

**Nepal Government**  
**MBBS Scholarship Program:**  
***A Study of the Process and Implementation***

November 2017  
Kathmandu

## List of acronyms

BS	Bikram Samvat
HF	Health Facility
BDS	Bachelors in Dental Surgery
BPKIHS	BP Koirala Institute of Health Sciences
DoHS	Department of Health Services
IOM	Institute of Medicine
KU	Kathmandu University
MBBS	Bachelors in Medicine Bachelors in Surgery
MDS	Masters in Dental Surgery
MoE	Ministry of Education
MoH	Ministry of Health
MS	Masters in Surgery
NMC	Nepal Medical Council
PAHS	Patan Academy of Health Sciences
PHCC	Primary Health Care Center
TU	Tribhuvan University

# Table of Contents

<b>List of Acronyms</b>	<b>1</b>
<b>List of Tables</b>	<b>3</b>
<b>List of Figures</b>	<b>3</b>
<b>Executive Summary</b>	<b>4</b>
<b>Background</b>	<b>8</b>
<b>Objective</b>	<b>9</b>
<b>Research Questions</b>	<b>9</b>
<b>Methods</b>	<b>9</b>
<b>Qualitative data collection</b>	<b>10</b>
<b>Quantitative Data Collection</b>	<b>10</b>
Data collection from the Department of Health Services and Ministry of Education	10
Data Collection from Scholarship Section, Ministry of Education	10
Data Merging, Cleaning and Analysis	11
<b>Results</b>	<b>12</b>
<b>Part I. The scholarship process</b>	<b>12</b>
<b>Part II. Data analysis</b>	<b>16</b>
<b>Discussion</b>	<b>27</b>
<b>Conclusion and Recommendations</b>	<b>30</b>
<b>Limitations</b>	<b>31</b>
<b>References</b>	<b>32</b>
<b>Annex</b>	<b>33</b>

## List of Tables

Table 1: Reservation category for Ministry of Education scholarships .....	12
Table 2: Number of MBBS scholarships by district and their affiliated university .....	17
Table 3: Number and years of MBBS scholarships in private medical colleges.....	17
Table 4: Category of Ministry of Education domestic MBBS scholarships .....	19
Table 5: Data for the Chi <sup>2</sup> test of association of scholarship awardees' service completion with sex, category of scholarship, and geographic origin .....	21
Table 6: Adjusted odds of service completion with sex, scholarship category and geographic origin of awardees.....	22
Table 7: Total service days of scholarship doctors who completed their service requirements	22
Table 8: Number of health facilities served by scholarship doctors during their mandatory service period.....	22
Table 9: Number of scholarship doctors who completed their mandatory service (n=373) and joined permanent government service during their service period .....	23
Table 10: Service days of scholarship doctors in different health facility types .....	23
Table 11: Service-days of scholarship doctors in health facilities located at different ecological regions .....	23
Table 12: Service-days of scholarship doctors in health facilities located at different development regions.....	23

## List of Figures

Figure 1: Data collection from Ministry of Education and Department of Health Services, Ministry of Health .....	11
Figure 2: Organogram of public hospitals where scholarship doctors are posted .....	13
Figure 3: Pathway of Ministry of Education's MBBS scholarship awardees Part 1 – scholarship to mandatory posting.....	14
Figure 4: Pathway of Ministry of Education's MBBS scholarship awardees Part 2 – post two-year service.....	15
Figure 5: Annual number of MBBS scholarship awardees and participating colleges.....	16
Figure 6: Ratio of MBBS scholarship awards per private medical college .....	16
Figure 7: Sex distribution of scholarship awardees by year .....	18
Figure 8: Scholarship awardees' development region of origin.....	18
Figure 9: Scholarship awardees' ecological region of origin .....	19
Figure 10: Ministry of Education MBBS scholarship awards and the service completion status of awardees since 2050 BS.....	20
Figure 11: Days served by scholarship doctors in hospitals categorized by type and accessibility .....	24
Figure 12: Service days of scholarship doctors in district level hospitals categorized by accessibility.....	25
Figure 13: Percent of days over the last 4 years filled with one scholarship doctor at district level hospitals.....	26

## Executive Summary

Economic liberalization policies in Nepal in 2049 BS permitted the private sector to offer medical education under the condition that a proportion of the annual student intake would be allotted as scholarships to the Ministry of Education. These scholarships include a service contract, which requires the awardees to work in government health facilities for two years following graduation. This strategy is intended to ensure an adequate supply of doctors in rural areas. The mandatory requirement for graduates to work for government health facilities was implemented in 2062/63 BS (2006 CE) after the Department of Health Services (DoHS) allocated resources to pay the scholarship doctors. Because of these policy changes, the private sector now produces the largest number of physicians in Nepal. Nonetheless, ten years after the MBBS scholarship program was implemented, this program's impact has not been evaluated. Our report is the first attempt to assess the MBBS scholarship program comprehensively through a policy review and separate quantitative analysis of scholarship awardees.

Two government agencies implement the MBBS Scholarship Program (MSP): The Ministry of Education (MoE) awards the scholarships while the Ministry of Health's Department of Health Services (DoHS) assigns the graduated scholarship doctors to public health facilities for job placement. If the scholarship awardee wishes to terminate the scholarship contract without completing the two-year service requirement, he/she must repay the government. Graduated Scholarship doctors, who do not fulfill the contract nor pay the financial penalty, are not permitted to register with the Nepal Medical Council (NMC). Registration is mandatory to practice medicine in Nepal. Moreover, they will also not be issued a Letter of No Objection from the MoE which is required if the physician wants to leave the country on a student visa.

Several system level issues challenge the efficiency of the MBBS Scholarship Program. The striking issue is that the DoHS and MoE communicate and coordinate very little regarding MBBS scholarship doctors. For example, they do not share the annual number of scholarship doctors expected to be posted at public facilities. Consequently, scholarship doctors are posted to health facilities on a first-come-first-serve basis; DoHS conducts no prior planning. Additionally, the process to post scholarship doctors to health facilities is neither systematic nor transparent. Thus, doctors frequently are able to avoid remote postings where the physician need is greatest.

Next, data management for the scholarship program is poor. DoHS uses a paper-based system and data gathering has been inconsistent although there has been some improvement in recent years. MoE has an electronic database of all the scholarship awards including medical scholarships, but it has not been used for planning or analysis. Moreover, the scholarship data at DoHS and MoE differ and has not been shared nor used to produce any reports.

Finally, the DoHS and MoE are unable to release specifics on defaulters, i.e., those who do not complete the required two-year service period and do not opt out of the contract through the formal process. The annual number of defaulters, those who paid the penalty amount in lieu of service, and those who did not graduate from medical school is not available from the MoE. MoE follows-up on defaulters only after an individual from the general public files a formal petition against a particular doctor.

Between 2050 and 2073 BS (1993-2017 CE), MoE provided 2,981 MBBS scholarship awards to Nepali citizens at private medical colleges in Nepal (average 124 scholarship awardees per year). The number of awards varies each year and depends on each medical college's permitted student intake that the NMC determines. The number of scholarships and awardees has grown: In 2073 BS, the MoE awarded 183 scholarships at 17 institutions compared to 25 awards at one institution in 2050 BS.

Following the Scholarship Rules promulgated in 2060 BS (2002/2003 CE), the Scholarship Section of the Ministry of Education provides MBBS scholarship awards to eligible citizens based on their performance in a competitive exam. Fifty five percent of the scholarship awards are open category, meaning that they are entirely based on merit while forty five of the awards are reserved for under-represented groups such as females, Madhesis, indigenous groups, Dalits, remote area residents, etc. Under-represented groups can compete in both open and reserved categories. If candidates of the under-represented groups fail to pass the minimum requirements to fill the quota for the reserved category, the scholarships are awarded to candidates in the open category.

Since 2060 BS, for every 10 reserved scholarships, approximately 14 open ones are awarded. The vast majority (79%) of the scholarship awardees during 2050-2073 have been males. However, since 2060 BS, the proportion of female scholarship awardees has increased. This was because more seats were reserved for females according to the Scholarship Rules 2060 BS which provides 33% of the reserved category scholarships are for females, i.e., 15% of total scholarships. In fact, since 2060 BS the actual total proportion of female awardees (annual) has been more than 15% because they are also selected from the open category.

Among all MBBS scholarship awardees at private medical colleges in Nepal, 43% came from the Central Development Region, 30% from the Western Development Region, and 13% from the Eastern Development Region. Ten percent were from the more remote Mid-western and Far-western Regions. Fifty-one percent of the awardees came from hill districts and 42% from the Terai. Four percent came from the mountainous districts. It is plausible that scholarships awardees from the Central Development Region and hill districts may have been over-represented because of temporary or recent migration to Kathmandu Valley.

Unfortunately, the mandatory service completion rate of the awardees and data on their service was poor for the first five years of the scholarship program (2062-67 BS). However, in 2067 BS, strict rules were introduced to require evidence of service before the DoHS would issue service completion certificates and the MoE, the Letter of No objection. Consequently, service completion rate for the past three scholarship year cohorts (2062-2064 BS) has been high (>85%). This is true for both genders and all scholarship categories. Males are, however, significantly more likely to complete their mandatory 2-year service contract, as are those who received an open category scholarship. Females may be less likely to complete the mandatory service possibly because of family obligations and migration after marriage. The reason for the difference between open and reserved category scholarships is unclear and requires further research.

Nepal's healthcare system follows a hierarchical hospital referral structure. Primary Healthcare Centers (PHCs) that only provide primary care services are the first place of contact between a physician and a patient. From PHCs, patients are referred to District level hospitals that also provide lifesaving emergency surgical services. PHCs and District hospitals are located in rural areas and refer patients to zonal, sub-regional or regional hospitals. Zonal hospitals provide specialty services in addition to life saving surgeries. Sub-Regional and Regional hospitals are the referral centers for their respective areas. The Central hospitals located in Kathmandu valley provide tertiary care and super-specialized services.

Undoubtedly, the scholarship program has made becoming a physician more accessible for Nepali citizens, and ensured a steady supply of doctors to public hospitals outside of Kathmandu Valley. The scholarship doctors who have recently completed their 2-year service requirements completed 78% of their service (working days) at PHCCs and District hospitals (46% of service days in District Hospitals and 32% of service days in PHCCs) that serve the rural population. However, inequities in physician distribution remain. Scholarship doctors provided little or no service at least accessible health facilities while those near urban centers got more service than needed. For instance, the past 3 cohorts of scholarship doctors who completed the 2-year

mandatory service in district level hospitals filled 141% of days in most accessible and 127% in the less accessible hospitals respectively compared to 91% in the least accessible hospitals. During this period, they filled over 300% of the days at district hospitals of Gorkha, Dhading, Mahottari, Makawanpur and Dolakha; 95% to 199% of the days at hospitals in 37 districts; and 0 to 50% of days at hospitals in 16 districts. No scholarship doctors served in Dolpa, Humla, Jumla, Jajarkot, or Manang, which are some of the least accessible districts in the country.

The *Implementation Guidelines for Nepal Government Scholarship Recipient Doctors and Health-workers 2071* attempts to address the problem of inequitable postings. The guidelines specify that scholarship doctors must fill positions in PHCCs across the country (1 scholarship doctor per PHCC) before any scholarship doctor is posted to a district hospital. Two scholarship doctors can be posted to a district hospital at any given time and all district hospitals must be filled before a scholarship doctor is posted at zonal hospitals. Three scholarship doctors may be posted in zonal, sub-regional and regional hospitals at a time but only after PHCCs and District level hospitals have been filled. The first cohort of scholarship doctors posted after the guidelines came into effect had not completed their mandatory service at the time of this study. Therefore, it remains to be seen if the guidelines are being followed in practice.

On the human resource development side, the MBBS Scholarship Program has reduced government expenditures on medical education because the private colleges bear the awardees' educational costs: Direct government expenditure on scholarship doctors at private colleges is limited to their payroll during the mandatory service period. In public institutions, the government funds and heavily subsidizes the tuition costs of medical education for the students, and also keeps them on payroll during the mandatory service period.

Thus, the MBBS scholarship program appears to be a 'win-win' situation for both the scholarship recipients and the government and is, presumably, the rationale behind expansion of the program. Since 2072 BS, MBBS graduates from public medical colleges have also been required to serve in public hospitals for two years. Until 2072 BS, medical residents themselves funded post-graduation programs and had no service obligations after they completed their training. Owing to pressure from the medical fraternity, the government waived the cost of post-graduate residency programs in public institutions. The government now bears the cost of these programs and in return, the residents are required to work for the government after graduation. It is unclear if the scholarships in different residency specialty programs are based on public hospitals' needs.

It is expected that soon the number of scholarship physicians working in public health facilities will increase. This year, approximately, 200 MoE MBBS scholarship awardees will graduate from private medical colleges. Additionally, about 100 scholarship doctors will graduate from public and foreign medical colleges and report to DoHS for posting. Computerizing the management system at DoHS will increase efficiency by making human resource for health management more up-to-date, more transparent, less error prone, and less labor intensive. Additionally, data analysis and data sharing with other ministries and agencies will be easier. This will increase the likelihood that MoE, DoHS and other relevant agencies will interact.

Requirement for such management is foreseen especially since over half of the regular sanctioned positions for physicians in PHCCs and District Hospitals are reported to be vacant. Scholarship doctors might work alone at some health facilities. Thus, new MBBS graduates must be adequately prepared to work with little or no supervision, at places with limited infrastructure and limited communication facilities, and where patients often come to a hospital as a last resort. Hence, the government should consider making plans to shift from increasing physician production to management of medical graduates to ensure quality and maintain/improve capacity of medical graduates to meet local needs and their equitable distribution.

