

## Original Article

# The present and future status of oral and maxillofacial pathology in Iran: A multicenter study

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## ABSTRACT

**Background:** At present, the status of oral and maxillofacial pathology (OMFP) in the country is not properly good. This study aimed to investigate the current status and develop practical approaches to improve occupational condition of the specialty in the future from the viewpoint of the beneficiaries.

**Materials and Methods:** This was a descriptive cross-sectional study. The participants were oral and maxillofacial pathologists of the country (200 individuals), OMFP residents (9 individuals), and final year dental students at six dentistry school of the country at 2020 (200 individuals) through multicenter design. At the first phase, the related questionnaires were developed and assessed psychometrically. Reliability of the questionnaires, internal consistency, and repeatability were computed and confirmed. At the second phase, the survey questionnaires on the current and future condition were sent electronically to the study groups. The data were analyzed using descriptive statistical tests (mean, standard deviation, percentage) and the Pearson test using SPSS.

**Results:** At the first phase, after primary design of the study too, 23 variables with content validity ratio below 0.56 and content validity index (CVI) below 0.79 were omitted. The questionnaire for the specialists was confirmed with Cronbach's alpha of 0.75 and intraclass correlation coefficient (ICC) as 0.83, and the questionnaire for the students and the residents were confirmed with Cronbach's alpha of 0.95 and ICC of 0.80. Results of the second phase showed that score of tendency of students to select OMFP specialty to continue education was  $1.58 \pm 0.57$  from 5. Satisfaction score of specialists on specialized activity of this specialty is  $2.7 \pm 1.52$  from 5. The most important reason for the students to select this specialty was "interest in being faculty member," and the "difficulty of the specialty" was the most probable reason for not selecting this specialty. The most important priority of the residents was "interest in specialty" and for the specialists was "being faculty member." The most important reason to change attitude regarding the specialty by the specialists was mentioned as "high occupational and profession responsibility as well as low

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income” with the score of  $1.38 \pm 3.99$ . “Fundamental revision in the educational curriculum of the specialty” with a score of  $4.60 \pm 0.93$  from 5 was considered as the most important revisionary approach from the viewpoint of specialists.

**Conclusion:** At present, the main problem regarding the OMPF specialty in the country is “high number of graduates and lack of the present occupational opportunities.” Evaluation and validation of the relevant specialized departments, producing occupational opportunities, and fundamental revision in the educational curriculum to train well-powered specialists are necessary.

**Key Words:** Curriculum, dental student, future, oral and maxillofacial pathology

## INTRODUCTION

Oral and maxillofacial pathology (OMFP) is one of the specialties in dentistry which investigates reasons, advances, and effects of diseases of the region.

This specialty is a connecting bridge between dentistry and medicine.<sup>[1-4]</sup> Besides, it establishes a fundamental connection among basic sciences and clinical sciences in dentistry.<sup>[5,6]</sup>

Oral pathology has been officially initiated since 1946 through the establishment of American Academy of Oral Pathology. The official title of the specialty was changed at 1995 into OMFP.<sup>[7]</sup>

In Iran, for the first time, the educational curriculum of OMFP at 1960 was formed as integrated with educational curriculum of medicine faculty of Tehran by Professor Esmaeil Yazdi, and OMFP department was recognized as an independent department in dentistry school of Tehran at 1988. OMFP association of Iran was also established at 1999. The seedlings of this specialty, which were planted in Iran six decades ago and have been gradually rooted by qualified specialists in more than 60 dental education units in the country,<sup>[8]</sup> are unfortunately not very fresh now due to various reasons.

Keith and Lisette pointed to activity of a high number of specialists in this specialty in big centers of cancer in England and connection of this specialty to all the aspects of head-and-neck pathology as a positive change.<sup>[9]</sup>

However, other studies investigated the problems underlying OMFP specialty.<sup>[2-4,10,11]</sup>

In some studies, various approaches have been presented for modifying these problems.<sup>[2,4,6,10-14]</sup>

Some studies investigated the reasons of not selecting this specialty by dentists.<sup>[15]</sup>

It has been shown that in most countries around the world, a few numbers of dentists were interested in this specialty and considered it as a job.<sup>[4,10,16,17]</sup>

Some studies addressed low tendency of dentistry students in selecting OMFP for future specialty and job in the study populations.<sup>[15,16,18]</sup>

Based on the current information, during 2 past years in Iran, the maximum capacity announced to accept residents for OMFP in ten faculties with permission of educating resident in the specialty was 20 individuals. This is while many of these capacities remain empty.

