFP) is the super-specialty of prosthodontics, which is involved in the conservative rehabilitation of patients with anatomical defect, disability or developmental disorders in the head and neck area.<sup>2,4,7</sup>

The history of artificial body parts, including limbs and facial structure replacement, dates back to ancient era.<sup>8</sup> Unfortunately, there is no global standardisation in the

teaching, training and identification of MFP services both at the undergraduate and postgraduate levels, and, hence, MFP as a discipline does not have uniform recognition.<sup>9,10</sup>

MFP requires at least one year of additional training after prosthodontics residency.<sup>11</sup> Due to lack of exit-level qualification or boards exam, the quality of MFP training standards vary widely. Wolfaardt<sup>9</sup> surveyed the quality of MFP training offered in various countries, and reported lack of dedicated faculty and structure for MFP training in different countries, including Australia, South Africa, Sweden and the Netherlands. Nevertheless, these countries have now improved their MFP training standards.

Pakistan, being a developing country, has many challenges, including limited resources, huge disease and trauma burden.<sup>12</sup> A substantial amount of MFP services remain unmet. Unfortunately, MFP has not yet obtained its due recognition worldwide, despite the fact that it has the potential to act as a bridge between dentistry and other medical disciplines related to patient rehabilitation. The current study was planned to determine the spectrum of MFP services offered in Pakistan, to explore the needs of MFP fellowship training programmes in the country, and to determine whether the local

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Department of Dental Surgery, Aga Khan University, Karachi, Pakistan.

**Correspondence:** Farhan Raza Khan. Email: farhan.raza@aku.edu

prosthodontists contribute to tumour board of head and neck oncology.

## Subjects and Methods

The cross-sectional online survey was conducted from March to June 2020 and comprised registered prosthodontists regardless of age, gender or professional experience. The survey was pre-designed by modifying the proforma used by Ariani et al.<sup>13</sup> After an approval of exemption from the institutional ethics review committee of the Aga Khan University (2020-4929-11001), the survey questionnaire was emailed using Google Forms to all the prosthodontists registered on the web portal of Pakistan Prosthodontics Association (PPA) which provided the relevant emails.<sup>14</sup> Three weekly reminders were mailed to all the participants, and no personal contacts were made to avoid the possibility of influenced results. Informed consent was an integral part of the proforma without which the form could not be submitted.

The proforma was divided into 4 sections: demographics, dental education and training, MFP training, services and practice, and the participants' recommendations and promotion of MFP as a super-specialty. The informed consent was integral part of the proforma, without which the form could not be submitted.

Personal identifiers, including name, license number, contact number etc., were neither taken nor reported. The information received was in password-protected soft files, and the database was only accessible by the research team and ethics committee.

Data was analysed using SPSS 23. Demographics of the

participants were noted. Categorical variables were reported as frequency and percentages, while quantitative variables were reported as mean  $\pm$  standard deviation (SD) / Median and interquartile range (IQR). Chi square / Fisher exact test was applied to determine whether MFP services were associated with gender or years of experience etc.  $P < 0.05$  was taken as statistically significant.

## Results

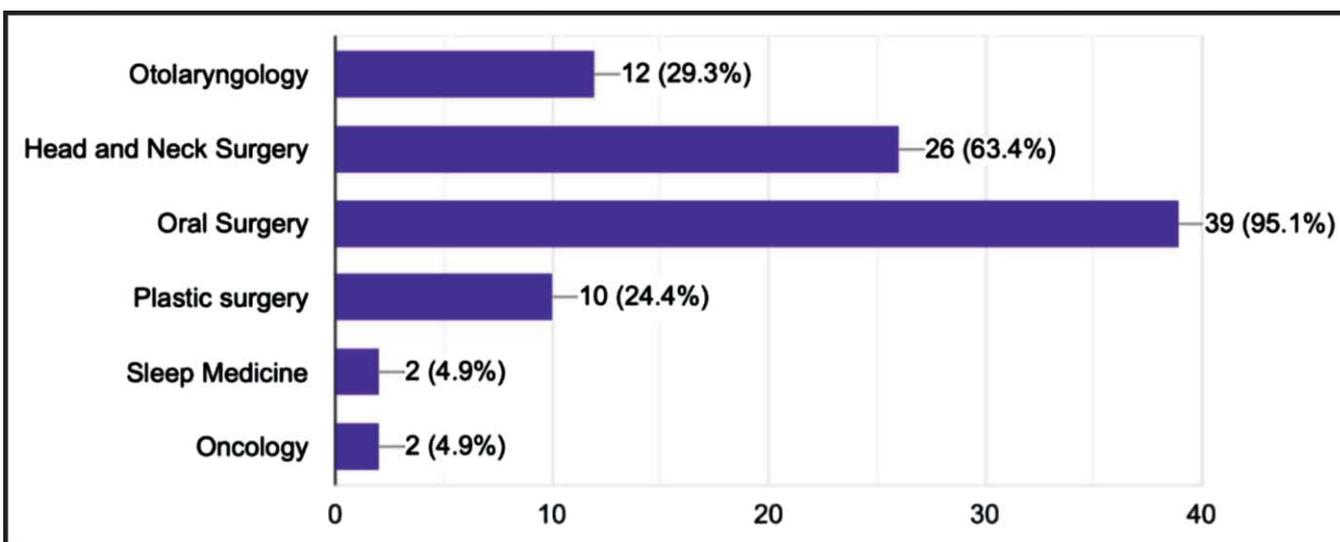
Of the 91 emails retrieved from the portal, 5(5.5%) addresses were duplicate and 2(2.2%) subjects had left the country. Of the 84(92.3%) prosthodontists approached, 44(52.4%) responded. The overall median