Increasing physician production and temporary positions in public hospitals is not sufficient to ensure increased accessibility to health services in rural areas. Without a systematic and transparent management system to post scholarship doctors at different hospitals along with provision of basic infrastructure, adequate equipment, supplies, communication facilities, and supportive supervision at workplaces, the current mal distribution of physicians will remain.

The priority for DoHS and MoE should be to improve their data management systems. Use of a common or interoperable information system will improve communication between the two government agencies, which in turn will facilitate better planning. Communication and coordination between the Ministries of Education and Health is key to being able to oversee health workforces' number, type, and quality, and to ensure that local needs are met.

DoHS must use a transparent and systematic process to ensure that doctors are posted equitably. The methods used to post (and track service completion status of) the current small number of doctors may not be adequate to achieve that goal, particularly in light of the increasingly large and diverse health workforce. Finally, the monitoring unit of the scholarship program must be strengthened to ensure that all mandatory obligations of the awardees are met and the country reaps the benefits of its policies and investment.



# **Nepal Government MBBS Scholarship Program: A Study of the Process and Implementation**

## **Background**

The World Health Organization identifies Nepal as one of the 57 countries facing a critical shortage of healthcare workers: (1). Nepal's physician density (2.1 physicians per 10,000 population) is one of the lowest; (2). According to the Joint Annual Review 2014 (the annual meeting of government, partners, and health sector stakeholders), more than 50% of the available positions for doctors in primary healthcare centers and district hospitals are vacant; (3). The national average is compounded by inequities in the distribution of physicians between urban and rural areas, across regions, and geographic terrains. For example, 85% of specialists and 56% of MBBS doctors in public sector are based in the country's central region that hosts 36% of the population. Only 1% of specialists and 3% of MBBS doctors are based in the far-western region that has 10% of the country's population; (4). Recruitment and retention of physicians in rural areas, where 82% of Nepal's population resides, has been a persistent challenge.

In 2049 BS, economic liberalization policies permitted the private sector to offer medical education in Nepal. Consequently, the annual production of doctors has significantly increased. Presently, twenty medical colleges offer MBBS programs: In 2049 BS, there was only one. Among the 20, 17 (85%) are private.

All private medical colleges are required to reserve a certain proportion of their annual student intake (10% for Nepali-owned institutions, 20% for foreign-owned institutions) free of cost for scholarship awardees selected by the Ministry of Education (MoE). The awardees are selected on the basis of a competitive exam. This MBBS Scholarship Program is intended to ensure an adequate supply of rural doctors. The scholarships include a service contract that requires the awardees to work in government health facilities for two years following graduation.

The MoE also awards Nepali citizens medical scholarships funded by foreign countries to attend medical colleges outside of Nepal. These scholarships include the same 2-year service requirements to work in public hospitals after graduation.

The number of MoE awarded MBBS scholarships varies from year to year. It depends on the number of students the Nepal Medical Council (NMC) allows medical colleges in Nepal to admit and the number of scholarships offered to the Nepal government by foreign governments each year.

The government bears the cost of MBBS program for Nepali students in public institutions (e.g. Tribhuvan University Institute of Medicine, BP Koirala Institute of Medicine, and Patan Academy of Health Sciences). Until 2071 BS, the graduates of public institutions did not have a mandatory service contract<sup>1</sup> after graduation. In 2072 BS, owing to pressure from the medical fraternity, the Nepal government waived the fee for post-graduate specialty residency programs for doctors in public hospitals. This waiver includes a mandatory five-year service contract to be completed in public hospitals.

Foreign countries (e.g. India, Pakistan, Japan, Bangladesh) also offer MBBS scholarships directly to Nepali citizens through their embassies. These are not granted through the Nepal government, and the awardees do not have mandatory service obligations in the public health sector.

---

<sup>1</sup> The graduating cohort of 2071 BS was the first public medical college cohort with a 2-year mandatory service requirement at public hospitals

The Nepal government began to award scholarships for higher education for Nepali citizens more than fifty years ago. The Scholarship Act of 2021 BS states that upon completion of their education, scholarship recipients are required to serve the government for up to 5 years (5). However, it was not until 2062/63 BS that the mandatory service requirement for scholarship doctors was implemented. Until then, the government did not have sufficient funds to pay scholarship doctors during their service. From 2063 BS onwards, the Department of Health Services (DoHS) under the Ministry of Health (MoH) allocated funds for the scholarship doctors' payroll.

Medical education scholarships or loan forgiveness tied to mandatory service is one of the global strategies used to recruit doctors to under-served areas. This strategy was in practice almost a century ago in the Soviet Union; it has now been used in over 70 countries although variations exist in financing mechanisms, duration, and conditions of service. For example, Malaysia, Mexico, and some parts of India (Assam and Kerala) require one year of post-graduation mandatory service (7). Only after completing mandatory service can physicians in Myanmar and South Africa have a private practice. Australia requires that medical graduates serve in rural areas for the number of years that they received financial aid; to be eligible for post-graduate education, Mongolia and Vietnam require rural work experience (7).

Mandatory services programs have helped ensure that health-workers are present in under-served areas. Mozambique could place at least one doctor in all district hospitals while Thailand was able to equitably distribute physicians to district hospitals (7,8). In South Africa, the mandatory program improved staffing and reduced rural hospital waiting times (9). In Japan and the US, it also improved rural physician retention (10).

In Nepal, the awardees' mandatory service contract aims to ensure a steady supply of doctors for public hospitals. According to the *Human Resources for Health Strategic Plan 2011-2015*, 335 out of 1,447 approved positions for public sector doctors are for scholarship program doctors (6). However, ten years after the MBBS Scholarship Program was implemented, its impact has not been evaluated. It is unclear how the scholarships have been able to improve MBBS physician distribution, availability and service provision in different parts of the country. Nor is it clear how useful it has been in strengthening the MBBS HRH situation in Nepal.

## Objective

The major objectives of this study were to assess the processes and effectiveness of Nepal's MBBS scholarship program.

### Research Questions

1. How is the MBBS scholarship program implemented?
2. How many MBBS scholarships has the Nepal Government granted to Nepali citizens to attend domestic private colleges and which colleges did they attend?
3. Who received the scholarships?
4. How many scholarship doctors have completed their mandatory service requirements? Where did they work and for how long?
5. Is there an association between the awardees' sex, geographic origin or scholarship category with service completion?

## Methods

We used a mixed method approach to answer the study questions. The approach included qualitative data collection and analysis and quantitative data collection and analysis. The quantitative data were collected from DoHS and MoE and were merged, cleaned and analyzed. A schematic of the methods employed is shown in Figure 1.

### Qualitative data collection

Qualitatively, we reviewed the scholarship program policy documents for the provisions for scholarship and for posting of physicians in different public health facilities following their graduation. This included: *Scholarships Act, 2021 (1964)*, *Scholarship Rules, 2060 (2003)*, and *Implementation Guidelines for Nepal Government Scholarship Recipient Doctors and Health-workers 2071*.

### Quantitative Data Collection

Quantitatively, we compiled and analyzed the available data on scholarship doctors at the Department of Health Services, Ministry of Health, and the Scholarship Section of the Ministry of Education. We limited our study to MBBS scholarship awardees at Nepal's private medical colleges

### Data collection from the Department of Health Services and Ministry of Education

The Nick Simons Institute (NSI) received permission to access data on scholarship doctors from the Director General of the Department of Health Services (DoHS). Permission was obtained in 2072 BS. At that time, electronic data was not available. Thus, we created a spreadsheet in Microsoft Excel from documents in the Doctors Section of the DoHS. These documents included official letters of service deployment to health facilities, transfer letters, certificates of service completion from DoHS/health facilities served, lists of deployed doctors'/mandatory service completion, official *tippani* (official note), and limited academic documents. In addition, the MoH provided a list of scholarship doctors assigned to districts affected by the 2015 Nepal Earthquake. Scholarship doctors' supporting documents were often missing or were filed with non-related documents. While some years doctors' documents were complete during other years had no data other than names. NMC registration number and the degree of the scholarship doctor (e.g. MBBS, BDS, MS, MDS etc.) were often missing, as were the names of the public hospitals<sup>2</sup> where these doctors were posted.

After 2068 BS, scholarship doctors' service data was relatively complete. This was because after 2068 BS, doctors were required to submit evidence of their 2-year service at public hospitals attached to their DoHS application for a certificate of service completion

Our DoHS data collection covered the period from approximately 2062 BS until Kartik 2072 BS (not all documents were dated). We found 1037 scholarship doctor records<sup>3</sup>. This included 60 scholarship doctors that were posted in districts affected by the 2072 BS Nepal earthquake. The records indicated that only 385 scholarship doctors had completed their 2-year service requirements. However, this included potential duplicates, non-MBBS doctors, and those who graduated from medical colleges in foreign countries because of incomplete data. Most importantly, DoHS did not have data on the number of scholarship doctors who were supposed to report for posting every year.

### Data Collection from Scholarship Section, Ministry of Education

In Baisakh 2074 BS, we received permission to access data on MBBS scholarships at the Scholarship Section of MoE. The electronic database at Scholarship Section of Ministry of Education had 2506 records of MBBS scholarships. Data for certain years were missing. From 2060 BS onwards, paper records were also available, and we collected data on some of the missing years from them (427 records).

---

<sup>2</sup> Sometimes same health facilities had different names in assignment letters and service completion certificates.

<sup>3</sup> After merging with the MoE data-set it was found that out of the 1037 records of scholarship doctors in the DoHS spreadsheet, 71 were non-MBBS or non-Nepal graduates and 20 were duplicates.

## Data Merging, Cleaning and Analysis

The 1037 records from DoHS indicated that only 385 scholarship doctors had completed their 2-year service requirements which included potential duplicates, non-MBBS doctors, and those who graduated from medical colleges in foreign countries, and incomplete data on the number of scholarship doctors who were supposed to report for posting every year. These were removed. DoHS and MoE data-sets were then merged and it was found that out of the 1037 records of scholarship doctors in the DoHS spreadsheet, 71 were non-MBBS or non-Nepal graduates and 20 were duplicates.

From the MoE data, after removing non-MBBS scholarships, scholarships outside of Nepal, and duplicates, we had 2926 records. Of these, 1307 had reported to MoE after graduation and 548 had completed the required 2-year service. Records of penalties against doctors who did not complete the mandatory service requirement or those who opted out of the service obligations through a formal process were not available.

Extracting specific information, such as annual number of scholarships in medicine, from the MoE database was not simple. Awardees entered their own records and drop-down menus did not exist for any fields. Thus, the data was not uniform. For instance, the degree, “MBBS” has been entered in more than 10 ways, e.g., M.B.B.S, MBBS, mbbs, Mbbs, general medicine, medicine, etc. Considerable effort was required to clean and extract useful data.

The final dataset only included data on MBBS scholarship awardees at domestic private colleges. We excluded data on scholarship awardees other than MBBS (e.g. dental, specialist degrees, nursing, etc.), scholarships outside of Nepal and in public medical colleges in Nepal. The data collected from DoHS, MoH, and MoE was merged in Microsoft Excel. After removing duplicates and exclusions, the final data set represents 22 scholarship years on 2,981 awardees (Figure 1). Of these, 891 records were found in both databases. MoE database had 2,035 unique records and DoHS/MoH database had 55. We did not have access to the paper-registries on MoE MBBS scholarship awards prior to 2060 BS and assumed that these 55 records were awarded before then. The scholarship year of 59 awardees and medical college of 52 awardees were missing. We analyzed the quantitative data using STATA version 14.

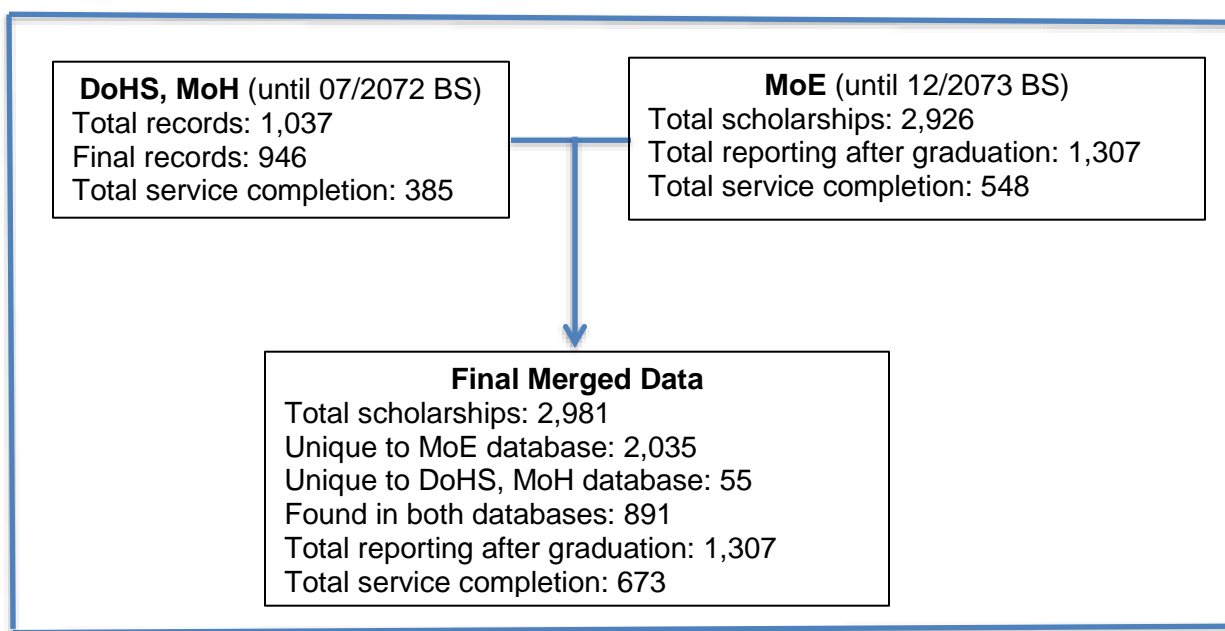


Figure 1: Data collection from Ministry of Education and Department of Health Services, Ministry of Health

## Results

### Part I. The scholarship process

Every year, the MoE issues a public notice inviting eligible students to appear for a medical scholarship exam. Students rank their preferred college in their applications and are selected based on their exam performance.

