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Post-graduation in medicine and allied health sciences in Nepal

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Abstract

The history of education in modern medicine in Nepal is not very long. The article tracks development right from the inception of education in modern medicine to various advanced degrees offered in medicine and allied health sciences in Nepal. With the establishment of different provinces and the setting-up of various hospitals and teaching institutions within the country, one can be certain that the objective of training Nepali citizens within the country and providing healthcare to people within Nepal will soon be a reality. An attempt has been made to sum up what already exists in the present scenario within the country so that appropriate action can be taken in the coming years to ensure sufficient human resources for health will be available to meet the World Health Organization's 2018 slogan of Universal Health Coverage in near future. It also tries to highlight the much needed issue of integrating the professionals from allied health sciences into the existing healthcare system for its further development. There are specialists from different allied professionsin the country; their expertise should expand out of academic sector to other sectors as well. The lack of integrationof such expertise in patient care seems to be hindering the new developments in the field of healthcare.

Key words: Bishweshwar Prasad Koirala Institute of Health Sciences (BPKIHS); Institute of Medicine (IOM); Kathmandu University (KU); Nepal Medical Council (NMC); Post Graduate (PG); Tribhuvan University(TU)

INTRODUCTION

Education in modern medicine is relatively new here in Nepal with a history of less than a century. It was in 1934 that the Civil Medical School was started in Kathmandu to train compounders and dressers[1]. This marks the very first attempt of apprenticeship in modern medicine in Nepal. Following this, various basic and middle level and graduate level courses in medicine and allied health professions were started and presently we have reached a level where post-graduation, superspecialty and Doctor of Philosophy (PhD) level courses are taught in different programs within the country. This article summarizes the leaps and bounds that Nepal has taken in modern medical education since its inception in the country.

Education for the development of human resources for health is an important contributor to overall healthcare system development in the country. Despite providing education for the development of different partners of healthcare team, Nepal is still to witness an inclusive development of all the healthcare professionals. Doctors have been the forerunners of healthcare team for long and therefore development in medicine has taken rapid strides whilst the development of allied health sciences has lagged relatively behind. Doctors represent an essential and vital element of the healthcare system, a system which can function better with active participation of other healthcare professionals. Doctors moving ahead singly will not bring much advancement in the field of healthcare until all allied health science professionals' work as a participatory team.

In light of the recent changes being made to the sector of medical education, we can neither overlook nor ignore the role played by Dr. Govinda KC in shaping today's medical education. His demands with relation to Postgraduate (PG) education is that PG education should be made free of charge, Government bond be decreased from five years to two years and that no new medical colleges should be started inside the Kathmandu valley for the next ten years. Dr. Govinda KC being a medical

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practitioner perhaps felt that it would be justified if he brought out the various issues of medical practice and fasted onto death in order to bring about positive changes in medical education. Sadly, his vision for the future still fails to bring on board allied health science professionals who are the very backbone and have essential role in the development of the healthcare system. In this context, it is worth emulating an African proverb which states: "If you want to go fast, go alone. If you want to go far, go together."

HISTORICAL PERSPECTIVE OF VARIOUS HRH PROGRAMS

It was the Civil Medical School which started training of compounders and dressers for the very first time in 1934 which then ran hospitals and smaller units under the supervision of doctors, most of whom had come back following their studies in India[1]. Later in 1956, a Health Assistant level of training was started by the Ministry of Health at Bir Hospital[2]. Various other programs described later also followed. It was only after the establishment of IOM that MBBS education was started in 1978[3]. BP Koirala Institute of Health Sciences (BPKIHS) at Dharan then started the MBBS courses in 1994[4]. MBBS program was started by Kathmandu University (KU) in Manipal College of Medical Sciences, Pokhara in 1994[5]. During the time of the last Rana Prime Minister Mohan Shumsher, four Nepali doctors were sent to the United Kingdom (UK) for higher studies and training in four different areas of medicine. Subsequently after that UK provided scholarships to Nepali doctors; both civilian and military, for Diploma, Membership and Fellowship in different specialities. This was another milestone in the development of specialization in medicine[2].