These evidence show that the current and future situation of this specialty needs analysis.

Therefore, the current study aimed to determine main problems in specialty in country, and evaluate and analyze the status, develop and prioritize the practical approaches effective to improve occupational condition of the specialty in the future.

## MATERIALS AND METHODS

This study is a descriptive-cross sectional study which was conducted multicentral at faculties of dentistry at Isfahan, Islamic University of Tehran, Tehran University, Shahid Beheshti, Mashhad, Yazd and by cooperating with OMFP association.

### Participants

Study population includes:

1. All oral and maxillofacial pathologists of the country (200 individuals) who were assessed through survey
2. All the specialized residents of OMFP studying at dental schools of the country (9 individuals) and underwent survey
3. Dentistry students at the final year in six dentistry schools of the study were totally 450 individuals at 2020.

In this group, sample size required was 200 individuals.

The inclusion criteria to enter the study were as follow: informed consent of the individuals to respond to the questions and exclusion criteria consisting of incomplete or not filled electronic questionnaires after sending the link for questionnaire for them and reminding them twice.

### Development and assessment of the study tool psychometrically

First, in the specialized group through brainstorming of a several specialists of OMFP and a specialist in medical education and through literature review, the primary draft of the questionnaires was prepared.

The questions were classified in three sections, including demographic information, survey on education or activity in OMFP from the viewpoint of the participants and regarding modifying approaches on OMFP specialty from the viewpoint of specialists and residents.

The recent questions for specialists and residents were completely identical due to the common benefits of the job.

To evaluate content validity qualitatively and quantitatively using two indices of “content validity ratio (CVR)” and “content validity index (CVI),” the questionnaires were assessed psychometrically.

In these questionnaires, specialists expert in this specialty were asked to determine CVR, evaluate each item based on three-grade spectrum (it is necessary, it is useful but not necessary, it is not necessary).

Then, based on the Lawsche table, the minimum value of validation ratio of the content was determined.<sup>[19]</sup>

By the way, regarding CVI, the criterion of relevance to each of the items of the questionnaire was assessed using a 4-grade Likert spectrum,<sup>[20]</sup> and then the required assessment was done based on CVI by Waltz and Bausell.<sup>[21]</sup>

To assess reliability of questionnaire, assessment of internal consistency using Cronbach’s alpha coefficient and repeatability of the tool using test-retest approach was considered on 10% of the target population.

### Data collection

At the second phase, link of the questionnaires above mentioned which were assessed psychometrically and reliable and valid were sent electronically in social media and by e-mail for the study groups and in case of not responding, reminding was done twice.

The method of scoring to the questions of the questionnaire was through Likert scale of 5 from absolutely disagree (score of 1) to absolutely agree (score of 5).

Grading of the variables was done based on mean and standard deviation. Of the scores obtained.

### Data analysis

Data were analyzed by descriptive statistical tests (mean, standard deviation, percentage) and Pearson test in SPSS software version 17 (2/2 IBM® SPSS® Modeler 16.0).

### Ethical considerations

This study was evaluated and approved in ethical committee of research and technology deputy of Yazd University of Medical Sciences with the code IR.SSU.REC.1399.195.

All the questionnaires were without name and the participants participated in the study with informed consent.

## RESULTS

Results of the first phase including psychometric assessment of the questionnaire:

CVR and CVI were determined as below: Regarding CVR, the items with CVR below 0.56 were omitted.

Regarding CVI, items with CVI lower than 0.7 were omitted and the questions with CVI among 0.7–0.79 were revised and edited for the content.

Thereby, 23 variables were omitted in the primary set of the questions. Finally, at this stage, the questionnaires with CVR >0.56 and CVI >0.79 were obtained.

The questionnaire of the specialists consisting of 44 variables was approved by Cronbach’s alpha of 0.75 and ICC equal to 0.83 and the questionnaire of the students and residents was confirmed with 36 and 25 variables by Cronbach’s alpha of 0.95, respectively, and intraclass correlation coefficient equal to 0.80.

The questionnaire of the specialists was confirmed with Cronbach’s alpha of 0.75 and ICC as 0.83, and the questionnaire of the students and the residents were confirmed with Cronbach’s alpha of 0.95 and ICC of 0.80.

Results of the second phase including data gathering and analysis: 106 individuals of the OMFP specialists in the country (with participation rate of 53%), 9

individuals of the residents studying (participation rate of 100%), and 208 dentistry students studying in six dentistry schools of the country (participation rate of 100%) participated in the study.

Demographic information of the specialists participating in the study is reported in Table 1.

