Pharmacy Practice in Nepal

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INTRODUCTION

The Federal Democratic Republic of Nepal is a landlocked country in South-East Asia, surrounded by India and China[1] (Figure 1). Nepal has a geographic area of 147 181 km^2, and its population of just over 29 million has an average life expectancy of 69.2 years.[2-4] The country's altitude ranges from a minimum of 70 m above sea level to a maximum of 8848 m above sea level; the highest point on earth, Mount Everest, is situated in Nepal. The average north–south dimension of Nepal is 193 km, and the average east–west dimension is 885 km. Nepal is a multiethnic, multilingual, multireligious, and multicultural country: 123 languages are spoken, and there are 125 caste and ethnic groups.[3]

Nepal is one of the poorest and least developed countries in the world, with about one-quarter of its population living below the poverty line. The country is heavily dependent on remittances, which amount to as much as 29% of gross domestic product (GDP). Agriculture is the mainstay of the economy, providing a livelihood for almost 70% of the population, yet it accounts for only about one-third of GDP.[2] Nepal's development has been severely constrained because of geographic, political, and sociologic factors such as its landlocked position, limited natural resources, rapid population growth, dependence on traditional agriculture, and increasing reliance on foreign assistance.[1] Other factors include persistent power shortages and underdeveloped transportation infrastructure.[2] Since the unification of Nepal in the late 18th to early 19th century, Nepal has retained its independence and has never been colonized.[2]

Nepal relies on tourism as a major source of foreign exchange. It is a unique destination for mountaineering, trekking, rafting, and jungle safaris. Eight of the 10 highest mountains in the world are situated in Nepal, and 10 UNESCO world heritage sites are located in the country. In 2013, about 798 000 tourists visited Nepal.[3]

Nepal was hit by massive earthquakes in early 2015, which damaged or destroyed infrastructure and homes and set back economic development. Post-earthquake recovery has been slow, and economic reform has been hindered.

Figure 1. Map of Nepal. Reproduced from The World Factbook (Central Intelligence Agency).[2]

HEALTH SYSTEM LEADERSHIP/ GOVERNANCE AND HEALTH CARE FINANCING

Nepal is currently divided into 5 development regions, 14 zones, and 75 districts. The districts are further subdivided into municipalities, village development committees, and wards. At the district level, there is a chief district officer to maintain law and order, a local development officer to coordinate developmental activities, and a district health officer responsible for all of the district's health activities, including organization and management of the district hospital, primary health care centres, health posts, and sub–health posts.[1] According to the recently promulgated *Constitution of Nepal*, the country is now being divided into 7 states.[5] The transition from 5 development regions to 7 federal states is in progress, and the old model of 5 development regions with 14 zones has not been fully replaced.

Health services in Nepal are delivered by 3 broad categories of provider: public institutions, private organizations, and nongovernmental organizations (NGOs).[6] The public health system is governed by various departments under the Ministry of Health of the Government of Nepal. The public health institutions within this ministry consist of 102 hospitals, 208 primary health centres, 1559 health posts, and 2247 sub–health posts.[3] Nepal also has 305 health centres based on Ayurveda,

an alternative health care practice.[3] Private sector health services are provided by private hospitals, private medical colleges, nursing homes, poly-clinics, private medical practices, and community pharmacies. NGOs provide health services through NGO and community hospitals, mission hospitals, and NGO clinics.

Total per-capita expenditure on health is only US$137, one of the lowest in the world.[7] The country's total health expenditure grew from US$294.1 million in fiscal year (FY) 2000/2001 to US$490 million in FY 2005/2006; during the same period, the annual share of out-of-pocket payments for total health expenditure ranged from 55.6% to 62.5%, the share of government contributions ranged from 16.0% to 23.7%, and the share paid by external development partners ranged from 19.6% to 24.3%.[8]

