

# Prudential Review of Pharmaceutical Health Resources in Indian Sub-Continent

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## Abstract

Indian subcontinent has been ruled by different empires and dynasties throughout the past. They have brought different curative skill and knowledge. Moreover, the subcontinent surrounded by variety of believes, myths' and religions. That obviously has significantly influenced the curative philosophy and therapeutic. Hence, we have designed this study manuscript to present a prudential review of pharmaceutical resources in sub-continent. That may potentially help to achieve the Millennium Development Goals (MDGs). Whereas, the legislative support is an important factor in health care system, and is recognized by all countries of the subcontinent. World Health Organization (WHO) is continuously supporting to develop, strengthen and modify the existing legislation to enforce the national health policies. That will help to assign the exact professional roles to pharmacy professionals instead of irrelevant, clerical and administrative work. That will help to reduce the potential risk of irrational drug usage, therapeutical error and clinical mistakes in health care system to achieve the MDGs. Hence, in conclusion, current pharmaceutical scenario needs the legislative and strategic support to assure appropriate pharmaceutical and clinical care in Indian subcontinent. It is also enviable to assign the exact scientific and professional roles to pharmacy professional instead of irrelevant managerial and clerical tasks. That will potentially reduce the irrational drug usage and poor pharmaceutical care. Otherwise serious vulnerable health problem may potentially be posed and then harbored to other parts of the world.

**Keywords:** Pharmacy professional; Pharmaceutical care; MDG's

**Abbreviations:** ADR: Adverse Drug Reaction; MDG: Millennium Development Goals; MDR: Multi Drug Resistant; NDM-1: New Delhi Metallo-beta-lactamase-1 enzyme; PQCB: Provincial Quality Control Board; WHO: World Health Organization; XDR: Extensive Drug Resistant

## Introduction

Indian sub-continent has always played a role in history. Different empires and dynasties throughout the past including the Kushns, Aryans, Scytnians and Sikhs has directly ruled this continent. Whereas, the Mughals, Turks, Arabs, British, Timurids, Persians, Afghans and Ghaznavids has also occupied different states during last thousand year. They have brought different curative skill and knowledge. Although, some era of our historic life is known as "Dark Age", even though, at the same time, several of our states had been recognized as well cultured, prosperous, highly crowded [1] and developed [2]. Moreover, the sub-continent surrounded by variety of believes, myths' and religions. That obviously has significantly influenced the curative philosophy and therapeutic [3]. Hence, we have designed this manuscript to present a prudential review of pharmaceutical resources in sub-continent. That may potentially help to achieve the Millennium Development Goals (MDGs). Moreover, current health system needs attention to assure the quality health standards. The drug resistance, poor clinical facilities and substandard pharmaceutical care are evidences of our deprived health facilities. Whereas, the resistant microbial superbugs i.e. New Delhi Metallo-beta-lactamase-1 (NDM-1) strains, Multi Drug Resistant tuberculosis (MDR-TB), Extensive Drug Resistant tuberculosis (XDR- TB), Methicillin Resistant Staphylococcus Aureous (MRSA), Carbapenem-Resistant Enterobacteriaceae (CRE) and Vancomycin-Resistant Enterococcus (VRE) has also posed potential health hazards. Thus; we have to improve the scientific proficiencies to mitigate the clinical errors and prevent health hazards [4].

## Current Health Legislation

The legislative support is an important factor in health care system.

That is now recognized by all countries of the Indian subcontinent. WHO is continuously supporting to develop, strengthen and modify the existing legislation to enforce the national health policies. Bangladesh has drafted an improved set of health laws and pioneered drug policy legislation. Mongolia and Korea have endorsed the drug jurisprudence for provision of health services for the entire population. India has revised the legislation in conformity with its national health development policy. A bill has been prepared in Maharashtra to disallow commercial trafficking of human organs for transplantation purposes. Indonesia has enacted legislation on health manpower to facilitate the implementation of primary health care activities. Myanmar has made modifications in the law in conformity with the new health policies [5,6]. The Decentralization Act has been enacted in Nepal in support of decentralization in the planning and management of health development programmes. Sri Lanka has enacted legislation in favour of wide scale decentralization for implementation of the HFA strategy. Thailand has developed comprehensive laws and amended legislation appropriately to assure public health facilities (Figure 1).