Regarding occupational activity, 81 individuals (76.4%) announced as general dentist, 58 individuals (54.7%) announced oral pathology, and 12 individuals (11.3%) announced nothing.

Regarding the history of specialized activity of oral pathology in one public or private pathology laboratory, 67 individuals (63%) stated never, 28 (26%) individuals stated sometimes, and 11 individuals (10%) stated as always.

All the residents educating (9 individuals) filled out the related questionnaire. Seven individuals (78%) were woman and two individuals were man (22%). Five individuals (56%) were at the range of 26–29 years old and four individuals (34%) were at the range of 30 years old and higher.

Regarding last year students, 208 individuals participated in the study (8 individuals more than the study sample). Demographic information was shown in Table 2.

Regarding tendency of students to participate in the dentistry residency examination was as mean and standard deviation of the score of the comments as  $3.36 \pm 1.47$  from 5.

One hundred and eighty-nine individuals (90.86%) of the students responded to this question that how much do you think on continuing studying in OMFP. In total, mean score of tendency of these students to select the specialty was  $1.58 \pm 0.57$  from 5.

Table 3 shows probable reasons to select OMFP specialty and probable reasons of not selecting by the students.

No significant correlation was observed regarding students among age ( $P = 0.80$ ), gender ( $P = 0.17$ ), mean average ( $P = 0.13$ ), type of university on paying fee ( $P = 0.39$ ), and tendency of students to select OMFP specialty.

However, the results showed that scientific or research connection with OMFP department during studying significantly affects tendency of the students to select this specialty (0.01).

Factors effective in selecting OMFP specialty for studying and job from the viewpoint of specialists

**Table 1: Demographic information of the specialists participated**

Variable	n (%)
Age	
30-39	48 (45.3)
40-49	36 (34.0)
50-70	22 (20.8)
Gender	
Male	28 (26.4)
Female	78 (73.6)
Marital status	
Single	15 (14.2)
Married	91 (85.8)
Employment relation	
Official (permanent-temporary) contractual	59 (55.7)
Conscription law (general/specific)	24 (22.6)
Part-time contract	6 (5.7)
No university activity	17 (16)
Academic rank	
Professor assistant	56 (52.8)
Associate professor	21 (19.8)
Professor	14 (13.2)
No announcement	15 (14.2)

**Table 2: Demographic information of dental students**

Variable	n (%)
Age	
23-25	61 (29.3)
26-28	120 (57.7)
29-30	18 (8.7)
>30	9 (4.3)
Gender	
Male	77 (37.0)
Female	131 (63.0)
Marital status	
Single	166 (79.8)
Married	42 (20.2)
The way of educating regarding paying the tuition	
Free	95 (45.7)
Tuition fee	113 (54.3)
GPA of the participant	
12-13.99	8 (3.8)
14-15.99	83 (39.9)
16-17.99	106 (51.0)
18-20	11 (5.3)
Playing role of the pattern by professors of OMFP	
Positive role	113 (54.3)
Negative role	19 (9.1)
Ineffective	76 (36.5)
Tendency to participate in residency exam	
Absolutely disagree	37 (17.8)
Approximately disagree	23 (11.1)
Moderate	45 (21.6)
Approximately agree	35 (16.8)
Absolutely agree	68 (32.7)



**Table 3: Factors affecting selecting (grey columns) or not selecting the specialty (white columns) from the viewpoint of the dentistry students**

Probable reasons Frequency tendency	OMFP tendency to select OMFP, n (%)	Interest in specialized activity in this era, n (%)	Easier acceptance comparing to other specialties, n (%)	Interest in being faculty member, n (%)	Ambiguous future occupation, n (%)	Inappropriate income, n (%)	Hardness of the specialty, n (%)	Negative comment of the professors n (%)
Absolutely disagree	128 (67.7)	35 (32.4)	35 (34.7)	28 (25.9)	34 (17.6)	26 (13.5)	21 (10.9)	96 (50)
Approximately disagree	29 (15.3)	26 (24.1)	18 (17.8)	13 (12)	18 (9.3)	16 (8.3)	30 (15.5)	45 (23.4)
Moderate	18 (9.5)	22 (20.4)	15 (14.9)	23 (21.3)	36 (18.7)	52 (27.1)	40 (20.7)	24 (12.5)
Approximately agree	12 (6.3)	9 (8.3)	17 (16.8)	16 (14.8)	45 (23.3)	40 (20.8)	42 (21.8)	12 (6.3)
Absolutely agree	2 (1.1)	16 (14.8)	16 (15.8)	28 (26)	60 (31.1)	58 (30.2)	60 (31.1)	15 (7.8)
Summation	189 (100)	108 (100)	101 (100)	108 (100)	193 (100)	192 (100)	193 (100)	192 (100)
Score (mean±SD)	1.58±0.97	1.4±2.94	1.4±2.61	1.53±3.03	1.45±3.41	1.35±3.46	1.35±3.47	1.5±1.98

OMFP: Oral and maxillofacial pathology, SD: Standard deviation

and residents and mean score of the viewpoint from 5 are shown in Figure 1.