For FY 2014/2015, the total national budget of the Government of Nepal was US$6398.55 million (618 100 million Nepalese rupees), of which 6.11% (i.e., US$390.95 million) was allocated to the health sector, while 5.42% (i.e., US$346.97 million) was allocated to the former Ministry of Health and Population (now the Ministry of Health).[9] The budget for the health sector was further subdivided for medical products, appliances and equipment, outpatient services, hospital services, public health services, and health-related research and development. The budget for the Ministry of Health and Population was further subdivided according to various organizational components and programs, as follows: administrative and managerial expenses for the Ministry of Health and Population US$43.52 million (12.5%), Department of Health Services US$209.29 million (60.3%), Department of Drug Administration (DDA) US$1.21 million (0.3%), various centres (e.g., National Health Training Centre, National Tuberculosis Centre) US$33.27 million (9.6%), Department of Ayurveda US$9.77 million (2.8%), hospitals US$49.77 million (14.3%), and alternative medicine US$0.13 million (0.04%).[9]

The proportion of the health budget as a share of the national budget over the period FY 2006/2007 to FY 2010/2011 varied between 6.24% and 7.16% (with a slight increase over the entire period, from 6.41% for FY 2006/2007 to 7.05% for FY 2010/2011).[10] Yet by 2014, total per-capita expenditure on health had reached only US$137, and total expenditure on health as percentage of GDP was 5.8%.[4,2,7] This proportion is still less than the 9.6% share of the overall government budget that was targeted by the second Nepal Health Sector Program.[11] Additional expenditures on health are covered by out-of-pocket payments by the patients themselves and by NGOs.

HEALTH INFORMATION

Over the past century, the population of Nepal has increased dramatically, from 5 638 749 in 1911 to 9 412 996 in 1961 to 26 494 504 in 2011.[3] In July 2016, the population was estimated to be 29 033 914.[2] The life expectancy of average Nepalese male and female citizens is 68 and 71 years, respectively.[4] These and other health indicators are summarized in Table 1.[2-4,7]

The Government of Nepal's Child Health Division has several objectives: to reduce under-five mortality, morbidity, and disability and to improve the nutritional status of children and mothers in all social groups, including the economically poor and socially excluded, in all geographic locations of the country. To achieve these goals, the Child Health Division is implementing the following programs: National Immunization Program, Community-Based Integrated Management of

Table 1. Nepal at a Glance: Health-Related Indicators[2-4,7]

Indicator	Value
Population (July 2016)	29 033 914
Life expectancy at birth	Male: 68 year Female: 71 years
Total expenditure on health, 2014	
Per capita	US$137
Relative to GDP, 2014	5.8% of GDP
Maternal and child health	
Birth rate	19.9 births per 1000 population
Maternal mortality ratio	258 per 100 000 live births
Mother's mean age at first delivery	20.1 years
Under-five mortality rate	35.8 per 1000 live births
Public hospitals	
No. of public hospitals	102
No. of public hospital beds, including health centres	8156
Urban population	
Total urban population, 2015	18.6% of total population
Rate of urbanization, estimated for 2010–2015	+3.18% annually

GDP = gross domestic product.

Childhood Illness and Newborn Care Program, and National Nutrition Program.[11,12] In the past 2 decades, Nepal has achieved praiseworthy progress in terms of child health, with a considerable decrease in mortality (Table 2).[11] The under-five mortality rate (per 1000 live births) has gradually decreased, from 118 in 1996 to 47 in 2013. The infant mortality rate (per 1000 live births) has decreased, from 79 in 1996 to 38 in 2013. Finally, the newborn mortality rate (per 1000 live births) has decreased, from 50 in 1996 to 23 in 2013.[11]

HEALTH WORKFORCE

Nepal has been using traditional medicinal herbs, Ayurvedic medicines, and traditional medicines since ancient times. Modern medicine was probably introduced with the establishment of British residency in 1816. The Bir Hospital in Kathmandu was established in 1890 and is still functioning as one of the main hospitals in Nepal.[13]

The health workforce in Nepal includes medical doctors, pharmacists, dentists, nurses, auxiliary nurse midwives, health assistants, dental assistants, and a wide range of other health professionals (Table 3).[3,14,15] Several legislative acts and regulations are in place to govern the various health professions, and councils have been formed on the basis of these acts (Table 4).[14-18] In Nepal, legislation is dated according to *Bikram Sambat*, one of the official Nepalese calendars, with the corresponding Gregorian date shown in parentheses.