The elderly people of Kathmandu valley are familiar with the ways of the olden days when it was the custom to drive a nail through an aluminium coin into a large trunk of a special wood representing WaSyaDyo (God of Toothache) at Bangemuda to get rid of the pain associated with a toothache[6]. The first official course to be started in dentistry was the certificate level in dental sciences (Dental Hygienists) by the Kantipur School of Dentistry in 1997[7]. The spurt in dental education took place from 1993/94 onwards. Preliminary attempts to start BDS & MBBS programs at Chisapani, Nepalgunj was made by the DY Patil Institute of India in 1993[8]. Even after enrolling two batches of students in the programs this institute was not given affiliation by any university in Nepal and had to shut down. Following this incident, Manipal Academy of Higher Education in India through the offices of a representative based in Kathmandu enrolled and trained many students from the 1993-94 session[8]. Many dental students went on to do their specialisation in different specialities at Manipal[8]. It was the return of these specialist dental surgeons which facilitated the establishment of dental colleges in Nepal. It was BPKIHS which started a dental college and introduced the Bachelor of Dental Surgery (BDS) program in 1999. The same year BDS program was also started at People's Dental College under affiliation of TU[8]. The first BDS program under KU was started at Kantipur Dental College in 2007[5]. Additional eight colleges have started BDS programs after the year 2011[8].

In Nepal, long before the trend of formal training in nursing education started, it had been a common practice to take assistance of birthing attendants during childbirth. Bir Hospital was started way back in 1890 (1947 BS) as a 7-bedded hospital but it did not have any nurses back then[9]. Therefore, in the year 1928, four Nepali girls were sent to Allahabad for 18 months training in midwifery and on return were posted in Bir Hospital[10]. This marks the very first attempt in nursing education by the Government of Nepal. Subsequently in 1956, a nursing school was started at Bir Hospital[1]. Later on in 1958, training of Auxiliary Nurse Midwives (ANM) to provide midwifery services was started at Hetauda[2]. In 1962, an Auxiliary Health Workers (AHW) School was started under the aegis of Ministry of Health[2]. Following the establishment of Institute of Medicine (IOM) in 1972, the certificate level courses were conducted at Maharajgunj Nursing Campus and Lalitpur Nursing Campus[2]. It was in the year 1978 that IOM started higher grades of nursing studies i.e. BN, referred to as 'Diploma' in Obstetrics and Gynecology and Community Nursing initially and later Paediatric plus Adult Nursing[2]. Surprisingly, nursing is seen as all-female profession here in Nepal. But this is not wholly true, as 10% of seats were allotted to male students back in 1986 to 1990, after which the quota system was removed[10]. The B. Sc. Nursing program was started in 1996 in BPKIHS[10]. Both TU and KU started the course only in 2005 and its affiliated colleges subsequently also started enrolling students in the program[10]. Sometime later, the program was initiated by Purbanchal University (PU) too[10].

IOM gave a head start with Proficiency Certificate Level (PCL) training in Pharmacy in 1972[11]. Back then, it was customary for Nepali students to go to India and Pakistan for bachelor level studies in pharmacy. KU was the first to start the Bachelor degree program (B. Pharmacy) in 1994[5], and IOM only started it in the year 2000[11]. Besides these courses, IOM initially continued the production of basic and middle level health workers such as AHWs, ANMs, CMAs, health assistants, laboratory,

X-ray and pharmacy technicians plus ayurvedic vaidyas and nurses[2]. It is now running Bachelor grade courses of various allied health professions. Many of the basic, middle and proficiency certificate level courses in medicine were then undertaken by CTEVT[12]. In July 2018, nine-point deal between government and Dr. KC plans has been laid for discontinuation of these entry level courses below proficiency level in medicine and allied health professions owing to adequacy of graduates in the fields[13].

The practice of physiotherapy services in Nepal may be said to have been started in 1972 by an ex-army person trained as a physiotherapist in India[14]. Though a two and half year certificate course in physiotherapy was started by IOM in 1983, the students sensing a lack of employment either dropped out of the course or transferred to other courses[14]. Presently, Bachelor grade studies in Physiotherapy is being conducted by KU at Dhulikhel since 2010[5]. Masters' courses have been done by Nepali candidates at Bangalore and Garhwal in India. Equivalent Masters'level courses have not yet started here.

START OF PG IN DIFFERENT AREAS OF HEALTH SCIENCES

MEDICAL & SURGICAL SPECIALITIES

Institute of Medicine started the first postgraduate course of MD in General Practice (MDGP) in 1982 in collaboration with Calgary University of Canada and later on its own in other specialties[2]. Changes followed in the post 1990's democratic movement, i.e. after the establishment of multiparty democracy in Nepal. Dr. SK Kakkar, then Director of the All India Institute of Medical Sciences, New Delhi came in 1992 as a WHO Consultant to guide the process[2]. As from 1994, a Post Graduate Committee was formed comprising of faculty and consultants of IOM and Bir Hospital, and a number of PG courses started too. Three programmes i.e. Medicine, Surgery, and Obstetrics and Gynecology (Obs. /Gyn.) were started in 1994 with the course of studies being conducted at the Valley Group of Hospitals and the degree awarded by Tribhuvan University[2]. In 2002, the government set up the National Academy of Medical Sciences (NAMS) which started its own programs of post graduate courses in Medicine and Surgery at BirHospital and the Valley Group of Hospitals[9].