Regarding the question “probability of re-selecting this specialty in the current situation,” mean score of specialists was  $2.51 \pm 1.52$  from 5.

Table 4 shows the reasons for change in attitude of the specialists on OMFP specialty in priority (viewpoint from 5).

Among the nine individuals of study residents, mean score on the question of reselecting the specialty in the current situation was  $4 \pm 1.49$  from 5.

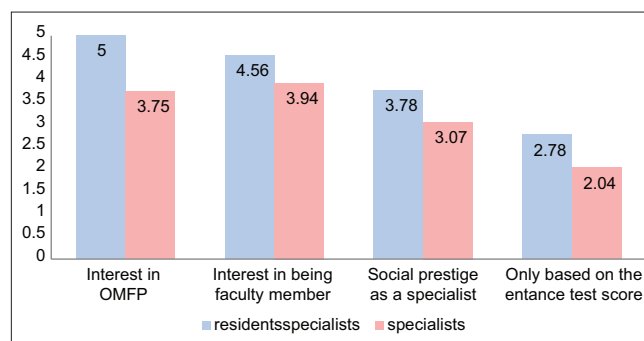
The residents represent the underlying reasons for change in attitude in priority as high occupational responsibility despite low income ( $3.56 \pm 1.42$ ), uncertain job future ( $1.42 \pm 3.56$ ), negative talking and performances of the professors of the specialty course ( $2.67 \pm 1.63$ ), low successful rate of the degree in recent years and hardness of the specialty ( $2.24 \pm 1.5$ ), finally, Table 5 shows agreement of specialists and residents with modifying approaches and recommendations of the specialty in priority.

These recommendations were prepared and assessed psychometrically at the first phase of the study based on literature review and comments of experts.

## DISCUSSION

Over two past decades, number of dental educating units and also number of specialized departments in all specialized fields of dentistry is increased in many faculties.

One of the specialized dentistry disciplines considered in this way due to its nature more than others is OMFP.



**Figure 1:** Factors effective in selecting oral and maxillofacial pathology specialty for studying and job from the viewpoint of specialists and residents (mean score of the viewpoint from 5).

**Table 4: Reasons underlying change in attitude toward the specialty from the viewpoint of oral and maxillofacial pathology specialty**

Priority	Score of reason underlying attitude change	5, n (%)	4, n (%)	3, n (%)	2, n (%)	1, n (%)	MD±SD
1	High occupational and professional responsibility despite low income	58 (54.7)	16 (15.1)	13 (12.3)	5 (4.7)	12 (11.3)	1.38±3.99
2	Uncertain future job position	56 (52.8)	15 (14.2)	18 (17)	5 (4.7)	12 (11.3)	1.38±3.92
3	Impossibility of establishment of oral pathology laboratory or working in general pathology laboratories	54 (50.9)	18 (17)	13 (12.3)	5 (4.7)	16 (15.1)	1.47±3.84
4	Lack of sufficient sample and case to work in this field specially in cities	46 (43.4)	23 (21.7)	16 (15.1)	4 (3.8)	17 (16)	1.45±3.73
5	Impossibility of working in pathology department of hospitals	44 (41.5)	19 (17.9)	14 (13.2)	7 (6.6)	20 (18.9)	1.54±3.58
6	Inappropriate view of the authorities of university/faculty and other specialists of dentistry on this specialty	46 (43.4)	10 (9.4)	18 (17)	11 (10.4)	21 (19.8)	1.59±3.46
7	Feeling deficiency comparing to other dentistry specialty	37 (34.9)	8 (7.5)	15 (14.2)	15 (14.2)	31 (29.2)	1.67±3.05

MD: Mean deviation, SD: Standard deviation

The current study investigates the present problems and modifying approaches from the viewpoint of beneficiaries.

Based on the results of our study, participating rate in responding of the specialists was only a slightly higher than the society average (53%).

At present, there are about 200 OMFP specialists in the country. One hundred and seventy-five individuals of them were member of OMF association. 23.6% of the participants in the study were not the member of association. This issue can indicate approximately unwillingness and weakness in occupational integrity.