## Millennium Development Goals of World Health Organization

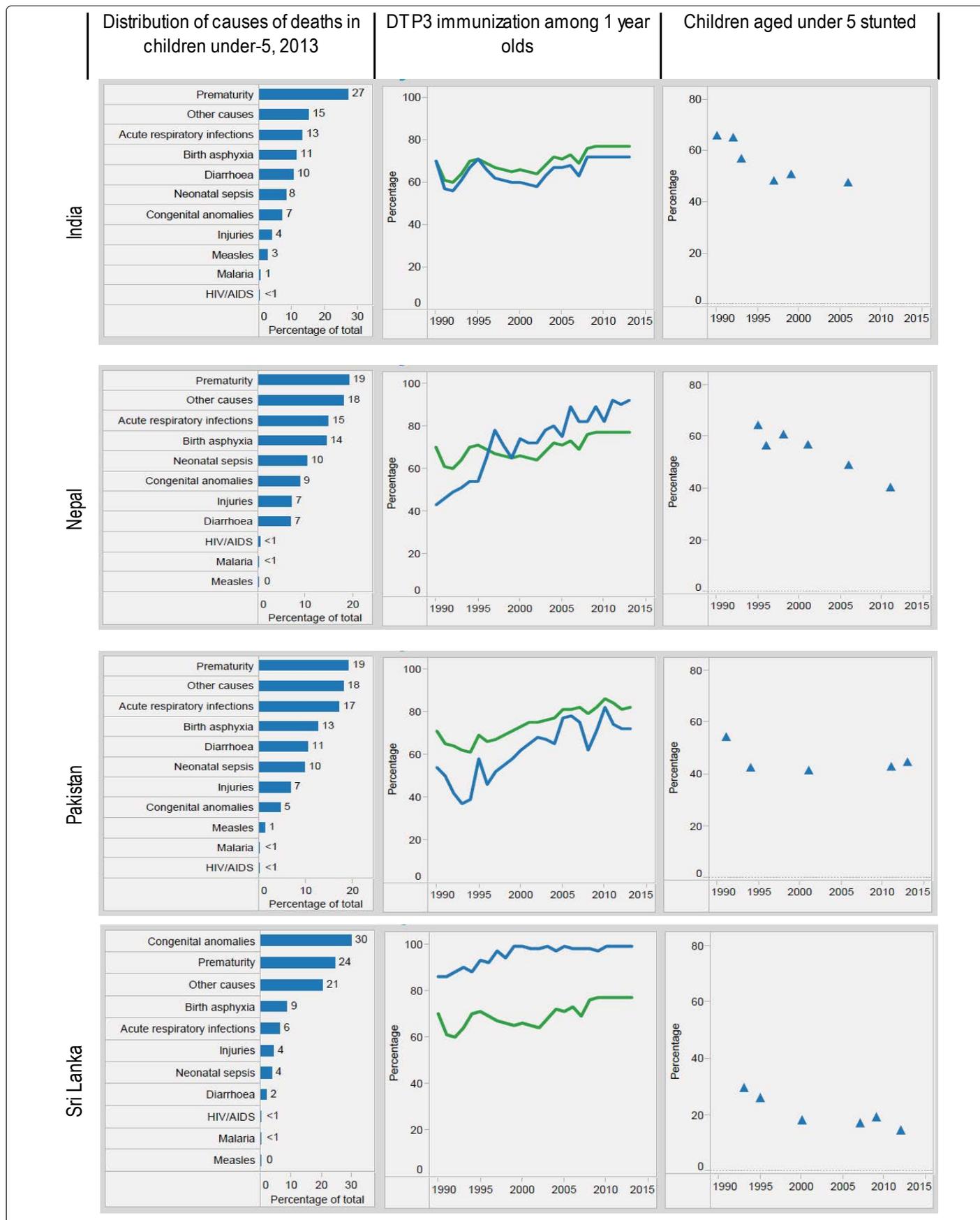
The United Nations (UN) has designed eight MDG's. All of the UN members were agreed to achieve these goals by the year 2015. The

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United Nations Millennium Declaration was signed in September 2000. The leaders of the world were convinced to fight against hunger, poverty, environmental degradation, illiteracy, disease and discrimination against women [7,8]. The MDGs were re derived from declaration, and all have specific targets and indicators. The eight MDG's are as under;

1. To eradicate extreme poverty and hunger
2. To achieve universal primary education
3. To promote gender equality and empower women
4. To reduce child mortality
5. To improve maternal health
6. To combat HIV/AIDS, malaria, and other diseases
7. To ensure environmental sustainability
8. To develop a global partnership for development.

The MDGs are directly connected with public health. Better health enables children to learn and adults to earn. Gender equality is essential to the achievement of better health. Hence, all these factors influence and support each other to eliminate and control the poverty, hunger and environmental degradation positively; but also depend on, better health.

### World Health Organization and Public Health Surveillance

Today, most of the health authorities have recognized the public health needs and designed programs to reduce the incidences, disability, and health conditions. In recent years, public health programs providing vaccinations have made incredible strides in promoting health, including the eradication of smallpox, polio, cholera, tuberculosis, diphtheria, that plagued humanity for thousands of years. The World Health Organization (WHO) has helped to identify the core issues and programs as under;

- Providing headship to health and engaging in partnerships where

joint action is needed.