PG programs in medicine MD, MS and MSc were started at BPKIHS in 1999[4]. The first PG programs of KU were in Pathology and Psychiatry being conducted at Bangalore, Mangalore and Manipal, India in collaboration with the Manipal Education and Medical Group (MEMG) in 2004[5]. Other MD programs in Medicine were started later at KU affiliated colleges at Pokhara, Bharatpur and Nepalgunj as from 2007[5]. Yet later in 2010,MagisterChirurgiae (MCh) and DM courses were started in collaboration with College of Medical Sciences (CMS), Bharatpur[5]. Another Deemed University, the Patan Academy of Health Sciences (PAHS) which came into being as from 2010 started post graduate studies as from 2017[15].Post graduate and PhD programs in medicine and related specialties are outlined in Table 1 to Table 3 below.

N.B. The various programs of different specialities are set out in the tables that follow. Designations may however differ in some institutions.

Table 1: Masters in Science and PhD programs at higher centres of medical studies

Programs / Institutions	BPKIHS, Dharan	KU, Dhulikhel	TU, IoM
PhD Programs			
Medical Microbiology	✔	✘	✔
Medical Biochemistry	✔	✘	✘
Basic & Clinical Physiology	✔	✘	✘
Masters Programs (MSc)			
Human Anatomy	✔	✘	✘
Human Physiology	✔	✔	✘
Medical/Clinical Biochemistry	✔	✘	✔
Pharmacology Clinical	✘	✔	✘
Medical/Clinical Microbiology	✔	✘	✔
Medical Imaging Technology (MIT)	✘	✘	✔
M Phil in Clinical Psychology	✘	✘	✔

Bishweshwar Prasad Koirala Institute of Health Sciences (BPKIHS), Kathmandu University (KU), Institute of Medicine (IoM), Tribhuvan University (TU)

Table 2: MD/MS programs at higher centres of medical studies

Programs/ Institutions	BPKIHS, Dharan	KU, Dhulikhel	NAMS, Bir Hospital	PAHS Patan	IoM, TU, Kathmandu
Anaesthesiology (& Critical Care)	✔	✔	✔	✘	✔
Physiology (Basic & Clinical)	✔	✔	✘	✘	✘
Biochemistry	✔	✔	✘	✘	✘
Anatomy	✔	✔	✘	✘	✔
Community Medicine (& Tropical Diseases)	✔	✔	✘	✘	✘
Dermatology (& STD)	✔	✔	✔	✘	✔
Forensic Medicine & Toxicology	✔	✔	✘	✘	✔
General Practice & Emergency Medicine	✘	✘	✔	✔	✔
Gynaecology & Obs.	✔	✔	✔	✔	✔
Internal Medicine	✔	✔	✔	✔	✔
Microbiology & Infectious Diseases	✔	✔	✘	✘	✔
Ophthalmology	✔	✔	✔	✘	✔
Otorhinolarygology & H&S Orthopaedics	✔	✔	✔	✘	✔
Orthopedics	✘	✔	✔	✔	✘
Paediatrics	✔	✔	✔	✔	✔
Pathology	✔	✔	✔	✘	✔
Pharmacology	✔	✔	✘	✘	✔
Psychiatry	✔	✔	✔	✘	✔
Radiodiagnosis & Imaging	✔	✔	✔	✘	✔
Surgery (General)	✔	✔	✔	✔	✔
Others	MD in Hosp Admin	✘	Radiotherapy	✘	✘

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Table 3: Specialty programs at higher centres of medical studies

Programs/Institutions	BPKIHS, Dharan	KU, Dhulikhel	IoM, TU, Kathmandu
Superspecialities- Doctrate in Medicine (DM)			
Cardiology	✔	✔	✔
Critical Care & Sleep Medicine	✔	✘	✔
Emergency Medicine	✘	✘	✔
Gastroenterology	✔	✔	✔
Neonatology	✔	✘	✘
Nephrology	✘	✔	✔
Neurology	✘	✔	✔
Superspecialities - Magister Chirurgiae (MCh)			
Cardio Thoracic & Vascular	✘	✘	✔
Gastro Intestinal Surgery	✔	✘	✔
Neuro Surgery	✘	✔	✔
Plastic Surgery	✘	✔	✘
Uro Surgery	✔	✔	✔
MPhil			
Clinical Psychology	✔	✘	✘