The Nepal Medical Council Act, 2020 (1964) was created to constitute and manage the Nepal Medical Council, which manages the qualification of medical practitioners and also the registration of medical practitioners qualified for the scientific utilization of modern medicine throughout Nepal.[19] The nursing profession is organized and managed, and nurses are registered, by the Nepal Nursing Council, which was established through the *Nepal Nursing Council Act, 2052 (1996)*.[20] The Nepal Nursing Council has defined power, functions, and duties to formulate the policies required to operate the nursing profession, to recognize educational institutions providing nursing education, to determine the qualifications of nursing professionals, to determine work limits for nurses, and to formulate the code of conduct of nursing professionals.[14]

There has been a steady increase in the number of registered health professionals in the past several years. For example, the number of doctors registered with the Nepal Medical Council increased from 11 431 in FY 2010/2011 to 15 671 in FY 2013/2014 (of whom 2154 were employed by the government).[3] The number of nurses increased from 12 681 in 2010/2011 to 24 264 in 2013/2014 and reached 38 759 by October 20, 2016.[3,14] In addition, 26 518 auxiliary nurse

Table 2. Improvements in Child Health in Nepal, in Terms of Mortality Rates, 1996–2013[11]

Rate per 1000 Live Births	1996	2001	2006	2011	2013
Under-five mortality rate	118	91	61	54	47
Infant mortality rate	79	64	48	46	38
Newborn mortality rate	50	43	33	33	23

Table 3. Health Professional Populations in Nepal[3,14,15]

Health Professional Category	No.
Pharmacists	2 590
Pharmacy assistants	4 847
Doctors	15 671
Nurses	38 759
Auxiliary nurse midwives	26 518

Table 4. Councils Registering Various Health Professionals in Nepal

Name of Council	Health Professional Membership
Nepal Pharmacy Council[15]	Pharmacists, pharmacy assistants
Nepal Medical Council[16]	Doctors (graduate and postgraduate), dentists (graduate and postgraduate)
Nepal Nursing Council[14]	Nurses, auxiliary nurse midwives
Nepal Health Professional Council[17]	Health professionals not registered with other councils (including public health practitioners, health educators, medical microbiologists, diagnostic radiographers, biochemists, homeopathy practitioners)
Nepal Ayurvedic Medical Council[18]	Ayurvedic doctors (undergraduate and postgraduate)

midwives were registered with the Nepal Nursing Council by late 2016.[14] There has been a slight increase in the number of health assistants (health assistants and auxiliary health workers), from 8013 in 2010/2011 to 9500 in 2013/2014.[3]

The *Narcotic Drugs (Control) Act, 2033 (1976)* was enacted in 1976 to control misuse of narcotics in Nepal.[21] The *Drugs Act, 2035 (1978)*, which makes provisions relating to medicinal drugs, was enacted in 1978 and subsequently amended in 1988 and 2000.[22]

The Nepal Health Professional Council was formed under the *Nepal Health Professional Council Act, 2053 (1997)*[23] for the systematic operation of health services and for registration of the names of health professionals according to their qualifications. Health professionals who are not registered by the other councils mentioned above are registered with the Nepal Health Professional Council. These health professionals work in various fields, including public health, health education, medicine, medical microbiology, diagnostic radiography, biochemistry, homeopathy, acupuncture, physiotherapy, community base rehabilitation, dental assistant, ophthalmology, clinical psychology, and speech and hearing.[17] It is noteworthy that chiropractors and occupational therapists are not yet registered as health professionals in Nepal.