#### *Selection*

According to the *Scholarship Rules 2060*, there are two categories of scholarships (11). Fifty five percent of the scholarships each year are open category, which is based entirely on merit. Forty five percent of the seats are reserved for disadvantaged group candidates (e.g. women, poor, rural areas, and specific ethnic groups) who have passed the School Leaving Certificate (SLC) exam.

In the reserved category, candidates are selected using the following scheme:

**Table 1: Reservation category for Ministry of Education scholarships**

<b>Reserved category</b>	<b>Proportion of reserved category</b>	<b>Proportion of total scholarship</b>
Women (total)	33%	14.85%
Dalit women	3%	
Muslim women	2%	
<i>Janajatis</i> (indigenous group)	27%	12.15%
Economically or socially excluded:	25%	11.25%
Madhesi (total)	20%	
Madhesi Dalit	3%	
Family of the disappeared, martyrs, & injured	3%	
Muslims	2%	
Dalit	9%	4.05%
Citizens from remote areas ( <i>Accham, Kalikot, Jajarkot, Jumla, Dolpa, Bajhang, Bajura, Mugu, or Humla</i> districts)	4%	1.8%
Disabled	2%	0.9%

If a candidate from a reserved-population group who has passed SLC from a community school does not pass the MoE exam, someone from the same population group who has passed from other types of schools (e.g. private, non-profit, missionary, public-private, etc.) becomes eligible for the scholarship award. Similarly, if no Dalit or Muslim women pass the exam, other women can be selected, and if a Madhesi Dalit is not available, another Madhesi candidate can be selected. If no individual from the reserved population group is available, the scholarship is awarded in the open category.

#### *Scholarship amount*

Domestic medical college scholarships only include tuition waivers. Students' lodging, logistics, and transportation are to be paid by the students themselves using personal resources or loans.

#### *Nepal Medical Council registration*

In order to enter practice, MBBS or equivalent degree holders are required to appear before the Nepal Medical Council (NMC) and pass a licensing exam to obtain a (temporary) NMC registration number following graduation and internship completion. This registration allows the new graduate to practice supervised medicine in Nepal for two years. When they register with the NMC, physicians must specify if they received a scholarship from the Nepal government. After two years of supervised medical practice with a temporary registration, a physician can obtain a permanent NMC registration that allows them to practice medicine independently.

### Reporting at Ministry of Education

Within 3 months of graduation and NMC registration, all private college MBBS scholarship awardees must report to the MoE. The Scholarship Section at MoE then issues a letter to DoHS to facilitate posting at a public health facility. The penalty for late reporting for mandatory service is Rs. 5,000 NPR (USD 50). Beginning in 2071 BS, MoE is required to send the DoHS a list of medical scholarship awardees and a list of awardees that have graduated from medical college. This list must be sent within 15 days of medical college admission and graduation.

### Posting for service

MBBS scholarship graduates need to submit an application at DoHS along with supporting documents from NMC and MoE to receive an official posting to a relevant public health facility (PHCC, District Hospital, or Zonal/Sub regional/Regional Hospital).

The structure of the public healthcare facilities in Nepal follow a hierarchy based on number of hospital beds (Figure 2). The PHCCs, having 3 – 10 beds, provide primary care services only and are the first tier of hospitals where a physician is posted. District level hospitals have 15 – 50 beds also provide lifesaving surgical services. PHCCs and District hospitals are located in rural areas and refer patients to Zonal, Sub Regional, and Regional hospitals that have more than 50 beds, provide specialized services, and are located in urban areas. Regional and sub regional hospitals are referral centers for their respective region. Central level hospitals provide tertiary care and super-specialized services and are in the Kathmandu Valley.

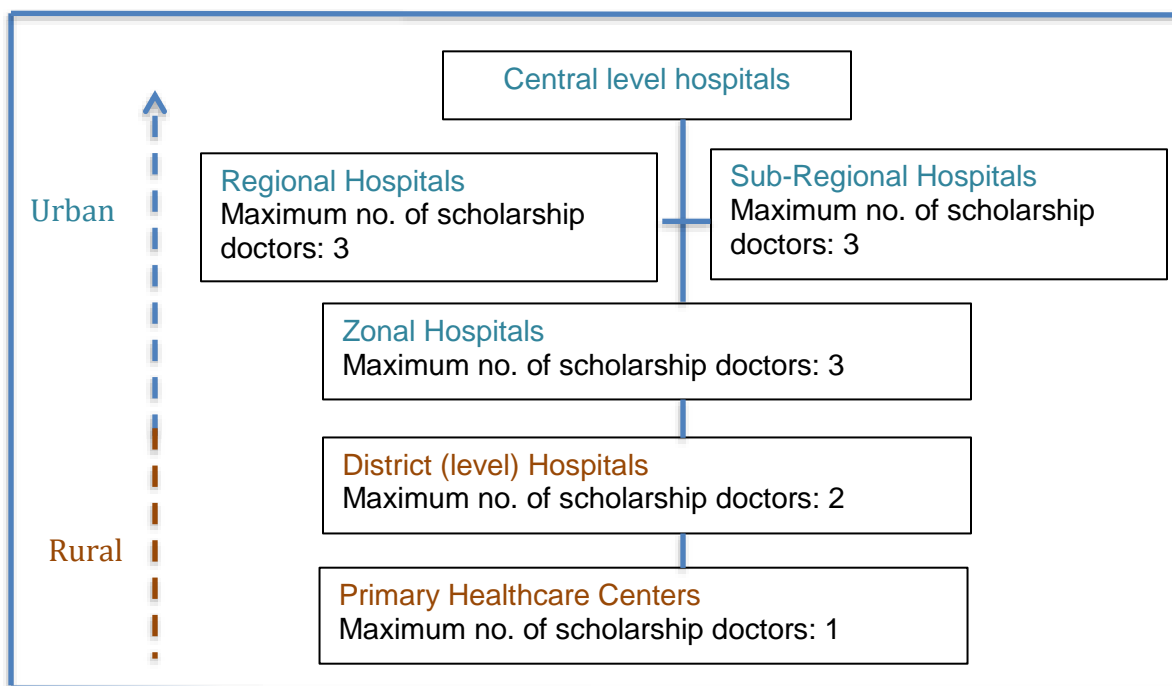


Figure 2: Organogram of public hospitals where scholarship doctors are posted

The *Implementation Guidelines for Nepal Government Scholarship Recipient Doctors and Health-Workers 2071* (12), specifies the maximum number of scholarship doctors to be posted at different tiers of hospitals. Only one scholarship doctor can be posted at a PHCC at a time and the positions at all PHCCs must be filled before a scholarship doctor is posted to a District level hospital. Two scholarship doctors can be posted at a time at District level hospitals. Three scholarship doctors can be posted at a time at Zonal, Sub-regional and Regional hospitals, but only after the positions at District level hospitals have been filled. If DoHS is unable to find a workplace for the graduate, the mandatory service requirement is waived.

The DoHS process for posting scholarship doctors is neither systematic nor transparent. Doctors are posted to a health facility in districts on first-come-first-serve basis without prior planning. Scholarship doctors can avoid the most rural and remote postings by refusing to accept a posting to a remote hospital and wait until a position opens at a hospital near an urban center.

*Transfer during mandatory service period*

Beginning in 2071 BS, a scholarship doctor must work in a hospital for at least a year to be eligible for a transfer. Priority is given to those scholarship doctors who have worked for at least a year in the most remote and rural areas.

While working during their mandatory service period and with prior DoHS permission, scholarship doctors can apply for permanent government positions (e.g. at MoH and government security forces). Time in such positions can be used to complete the remainder of their mandatory service requirement.

*Service completion*

Starting 2067 BS, scholarship doctors are required to submit evidence of their 2-year service to the DoHS. This evidence includes an official letter from the hospitals served and a copy of their attendance sheet. The DoHS will then issue a certificate of service completion. The certificate is required to obtain a MoE Letter of No Objection and to obtain a permanent NMC registration number.

Figures 3 and 4 summarize the pathway of a MoE MBBS scholarship awardee.

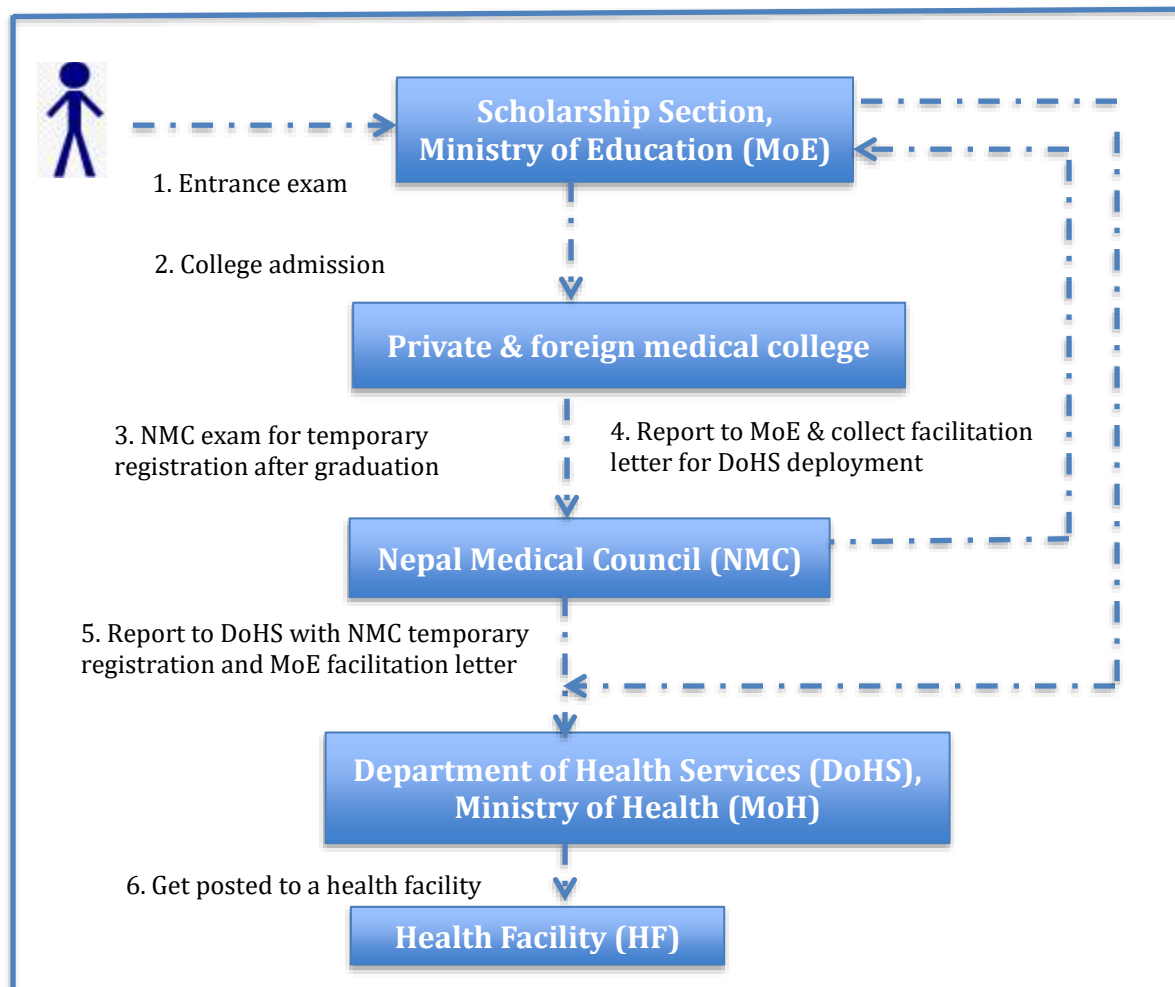


Figure 3: Pathway of Ministry of Education's MBBS scholarship awardees Part 1 – scholarship to mandatory posting