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DENTISTRY

Nepal Medical Council (NMC) published the regulations for post graduate education for MDS program in 2003. It was KU which then started the PG program in dental science in 2003. However, the program was halted in 2008 as there was no intake. Then KU, in affiliation with Manipal Academy of Health Education started 3 year MDS program in Prosthodontics, Conservative Dentistry and Oral Surgery at Mangalore, India. NAMS in 2008 took an initiative to start the MDS program in Orthodontics at Bir Hospital in Kathmandu. TU subsequently began the postgraduate courses in dental science at IOM and its affiliate People's Dental College in 2010. BPKIHS started PG courses in 2012 and KU in 2014. Besides MDS programs, BPKIHS, Dharan allowed BDS graduates to enrol during 2003-2008 in basic medical sciences PG programs because of the acute shortage of manpower in basic sciences in medicine. However, the BDS graduates were only allowed to do so after completing a Bridge Course approved by NMC. KU also started similar course in 2011 and this is still running.The higher centres for learning are all conducting Masters Level of study for dentistry as shown below in Table 4.

NURSING

Masters in Nursing (MN) program was started initially at Maharajgunj Nursing Campus (MNC) in 1995 in Women's Health and Development[10]. In 2000, IOM started two other courses in Adult Nursing and Paediatric Nursing[10]. TU now runs MN programs through its affiliated colleges too. BPKIHS started M.Sc. Nursing program in Community Health Nursing and Psychiatric Nursing in 2008[4]. IOM took a head start in initiating a PhD program in Nursing for the very first time in Nepal in 2011[10]. BPKIHS also followed the suit to start the PhD program.

Following BN or BSc, nursing candidates can pursue the following higher academic degrees at the under mentioned centres of higher learning as shown in Table 5.

Table 4: Masters Levels of training at higher centres of dental studies

Programs/Institutions	BPKIHS	IoM+ Affiliates	KUSMS + Affiliates	NAMS
Community / Public Health Dentistry	✔	✘	✔	✘
Conservative Dentistry & Endodontics	✔	✔	✘	✔
Oral & Maxillofacial Surgery	✔	✔	✘	✔
Oral Medicine+ Radiology	✔	✘	✘	✘
Oral Pathology	✔	✘	✔	✘
Orthodontics	✔	✔	✔	✔
Periodontics & Oral Implantology	✔	✘	✘	✔
Pedodontics& Preventive Dentistry	✔	✘	✘	✘
Periodontics	✔	✔	✘	✔
Prostodontics	✔	✔	✔	(✔)

Bishweshwar Prasad Koirala Institute of Health Sciences (BPKIHS), Institute of Medicine(IoM), Kathmandu University School of Medical Sciences (KUSMS), National Academy of Medical Sciences (NAMS)

NB. Program mentioned ✔ in Brackets (✔) indicates the program does not have intake in the last year.

Table 5: Master's & PhD Levels of training at higher centres in nursing studies

Courses	BPKIHS	KU	NAMS	PAHS	TU + Affiliates
PhD	✔	✔	✘	✔	✔
Adult Health Nursing*	✔	✘	✘	✔	✔
Community Health Nursing	✔	✔	✘	✔	✘
Pediatric Nursing	✔	✘	✔	✔	✔
Psychiatric Nursing	✔	✘	✘	✔	✘
Women's Health and Development**	✔	✔	✔	✔	✔

Bishweshwar Prasad Koirala Institute of Health Sciences (BPKIHS), Kathmandu University (KU), National Academy of Medical Sciences (NAMS), Patan Academy of Health Sciences (PAHS), Tribhuvan University(TU)

NB.: * Adult Health Nursing program is run under BPKIHS as Medical Surgical Nursing.

** It is run as the Midwifery Maternal Health Nursing program at BPKIHS and Masters in Midwifery at KU.

PHARMACEUTICAL SCIENCES

Kathmandu University started the Masters in Pharmacy (M.Pharm.) in Industrial Pharmacy and Pharmaceutical Care in 2000 and subsequently PhD as faculty development program in 2004[16]. The faculty development program was later extended as a program available to all. It also initiated a post-baccalaureate Doctor of Pharmacy program for 3 consecutive years[16]. However, the continuation of the program has not been regular. Master of Pharmaceutical Sciences started in 2005 in Pokhara University in two majors Natural Products Chemistry (NPC) and Pharmaceutics, but then the program was halted soon after one batch graduated in 2007[17]. Later in 2011, it resumed with NPC and Clinical Pharmacy as the new majors[17]. Pokhara University has given affiliation to Central Institute of Science and Technology (CIST) in Kathmandu for M.Pharm Clinical Pharmacy in 2017[18]. Purbanchal University also started the Masters in Clinical Pharmacy in 2016[19]. Masters and PhD programs in pharmaceutical sciences offered by different universities are shown in Table 6.