In the study by McPeake *et al.* at 2014, selection bias and also low rate of participating were addressed as fundamental challenges of the study which is done using electronic questionnaires.

Conventionally, a responding rate of 60% is considered as reasonable by many of the biomedical journals.

In the present study, despite using various methods mentioned in the texts to increase cooperation and especially with at least two times reminding with mentioning rate of respondents in the reminder<sup>[22]</sup> by the way rate of responding of the specialists at the ending did not increase beyond 53%.

High exposure of the specialists to the electronic questionnaires might play role currently in modest participating by the study specialists. However, it is possible that lack of motivation and uncertainty on possibility of solving numerous problems and/or lack of professional unity and consensus were the most important reasons.

Wright *et al.* stated in their study at 2003; in our country in two recent decades, due to extending the system of providing health-treatment services, the main aim and policy of the relevant ministry was

based on increasing accepting student in medical universities specialties and providing labor force required to achieve this aim.

However, due to the lack of considering realities of society and the present demands, unfortunately, this policy makes numerous problems at the level of health system and especially for young physicians.<sup>[22]</sup>

The results of our study showed in line with this study that currently, OMFP specialists employed in the country do not have proper satisfaction on their occupational status with a score below the average ( $2.7 \pm 1.52$  from 5).

Various specialized resources investigate the topic “high number of OMFP specialists against the few job opportunity present.”

Cheng *et al.*<sup>[15]</sup> according to an announced standard in America indicating that each OMFP specialist in America at 2006 must provide the related specialized services to 901550 individuals, stated number of specialists present at 2006 in Taiwan (65 ones) more than double of the number of specialists required based on the above standard (26 ones).

However, it was stated that number of specialists who provide services of histopathologic diagnosis of oral lesions and oral diseases based on standard is only eight which is equal to 31% of America’s standard.

Donoghue *et al.*<sup>[23]</sup> 2020 in one article stated that currently, all the OMFP specialists in India (about 5000 individuals) are dissatisfied and concerned on high number of graduates and insufficient job. However, the author concluded from comparison of ratio of “general pathologists to population” (one individual per each 180,000 individuals) by this ratio on OMFP specialists (one per each 270,000 individuals) and also pointing to high rate of oral

**Table 5: Prioritizing modifying approaches recommended from the viewpoint of specialists and residents**

Priority	Approach	Score					MD±SD
		5, n (%)	4, n (%)	3, n (%)	2, n (%)	1, n (%)	
1	Fundamental revision in educational curriculum of OMFP based on day demands with the aim of more empowering of graduates of this specialty to obtain better and more job opportunities. These changes could consist of management of pathology laboratory, ENT pathology including lymphatic tissues of neck, ear, sinunasal tract, throat, pharynx, face and neck, skin of head and neck, histopathology of thyroid and parathyroid, cytology, FNA, forensic dentistry, change in teaching topics related to hospitalized pathology and above cases from manner of active observer during educational course of oral pathology as full-time in educating hospitals	94 (81.7)	8 (6.9)	6 (5.2)	5 (4.3)	2 (1.9)	4.62±0.88
2	Providing possibility and necessity of the presence of oral pathologist in departments of pathology of educating hospitals and private laboratories of general pathology to assess oromaxillary samples	85 (73.9)	15 (13)	7 (6.1)	4 (3.5)	4 (3.5)	4.52±0.96
3	Attempts of medical sciences universities/dentistry schools of the country for establishment and equipment of dentistry department of hospital in main teaching hospitals of the capitals and presence of OMFP specialists along with surgeons and OMF diseases	82 (71.5)	18 (15.6)	6 (5.2)	6 (5.2)	3 (2.5)	4.47±0.98
4	Producing possibility of education in oral pathologists in oral oncology fellowship courses	86 (75)	11 (9.6)	7 (6.1)	4 (3.5)	6 (5.2)	4.46±1.06
5	Assessment of the possibility of establishment of pathology laboratory by oral pathology specialists independently or in cooperation with general pathology specialists	82 (71.5)	16 (13.9)	9 (7.8)	3 (2.5)	5 (4.3)	4.45±1.08
6	Standardization of groups and departments of specialized teaching of oral pathology through external assessment and necessity of university/the related faculties regarding providing facilities/appropriate and sufficient teaching team/sufficient and talented educating content and patient and in other case lack of accepting resident by these faculties to assurance on empowerment of graduates	81 (70.5)	15 (13)	9 (7.8)	4 (3.5)	6 (5.2)	4.40±1.08
7	Encouraging researchers in various fields of dentistry research and active research centers in this regard to use cooperating of OAMFP specialists with changes in educational curriculum to educate advanced research methods	78 (67.8)	16 (13.9)	12 (10.4)	5 (4.3)	4 (3.5)	4.38±1.02
8	Assessment of possibility of increasing rate of salary of OMFP specialists who are working as teaching, research and diagnosis and treatment geographically full-time in Medical sciences universities	76 (66)	14 (12.1)	12 (10.4)	5 (4.3)	8 (7.2)	4.26±1.19
9	Organizing and standardization of exam of specialized board of oral pathology to assess correctly and logically of knowledge of residents	69 (60)	17 (14.8)	17 (14.8)	8 (6.9)	4 (3.5)	4.20±1.21
10	Helping to correct and update organization chart of dentistry schools of the country to provide possibility of employing a higher number of faculty member of oral pathology due to demand of all the faculties to presence of stable and permanent faculty member	71 (61.9)	15 (13)	12 (10.4)	8 (6.9)	9 (7.8)	4.13±1.27
11	Establishing specific facilities to promote and transform employment status and/or shortening the legal commitment course and/or on the conscription (for men) regarding faculty members of oral pathology who are working full-time geographically in the fields of teaching, treatment in Medical Sciences Universities	65 (56.7)	22 (19)	10 (8.7)	5 (4.3)	13 (11.3)	4.05±1.31
12	Providing possibility of participation of high-graded graduates in dentistry (the higher 5%) immediately after ending education and before initiating training course directly in residency exam of OMFP	59 (51.3)	12 (10.4)	18 (15.6)	9 (7.8)	17 (14.8)	3.76±1.50
13	Since in regard with selecting oral pathology, localization and fulfillment of long-term commitments for presence in specific universities are discussed, this issue affects decline in general tendency to continue educating in this specialty, therefore, it is recommended that this condition to be removed on selecting oral pathology	43 (37.4)	13 (11.3)	26 (22.6)	11 (9.6)	22 (19)	3.76±1.50