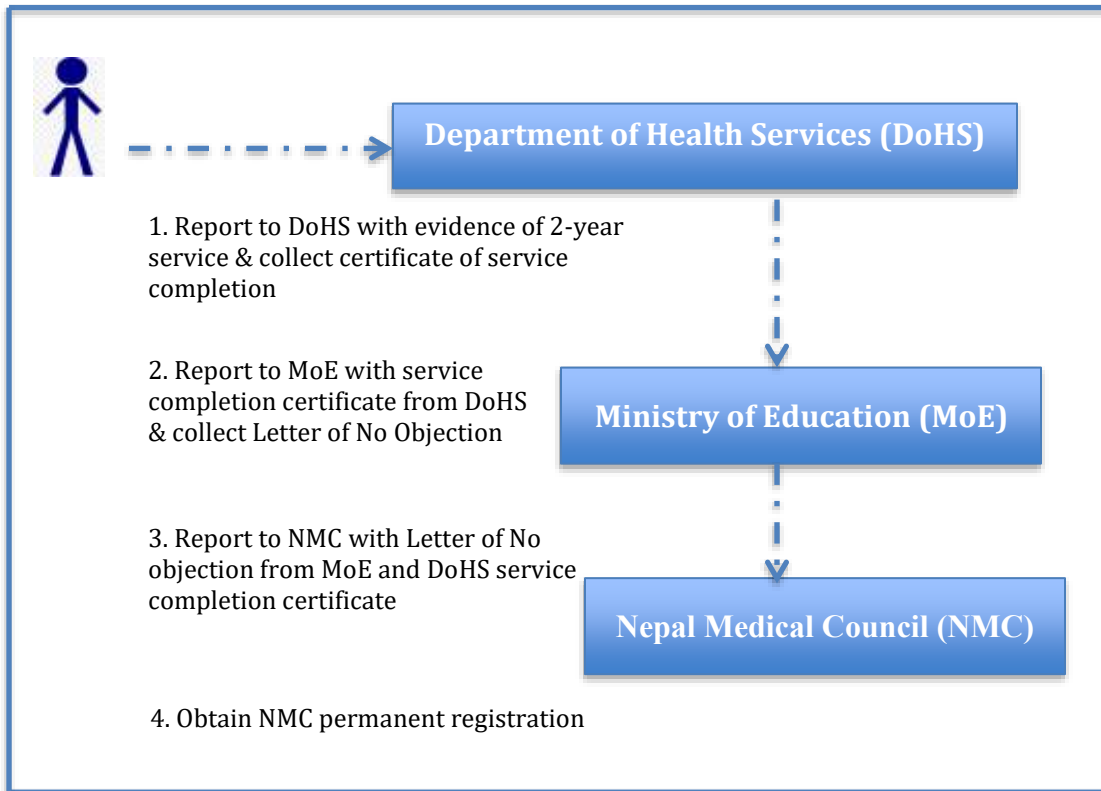


Figure 4: Pathway of Ministry of Education's MBBS scholarship awardees Part 2 – post two-year service

#### *Contract termination without service fulfillment*

- Scholarship doctors who do not wish to provide two years of service in public hospitals must pay a financial penalty. The MoE determines the amount that includes the total sum required for his/her education and other benefits. Payments are made to the Revenue Division of the Ministry of Finance within 6 months. When scholarship awardees are not in country, the government has the right to recover the amount from his/her parents.
- The NMC will not issue a permanent registration to scholarship (MBBS) doctors and specialist registration to a postgraduate scholarship doctors without a service completion certificate from the DoHS or financial penalty payment to the government.
- MoE will not issue a Letter of No Objection without a service completion certificate from DoHS or the financial penalty payment to the government. This Letter of No Objection is required by the Department of Immigration when Nepali citizens leave the country on a student visa and to receive foreign currency for their education.

#### *Coordination Committee*

The Coordination Committee is a government team responsible for managing the medical scholarship program. It consists of the Director General of DoHS (President), Joint Secretary of MoH, a representative of the MoE, a representative of respective councils (e.g. medical, nursing) and the under-secretary DoHS. This committee is also responsible for compiling data on scholarship doctors and health workers and those who have not reported to relevant agencies. We found no evidence that the Scholarship Section of MoE and the DoHS communicate about scholarship doctors. Although the MoE database on scholarship awardees is extensive, it has not been used to share information. MoE initiates investigations against defaulters only after an individual from the general public files a complaint against a particular defaulter at the Commission for Investigation of Abuse of Authority.



## Part II. Data analysis

### Scholarships awarded

In 2050 BS, 25 students received scholarships to one medical college (Figure 5). No data on scholarships was available for 2051 and 2052 BS. The growth of awardees and the increase in number of participating private medical schools showed a linear increase as well as proportional increase (Figure 5). The number of awardees increased except in 2053 and 2072-73 BS. The highest number of MBBS scholarships awards was in 2071 BS (226 scholarships to 13 medical colleges). In 2073 BS, 183 scholarships were awarded to 17 medical colleges. The awardees/institution ratio is between 12.8-14.5 (median 13.8) (Figure 6), and has been fairly consistent since 2054 onwards. However, it showed a decreasing trend in 2072 (13.0) and 2073 (10.8) [Annex-1]

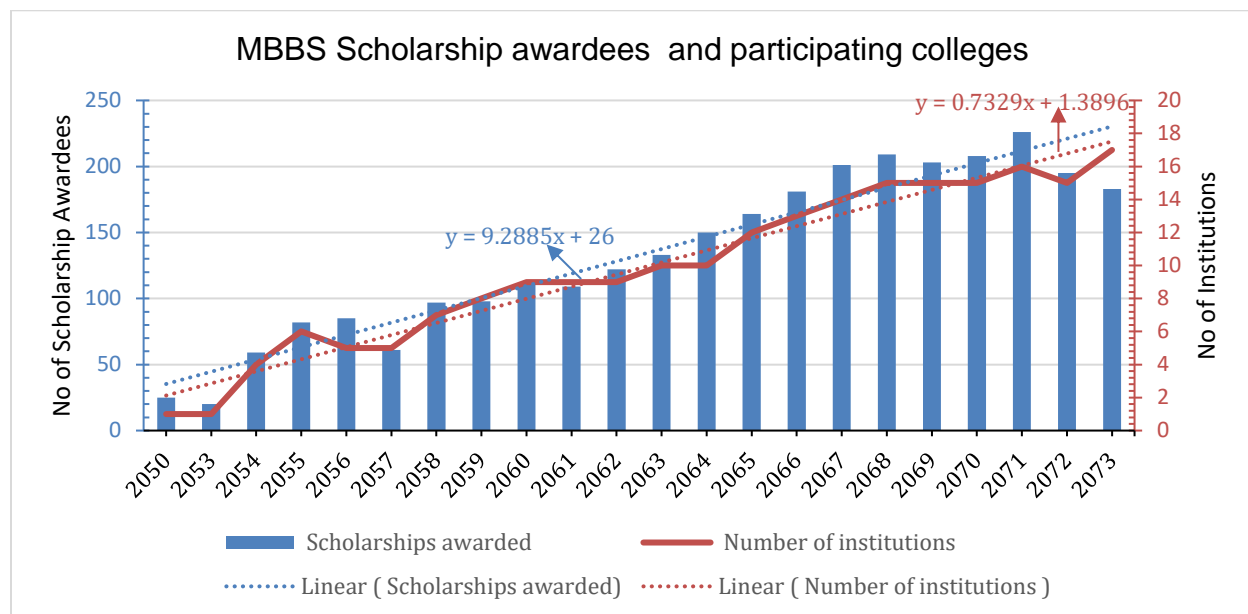


Figure 5: Annual number of MBBS scholarship awardees and participating colleges

Private medical colleges are scattered in eleven districts. Chitwan, Kaski, Kathmandu, and Rupandehi districts produce the most MBBS doctors (69%) (Table 2). All medical colleges are in the hills and Terai. No medical colleges exist in the mountains or in the far-western development region.

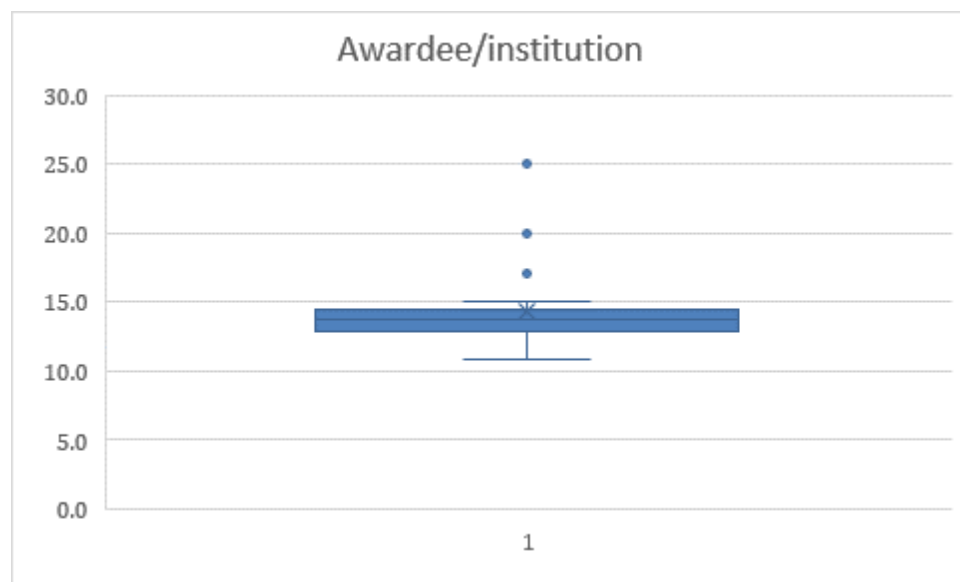


Figure 6: Ratio of MBBS scholarship awards per private medical college

Nepal's medical colleges are either affiliated with the state-owned Tribhuvan University (TU) or the private Kathmandu University (KU). Since KU produces the largest number of doctors, the majority of the scholarships (66%) have been awarded to its affiliated medical colleges (Table 2).

**Table 2: Number of MBBS scholarships by district and their affiliated university**

District	KU (number of affiliated colleges)	TU (number of affiliated colleges)	Unknown	Total	Percent of total scholarships
Chitwan	534 (1)	103 (1)		637	21%
Kaski	503 (1)	55 (1)		558	19%
Kathmandu	428 (2)	71 (1)		499	17%
Rupandehi	13 (1)	350 (1)		363	12%
Banke	249 (1)			249	8%
Parsa		194 (1)		194	7%
Morang	152 (2)			152	5%
Dhanusa		93 (1)		93	3%
Lalitpur		88 (1)		88	3%
Palpa	80 (1)			80	3%
Kavrepalanchok	16 (1)			16	1%
Unknown			52	52	2%
<b>Total</b>	<b>1,975 (10)</b>	<b>954 (7)</b>	<b>52</b>	<b>2,981</b>	<b>100%</b>

Of these affiliates, the College of Medical Sciences has provided the maximum number of MoE scholarships (534 in 22 years) followed by Manipal College of Medical Sciences (503 in 20 years) (Table 3). The same colleges also provide the maximum number of scholarships per year (Table 3).

**Table 3: Number and years of MBBS scholarships in private medical colleges**

Medical College	Number of Scholarships	Number of years*	Scholarships per year
College of Medical Sciences	534	22	24.3
Manipal College of Medical Sciences	503	20	25.2
Universal College of Medical Sciences	350	18	19.4
Nepalgunj Medical College	249	19	13.1
Nepal Medical College	224	20	11.2
Kathmandu Medical College	204	19	10.7
National Medical College	194	17	11.4
Nobel Medical College	131	11	11.9
Chitwan Medical College	103	8	12.9
Janaki Medical College	93	12	7.8
KIST Medical College	88	9	9.8
Lumbini Medical College	80	9	8.9
Nepal Army Institute of Health Science	71	6	11.8
Gandaki Medical College	55	7	7.9
Birat Medical College	21	3	7.0
Kathmandu University School of Medical Sciences	16	15	1.1
Devdaha Medical College	13	2	6.5
College unknown	52		
<b>Grand Total</b>	<b>2,981</b>		

\*Number of years for which the college provided MoE scholarships

### *Scholarship awardees*

The vast majority (79%) of MBBS scholarship awardees are male. Since 2060 BS, the proportion of female recipients has been more than the 15% reserved for them (Figure 7). The highest proportion of females was 30%, in 2061 BS.

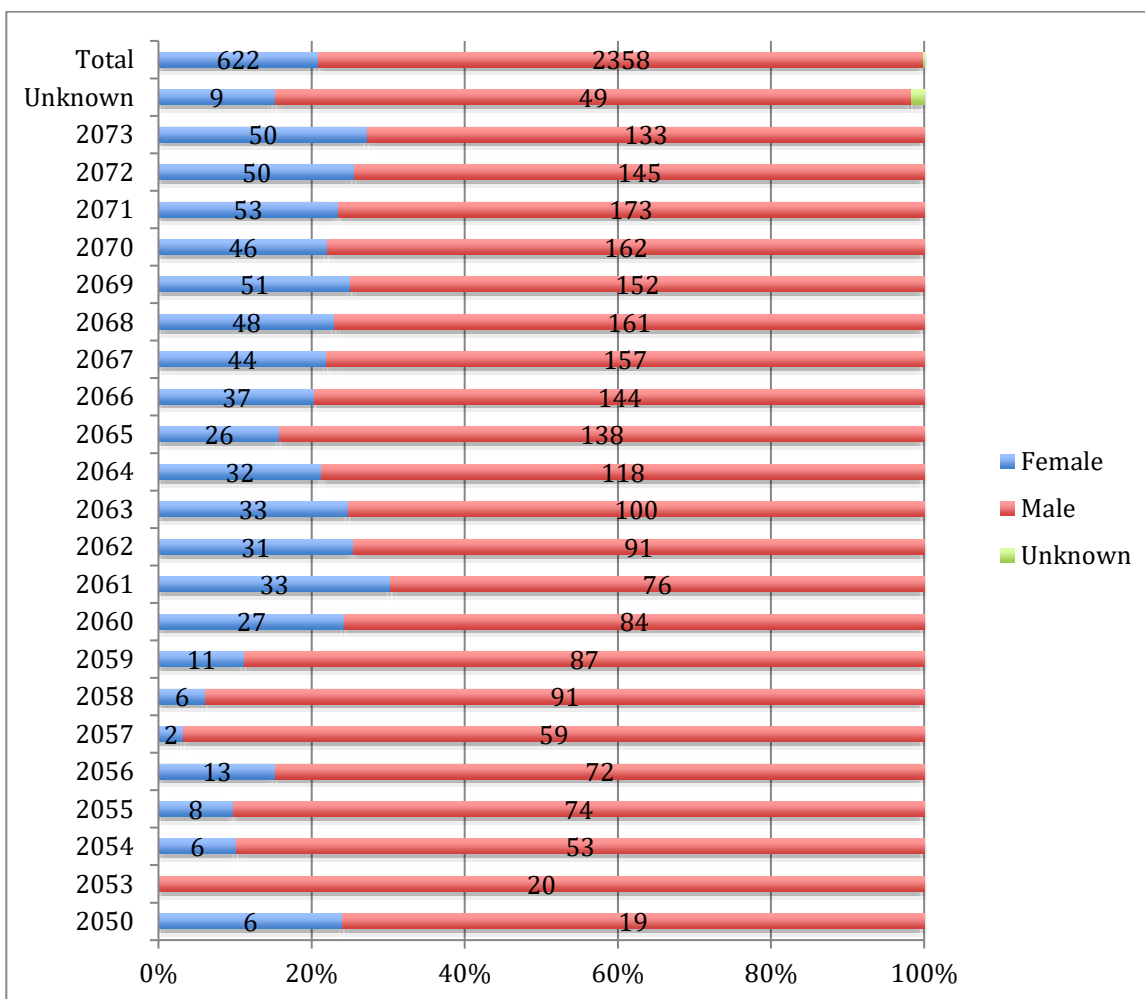


Figure 7: Sex distribution of scholarship awardees by year

Citizens from Kathmandu (272), Kaski (162), Chitwan (138), Bhaktapur (131), and Dhanusa (129) districts have received the most MBBS scholarships. No individual from Rasuwa district has ever received a MoE MBBS scholarship to attend a domestic private medical college. Taplejung (2), Mustang (2) and Humla (2) have each received only 2. (Annex-2).