To make the Ayurvedic system of medicine effective and to allow its provision to the population, the Nepal Ayurvedic Medical Council[18] was established under the *Ayurveda Medical Council Act, 2045 (1988)*.[24]

Registration of Pharmacists

The *Nepal Pharmacy Council Act, 2057 (2000)* was created in 2000 to manage the Nepal Pharmacy Council, which makes pharmacy professionals effective through registration of pharmacists and the setting of quality standards for pharmacists.[25] The *Nepal Pharmacy Council Rules 2059 (2002)* were framed in 2002.[26]

It is only in the past 4 decades that legislation related to the pharmacy health workforce has been enacted in Nepal. More specifically, the *Drugs Act, 2035 (1978)*[22] was enacted only in 1978 and the *Nepal Pharmacy Council Act, 2057 (2000)*[25] was enacted in 2000. The *Drugs Act* paved the way for establishing the national drug regulatory authority, the DDA, which is responsible for registration of all medicines and pharmacies in Nepal.[22] The *Nepal Pharmacy Council Act* led to the formation of the Nepal Pharmacy Council, which is responsible for the registration of pharmacists and pharmacy assistants in Nepal.[25,26] There are currently 2590 pharmacists and 4847 pharmacy assistants registered with the Nepal Pharmacy Council.[15]

Pharmacy Education in Nepal

Until the late 1990s, most of the graduate pharmacists in Nepal were educated in foreign countries. The Institute of Medicine of Tribhuvan University in Kathmandu started a proficiency certificate-level pharmacy program in 1972 and began a Bachelor of Pharmacy program in 2000.[27] Kathmandu University was the first institution in Nepal to offer a Bachelor of Pharmacy program, starting in 1994. The same institution started Master of Pharmacy and Doctor of Philosophy (Pharmaceutical Sciences) programs in 2000 and 2004, respectively, and also offers a Post-Baccalaureate PharmD (Doctor of Pharmacy) program.[28]

As of 2016, a total of 19 educational institutions offer a Bachelor of Pharmacy program, and 29 colleges offer a Diploma in Pharmacy program. In addition to Tribhuvan University and Kathmandu University, pharmacy colleges are affiliated with Pokhara University, Purbanchal University, and the Council for Technical Education and Vocational Training. The major drawback is that more than half of the colleges are situated in Capital Kathmandu Valley, including 7 in the Kathmandu district and 3 in the Lalitpur district.[15]

In 2015, the Nepal Pharmacy Council introduced a licensure examination for pharmacists and pharmacy assistants. However, all pharmacists and pharmacy assistants who were registered with the Council before introduction of the licensure examination were exempt from taking the exam.

Despite an increase in the number of pharmacy colleges and the number of pharmacists, certain aspects specifically related to hospital pharmacy still need improvement, such as training in hospital and clinical pharmacy, mentorship programs, and definition of career paths for pharmacists in both the public and private sectors.

Associations Related to the Pharmaceutical Sector

Several associations operate within the pharmaceutical sector in Nepal. The Nepal Pharmaceuticals Association, initiated in 1972,[29] played a vital role in the formation of the Nepal Pharmacy Council, and the association's chairperson is a member of the Council's executive committee, as set out in the *Nepal Pharmacy Council Act, 2057 (2000)*. The membership of the Nepal Pharmaceuticals Association includes pharmacists, as well as other professionals working in the pharmaceutical sector. The Graduate Pharmacists' Association, Nepal has as its members pharmacists with at least an undergraduate degree in pharmacy.[30] A number of other associations have been formed in the past decade, including an association of hospital pharmacists and assistant pharmacists, the Hospital Pharmacist Association of Nepal, established in 2008.[31] Despite the major role of all associations in improving the professional stature of pharmacists and the pharmaceutical sector, additional coordination among associations and among pharmacists is needed to enhance the profession and establish pharmacists as an integral component of the health care team. This will be a challenge for current and future pharmacists and for the pharmaceutical associations.

