

Orthodontists of Nepal: The demographic and professional characteristics

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ABSTRACT

Introduction: Orthodontists are specialist human resource in dentistry. They are essential for the treatment of malocclusion and correction of dentofacial anomalies. Human resource data is required for the planning and implementation of orthodontic service in the country. So the objective of this study was to assess the distribution of Nepali orthodontists according to demographic and professional characteristics.

Materials and Method: The study was carried on Nepali orthodontists graduated till December 2020. Demographic details on age, gender, ethnicity, address and professional details on graduation year, university, country, working sector, working district were obtained from the records of Nepal Medical Council and Orthodontic & Dentofacial Orthopedic Association of Nepal, and from the personal communications. The collected data were entered in Microsoft Excel sheet, which was transferred to SPSS Version 20 program for category description.

Result: A total of 164 qualified Nepali orthodontists were present as of December 2020. The mean age of the orthodontists was 37.65 (± 7.047) years and male to female ratio was 6:4. Among all; 145 were working in Nepal and 80 (48.8%) were working in Kathmandu valley. Among the working orthodontists; 83.4% served in private and 16.6% served in public sector. Orthodontists serve in 24 districts of all seven provinces of Nepal.

Conclusion: The number of Nepali orthodontists has increased remarkably after the year 2010. Majority of the orthodontists are working in private sector; those serving in public sector and academia also work extra time at private clinics. Very few orthodontists are present in Karnali and Sudurpaschim province.

KEYWORDS: Demography, Malocclusion, Nepal, Orthodontist, Professional, Specialty.

INTRODUCTION

Orthodontics refers to the treatment of malocclusion and correction of dentofacial anomalies practiced by the registered certified specialists. It is the oldest specialty of dentistry founded by Sir Edward H. Angle in early 1900's in the United States.¹ The practice of orthodontics is relatively new in Nepal.² The first Nepali orthodontic specialist is Dr Shambhu Man Singh, who started specialty orthodontic practice with fixed appliance in Kathmandu in 1990. Before this era, orthodontic service used to be provided by few general dentists limited to removable appliances, or by

foreign doctors at missionary hospital, or by visiting orthodontist from India.³ In 1996, Dr Praveen Mishra graduated as the first Nepali orthodontist with the masteral degree. He started the orthodontic academic program in the country.⁴ After the year 2000's, more Nepali orthodontists graduated from foreign countries like India, China, Bangladesh, Philippines, Russia, etc. Most of them studied in self-finance and some were sponsored by the institutions. Orthodontists from Nepali institutions started graduating from the year 2011.

Presently, there are seven post graduate institutions

offering 3-year Master of Dental Surgery (MDS) Orthodontics program in Nepal. Additionally, two more colleges have been given the permission to run the program. Post graduate education in orthodontics was started at National Academy of Medical Sciences (Bir Hospital), Kathmandu in 2008. Subsequently, Tribhuvan University started the program at Maharajgunj Medical Campus and People's Dental College, Kathmandu in 2010, and in Universal College of Medical Sciences, Bhairahawa in 2011. BP Koirala Institute of Health Sciences, Dharan started the program in 2011. Kathmandu University commenced MDS (Orthodontics) at Kantipur Dental College, Kathmandu in 2014 and in School of Medical Sciences-Dhulikhel Hospital in 2018.⁵ In 2020, Medical Education Commission granted permission to run orthodontic program in Nepal Medical College, Kathmandu and Chitwan Medical College, Bharatpur.

Orthodontists are specialized human resource in dentistry. They are essential for the treatment of malocclusion and correction of dentofacial anomalies in the country. Human resource in health (HRH) data is necessary for the planning and implementation of health care delivery system. The periodic data on dental specialists is scarce. Thus, the present study aims to assess the distribution of Nepali orthodontists according to their demographic and professional characteristics.

MATERIALS AND METHOD

The study on Nepali orthodontists was performed during July to December 2020 after receiving the ethical clearance from Institutional Review Committee. The 'orthodontist' specialist was defined as the dentist with additional certified academic qualification of MDS (Master of Dental Surgery) or equivalent degree recognized by the Nepal Medical Council (NMC).