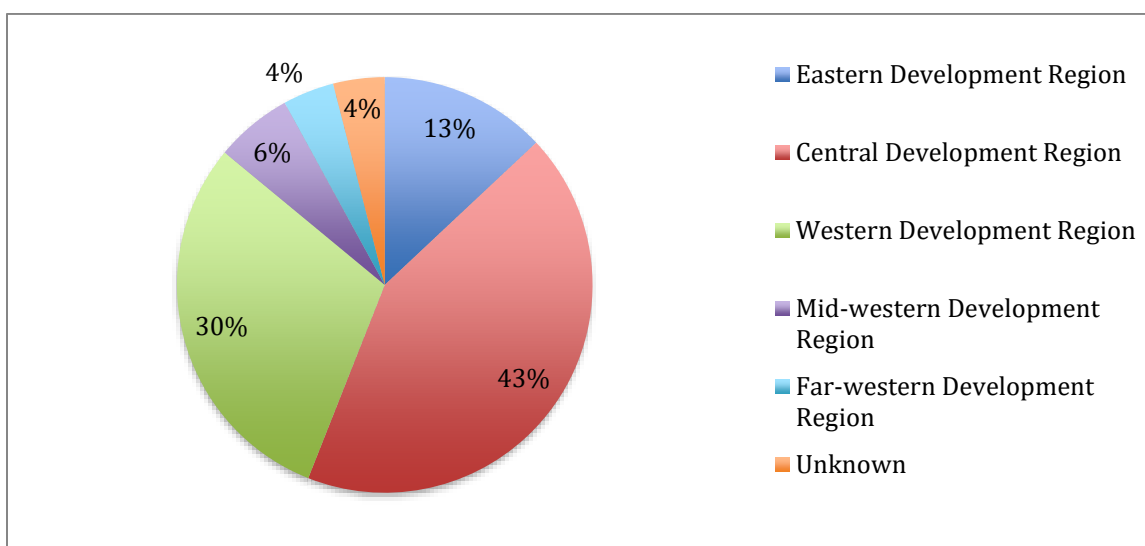


Figure 8: Scholarship awardees' development region of origin

The largest percentages of scholarship awardees have been from the Central (43%) and the Western (30%) Development Regions (Figure 8). The fewest awardees are from the Mid-western (6%) and Far-western Development Regions (4%). Half of the total scholarship awardees have been individuals from the hills compared to 4% from the mountain region (Figure 9).

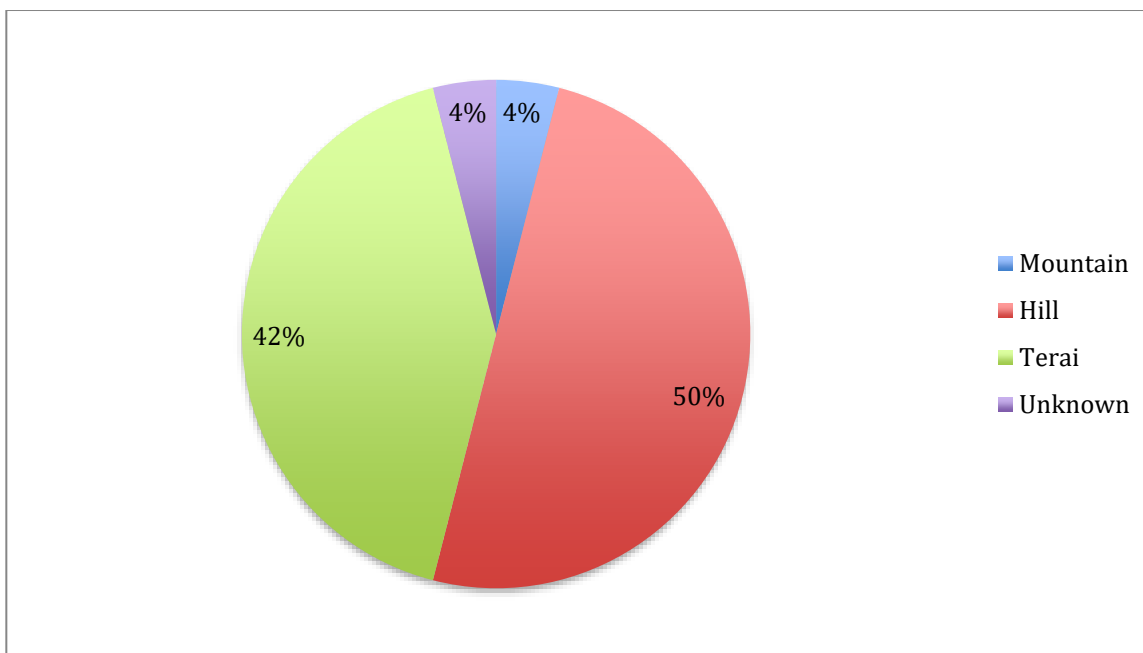


Figure 9: Scholarship awardees' ecological region of origin

Since 2060 BS, about half of the total scholarships awarded have been open category and 37% reserved (Table 4). In 2072 BS, 45% of the scholarships were reserved.

Table 4: Category of Ministry of Education domestic MBBS scholarships

Scholarship Year (BS)	Open category	Reserved category	Unknown category	Total
2060	68 (61%)	39 (35%)	4 (4%)	111
2061	65 (60%)	44 (40%)		109
2062	76 (62%)	44 (36%)	2 (2%)	122
2063	75 (56%)	45 (34%)	13 (10%)	133
2064	83 (55%)	44 (29%)	23 (15%)	150
2065	94 (57%)	59 (36%)	11 (7%)	164
2066	98 (54%)	77 (43%)	6 (3%)	181
2067	89 (44%)	73 (36%)	39 (19%)	201
2068	40 (19%)	33 (16%)	136 (65%)	209
2069	112 (55%)	90 (44%)	1	203
2070	87 (42%)	73 (35%)	48 (23%)	208
2071	117 (52%)	96 (42%)	13 (6%)	226
2072	107 (55%)	87 (45%)	1	195
2073	103 (56%)	77 (42%)	3 (2%)	183
<b>Total</b>	<b>1214 (51%)</b>	<b>881 (37%)</b>	<b>300 (12%)</b>	<b>2,395<sup>4</sup></b>

#### Mandatory service completion status

Figure 10 summarizes the trend in number of scholarship awards at domestic private colleges from 2050 to 2073 BS and the service completion status of the awardees. The mandatory service requirement was not enforced for the cohorts from 2050 to 2056/57 BS scholarship year.

<sup>4</sup> The 586 scholarships awarded prior to 2060 BS have been excluded here because the 45% reserved category in government scholarships was introduced through Scholarship Rules 2060 BS (2003 AD)

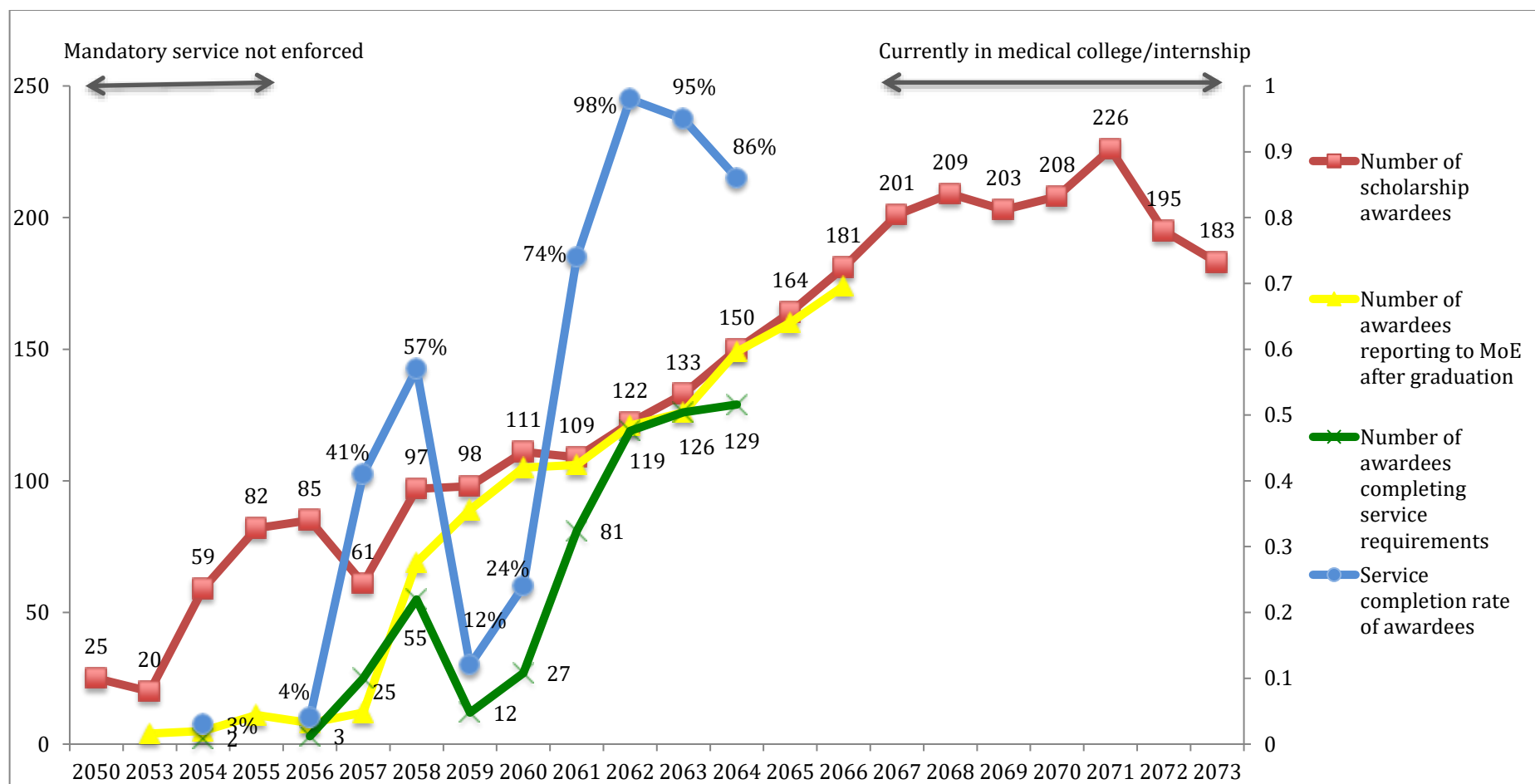


Figure 10: Ministry of Education MBBS scholarship awards and the service completion status of awardees since 2050 BS<sup>5</sup>

<sup>5</sup> The 59 scholarship awardees of unknown year and the completion status of cohorts that are currently in service have been removed in this figure.

Scholarship awardees started reporting to the MoE after graduation only after the enforcement of the 2-year mandatory service requirement began in earnest in 2062/63 BS (scholarship cohort of 2057). However, the rate of service completion (and/or data on service completion) ranged from 12% to 57% until the scholarship cohort of 2060 BS. Service completion rate of the scholarship cohorts of 2061 to 2064 BS was 74%, 98%, 95%, and 86% respectively. Members of the cohorts of 2065 and 2066 BS scholarship year were in service when this report was prepared.

The following data analyses are limited to the scholarship cohorts of 2062-2064 BS, the period for which relatively complete data is available. Between 2062-2064 BS, MoE awarded 405 MBBS scholarships in domestic private medical colleges. Of these, 374 (92%) awardees completed their mandatory 2-year service at public hospitals.

We used logistic regression to examine the likelihood that an awardee would complete their mandatory service (completed vs not completed). For predictors, we used awardee sex, scholarship category, and geographic origin.

Unadjusted, service completion was significantly associated with the doctors' gender ( $\chi^2=7.4$ ,  $p=0.006$ ) and their category of scholarship ( $\chi^2=5.1$ ,  $p=0.023$ ) (Table 5). Males and open category recipients were more likely to complete the mandatory service requirement than females and those in the reserved category. Scholarship doctors' place of origin was not associated with service completion ( $\chi^2=3.3$ ,  $p=0.188$  for ecological zones of origin and  $\chi^2=5$ ,  $p=0.292$  for development region of origin).