Medical Colleges

Considerable progress has been made in the establishment of medical colleges in Nepal over the past 25 years. The medical colleges provide undergraduate and postgraduate degrees for physicians, dentists, and nurses. The number of medical colleges recognized by the Nepal Medical Council has risen to 20, with 3 these colleges providing education leading to qualification as dentists.[16]

NATIONAL DRUG REGULATORY AUTHORITY

The DDA is the drug regulatory authority of the Government of Nepal. It was established with the objective of enforcing the *Drugs Act 2035 (1978)* and its regulations, aiming to prevent the misuse or abuse of drugs and allied pharmaceutical materials, as well as to prevent the dissemination of false or misleading information about the efficacy and use of drugs, and to control the production, marketing, distribution, export and import, storage, and utilization of those drugs intended for use in humans. As such, the DDA regulates all aspects of drug use in Nepal, from the production of medicines of standard quality to their proper sale and distribution.[32] The department has been functioning within this regulatory mandate to ensure the safety, efficacy, and quality of drugs made available for use in Nepal.

The DDA is one of the departments under the Ministry of Health. The Drug Consultative Council, headed by the Minister of Health, advises the government on basic principles and administrative matters pertaining to drugs. The Drug Advisory Committee, headed by the Secretary of the Ministry of Health, advises the DDA on technical matters, such as research and development and other regulatory aspects. In addition to various administrative and functional sections in its central office, the DDA has 3 regional sections, which are located at Biratnagar in the eastern region of the country, Birgunj in the central region, and Nepalgunj in the mid- and far western region. The National Medicines Laboratory is the principal medicines testing laboratory of the Government of Nepal.

All medicines intended for use in Nepal, both locally manufactured and imported, must be registered with the DDA. All pharmacy outlets (i.e., both wholesale and retail or community pharmacies) in Nepal must be registered with the department as well. Major departmental activities include provision of drug information, publication of a drug bulletin, inspection of domestic and foreign pharmaceutical companies, inspection of wholesalers and retail pharmacy outlets, organization and management of a survey of the department and the national medicines laboratory, drug analysis, and development of reference substances.[12]

PHARMACY INDUSTRY IN NEPAL

In 1955, the Government of Nepal drafted a master plan for the development of herbs and drugs, which was implemented in 1961. The Royal Drug Research Laboratory, established under this master plan, carried out several experimental studies for the manufacture of modern pharmaceutical products, and the production unit was transferred to the pharmaceutical industry in 1972 under the name Royal Drugs Limited.[13] Within the private sector, Chemidrug Industries first started producing Ayurvedic drugs in 1971 and later started producing allopathic medicines.[13] Currently, the pharmaceutical industry is one of the main sectors where legally qualified pharmacists work.

The Association of Pharmaceutical Producers of Nepal (known as APPON) was established in 1990 by the pharmaceutical entrepreneurs of Nepal, with a view to facilitating, enhancing, and improving the service of pharmaceutical companies in coordination with various government bodies, physicians, and pharmaceutical companies. APPON's membership consists of 50 pharmaceutical companies that are involved in pharmaceutical production in Nepal, which are claimed to provide 40% of the pharmaceutical market share in Nepal.[33] The remainder of pharmaceuticals used in Nepal are imported from other countries, mostly from neighbouring India.

A positive aspect of the Nepalese pharmaceutical industry is its effort to comply with the Good Manufacturing Practices of the World Health Organization (WHO). Thirty-two Nepalese pharmaceutical companies affiliated with APPON have received the WHO's Good Manufacturing Practices certificate from the national drug regulatory authority.[33]

There is scope to improve the pharmaceutical sector further. Nepalese pharmaceutical companies currently focus on manufacturing finished products from imported active pharmaceutical ingredients and excipients. Along with growth of the market for Nepalese companies, the focus should shift toward producing active pharmaceutical ingredients and other raw materials. As such, Nepalese pharmaceutical companies should move toward establishing a sophisticated industry with capability for research and innovation. Even with the growth of pharmaceutical companies, there has been less contribution toward research and development. Investment in this area would not only improve job opportunities for pharmacists but would also make the industry more competitive in terms of the formulation and production of active pharmaceutical ingredients and excipients. Nevertheless, Nepalese pharmaceutical industries have attained encouraging growth in the past 40 years, despite constraints like the power crisis and labour unrest.[34] The government should encourage research and development in the pharmaceutical sector by reducing custom duties on instruments imported for this purpose.

HEALTH SERVICE DELIVERY

Pharmacists in Nepal are working in a wide variety of fields, including the pharmaceutical industry, hospital and

community pharmacy, academic pharmacy, medical colleges, government services, and pharmaceutical marketing.