PUBLIC HEALTH / COMMUNITY MEDICINE

Post graduate programs in Public Health were first started at IOM as early as 1991 and the first program was the two years MSc. This program was converted in 1998 to one year duration and named it Master of Science in Public Health (MSc PH)[20]. IOM has emphasized on MPH rather than MD in Community Medicine. BPKIHS started PG program in Community Medicine in 2003. Still later, School of Public Health was established in 2005 which now runs MPH program[4]. Now other higher centres with their affiliated institutions have also started the programs as given in Table 7 below:

NUTRITIONAL STUDIES

Master in Public Health Nutrition course is being conducted at the Institute of Medicine in Nepal[21]. Someindividuals are also going out, mostly to India, to study in this field.

A summary of various program in healthcare professions offered by different universities is given in Table 8 below.

Table 6: Masters & PhD levels of training at higher centres for pharmaceutical sciences

Programs/Institutions	Kathmandu University	Pokhara University + Affiliates	Purbanchal University
PhD in pharmaceutical sciences	✔	✘	✘
Masters in pharmaceutical sciences	✘	✘	✘
Clinical Pharmacy	✘	✔	✔
Industrial Pharmacy	✔	✘	✘
Natural Products Chemistry	✘	✔	✘
Pharmaceutical Care	✔	✘	✘
Pharmaceutics	✘	(✔)	✘
Post Baccalaurate - Doctrate in Pharmacy	(✔)	✘	✘

NB. The programs mentioned as (✔) are not regular

Table 7: Masters'& PhD Levels of training at higher centres of public health / community medicine

Programs/Institutions	BPKIHS, Dharan	IoM, TU	KU + Affiliates	PurbanchalUniversity + Affiliates	Pokhara University + Affiliates
PhD in Public Health	✘	✔	✘	✘	✘
MSc PH	✘	✔	✘	✘	✘
MPH	✔	✔	✘	✔	✔
MPH – Global Health	✘	✘	✔	✘	✘
MPH – Clinical Epid.	✘	✔	✔	✘	✘

Bishweshwar Prasad Koirala Institute of Health Sciences (BPKIHS), Institute of Medicine(IoM), Tribhuvan University(TU), Kathmandu University (KU)

Table 8: Institutions of higher learning- Number of institutions under different universities and autonomous institutions

Name of the University	Number of institutions in				
	Medicine	Dentistry	Nursing	Pharmacy	Public Health
Tribhuwan University	Own + 7 Aff	6 Affiliates	Own +5 Aff	-------	Own
Kathmandu Univeristy	Own + 9 Aff	Own + 5	Own + 5Aff	Own	-------
BPKIHS	Own	Own	Own	-------	Own
NAMS	Own	Own	Own	-------	-------
PAHS	Own	-------	Own	--------	Own
Pokhara University	-------	-------	-------	Own + 2 Aff	Own+ 1 Aff
Purbanchal University	-------	-------	-------	Own + 1 Aff	Own + 3 Aff

Bishweshwar Prasad Koirala Institute of Health Sciences (BPKIHS), National Academy of Medical Sciences (NAMS), Patan Academy of Health Sciences (PAHS)

Table 9: NMC registered Nepali medical and dental Specialists tallied with the projected specialist's requirement for 2017

S.N.	Specialty	Nepal Govt. Estimate 2003*	Total Specialists Projection for 2017	Nepal Medical Council Register 2017		
				Male	Female	Total
1	Anaesthesia	98	151	290	99	389
2	Anatomy	0	0	26	10	36
3	Biochemistry	0	0	19	19	38
4	Cardiac Surgery	0	0	3	0	3
5	Cardiology	43	65	107	7	114
7	Clinical Pathology	44	75	95	114	209
8	Com.Med/ Public Health	98	130	82	40	122
9	Conservative Dentistry & Endodontics	0	0	10	18	28
10	Critical Care Medicine	0	0	1	0	1
11	Cardiothoracic and vascular surgery	11	16	6	1	7
12	Dermatology & Venereology	47	70	108	83	191
13	Endocrinology	2	3	13	4	17
14	ENT (& HN Surgery)	53	99	133	52	185
15	Emergency Medicine	0	0	4	0	4
16	Epidemiology #	11	15	-	-	-
17	Forensic Medicine	0	0	25	8	33
18	Gastroenterology	14	22	33	1	34
19	General Practice	30	77	241	57	298
20	General Surgery	129	238	528	28	556
21	Geriatric Medicine	1	1	1	0	1
22	Hepatobiliary Surgery	0	0	2	0	2
23	Hepatology	0	0	1	0	1
24	Hematology	0	0	1	0	1
25	Internal Medicine	118	221	575	55	630
26	MDS ##	105	158	144	28	172
27	Microbiology	0	0	22	26	48
28	Nephrology	8	12	17	4	21
29	Neurology	7	11	23	3	26

table 9 cont...