In fully adjusted models, the associations between service completion status and gender of the awardees ( $OR=0.4$ ,  $p=0.037$ ) and their category of scholarship ( $OR=0.5$ ,  $p=0.013$ ) remained significant (Table 6).

**Table 5: Data for the Chi<sup>2</sup> test of association of scholarship awardees' service completion with sex, category of scholarship, and geographic origin**

Service completion status	Female	Male	Total			
Did not complete	14	17	31			
Completed	82	292	374			
Total	96	309	405			
Completion rate	85%	94%	92%			
Chi-square = 7.4873 p = 0.006						
Service completion status	Open Category	Reserved category	Total			
Did not complete	10	14	24			
Completed	224	119	343			
Total	234	133	367			
Completion rate	96%	89%	93%			
Chi-square = 5.1769 p = 0.023						
Service completion status	Hill	Mountain	Terai	Total		
Did not complete	19	3	9	31		
Completed	213	12	149	374		
Total	232	15	158	405		
Completion rate	92%	80%	94%	92%		
Chi-square = 3.3449 p = 0.188						
Service completion status	Development Region					Total
	Central	Eastern	Far-western	Mid-western	Western	
Did not complete	12	3	3	2	11	31
Completed	186	51	9	20	108	374
Total	198	54	12	22	119	405
Completion rate	93%	94%	75%	90%	91%	92%
Chi-square = 4.9500 p = 0.292						

**Table 6: Adjusted odds of service completion with sex, scholarship category and geographic origin of awardees**

Association with service completion	Adjusted Odds Ratio	[95% Conf. interval]	p-value
Sex	0.4361	0.1999 0.9511	0.037
Scholarship Category	0.5041	0.2930 0.8674	0.013
Development Region of origin	0.6779	0.4559 1.008	0.055

#### Service details

Of 374 doctors who completed their service, details were available for all but one. Of the 373, 366 had served for at least 700 days (Table 7). The reasons for scholarship doctors reported serving for less than 730 days (=2 years) are unclear. It may be because of data entry errors, use of accumulated leave, or because a waiver (with or without penalty) was granted. Scholarship doctors reported as serving for more than 730 days are those who, during their mandatory service period, were recruited into permanent government service (Ministry of Health, Nepal Army, Nepal Police, or the Armed Police Force). Their service was counted up until the time they approached the DoHS for a service completion certificate. To avoid misrepresenting the number of service-days in our analysis, six cases with more than 800 days of service were edited to 730.

**Table 7: Total service days of scholarship doctors who completed their service requirements**

Days served	Number of doctors	Percent
Less than 500 days	2	1%
500 to 700 days	5	1%
701 to 730 days	345	92%
731 to 800 days	21	6%
<b>Total</b>	<b>373</b>	<b>100%</b>

The scholarship doctors served in a health facility for two years unless they receive a transfer letter. They may request for a transfer themselves or be transferred by DoHS to another hospital at any point. Over half of the scholarship doctors served in the same health facility for 2 years, 28% in two, and 15% in three (Table 8). The 6% of doctors who served in more than 3 health facilities are those who, during their mandatory service period, joined the Ministry of Health as permanent employees. They were stationed at the Ministry of Health for a brief period before being posted to district health facilities (Table 9).

Scholarship doctors worked primarily in district level hospitals (46% of service-days<sup>6</sup>) and PHCs (32% of service-days); however, they did not work in 87 PHCs and 5 district hospitals (Table 10). Twelve percent of their service-days were at Zonal hospitals, and 3% each at Sub regional and Regional hospitals. Scholarship doctors were posted at central hospitals only after being recruited into permanent service.

**Table 8: Number of health facilities served by scholarship doctors during their mandatory service period**

Number of Health Facilities served	Number of doctors	Per cent
1	192	51%
2	104	28%
3	54	15%
4	19	5%
5	4	1%
<b>Total</b>	<b>373</b>	<b>100%</b>

<sup>6</sup> Service-days calculated as sum of working days of the scholarship doctors during the mandatory 2-year service period, based on dates in the service completion certificate.

**Table 9: Number of scholarship doctors who completed their mandatory service (n=373) and joined permanent government service during their service period**

Government institution joined during 2-year mandatory service period	Number of doctors	Percent of service completers
Armed Police Force	3	1%
Ministry of Health	59	16%
Nepal Army	7	3%
Nepal Police	2	1%
<b>Total</b>	<b>71</b>	<b>21%</b>

Scholarship doctors worked the most (53% of service-days) in the hills and the least (12% of service-days) in the mountains (Table 11). Similarly, they worked mostly in the Central Development Region (55% of service-days) and the least in (2% of service-days) the Far-Western Region (Table 12).

**Table 10: Service days of scholarship doctors in different health facility types**

Types of health facility	Number of HFs served (Total HFs)	Service-days	Percent of service days in different health facility types
Primary Healthcare Center	118 (205)	87,727	32%
District (level) Hospital	66 (71)	124,726	46%
Zonal Hospital	11 (11)	33,752	12%
Sub Regional Hospital	3 (3)	8,622	3%
Regional Hospital*	3 (3)	7,466	3%
Central Hospital	3	3,533	1%
District (public) Health Office		1,716	1%
Ministry of Health		3,525	1%
<b>Total</b>		<b>271,067</b>	<b>99%</b>

\*Includes Regional Tuberculosis center

**Table 11: Service-days of scholarship doctors in health facilities located at different ecological regions**

Ecological region	Service-days	Percent
Mountain	31,847	12%
Hill	143,147	53%
Terai	96,073	35%
<b>Grand Total</b>	<b>271,067</b>	<b>100%</b>

**Table 12: Service-days of scholarship doctors in health facilities located at different development regions**

Development Region	Service-days	Percent
Eastern Development Region	47,565	18%
Central Development Region	93,446	34%
Western Development Region	72,715	27%
Mid-western Development Region	37,958	14%
Far-western Development Region	19,383	7%
<b>Grand Total</b>	<b>271,067</b>	<b>100%</b>

When the hospitals where the scholarship doctors served were classified according to accessibility<sup>7</sup>, most service-days were at the less accessible hospitals. (Figure 11) The average service-days are the fewest at the least accessible PHCs.

<sup>7</sup> Ministry of Health accessibility classification is based on road accessibility to a health facility (Nepal Health Services Act 2053, Annex 11)



When the district level hospitals are classified by accessibility, the least accessible hospitals received the least scholarship doctor service in the past 4 years (Figure 12). In those hospitals, only 91% of the days were filled with a scholarship doctor compared to 127% and 141% in the less accessible and most accessible hospitals respectively.

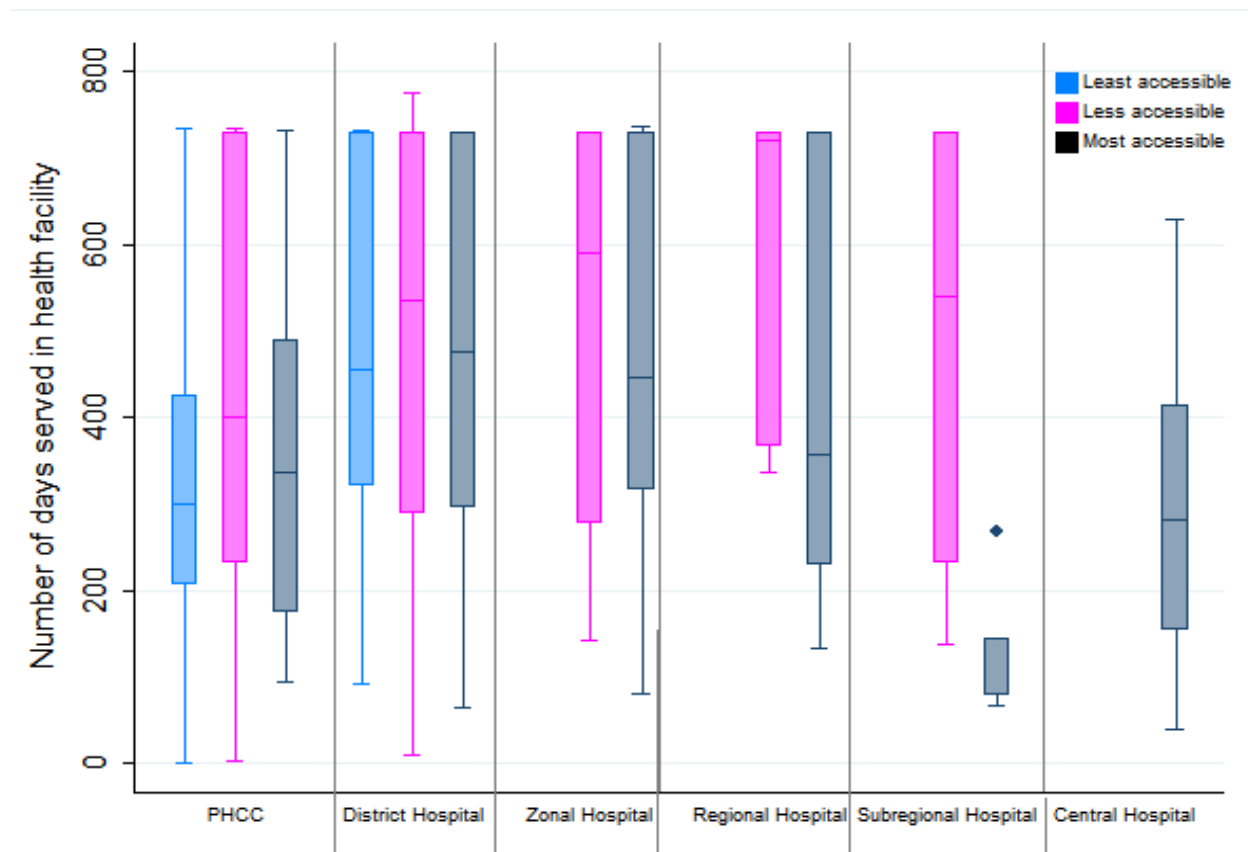


Figure 11: Days served by scholarship doctors in hospitals categorized by type and accessibility

The scholarship doctors worked in 66 district level hospitals across 58 districts. They worked in two district level hospitals each in Kapilbastu, Mahottari, Palpa, Siraha, and Udaypur and in three district level hospitals in Tanahun. Figure 13 shows the percent of days the three cohorts of scholarship doctors filled district level hospitals during the last 4 years of mandatory service enforcement (since each cohort overlaps a year with the preceding and succeeding cohort). Each hospital in Gorkha, Dhading, Makawanpur and Dolakha had more 300% filled. More scholarship doctors worked in these district hospitals compared to others. On the other hand, no scholarship doctors worked in district hospitals of Dolpa, Humla, Jumla, Jajarkot, and Manang.

In total, the past three 3 cohorts of scholarship doctors provided 124,726 service-days at district level hospitals. Had those days been equitably distributed across all 63 districts<sup>8</sup>, then scholarship doctors would have been present 136%<sup>9</sup> of the time in each district.

The scholarship doctors provided 87,727 service-days at 118 PHCs. Had the service-days been evenly distributed across 205 PHCs in the country, only 29% of the days in the past 4 years would have been filled with a scholarship doctor<sup>10</sup>.

<sup>8</sup> 12 districts do not have a district level hospital because of presence of hospitals of higher levels (i.e. zonal hospital or sub-regional, regional or central hospital). Chitwan is the only district with district hospital and a zonal hospital.

<sup>9</sup> Percent of days of district hospital filled with scholarship doctor =  $(100 \times 124,726) / (4 \times 365 \times 63) = 136\%$

<sup>10</sup> Percent of days of PHC filled with scholarship doctor =  $(100 \times 87,727) / (4 \times 365 \times 205) = 29\%$