The demographic features included age, gender, ethnicity, district of origin and professional features included graduation year, university, country, working sector, working district. The details of Nepali orthodontists were obtained from Nepal Medical Council record,⁶ ODOAN Directory⁷ and from the

personal communications. The Nepali orthodontists graduated till December 2020 were included in the study. The ethnicity was determined according to the caste listed in Central Bureau of Statistics report.⁸ The workplace was determined as the main working sector with full-time or institutional involvement on permanent or contract basis. The working sector was divided as public and private sectors. The public sector included working areas in government hospital, law enforcement agencies (police, army and armed force), health science academy/institution and university constituent dental colleges. The private sector included professional practice in private or NGO-run clinic, dental/general hospital, academic service in private dental/medical college. Those working extra hours in private clinic/hospital besides full time job was also noted.

The collected data were entered in Microsoft Excel sheet, which was transferred to SPSS Version 20 program for category description.

RESULT

The total number of Nepali orthodontist was 164 as of December 2020. There were 65 (39.63%) female and 99 (60.37%) male orthodontists. The mean age of the Nepali orthodontists was 37.65 (± 7.047) years. The mean ages of female and male orthodontists were 35.94 (± 5.681) and 38.77 (± 7.636) years respectively. Among all, the maximum age was 68 years and minimum was 29 years.

The number of orthodontists according to the age group and ethnicity are given in Table 1 and Table 2 respectively.

Table 1: Distribution of Nepali orthodontists according

Age group	Female	Male	Total
<30 years	11	3	14 (8.5%)
31-40 years	43	65	108 (65.9%)
41-50 years	8	21	29 (17.7%)
51-60 years	3	7	10 (6.1%)
>60 years	0	3	3 (1.8%)
Total	65 (39.63%)	99 (60.37%)	164

Table 2: Distribution of Nepali orthodontists according to ethnicity

Ethnicity	Caste	No. (Percentage)
Khas Arya (Hill) 61 (37.2%)	Brahmin	48 (29.3%)
	Chhetri/Thakuri	13 (7.9%)
Madhesi (Terai) 49 (29.9%)	Madhesi	42 (25.6%)
	Marwari	2 (1.2%)
	Muslim	1 (0.6%)
	Tharu	1 (0.6%)
	Dasnami	3 (1.8%)
Newar 49 (29.9%)	Newar	49 (29.9%)
Janjati 5 (3.0%)	Magar	1 (0.6%)
	Rai	1 (0.6%)
	Sherpa	2 (1.2%)
	Thakali	1 (0.6%)

Among the total Nepali orthodontists, 121(73.8%) worked in private sector, 24(14.6%) worked in public sector, 7(4.3%) were not working and 12(7.3%) were residing in foreign countries (Australia 3, Canada 2, China 1, India 1, Norway 1, USA 4). Among the 145 working orthodontists, 11(7.6%) were in government service, 55(37.9%) worked in academic institutions and 79(54.5%) were involved in full time private practice. Additionally, 57(39.3%) orthodontists also did part-time private practice besides their full-time institutional job. Thus, a total of 136(93.8%) Nepali orthodontists worked in private clinics or hospitals in Nepal.

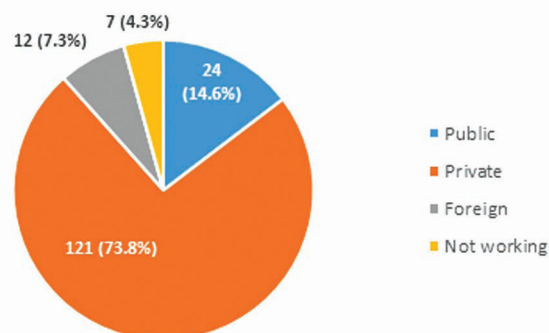
Among the government service; 8 served in government hospitals and 3 worked in hospitals owned by law enforcement agencies. Among the 55 orthodontists working in academic sector; 6 were at the level of Professor (male 5, female 1), 11 were Associate Professor (male 9, female 2) and

Nepali orthodontists serve full-time in 19 districts and on visiting basis in 5 districts. Thus, a total of 24 districts are served by qualified orthodontists. The distribution of orthodontists according to the working district is given in Table 4 and service mapping is given in Figure 2.