OMFP: Oral and maxillofacial pathology, SD: Standard deviation, MD: Mean deviation, FNA: Fine needle aspiration, ENT: Ear, nose, and throat

diseases in India (about 0.5 billion individuals) that number of OMFP specialists in India is not high but also there is default in the field of teaching society, government, and also physicians and dentists on

cooperating and the rate of necessity and effect of this specialty in health-care system.

Reports on number of OMFP specialists required for one country per population to

provide related specialized services can be highly various.

However, we should consider this issue that computing this number based on reports provided by some developed countries such as the study by Cheng *et al.*<sup>[15]</sup> for developing countries, due to differences in geographic, culture, rate of development, different priorities of general health for governments, society, physicians, and dentists might be inaccurate.

The study by Govindarajan *et al.*<sup>[11]</sup> at 2017 in India stated that currently, number of oral pathologists is more than the potential occupational opportunities.

Ascending deficiency regarding university positions and lack of job opportunities forced most oral pathologists to quit their specialty and turn toward full-time dental clinical jobs.

Besides, according to the mentioned guideline in the last general dentistry teaching curriculum (forth revision) and due to annual acceptance, about 1400 dentistry students in the country and presence of ten sectors eligible to teach specialized residents in the field of teaching, we need approximately 120 faculty members of OMFP.

This is while, currently, there are about 200 specialists of this specialty in the country which about half of them are faculty member.

In our study, 80% of the specialists participated were employed faculty member. 54.7% of the participants had or have specialized activity in the field of OMFP.

Regarding cooperating with a general pathology laboratory to diagnose oromaxillary lesions, only 10% of the specialists participating in the study cooperated as a permanent job and 26% cooperated sometimes, and 63% did not experience any activity.

Although currently health ministry regarding meeting faculty member required for teaching OMFP in dentistry schools is being too close to the required number (108 against 120 individuals, sometimes, due to inappropriate distribution of these specialists and also since most of them are not stable and permanent in their university job position (64% of permanent faculty members) and ever some faculties are faced to insufficient faculty members, and besides, community of OMFP specialists suffer from saturation of the capacity and insufficient job opportunities. Despite that how the number of specialists of this specialty, there is a general dissatisfaction on the condition of the specialty.

Mean score of satisfaction of the specialists on specialized activity in this specialty which was at the moderate level ( $2.7 \pm 1.52$  from 5) indicates this claim.

Besides, currently, many samples of oral lesions, especially in hospitals, are examined and responded by general pathologists, especially in hospitals.