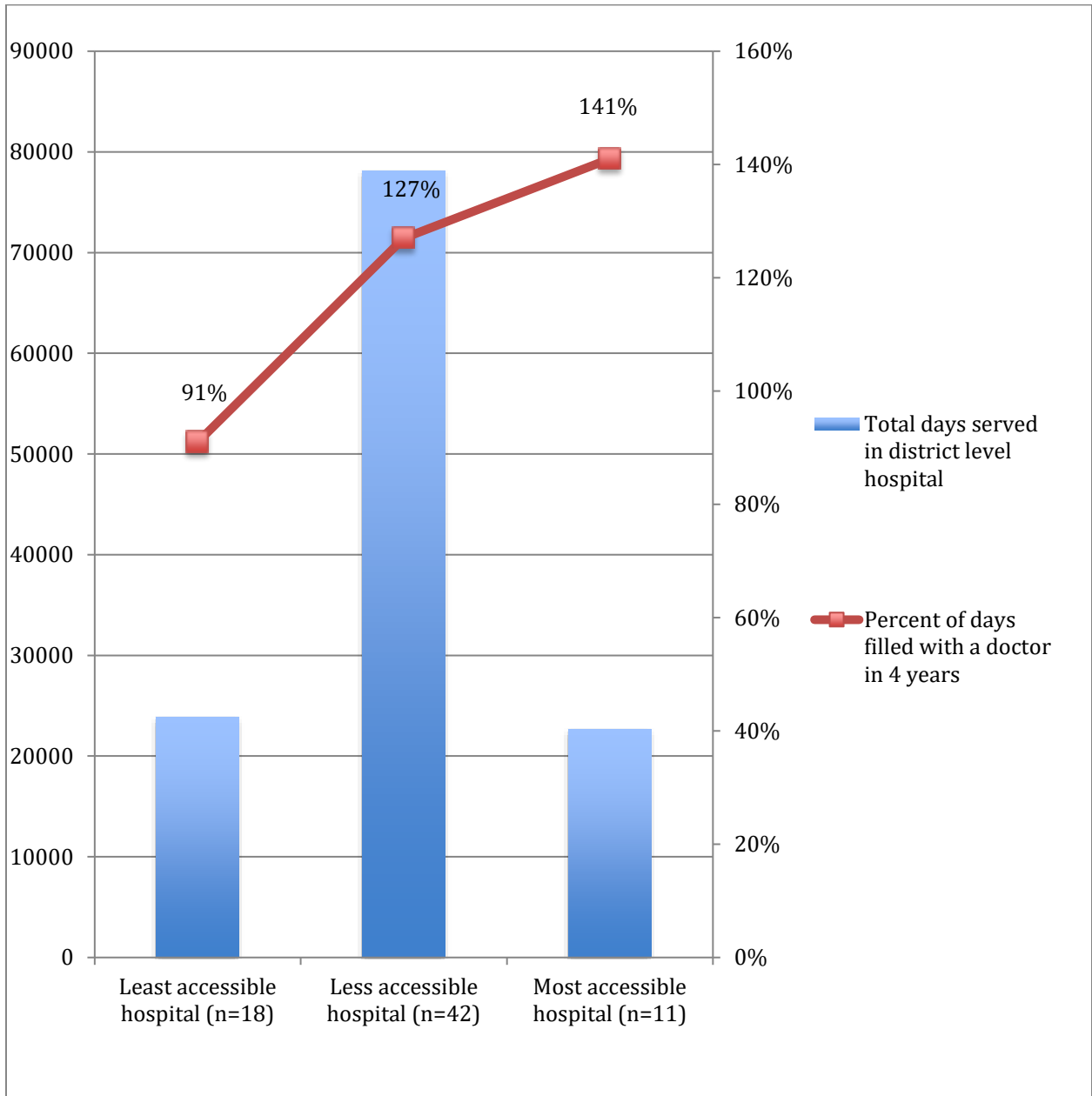
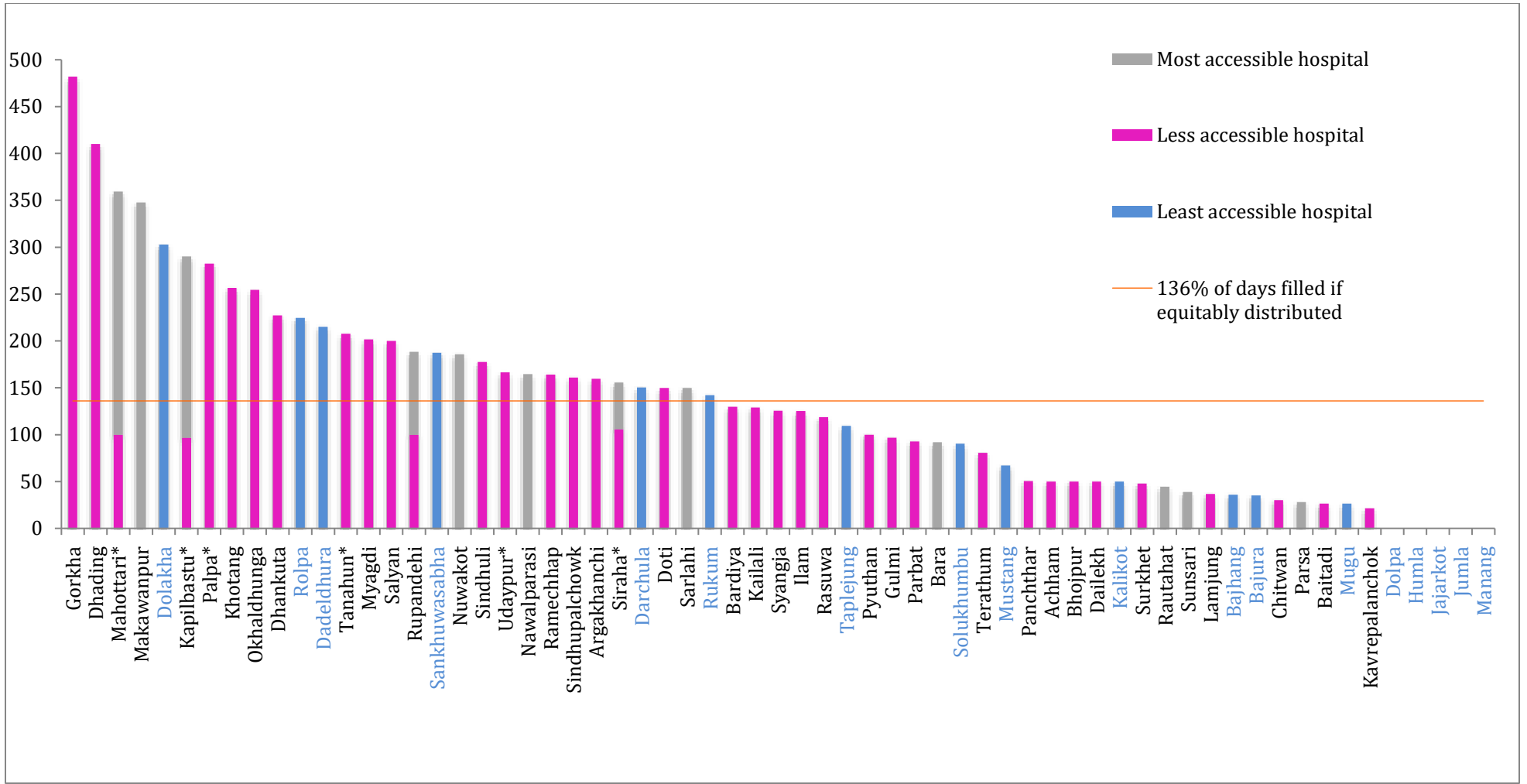


Figure 12: Service days of scholarship doctors in district level hospitals categorized by accessibility



\* Sum of percent of days filled in district level hospitals in districts with more than one district level hospital

Figure 13: Percent of days over the last 4 years filled with one scholarship doctor at district level hospitals

## Discussion

Since 2050 BS, almost 3,000 citizens have benefitted from the MBBS Scholarship Program, which allowed them to attend private colleges in Nepal. The scholarship awardees came from all three ecologic regions and five development regions. Awardees from the hills and central development region were more than other regions possibly because of recent or temporary migration to Kathmandu valley.

The 45% reserved category requirement has ensured inclusion of under-represented communities and groups in the scholarship program. Since 2060 BS for every 14 open category, approximately 10 reserved scholarships have been awarded. The proportion of females has been consistently over 15% in total<sup>11</sup>.

Nepal had low service completion rates in the initial years of the scholarship program. A similar situation exists in five states (Assam, Chattisgarh, Madhya Pradesh, Maharashtra and Karnataka) in India because of weak mechanisms to monitor, track, and follow-up on defaulters (13). However, in 2067 BS, Nepal enforced strict rules that required scholarship doctors to provide evidence of service before DoHS would issue a service completion certificate and MoE would issue a Letter of No Objection. Consequently, in the past three years, the annual mandatory service completion rate has consistently been over 85%. This rate holds for both genders and all categories of scholarship.

Males are, however, significantly more like to complete their 2-year service contract, as are those who received an open category scholarship. Female scholarship doctors in Nepal may be less likely to complete service requirements because of family obligations and migration after marriage. The social set up in Nepal gives more independence to males to move with or without their families to the place of posting. While such data from Nepal is not available, evidence from Japan, where there is a societal similarity with Nepal in terms of family values, suggests that female physicians choose to work within commuting distance from their homes while males move with their families (14). Curiously, the scholarship doctors (both male and females) in the open category have high service completion rates. The reason for the difference between open and reserved scholarships is unclear and requires further research when additional data become available.

Nepal's private sector directly contributes to the public healthcare system through the scholarship program. Since the private medical colleges bear the cost of MoE scholarship awardees, direct government expenditures for the MBBS scholarship program are limited to expenses at public medical colleges and the payroll of scholarship doctors during their mandatory service period. Without the scholarship program, a Nepali student at a private medical college would have to pay about \$40,000 USD for tuition. Hence, the program has increased medical education opportunities for Nepali citizens and has the potential to ensure a steady supply of physicians for remote and rural areas.

However, the objective of the program has not yet been fully realized. The scholarship program has ensured human resources are available for rural healthcare services, but remote placement has been a limited success. Although scholarship doctors provided over 75% of their service days at district hospitals and PHCCs in the past four years, still, the least accessible district hospitals that are often are in most need doctors received the least service or no service at all. Similarly, no scholarship doctor worked in 87 PHCs (42.4% of PHCs) during this period. In contrast, during the same period more than three scholarship doctors worked in district level hospitals near urban centers (Gorkha, Dhading, Makawanpur, Dolakha<sup>12</sup>).

---

<sup>11</sup> 33% of reservation category is reserved for females, which is about 15% of total.

<sup>12</sup> Although Dolakha district hospital is classified as least accessible, it is close to Kathmandu.

The annual number of scholarship doctors is adequate to fill all rural public hospitals in Nepal with at least one doctor. Redistribution of surplus scholarship doctors from the most accessible health facilities to the least accessible hospitals could reduce the inequities in physician distribution. This requires a transparent and systematic process for posting scholarship doctors. Such a process could be based on hospital needs and physician characteristics. For example, the United States uses a matching process to determine residency-training locations. Residency candidates and the training institutions rank each other in order of declining preference; then a computer algorithm matches the candidates to institutions (15). In Norway, each graduate gets a random number, the numbers are called in order and a graduate gets six hours to choose from among the available places (7). Developing such a system in Nepal will definitely be a challenging exercise.

Nevertheless, the *Implementation Guidelines for Nepal Government Scholarship Recipient Doctors and Health-workers 2071* addresses the inequitable distribution of scholarship doctors to some extent. However, since the guidelines have just been implemented, it remains to be seen if the guidelines are being followed.

Recently, the government has expanded the mandatory service contract of the MBBS scholarship program to include all doctors, including specialists graduating from public medical colleges. After 2074 BS, more than 100 post-graduate doctors (specialists) will report to MoH for mandatory posting. It is not clear if the current scholarships in post-graduate specialties are being awarded based on the needs of the public hospitals. In India, one of the major reasons for low service completion rate for specialists was because they were assigned to hospitals where their skills were not required (13).

The scholarship program is facing several system level challenges. The biggest is the poor communication about scholarship doctors between the Ministries of Education and Health. Without data on the expected number of scholarship doctors each year, DoHS cannot plan their postings in advance. This has created a window of opportunity for the scholarship doctors to avoid remote postings. They can use political or financial influence to be posted to a hospital they prefer. Alternatively, the doctors can simply refuse to accept the remote posting and wait until a position at a preferable location becomes available.

Though it has improved in recent years, scholarship program data management remains weak. Although the MoE has an electronic database of scholarship awardees, it does not use the data for policy or planning nor share the information with DoHS. DoHS still uses a paper-based system and does not have a complete database.

Soon, DoHS will have to manage about 600 MBBS scholarship doctors each year in addition to other types of health workers. Electronic management system at DoHS will increase the efficiency by reducing human labor, improving accuracy, and enabling easy data analysis and sharing. This will facilitate communication with other government agencies and contribute to better planning.

The penalty measures for defaulters are only effective for scholarship doctors practicing in Nepal. Loopholes in penalty measures exist for those who quit medical practice or leave the country. NMC permanent registration is not required for those who choose a non-medical career path. The MoE Letter of No Objection is not required to clear immigration on a non-study visa or to go to India (and travel elsewhere from there). Other countries have used stricter measures e.g., withholding diplomas, restricting visa eligibility, and specialist-training opportunities until service is completed (15).

While focusing on postings and defaulters, we must continuously remain cognizant that the scholarship doctors must be adequately and appropriately trained and supported to provide rural healthcare service. New MBBS graduates work alone with little or no supervision, in locations with

limited infrastructure and communication facilities, and where patients often come to a hospital as last resort. They may also have managerial and administrative responsibilities. Therefore, it is important to periodically evaluate their preparedness and motivation to serve in limited resource settings. In South Africa, the internship period for medical graduates was increased from 1 to 2 years because it was felt that a one-year internship did not adequately prepare the doctors for unsupervised practice in district hospitals (16). Beyond formal training, doctors in rural areas also require adequate support, comfortable housing, communication facilities, supportive supervision and essential equipment and supplies to be able to work effectively (17). Nepal government's focus should now shift from physician production to ensuring that medical training prepares doctors to fill local needs in remote and rural areas and creating working conditions in which health workers are able to provide high quality service.

#### **Summary of key lessons**

1. Government partnership with the private sector for mandatory scholarships linked to service at public hospitals can be a successful strategy for steady supply of physicians to rural hospitals provided that regulations are strictly enforced.
2. A transparent and systematic process to post doctors is essential to achieve equitable distribution in rural and remote areas.
3. For the scholarship program to be successful the executing agencies must coordinate and communicate to share data and evaluate if medical training meets rural healthcare needs.

## Conclusion and Recommendations

The MBBS Scholarship Program in Nepal has provided considerable medical education opportunities to the citizens including under-represented groups and communities. Recent mandatory service completion rates have been impressive with the majority of the service directed at rural healthcare.

To reap the full benefit of the program, the emphasis must also be on (a) an equitable distribution of MBBS physicians during their mandatory service period, (b) creation of favorable working conditions for them to deliver high quality service, and (c) provision of appropriate physician training for practice at remote health facilities to achieve the goals of the MBBS Scholarship program.