Table 4: Distribution of Nepali orthodontists according to serving districts

Serving district	Province 1	Province 2	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim
Full-time	Jhapa-2	Bara-1	Bhaktapur-7	Kaski-10	Banke-1	Surkhet-1	Kailali-2
	Morang-8	Dhanusa-2	Chitwan-8	-	Dang-4	-	-
	Sunsari-6	Parsa-7	Kathmandu-61	-	Palpa-1	-	-
	-	Saptari-1	Kavre-3	-	Rupandehi-8	-	-
	-	-	Lalitpur-12	-	-	-	-
Visiting	-	Siraha	Makwanpur	Nawalpur	Parasi	-	Kanchanpur
Total	16	11	91	10	14	1	2

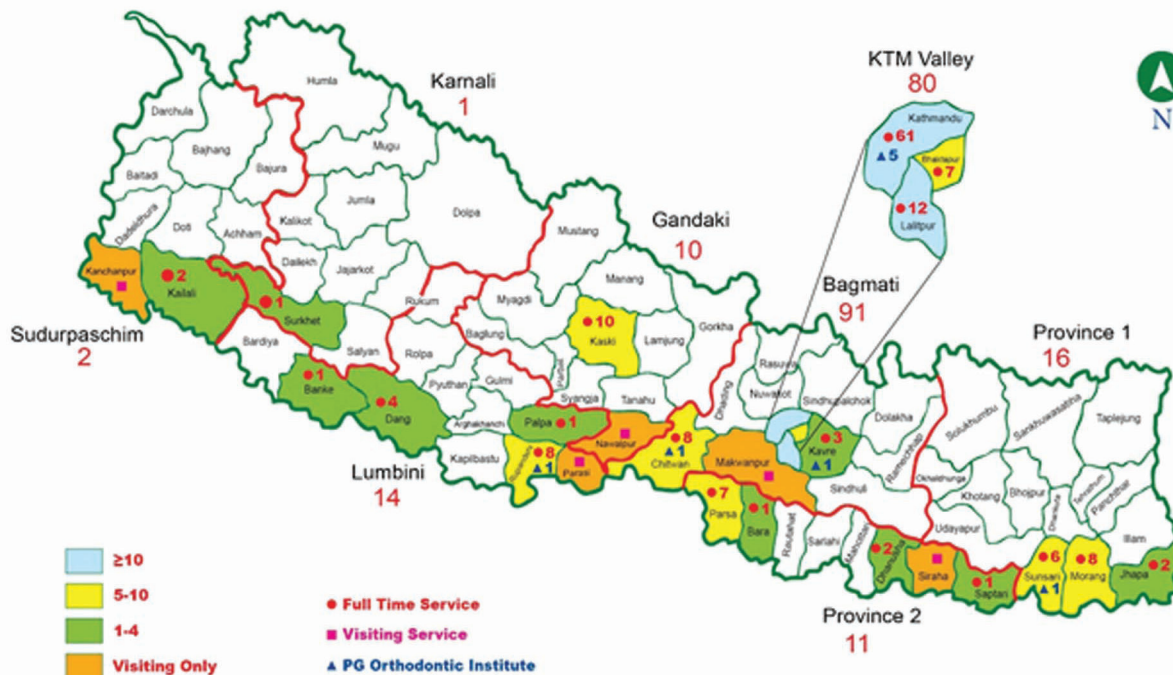
38 were Assistant Professor/Lecturer (male 26, female 12). The distribution of orthodontists according to the working and service sector are given in Figure 1 and Table 3.