The study by Jones and Jordan<sup>[24]</sup> in Johns Hopkins hospital at 2010 showed that head-and-neck lesions after lesions in reproductive system and gastrointestinal is the third group of lesions which due to lack of experience and lack of familiarity to histopathologic projects of lesions of head and neck surgery by the general pathologists are incorrectly diagnosed.

By the way, in our country, there is no necessity to report or at least confirm the samples related to oral maxillofacial lesions by an OMF specialist.

Binmadi and Almazroa<sup>[12]</sup> in one study at 2017 in Saudi Arabia stated that there is a critical demand to increase awareness regarding this specialty and also encouraging referring samples and/or applying OMFP specialist in public or private laboratories of pathology.

According to the study by Mudaliar *et al.*<sup>[25]</sup> 2019 in India, there is a lack of sufficient awareness on OMFP services as a specialty among physicians and even some dentists, so that, the surgeons sometimes refer the oral biopsies for diagnosis to the general pathologists.

It is normal that when a job is not appropriate, few individuals are intended to enter that specialty.

Regarding tendency of study students to continue educating in various specialized courses of dentistry, generally tendency of last year students regarding “participating in residency exam” was at moderate rate ( $3.34 \pm 1.47$  from 5) and regarding probability of selecting OMFP specialty” was too low ( $1.58 \pm 0.97$  form 5).

According to Table 3, the most important reason underlying selection of this specialty is “interest in being faculty member” and the most important probable reason underlying not selecting was the hardness of the specialty.

Some studies mentioned the reasons underlying not selecting this specialty by young dentists as a highly academic job, few occupational opportunities,



low personal life quality due to low income and high work load.<sup>[15]</sup> Some surveys show that in most countries around the world, a minority of the dentists are only interested in this specialty and consider it as a job.<sup>[16,17,26]</sup>

As so, in our country, despite the presence of a capacity of 20 individuals over the 2 past years, only two individuals started to study this specialty.

Similarly, Dhima *et al.*<sup>[16]</sup> at 2011 in America, Puryer *et al.*<sup>[18]</sup> at 2017 in England, and Cheng *et al.*<sup>[15]</sup> at 2020 in Thailand also addressed very low tendency of dentists to select oral pathology to continue education and job.<sup>[15,16,18]</sup>

Based on the study by Nagpal in India at 2019, the main reason of selecting the specialty by a dentist is to increase his/her skill and has a job with proper performance, higher income, and appropriate life.

This is while OMFP specialty is not sufficiently able to meet these expectations.<sup>[2]</sup>

In the current study, according to Figure 1, regarding assessment of factors effective in selecting OMFP for studying and working, the most important priority of the study residents was “interest in activity in the related specialty” and regarding specialists was “interest in activity as a faculty member of the university.”

Regarding the question “probability of re-selecting of this specialty in the current situation,” mean score of specialists is interestingly lower than the average ( $2.51 \pm 1.52$  form 5), while mean score of residents in the study was good ( $4 \pm 1.49$  form 5).

This issue shows that interest and hope to activity in the field of OMFP in residents who are studying will be decreased gradually after initiating activity as a specialist.

According to the results obtained, the most important reason underlying change in attitude of specialists and residents was high occupational responsibility despite low income. Other factors are mentioned in Table 4.

In other studies in this regard, educational programs of OMFP isolated and limited to dentistry clinics,<sup>[4]</sup> weakness in refer and consultation of samples of head-and-neck region to oral pathologist among medical professions employed in hospitals,<sup>[3]</sup> feeling self-deprecation of oral pathologists comparing to general pathologists, increase in number of graduates along with limited occupational opportunities of university and research funds<sup>[2,10,11]</sup> are addressed.

Finally, we investigated modifying approaches from the viewpoint of specialists and residents. Given occupational benefits in common, the questions of these two groups were identical. These approaches are presented in Table 5 in order of priority. Meanwhile “fundamental revision in educational curriculum of OMFP with the aim of empowering graduates of this specialty to obtain more and better job positions” with the score of  $4.62 \pm 0.88$ , and then “providing possibility of presence of an oral pathologist in departments of pathology of hospitals and private laboratories of general pathology laboratories” with the score of  $4.52 \pm 0.96$  have the highest priority from the viewpoint of specialists and residents.

In the study by Wright *et al.*<sup>[7]</sup> at 2003 in America, hospital-based anatomic pathology services and extending to clinical scene have been stated as an opportunity for growth and appropriate job position for OMFP specialty.