30	Neurosurgery	11	16	31	0	31
31	Nuclear Medicine	5	6	9	1	10
32	Obstetrics &Gynaecology	204	321	190	432	622
33	Ophthalmology	106	165	146	145	291
34	Oral & Maxillofacial Surgery	0	0	33	11	44
35	Oral Medicine and Radiology	0	0	0	3	3
36	Oral Pathology	0	0	2	2	4
37	Oral Science	0	0	1	1	2
38	Orthodontics	0	0	34	32	66
39	Orthopaedics	60	100	470	5	475
40	Paediatrics	177	330	367	137	504
41	Paediatric Surgery	8	12	10	2	12
42	Pedodontics	0	0	2	8	10
43	Periodontics	0	0	7	11	18
44	Pharmacology	0	0	41	15	56
45	Physical Medicine & Rehabilitation	0	0	1	0	1
46	Physiology	0	0	32	21	53
47	Plastic Surgery	7	11	4	1	5
48	Prosthodontics	0	0	24	18	42
49	Psychiatry	32	49	109	38	147
50	Radiotherapy	0	0	9	8	17
51	Radio / Imaging	59	90	278	74	352
52	Rheumatology	0	0	1	1	2
53	Surgical Oncology	0	0	20	0	20
54	TB, Resp. Disease Pulmonology	30	45	21	5	26
55	Transfusion medicine & tissue typing	0	0	1	0	1
56	Tropical Medicine #	11	15	-	-	-
57	Urology/Uro. Surgery	16	23	34	1	35
	Total:	1544	2548	4387	1629	6016

N.B. Adapted from various sources: MOH Report[22] & NMC register[23]

* - Estimates are only of active and retired personnel as per government records.

- Specialties which may have been registered under different heading now.

- Denotes the registration of specialists in dentistry till 2012, after which the new specialists were registered in different subspecialties mentioned above

CURRENT RECORDS ON THE NUMBER OF SPECIALISTS IN MEDICINE AND DENTISTRY

A summary of the government estimates for 2003 and the projection of requirement of total specialists for the year 2017 made in the strategic HR plan of 2003 have been tallied with the NMC register of August 2017 in Table 9[22,23]. This shows the present scenario of number of specialties registered in the country. While the register may still not reflect the current number of post-graduates in the country since people who have gone abroad and the deceased names may not have been omitted, this is still the best data we can have for now.

DISCUSSION

In recent years, Nepal has taken big strides when it comes to offering post-graduation courses in medicine and allied health sciences. While post-graduation in medicine started at IOM in 1982, post graduate courses

in public health, nursing, pharmacy and dentistry started in 1991 (IOM), 1995 (IOM), 2000 (KU) and 2003 (KU) respectively.

As of now, Nepal is providing opportunity for higher education in various programs to our graduates within the country itself, which has decreased the mandatory need to go to foreign lands to get into specialty courses. In a country like Nepal where government hospitals are inadequate, private teaching institutions have played an immense role in providing the healthcare services to the people of Nepal at an affordable price. The opening of private institutions have also helped increase the facilities for UG and PG studies, thereby helping the nation in the production of specialists HRH in Nepal itself. Furthermore, with institutions working to start more PG courses, they are offering latest technological advances to the Nepali populace in healthcare sector with senior manpower and technically advanced equipment. However, such facilities are available in big cities only. This could somehow have a negative impact as increasing placements within big cities only may decrease the patient load in the hospitals as new institutions are set up concentrated in the same area. The tendency of existing institutions is to increase the placements for PG studies, but while doing so the institutions should make sure that bed occupancy is maintained most of the time and that mere bed count should not be the assessment criteria. High occupancy rates with less bed count should stand at same level with low occupancy rates and more bed count. Granted more PG opportunities are forthcoming, there is also a need for check and balance to make sure that the post graduates get ample opportunities to see and learn different kinds of complex cases throughout their duration of study.