**Table-1:** Association of gender with working hours per day.

Gender	Working hours per day					Total	p-value
	2-4	5-6	7-8	9-10	N/A		
Female	1	5	1	0	3	10	0.001*
Male	5	12	14	3	0	34	
Total	6	17	15	3	3	44	

**Table-2:** Association of number of years since terminal qualification with involvement in the head and neck tumour board.

Number of years since terminal qualification	Head and neck tumour board		Total	p-value
	No	Yes		
< 5 years	18	1	19	0.07
5.1-10 years	12	0	12	
10.1-15 years	8	1	9	
>15.1 years	3	1	4	
Total	41	3	44	



**Figure:** Distribution of referrals from other specialties (n=40); \*multiple responses were allowed.

age was 39 years IQR 5 years (range: 30-60 years). Besides, 19(43.2%) respondents were from Punjab, 14(31.8%) Sindh, 6(13.6%) Khyber Pakhtunkhwa (KP), and 5(11.4%) Islamabad. There were 34(77.3%) males and 10(22.7%) females and the working hours were considerably less for females than males (Table-1).

Of the total, 31(70.5%) prosthodontists had graduated from public-sector institutions, 15(34.1%) reported employment in the government sector, including the armed forces, 36(81.8%) were locally trained, 30(68.2%) were involved in group practice, and 8(18.2%) had solo offices or private practices.

None of the participants had received any formal accredited training in MFP, but 37(84.1%) respondents reported providing MFP services to their patients as they had learnt it during their prosthodontics residency. Oral surgeons were the ones frequently making referrals for MFP (Figure).

Further, 3(6.8%) of the subjects were invited in the head and neck tumour board, and, of them, 1(33.3%) was a regular member of such a board (Table-2).

Majority 42(95.5%) of the subjects realised the need of structured training programmes in MFP, and thought the shortage of skilled clinicians was the primary reason why this super-specialty was being overlooked nationally.

## Discussion

Humans have always remained concerned with their aesthetics and function. The history of MFP is not very clear, but the remains discovered from ancient civilizations, especially Egyptian, have shown facial and auricular prosthesis.<sup>8</sup> King Justinian II (668-711 AD) is known to have received a prosthetic nose made up of gold.<sup>8</sup> This reflects that the rehabilitation of facial aesthetics and function have always remained imperative to human. Fortunately, most of the maxillofacial defects can be rehabilitated aesthetically and functionally using removable prostheses.<sup>4</sup> In small defects with adjacent teeth or adequate supporting alveolar ridges, a one-piece maxillary denture-obturator prosthesis is frequently all that is needed.<sup>4</sup>

Institutions in North America and United Kingdom are the flag-bearers of innovation and progress in most of the health science disciplines; MFP is no exception. The MFP training in UK was based on an unstructured apprenticeship, whereas the United States had structured one to two-year formal residency / fellowship. Other countries, including South Africa, Sweden and Australia,

have 3-4 year full-time salaried MFP residency positions.<sup>9,11,13,15</sup>

The response rate on MFP-based surveys have remained variable. Bonner et al. reported a response rate of 48.7% in South Africa,<sup>16</sup> whereas Sheets et al. had 60.4%.<sup>11</sup> A survey by Ariani et al.<sup>13</sup> had 41.6% response. In the present study, the response rate was a bit better at 52.4% but the overall participant count was low, owing to limited number of qualified prosthodontists in the country.