Hospital Pharmacy

The hospital pharmacy sector is in the early stages of development in Nepal. Over the past decade there has been gradual development in this area, and most hospitals in urban areas are now staffed with a legally qualified pharmacist.

Hospital pharmacy practice in Nepal began with missionary pharmacists working in Shanta Bhawan Hospital in Lalitpur, which was later amalgamated with Patan Hospital. The pharmacy of Patan Hospital is of historical importance and is exemplary in Nepal as it provides a range of pharmaceutical services, including outpatient dispensing, inpatient drug distribution, drug information, extemporaneous compounding, and drug reconstitution. The Patan Hospital formulary was probably the first hospital formulary in Nepal and has been updated several times. In addition to Patan Hospital, the Dhulikhel Hospital, Shahid Gangalal National Heart Center, Tribhuvan University Teaching Hospital, Civil Services Hospital, and the Kathmandu Medical College and Teaching Hospital have made efforts to develop hospital pharmacy.

The recently developed *Hospital Pharmacy Guideline 2072* recommends the formation of a pharmacy and therapeutics committee, as well as the presence of at least 1 pharmacist in hospitals with 26–50 beds and 1 clinical pharmacist and 2 pharmacists in hospitals with 51–100 beds.[35]

Most hospitals with a hospital pharmacy are using either a centralized individual drug distribution system or a combination of an individual drug distribution system and a ward stock system. Computerized documentation is usually limited to the recording of procurement and the management of inventory. Patient information is usually kept within the institutions, and organizations in the public and private sectors currently function as stand-alone operations. Nepal has yet to implement a national electronic patient record system. Prescribing is usually done manually, and Nepal has not yet introduced computerized prescriber order entry systems.

Community Pharmacy

The presence of pharmacists in community pharmacy was negligible until 20 years ago. Some community pharmacies in urban areas are now staffed with a pharmacist and assistant pharmacist, but the majority of community pharmacies are still without a pharmacist. Pharmacists and nurses currently do not have the right to prescribe in Nepal. A number of community pharmacies in urban areas are attempting to computerize their records, but electronic records are used only for inventory and storage purposes.

The *Drugs Act, 2035 (1978)* includes the following definitions of pharmacy-related personnel. A "pharmacist" is a person who has graduated in pharmacy or pharmaceutics and been recognized by the Drugs Advisory Committee. A "pharmacy assistant" is a person who has passed a certificate-level program or equivalent in pharmacy, and a "professional person" is a person who possesses the prescribed qualifications and has been recognized by the Drugs Advisory Committee.[22] The prescribed qualification of "professional persons" involves training that ranges from a few weeks to 3 months. Currently, "professional persons", pharmacists, and pharmacy assistants can obtain a licence to own and operate a pharmacy from the national drug regulatory authority, the DDA. The majority of pharmacies are licensed to "professional persons", with only a negligible number licensed to pharmacists or pharmacy assistants.

Academic Pharmacy

With the increase in the number of pharmacy colleges, a sizeable number of pharmacists are now working in the academic sector. This sector consists of pharmacists with postgraduate degrees in addition to their undergraduate degrees. The faculty members of most medical colleges are pharmacists with an additional degree in pharmacology or pharmaceutical care. A number of medical colleges initially had pharmacists as faculty members in pharmacology.

ACCESS TO MEDICAL PRODUCTS, VACCINES, AND TECHNOLOGY

The rural areas of Nepal face issues related to the procurement, distribution, and storage of medicines, because of remote location, electricity outages, and a poor transportation network. In the public sector, the Logistics Management Division was established under the Department of Health Services within the Ministry of Health and Population in 1993, with a network of 1 central and 5 regional medical stores, as well as district-level stores to procure, store, and distribute health commodities for the government's health facilities. These stores function as distribution centres for distributing medicines to the government's health facilities. The Logistics Management Division is subject to several constraints, including inadequate storage space, old or traditional storage buildings (especially for the central and regional medical stores), and difficult geographic topography impeding transportation.[12] Similar logistic constraints are faced by private sector organizations, including poor road infrastructure, especially in the rainy season.