Despite providing opportunities for PG studies in the nation itself, still a great disparity exists between the production of bachelor levels and facilities for higher levels of study. The private institutions have played some part to provide platforms for PG studies, however, still a lot needs to be done immediately in order to increase the placements for Masters and PhD. More facilities should be developed within the country if we are to reduce the number of Nepali graduates going abroadfor higher studies. Certainly, a number of people will seek further education abroad; this may be a good thing in that they also tend to bring in new ideas and techniques which still lag in Nepal. Nevertheless, an increase in placements for Masters and PhDs within the country, provided that there are supervisors, will be greatly beneficial since it will increase the facilities of improved health care in different parts of Nepal. To increase facilities for PG studies in Nepal, a number of the private hospitals providing specialized services both within and outside the valley with their highly qualified professional staff should be inspected by the NMC and the respective Universities to assess their ability to conduct higher levels of study, e.g. Masters and PhDs in medicine and allied health sciences. What must be remembered is that late Prof. Dr. Upendra Devkota during the time when he was in the National Academy of Medical Sciences (NAMS) based at Bir Hospital had also striven to make Fellowship examinations a reality in this country too. Fellowship of the National Academy of Neurosciences (FNANS) course was started and some honorary fellowships conferred on practising surgeons of Nepal. However, before the course of the first batch was completed there was a rethinking and it was decided to confer the Master degree of MCh instead. Of course many Nepali doctors do have the Fellowships of the Colleges of Surgeons and Physicians of England, Scotland, Pakistan and Bangladesh. Figures for 2017 available at NMC show that averages of 400 doctors have taken eligibility certificates from NMC to do PG elsewhere. Once facilities for PG education increases within the country there should be a National Board established for PG examination with all the involved universities and nationwide examination conducted so that the graduates are of uniform standard. This will ensure that the increased number of specialists produced as per the countries requirements are of the expected standards.

With regards to Dr. Govinda KC's role in reshaping the medical education sector, a major demand of Dr. KC is that PG studies be made free and that the government's bond to work compulsorily for three years in the outskirts and two years in urban areas should be reduced to one year each in both places. His demand that no new medical colleges be started in the capital for ten years amongst others is yet to be finalised in the National Medical Education Bill which has been registered in the House and is under discussion[24].A solution to free PG studies is possibly that PG students should be paid adequately by the institutions which run the hospitals where they are serving whilst learning. For those working in the government bond, if they choose to join the government service, they should be able to do so by lateral entry at the level of their expertise and ability.

Similarly, stress should be given to the training of the higher levels of all allied healthcare professions if the standards of the healthcare, education and research are to show all round development in the country.The opportunity for PG studies in allied health professions is very limited. This has partly attributed to the slow

development of various allied health professions in Nepal. The chances of the fresh graduates carrying on further education in allied professions are much less. Ties with foreign countries in order to upgrade the existing facilities in different healthcare streams may help uplift different professions to optimal standards. So far our approach in running healthcare institutions cannot be seen as all inclusive one. While our hospitals try and acquire doctors with Masters Degrees and Doctorate in Medicine (DM) specialists in different fields, these same hospitals mostly look for nurses and allied health professions with a certificate or diploma. Certainly, they represent the workforce which will get the work done while not financially burdening the institutions. However, it leads to an imbalance and question arises as to whether the quality of services expected can be ensured by same institutions with only entry level healthcare professionals from allied professions? This is neither desirable, nor will it facilitate for further development and progress of the professions or the healthcare institution itself.

Even after offering the PhD level courses in nursing and pharmacy within the country, we are probably at fault in seeing the post graduates & PhDs in allied healthcare professions as academicians only and not integrating these available resources into the existing healthcare system. So far only a small number of graduates with Bachelor degrees are employed in our hospitals. There is a trend of graduates getting into positions which are allocated for certificate level professionals in absence of vacancy for graduates. Despite so many colleges offering Bachelor level programs in nursing so far the trend is that BSc nursing graduates seek placements abroad owing to minimal opportunities here in Nepal.

Until recently, pharmacy was totally considered a business undertaking and the practice was to give it on lease to the highest bidder. This is changing in government hospitals with new decisions being taken in favour of the development of the profession and giving quality services and medicine to patients at affordable prices. Sadly the private hospitals are still running in the same old fashion, leasing pharmacies at exorbitant rents.

Similar is the case of biochemists and geneticists. Their involvement in running and checking the biochemical tests in the hospital is minimal; establishing genetic laboratories within the hospitals seems like a far cry. Nutritionists likewise have not been given due credit and role when it comes to achieving good state of health, though role of nutritionists in healthcare is an established fact. Even WHO, which at one time was the advocate of 'Healthcare Team' seems to have forgotten this aspect.

While we talk about inadequate number of manpower when it comes to human resources for health (HRH), a number of graduates are labelled ineligible for certain positions at different centres despite their huge potential. The actions are inexplicable and arbitrary at times. Time will only tell if our country will accept them with wide open arms or continue discouraging them. If proper opportunities are not provided to the skilled and well trained manpower, we may see an exodus of personnel which would retard research and advancement in certain sectors in the future.With regards to the number of yearly admission of allied healthcare professions such as nursing and pharmacy should be regulated to reflect the requirement in the future. Hospitals and teaching institutions should be encouraged for the production of ancillary laboratory and X-ray technicians amongst others as there is a great shortage. These types of manpower are necessary too in greater numbers for the health care institutions of the future.