Figure 1: Working sector of Nepali orthodontists (N=164)**Table 3: Distribution of Nepali orthodontists according to their professional service (n=145)**

Service	No.	Sector
Private practice 79 (54.5%)	Dental clinic	Private 121 (83.4%)
	Dental hospital	
	General hospital	
Academic 55 (37.9%)	Affiliated dental College/program	Public 24 (16.6%)
	Affiliated medical college*	
	Health science academy/ institute	
	University/Constituent dental college	
Government 11 (7.6%)	Government hospital	Public 24 (16.6%)
	Police	
	Army	
	Armed Police	

*Nepalese Army Institute of Health Sciences included in public sector among affiliated medical colleges

Figure 2: Service mapping of Nepali orthodontists



The countries of graduation for orthodontic degree were: Nepal 57(34.5%), China 51(30.9%), Philippines 32(19.4%), India 15(9.1%), Bangladesh 5(3%), Russia 3(1.8%), etc. The distribution of orthodontists according to country, university of graduation and nomenclature of postgraduate degree is listed in Table 5.

Table 5: List of universities and their countries attained by Nepali orthodontists

Country	University/ Institution	No.	Degree
Nepal 57 (34.5%)	BP Koirala Institute of Health Sciences	3	MDS
	Kathmandu University	7	
	National Academy of Medical Sciences	2	
	Tribhuvan University	43	
China 51 (30.9%)	Central South University	1	MDS
	Chongqing Medical University	3	
	Dalian Medical University	6	
	Huazhong University of Science & Technology	10	
	Jiamusi University	7	
	Jinzhou Medical University	2	
	Nanjing Medical University	6	
	Sichuan University	8	
	Southern Medical University	1	
	Southwest Medical University	1	
	Sun Yat Sen University	1	
	Xi'an Jiaotong University	1	
	Xinjiang University	1	
Zhengzhou University	2		

Country	University/ Institution	No.	Degree
Philippines 32 (19.4%)	Centro Escolar University	1	MSD
	Manila Central University	9	
	University of the East	16	
	University of the Philippines	6	
India 15 (9.1%)	All India Institute of Medical Sciences	7	MDS
	Bharati Vidyapeeth University	1	
	Dr BR Ambedkar University	1	
	Dr NTR University of Health Sciences	1	
	Dr Ram Manohar Lohia Avadh University	2	
	Manipal University	2	
	Rajiv Gandhi University of Health Sciences	1	
	RTM Nagpur University	1	
Bangladesh 5 (3%)	Bangabandhu Sheikh Mujib Medical University	5	MS
Russia 3 (1.8%)	Tver State Medical University	2	MDS, Ordinatura, PhD
	Volgograd Medical Academy	1	
Sri Lanka 1 (0.6%)	Colombo University	1	MD
United Kingdom 1 (0.6%)	Royal College of Surgeons Edinburgh	1	D Ortho

There was a mean difference of 6.9 years between the years of difference between bachelor and masteral degrees among all orthodontists. Table 6 depicts the graduation period and Table 7 illustrates the mean year difference between the degrees obtained by orthodontists.

Table 6: Graduation period of Nepali orthodontists

Period	Total	Female	Male
Before 2000	2 (1.2%)	-	2
2001-2005	8 (4.9%)	2	6
2006-2010	14 (8.5%)	3	11
2011-2015	67 (40.9%)	25	42
2016-2020	73 (44.5%)	35	38
Total	164	65	99

Table 7: Mean year difference between bachelor and masteral degrees

Parameter		N	Mean	SD
Gender	Female	65	6.94 years	2.709
	Male	99	6.87 years	2.820
Duration	Before 2008	80	8.24 years	3.163
	2009 onwards	84	5.62 years	1.464
Total		164	6.90 years	2.768

DISCUSSION

The present study presents the current information on HRH situation of Nepali orthodontists. The information was obtained from the records of Nepal Medical Council, Orthodontic & Dentofacial Orthopedic Association of Nepal, and from the personal contacts. Shrestha RM et al published a situation analysis of Nepali dentists; which reported a total number of 82 orthodontists and