Nepal prepared its first national list of essential drugs in 1986, which was subsequently revised in 1992, 1997, and 2002. It was revised for a fourth time in 2011, when the title was changed to *National List of Essential Medicines Nepal* (fourth revision).[36] The Logistics Management Division uses this national list when selecting essential medicines to be

procured and distributed through government outlets.[37] Although some medicines are provided free of charge at public health outlets, timely availability of essential medicines in remote areas has been an issue that needs to be tackled by all stakeholders.

Over the past 2 decades, there has been an improvement in the number of 1-year-old children who are fully vaccinated. The percentage of 1-year-old children who are fully vaccinated was 43% in 1996, 66% in 2001, 83% in 2006, 87% in 2011, and 90% in 2013. The target of 90% was originally set for 2015 but was achieved early.[11]

In 2014, 92% of Nepalese infants received 3 doses of hepatitis B vaccine.[4] Immunization of children in Nepal has improved because of the free availability of vaccines (such as vaccines against bacillus Calmette–Guérin, diphtheria–pertussis–tetanus, polio, measles, and tetanus) under the Government of Nepal's national immunization program. These vaccines are available free of charge at both private and public health centres.

FUTURE DIRECTIONS AND CONCLUSIONS

Pharmacy practice is still in the very early stages of development in Nepal. Within the past 2 decades, there has been a considerable increase in the number of pharmacy colleges and pharmacy graduates; however, a clear career path for pharmacists is lacking. As such, the retention of pharmacists is an issue, as they may be tempted to move to more developed countries for better opportunities. Policy-makers, stakeholders, and (especially) pharmacists should join hands to establish the pharmacist as an integral member of the health care team in Nepal.

Community pharmacy is relatively less well explored by pharmacists and is a potential field of practice for pharmacists. There have been some positive signs for hospital pharmacy as well; for example, the prime minister of Nepal, Pushpa Kamal Dahal, has directed all government hospitals to operate their own hospital pharmacies.[38] Furthermore, the Supreme Court of Nepal has ordered closure of all privately owned pharmacies in government hospitals, to ensure the distribution of medicines declared free by government hospitals. This could herald positive outcomes for hospital pharmacy.

The future enhancement of the pharmacy profession, specifically hospital and clinical pharmacy, will require a combination of approaches. First and foremost, pharmacists must be able to provide value-added service to patients and the institution, for example, by providing patient counselling and drug information, participating in ward rounds, and teaching patients and other health care professionals. Pharmacists should become trained in and undertake institutional as well as clinical activities, including (but not limited to) establishment of drugs and therapeutics committees, provision of drug information, promotion of rational prescribing, establishment of a formulary system, and teaching of health care professionals. Second, the pharmaceutical industry, institutional pharmacy, and academicians should undertake research to develop innovative results, concepts, and products. Although the current scenario of Nepalese pharmaceutical companies adopting the WHO's Good Manufacturing Practices is praiseworthy, trust must be built to prove that Nepalese pharmaceutical products are bioequivalent to prototype manufacturers' medicines, which can only be accomplished by research and development. Such research and development would, in turn, provide adequate employment for pharmaceutical professionals working in various sectors. Third, a career path for pharmacists should be maintained in all sectors. In hospital pharmacy, such a career path could be maintained by the introduction of specific residency programs. Fourth, there should a strong lobby group to establish the pharmacist as an integral member of the health care team. In this effort, all pharmacists and pharmacy-related associations should come together to plan appropriately for the future. Finally, the overarching issue in Nepal, affecting not only pharmacy but all areas of the economy and daily life, is its financial situation. This situation is exemplified by the total per-capita expenditure on health, which is only US$137, almost 34 times less than the per-capita expenditure in Canada of US$4641.[7,39] Nepal's financial situation needs to improve and the country needs to contribute more toward health; otherwise, Nepal will continue to rely on donations from foreign countries and international NGOs for development of its health care sector, including the pharmaceutical sector.

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