In light of this, we make the following recommendations:

### *1. Improve data management*

An urgent need is to improve the data management systems at DoHS and MoE. The information systems in these two ministries must be common or at minimum compatible enough for one ministry be able to access or import relevant digital data from the other. Minimally, DoHS could have view-only rights to the database on scholarship doctors at MoE and/or vice-versa.

### *2. Improve communication and coordination between MoE and DoHS*

MoE and DoHS must regularly coordinate and communicate to ensure effective planning for physician production and posting, to ensure medical training is aligned with the local population needs, and to make necessary preparations at public hospitals for the incoming health workforce. They must also jointly ensure that specialty post-graduate scholarships and postings reflect the needs of public hospitals.

### *3. Create a systematic and transparent process for posting scholarship doctors*

A transparent and systematic deployment system based on the local needs and the preference of scholarship doctors will help ensure that doctors are equitably distributed to rural hospitals. Following the existing guidelines, DoHS can introduce its own algorithm for posting that is based on health facility needs and doctors' characteristics such as availability date, language, and academic performance. Such a system will reduce the potential for scholarship doctors to avoid rural postings.

### *4. Ensure effective monitoring mechanisms*

To keep pace with the increasing number and type of awardees, the existing monitoring system of scholarship program must be improved. This should include assessing the presence and medical practice capacity of scholarship doctors at assigned hospitals. Defaulters must be actively traced and held financially accountable. Penalties and recovered costs can be used to improve services at remote hospitals.

### *5. Create a consolidated human resource for health department within MoH*

A single human resource department within the MoH is necessary to plan and appropriately match posting of doctors recruited in public hospitals through different streams (e.g. regular staff, scholarship doctors, temporary recruits) with needs of healthcare facilities. The management of scholarship specialist doctors with mandatory contract service must also be consolidated in the same unit.

## **Limitations**

This report depended entirely on the data available at the DoHS and MoE. We are unable to verify its completeness or accuracy, as no other source is available. Data on MBBS scholarships for some years were not available (2051, 52 BS).

The data on geographic origin of scholarship awardees has not been standardized to the population or educational distributions within districts or regions. Thus, regional and district comparison must be made with that understanding.

Scholarship doctors' service-days have been calculated from their DoHS certificate of service completion. These counts may include holidays and entitled leaves. Additionally, since detailed service completion data was available only for the past three cohorts, one must interpret the service-days results and the association of service completion with sex and scholarship category with caution.

MBBS doctors working in public hospitals are recruited through permanent positions at MoH, temporary contract recruitment and through the MBBS scholarship program. These are managed through different human resource management system within the MoH's different divisions and departments. This study solely focuses on the physicians recruited through the MBBS scholarship program and has not reviewed other systems that hire physicians in public health facilities. Without data on non-scholarship doctors, we cannot say how much of the MBBS positions in the public sector are being filled through the scholarship program.

Finally, this study does not consider working conditions and stakeholders' perspectives. These are important when determining program effectiveness and developing improvement recommendations.



## References

1. World Health Organization (WHO). *World Health Report 2006 Working Together for Health*. 2006. Geneva: WHO
2. Campbell J, Dussault G, Buchan J, Pozo-Martin F, Guerra Arias M, Leone C, Siyam A, Cometto G. A universal truth: no health without a workforce. 2013. *Forum Report, Third Global Forum on Human Resources for Health*, Recife, Brazil. Geneva, Global Health Workforce Alliance and World Health Organization
3. "Fourth Joint Annual Review (JAR)" January 27-29, 2014. Kathmandu Aide-Mémoire. Accessed August 30, 2015. [http://www.nhssp.org.np/jar/Aide\\_Memoire\\_JAR2014\\_signed.pdf](http://www.nhssp.org.np/jar/Aide_Memoire_JAR2014_signed.pdf)
4. MoHP and NHSSP. *Human Resources for Health Nepal Country Profile*. 2013. Kathmandu: Ministry of Health and Population.
5. Scholarships Act, 2021. 1964. Date of Authentication and Publication 2021-5-13 (Sept. 28, 1964)
6. MoHP and NHSSP. *Human resources for Health Strategic Plan 2011-2015 Draft*. 2012. Kathmandu: Ministry of Health and Population
7. Frehywot S, Mullan F, Payne P and Ross H. Compulsory service programs for health workers in remote and rural areas: do they work? *Bull World Health Organ*. 2010;88:364-370
8. Wiwanitkit V. Mandatory rural service for health care workers in Thailand *Rural and Remote Health*. 2011;11 (1): 1583
9. Reid SJ. Compulsory community service for doctors in South Africa – an evaluation of the first year. *S Afr Med J* 2001;91:329–36.
10. Liu X, Dou L, Zhang H, Sun Y and Yuan B. Analysis of context factors in compulsory and incentive strategies for improving attraction and retention of health workers in rural and remote areas: a systematic review. *Hum Resour Health*. 2015;13:61
11. Scholarship Rules, 2060. 2013. Date of Publication in the Nepal Gazette 2060-3-26 (July 10, 2003 A.D.)
12. Implementation Guidelines for Nepal Government Scholarship Recipient Doctors and Health-workers 2071. 2015.
13. National Health Systems Resource Center (NHSRC). *A review of existing regulatory mechanisms to address the shortage of doctors in rural, remote and underserved areas: A study across five states in India*. 2016. New Delhi: NHSRC
14. Matsumoto M, Inoue K, Kashima S and Takeuchi K. Characteristics of physicians, their migration patterns and distance: a longitudinal study in Hiroshima, Japan. *Rural and Remote Health* 2012;12:2027
15. Barnighausen T and Bloom D. Financial incentive for return of service in underserved areas: a systematic review. *BMC Health Serv Res*. 2009;9:86
16. Nkbinde TC and Nkwanyana NM. Internship training adequately prepares South African medical graduates for community service – with exceptions. *S Afr Med J*. 2013;103(12): 930-4
17. World Health Organization (WHO). *Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations*. 2010. Geneva: WHO

## Annexes

### Annex-1: Number of MBBS scholarship awarded through the Ministry of Education at private medical colleges in Nepal

Year (BS)	Scholarships awarded	Number of institutions	Awardees/institution
2050	25	1	25.0
2053	20	1	20.0
2054	59	4	14.8
2055	82	6	13.7
2056	85	5	17.0
2057	61	5	12.2
2058	97	7	13.9
2059	98	8	12.3
2060	111	9	12.3
2061	109	9	12.1
2062	122	9	13.6
2063	133	10	13.3
2064	150	10	15.0
2065	164	12	13.7
2066	181	13	13.9
2067	201	14	14.4
2068	209	15	13.9
2069	203	15	13.5
2070	208	15	13.9
2071	226	16	14.1
2072	195	15	13.0
2073	183	17	10.8
Unknown	59	Unknown	
<b>Total</b>	<b>2981</b>		

**Annex-2: District of origin of MoE MBBS scholarship awardees in domestic colleges**

District	Number of scholarship awardees (2050-2073 BS)	District	Number of scholarship awardees (2050-2073 BS)
Kathmandu	272	Baitadi	17
Kaski	162	Makawanpur	17
Chitwan	138	Jumla	16
Bhaktapur	131	Ramechhap	16
Dhanusa	129	Bajhang	14
Rupandehi	123	Pyuthan	14
Mahottari	105	Surkhet	14
Lalitpur	93	Okhaldhunga	13
Syangja	88	Achham	12
Saptari	85	Sindhuli	12
Nawalparasi	81	Rukum	11
Tanahun	69	Dailekh	10
Morang	67	Ilam	10
Sarlahi	62	Bhojpur	8
Gorkha	60	Darchula	8
Siraha	60	Khotang	8
Gulmi	59	Panchthar	8
Kavrepalanchok	59	Salyan	8
Jhapa	55	Udaypur	8
Parsa	54	Sankhuwasabha	7
Lamjung	51	Solukhumbu	7
Rautahat	50	Bajura	6
Sunsari	48	Dhankuta	6
Baglung	44	Tehrathum	6
Parbat	44	Myagdi	5
Dang	39	Rolpa	5
Dhading	38	Dadeldhura	4
Argakhanchi	34	Dolpa	3
Palpa	34	Doti	3
Bara	33	Jajarkot	3
Kailali	33	Kalikot	3
Nuwakot	33	Manang	3
Kapilbastu	27	Mugu	3
Kanchanpur	25	Humla	2
Bardiya	22	Mustang	2
Dolakha	22	Taplejung	2
Sindhupalchowk	21	Rasuwa	0
Banke	18	Unknown	119
		<b>Grand Total</b>	<b>2981</b>

**Annex-3: Service days of scholarship doctors (Scholarship awardees 2062-2064) in different types of health facilities and districts**

Districts	PHCC	District level Hospital	Zonal –Regional Hospital	Central Hospital	DHO/ DPHO	MOH	Total
Achham	0	729	0		0		729
Argakhanchi	948	2330	0		0		3278
Baglung	2346		5175		0		7521
Baitadi	0	387	0		0		387
Bajhang	368	526	0		0		894
Bajura	567	514	0		0		1081
Banke	2187		4850		0		7037
Bara	435	1343	0		0		1778
Bardiya	0	1894	0		0		1894
Bhaktapur	1788		0		0		1788
Bhojpur	729	729	0		730		2188
Chitwan	2558	439	2847		0		5844
Dadeldhura	0	3140	1057		0		4197
Dailekh	892	729	0		379		2000
Dang	2119		9902		0		12021
Darchula	392	2197	0		0		2589
Dhading	1808	5989	0		0		7797
Dhankuta	0	3318	0		0		3318
Dhanusa	2324		3434		0		5758
Dolakha	1460	4421	0		0		5881
Dolpa	0	0					
Doti	0	2188	0		0		2188
Gorkha	315	7036	0		49		7400
Gulmi	1369	1411	0		0		2780
Humla	0	0					
Ilam	778	1829	0		0		2607
Jajarkot	0	0					
Jhapa	1691		6845		0		8536
Jumla	1	0	0		0		1
Kailali	0	1882	2066		0		3948
Kalikot	0	729	0		0		729
Kanchanpur	1462		1908		0		3370
Kapilbastu	1723	4236	0		0		5959
Kaski	2207		4585		0		6792
Kathmandu	1664		0	3533	0	3525	8722
Kavrepalanchok	6334	312	0		0		6646
Khotang	410	3745	0		0		4155
Lalitpur	1867		0		0		1867
Lamjung	859	535	0		0		1394
Mahottari	268	5247	0		0		5515
Makawanpur	3266	5079	0		78		8423
Morang	4762		1616		0		6378
Mugu	343	386	0		0		729
Mustang	299	978	0		0		1277
Myagdi	0	2944	0		0		2944
Nawalparasi	5550	2402	0		0		7952
Nuwakot	2710	2711	0		0		5421
Okhaldhunga	874	3714	0		0		4588
Palpa	1101	4124	0		0		5225
Panchthar	435	737	0		0		1172
Parbat	724	1355	0		0		2079
Parsa	0	407	719		0		1126
Pyuthan	40	1458	0		0		1498
Ramechhap	1253	2397	0		0		3650

Districts	PHCC	District level Hospital	Zonal –Regional Hospital	Central Hospital	DHO/ DPHO	MOH	Total
Rasuwa	1230	1733			0		2963
Rautahat	2418	648	0		0		3066
Rolpa	0	3281	0		0		3281
Rukum	75	2077	0		0		2152
Rupandehi	4313	2752	1687		0		8752
Salyan	0	2919	0		0		2919
Sankhuwasabha	52	2737	0		0		2789
Saptari	0		268		0		268
Sarlahi	1364	2187	0		0		3551
Sindhuli	1542	2592	0		0		4134
Sindhupalchowk	7167	2349	0		0		9516
Siraha	0	2272	0		0		2272
Solukhumbu	387	1320	0		0		1707
Sunsari	0	568	0		480		1048
Surkhet	117	699	2881		0		3697
Syangja	3083	1832	0		0		4915
Tanahun	1416	3031	0		0		4447
Taplejung	95	1596	0		0		1691
Terathum	421	1177	0		0		1598
Udaypur	821	2429	0		0		3250
<b>Total</b>	<b>87727</b>	<b>124726</b>	<b>49840</b>	<b>3533</b>	<b>1716</b>	<b>3525</b>	<b>271067</b>

#### Annex 4: Percent of days in 4 years in district level hospital filled with scholarship doctor

Percent of days filled	Districts
<b>0</b>	Dolpa, Humla, Jumla, Jajarkot, Manang
<b>20 - 90%</b>	Solukhumbu, Terathum, Mustang, Panchthar, Achham, Bhojpur, Dailekh, Kalikot, Surkhet, Rautahat, Sunsari, Lamjung, Bajhang, Chitwan, Parsa, Baitadi, Mugu, Kavrepalanchowk,
<b>91 - 140%</b>	Bardiya, Kailali, Syangja, Ilam, Rasuwa, Taplejung, Pyuthan, Gulmi, Parbat, Bara
<b>141 - 200%</b>	Rukum, Darchula, Doti, Sarlahi, Siraha*, Argakhanchi, Sindhupalchowk, Ramechhap, Nawalparasi, Udaypur*, Sindhuli, Nuwakot, Sankhuwasabha, Rupandehi, Salyan,
<b>201 - 300%</b>	Palpa*, Kapilbastu*, Myagdi, Tanahun*, Dadeldhura, Rolpa, Dhankuta, Okhaldhunga, Khotang
<b>More than 300%</b>	Gorkha, Dhading, Makawanpur, Dolakha, Mahottari*

\* The sum of percent of days filled with scholarship doctors in more than one district level hospitals