The present findings showed that most respondents were not satisfied with MFP services, mainly because of lack of formal MFP training resulting in a handicap in the spectrum of services followed by lack of infrastructure for MFP services, like laboratory, materials and trained technicians etc.. This is strikingly different from American prosthodontists who reported<sup>11</sup> that they were very satisfied with their MFP training and most of them spend one-fourth of their practice time in this area. The most common procedures performed by American MFP specialists were obturators, dental oncology, and mandibular resections.<sup>11</sup> This is in agreement with the present study.

Due to a number of factors, patients with head and neck defects are mostly neglected or partially treated. The success of MFP rehabilitation mainly depends on careful pre-surgical evaluation and communication with the patient and the other clinicians, mainly the surgeon involved in resection. Unfortunately, prosthodontists commonly receive patients only after the surgery, leaving the prosthodontists handicapped as at this point nothing much could be done; a situation best described as "consultation by crisis."<sup>16</sup> It is commonly believed that the surgical community does not appear to see the value of early prosthodontic consultation in their work.<sup>17</sup>

The establishment of a multidisciplinary team approach is vital to the successful rehabilitation of patients with head and neck defects.<sup>5</sup> Sadly, the prosthodontists in Pakistan are not welcomed in the regular pre-surgery tumour boards. A head and neck cancer tumour board without having prosthodontist onboard is violation of the multidisciplinary care and in fact is denial of the opportunity of conservative rehabilitation to the patient.

A study reported that 'financial incentive' was the major reason for choosing residency in prosthodontics.<sup>18</sup> Contrary to this, Ariani et al.<sup>13</sup> showed 'personal satisfaction' to be the primary

driving force among the prosthodontists pursuing MFP. Gotay et al.<sup>17</sup> reported that 'personal interest' (47%) and 'desire for more credentials and training' (25%) were the main reasons for selecting a career in MFP in their. In the present study, the participants desired for MFP training mainly for humane reasons and to achieve self-satisfaction.

It is known that there is a huge burden of cancer, mainly head and neck cancer, in Pakistan, and this necessitates the availability of MFP-trained prosthodontists in both public and private hospitals in the country. Unfortunately, the online published record of cancer patients is not updated,<sup>12</sup> so the actual disease burden cannot be calculated.

Pakistan has poor literacy rate.<sup>19</sup> Compromised education coupled with scant resources are the barriers in the way of people getting timely access to proper healthcare. Among head and neck cancer patients, delay in presenting to clinicians allows metastasis to take place or the localised invasion to grow.<sup>20</sup> There are a limited number of prosthodontists serving in the country and it is alarming to note that not a single clinician has received any formal training in MFP. Ironically, in a country with a population of over 220 million there are no accredited training centres for MFP. Thailand, with one-third the population of Pakistan, has internationally-recognised MFP training centres. In the 1970s, American prosthodontists foresaw the increased demand of MFP services. With their timely planning and actions, within a decade there were overabundance of specialists to the extent that they had to decrease the number of residency slots in the late 1980s.<sup>9,17</sup>

Most individuals in need of MFP services have limited knowledge of what rehabilitation options exist, what could be achieved and the associated complexities of the treatment options.<sup>21</sup> It is understood that clinicians with formal training in MFP are likely to offer broad range of services to their patients and would be competent enough to undertake complex cases. All of this will improve the patients' quality of life. MFP remains an area of dentistry which is often neglected, not only in under and postgraduate training, but also in private practice.<sup>16</sup>

The primary limitation of the present study is its small sample size. The inherent problem of accuracy and reliability of information obtained in surveys is also a known limitation. Lastly, the actual burden of the disease needing MFP services could not be deciphered.

Post-residency fellowship training programmes in MFP are certainly needed in the country. It is high time training centre for MFP super-specialty training was established in the country. This could be achieved initially by sending a few prosthodontists and technicians to centres of excellence abroad who may then come back and contribute to teaching and training of MFP locally.

## Conclusions

Most prosthodontists were not satisfied with MFP service facilities at their workplaces. Obturator for cancer resection patients was reported to be the most frequently offered MFP service. The participation of prosthodontists in the head and neck tumour board was negligible.

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