60 orthodontic residents till June 2015.⁹ According to Shrestha S et al; there were 14 Nepali orthodontists till August 2008.¹⁰ Maharjan SK and Mathema S surveyed a status of Nepali prosthodontists in 2018; they reported a total of 77 prosthodontists working in Nepal.¹¹

The present study showed that the number of Nepali orthodontists has increased remarkably after the year 2010, which can be attributed to the establishment of postgraduate institutes in Nepal and increasing trend of dental graduates to study post-graduation abroad. There is also an increasing trend of females studying orthodontics in recent years.

The mean age of the orthodontists is 37.65 years, which is 35.6 years in case of prosthodontists and 32.54 years in case of general dentists⁹. The mean year difference between the bachelor degree and masteral degree obtained by Nepali orthodontists is about 7 years, which has dropped down remarkably in a recent decade. The mean year difference was 8.2 years till 2008, which dropped to 5.6 years after 2009. The proportion of orthodontists below the age 30 years is only 8.5%, which is similar to prosthodontists (11%)¹¹ and is different from general dentists (47.6%)⁹. According to the present study, the Khas Arya ethnicity comprised of majority of the Orthodontists' population (37.2%), which is similar to the proportion of general dentists (40.9%)⁹. According to the NMC register, there are 616 MDS and 3663 BDS graduates till December 2020.⁶ The total number of MDS graduates could be still higher as many might not have registered due to waiting for NMC special licensing examination or residing in foreign countries. The present study gathered the information of all accessible orthodontic graduates who have successfully completed their education. Among the total 164 orthodontists, about 8 have not registered with the specialist licensing.

The ratio of orthodontist to total dental specialist in Nepal is 1:4 and the ratio of orthodontist to general dentist is 1:18. The ratio of male to female orthodontist is 60.4 : 39.6, which is reverse in case of general dentists (39.2 : 60.8)⁹ and is similar to prosthodontists (55 : 45)¹.

The present study devised the service mapping data of Nepali orthodontists (Figure 2). Orthodontists are present in all major cities and most of the districts of

Terai region. Among the serving districts, they serve full time or are stationed in 19 districts while they visit periodically in 5 districts. It is contrary to the fact that they belong to 41 native districts but serve in only 24 districts. In spite of their districts of origin, following districts are devoid of orthodontic service: Bhojpur, Okhaldhunga, Solukhumbu, Mahottari, Rautahat, Sarlahi, Nuwakot, Baglung, Lumjung, Myagdi, Mustang, Syanja, Tanahu, Gulmi, Kapilbastu, Bardiya, Dadeldhura and Doti.

Regarding the country of graduation; the percentage of orthodontists graduated from Nepal is the highest (34.5%) followed by China (30.9%), Philippines (19.4%), India (9.1%), Bangladesh (3%). Similar list for general dentist is: Nepal (55.4%), India (24.6%), Bangladesh (14.6%), Pakistan (2.6%)⁹. The current orthodontist to population ratio in Nepal is 1:184,000; whereas the dentist to population ratio is 1:8248 based on the population data of Central Bureau of Statistics.¹² The orthodontist to population ratio is about 1:100,000 in India and 1:30,581 in the United States.¹³

CONCLUSION

The total number of Nepali qualified orthodontist is 164 as of December 2020. The number of Nepali orthodontists has increased remarkably after the year 2010. There is an increasing trend of early post-graduation and more females studying orthodontics in recent years.

Among all; 145(88.4%) are working in the country and 80(48.8%) are working in Kathmandu valley. Among the working orthodontists; 83.4% serve in private sector and 16.6% serve in public sector. Majority of the orthodontists working in public sector and academia serve extra time at private clinics also. Totally, 136(93.8%) orthodontists work in private clinics or hospitals. Orthodontists serve 24 districts of all seven provinces of Nepal. Only three orthodontists serve in Karnali and Sudurpaschim provinces.

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