Besides, diagnosis and management of pathologic condition of head and neck is a demand for society and public health. Researchers in this study in addition to pointing the critical condition of this specialty in the time of research investigated new pathways in teaching residency of this specialty including obtaining medicine degree by the oral pathologists.

After assessment of the advantages and disadvantages of this change, the researchers concluded that instead of placement in progressses which its consequent is transmitting our specialty from dentistry to medicine, we should seek establishment of higher occupational opportunities.

In the editorial by Keith and Lisette at 2020, positive changes regarding the status of OMFP specialty in England has been pointed. The author stated that although at first, the basis of this specialty was established in England in environment of dentistry school, now a considerable ratio of labor force are working in big centers of cancer.

Therefore, this specialty is extended into all the aspects of head-and-neck pathology.<sup>[9]</sup>

In other studies, approaches such as revising educational curriculum of oral pathology, involving topics related to thyroid, and fine needle aspiration of nodal lymph and salivary glands, reinforcing knowledge of graduates in topics related to the field of “forensic odontology” to provide more job opportunities, efficient and systematic relation with

medicine school,<sup>[2,10,14]</sup> forcing hospitals to employ an oral pathologist to observe samples related to region of head and neck in public and private laboratories, increasing awareness of general pathologists on OMFP specialty to refer related samples,<sup>[10-12,14]</sup> establishing a bridge among clinical and research activities, empowering graduates in the field of research,<sup>[4,6]</sup> attempt to attract support form related associations,<sup>[14]</sup> and more emphasis on role and value of specialists of this specialty in teaching system, providing health care and research society.<sup>[4]</sup>

Our findings showed, currently, number of specialists of this specialty in country is at least sufficient or more than the required number.

So that due to the lack of specialized job opportunities, the main activity of many of the OMFP specialists has been limited to general dentistry.

Similarly, according to the study by Shetty *et al.* in India at 2018, currently, laboratories of oral pathology are limited to dentistry institutes and dentistry specialists at private departments make the least use of OMFP specialists.<sup>[4]</sup>

In total, regarding the modifying strategies, it seems that the professors of the specialty should take the first step in this hard and long pathway, the professors should attempt toward introducing and explaining importance of the OMFP specialty and identification and encouraging talented and interested students to enter in this specialty.

Lattoo *et al.* at 2019 in Singapore addressed establishment of even slight changes in dentistry educating curriculum to make the specialty more attractive for dentistry students.<sup>[13]</sup>

The study by Chatterjee at 2018 in India stated that dentistry students usually show lower motivation to oral pathology since this study course is taught more in theory and lesser in practice. He recommends that the students should be provided by opportunities during their studying to be involved in the progress of histopathologic diagnosis of mouth lesions, and interest in histopathology in them should be implemented.<sup>[27]</sup>

Interest of the students to oral pathology in general dentistry course should be increased in 1<sup>st</sup> years.<sup>[2]</sup>

The specialists who are faculty member can step toward providing cognitive, functional, and attitude educating objectives through seminar and uniform

practice in introducing the specialty of OMFP to the students and playing role as positive model, using diverse and novel methods of teaching and assessment and confirming clinicopathologic relations instead of strict theoretic topics and by the aim of more involving the students with relevant diagnostic, treatment, research activities, and modifying lesson planning specially regarding practical units.

The results of the study showed that; “Scientific or research relation with OMFP department in educational course” significantly affects willingness of students to the specialty. This result emphasizes benefits obtained on involving the students with OMFP group in various scientific and research dimensions.

By the way, every year, there are a sufficient number of dentists interested and with sufficient motivation who enter this specialty.

The next step is to change educational curriculum and obtaining required approvals to produce more job positions. The details on recommended programs are presented.

One of the problems and limitations of the current study is lesser cooperation and acclamation of the specialists in responding the questionnaire.

In this regard, several attempts were done which were mentioned. However, despite 100% responding rate among students and residents, responding rate of specialists did not increase beyond 53%.

## CONCLUSION

At present, the main problem in relation to the OMFP specialty in the country is “high number of graduates and deficiency of the present occupational opportunities.” The entering capacity should be modified by a number of specialists who quit specialized profession annually. Besides, it is tried to involve young and interested residents in this way. The quality of educating residents is spontaneously promoted.

This should be done through evaluation and validation of specialized departments which currently have approval to educate resident and fundamental revision should be done in educational curriculum of the specialty to train empowered specialists and producing appropriate job positions. In this way, all of us need fundamental changes. *As quoted by Albert*

Einstein “we cannot solve our problems by those thoughts that brought the problems.”

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