Tallying the number of specialists registered at NMC till 2017 with the Ministry of Health specialist's requirement projections for the same year as shown in Table 9 shows that Nepal has achieved in numbers when it comes to the production of specialists in the sector of medicine and dentistry. The original requirements estimated for 2017 back in 2003 was 2548 specialists while the numbers registered at NMC have now reached 6016. However, with various councils still failing to register specialists in various sectors, it is difficult to specify the currently available number of specialists in different professions, making it difficult to make projections on the requirements of the nation in the coming years. An attempt should be made to try and form similar registers at different councils which indicate the presence of postgraduates in various allied health professions. In reality many professional council have only registered the first degree till date. It is also essential to update all registers periodically so that the current status is known.

Looking at choices of newly qualified doctors for specialization, one sees that it varies from time to time. This is apparent as one reviews the previous lists and the latest existing registration of specialist list by Nepal Medical Council at the end of 2017[23]. 'What specialization should be catered for or encouraged' tends to change because of various factors. Initially the wish of many new graduate doctors is to take up surgery, medicine or even cardiology as these have great visibility[25]. These choices change over succeeding years from time to time,

depending on future prospects or cost of specialization. The current trend is for orthopaedics and radiology. As far as Nepal is concerned, the government had rightly encouraged specialization in anaesthesia for the reason that many other specialists could not function or provide services without the aid of this specialty. The other area of importance is that of family medicine or general practice. The government has rightly stressed on this area. As emergency medicine is also a dire necessity at times, this also is being catered for and encouraged.

Nepal Government, following its federal set up and new constitution promulgation has identified health as the basic right of the citizen. The Ministry of Health has enlisted a provision of four categories of government hospitals as per federal set-up. As per the Nepal Health Infrastructure Development Standard, 2017, hospitals of first, second, third and specialized category will be set-up at the rural municipality, municipality, provincial and central levels respectively[26]. If actions are taken soon in this regard it might be possible to make the WHO's slogan of 2018 of "Universal Health Coverage" into a reality[27]. The political commitment to provide healthcare to the people as a basic right means that a large number of specialists will be required in the future. One immediate effect of announced National Medical Education Bill is that there has to be a government medical college in both Provinces No. 2 and 7[28]. There is also talk of having a Central/ Federal Medical University. The decision is awaited. In a recent article titled "Transformation of Councils in the Federal set up of Nepal", an issue was raised about medicine and allied health sciences all being affiliated to a University of Health Sciences[29]. With Academy of Health Sciences opening up in different provinces, it could now provide the affiliations to medicine and allied health science institutions in the area.

Karnali Academy of Health Sciences (KAHS) at Jumla though officially established in 2007 started functioning only in 2011 and is presently conducting courses for entry level healthcare professions only[30]. A special committee has been recently formed towards starting MBBS classes[31]. The likelihood is that PG studies will be started at Surkhet, the provincial headquarters of Karnali Province. Presently, there are some activities going on at Badribas and Geta to fulfill that commitment. Though Pokhara Academy of Health Sciences and Rapti Academy of Health Sciences have been establishedfor some time, no Masters' level programs have started yet despite original plans. Plan for an Academy of Health Sciences to be based at an expanded 300 bedded Hetauda Hospital named after late Madan Bhandari has also been announced[32]. An intention to have an Academy of Health Sciences at Rajbiraj named after late Ramraja Prasad Singh has also been publicly made[33]. The other political slogan which foresees Nepal as a hub for medical tourism also means that there will be a great requirement of men, money and materials to bring this about. In the early 2000s following the successful operation of the B.P. Koirala Memorial Cancer Hospital in Bharatpur, Bharatpur was envisioned as "Medical City"[34]. The projection of Bharatpur as 'Healthcare hub' has been re-echoed in recent days[35]. It is about time to implement the plans and decisions.

CONCLUSION

In the recent decades, we have seen some positive changes in Nepal when it comes to the inception and increase in the post-graduation programs offered in medicine and allied health sciences. The number of seats available is still very low as compared to the number of people who obtain the undergraduate degrees in different programs. It is the need of the hour to tap into the potential of different private and government institutions to function as post graduate teaching/ learning centres. Various councils and universities should work collaboratively to make this a reality in the near future if enough specialty HRH manpower is to be trained and educated within the country. The promises made of establishing Academy of Health Sciences in all the provinces must soon materialize and the concerned authorities should start the providing PG education soon. Having adequate number of specialist healthcare professionals will eventually help in reaching the goal of "Universal health coverage" and providing quality services within the country. Assimilation of different specialists from allied health sciences in the healthcare system is the need of the day.

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