- shaping a research agenda and stimulating the generation, translation and dissemination of valuable knowledge;
- Setting norms and standards and promoting and monitoring their implementation;
- Articulating ethical and evidence-based policy options;
- Monitoring the health situation and assessing health trends [9].

In particular, public health surveillance programs can:

- Serve as an early warning system for impending public health emergencies;
- Document the impact of an intervention, or track progress towards specified goals; and
- Monitor and clarify the epidemiology of health problems, allow priorities to be set, and inform health policy and strategies.

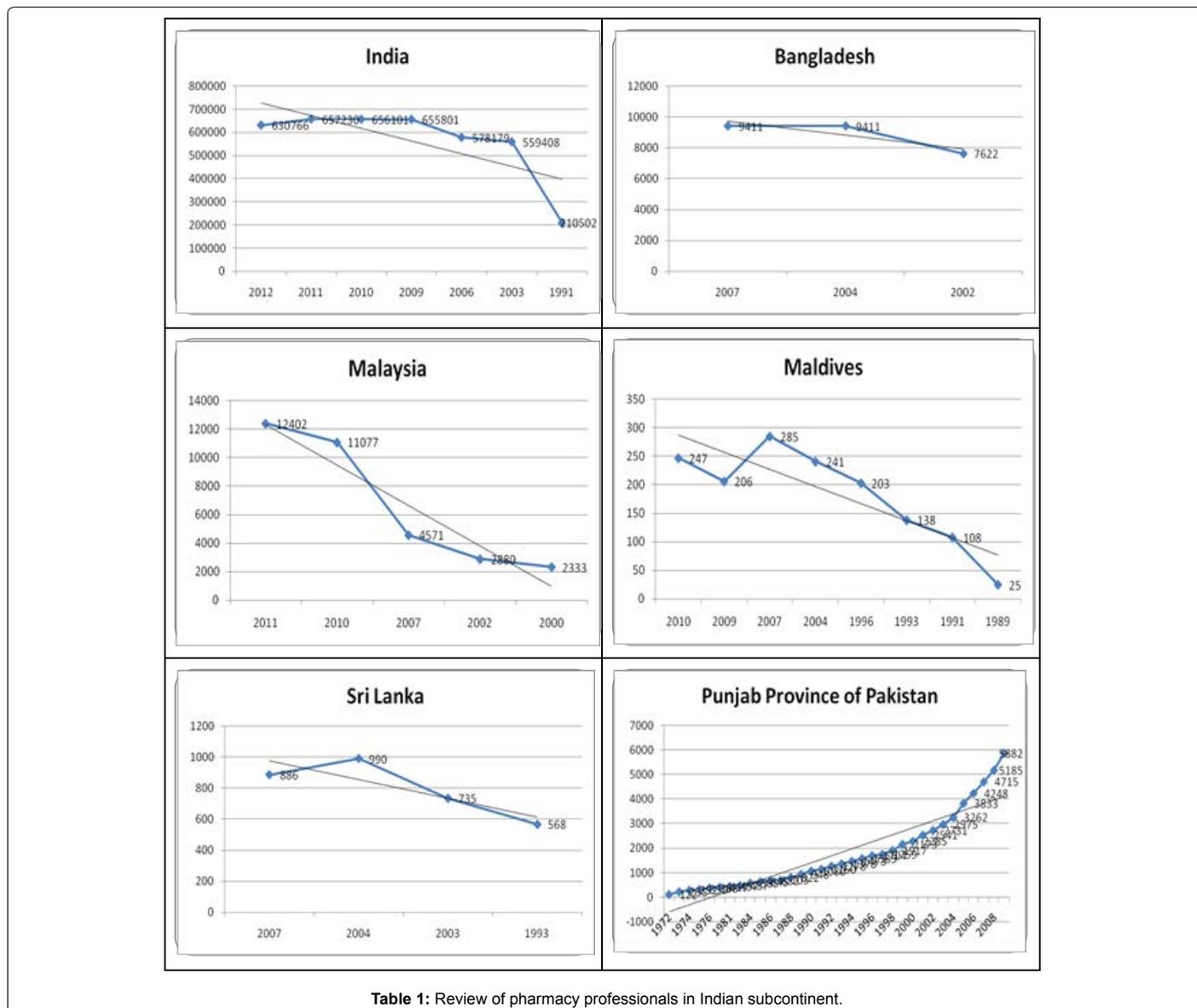


Table 1: Review of pharmacy professionals in Indian subcontinent.

◦Diagnose, investigate, and monitor health problems and health hazards of the community [10].

Pharmaceutical services are quite important to establish a quality healthcare system. Hence; the health system of the Punjab is amalgamate of historic, scientific and mythological procedures. The treatments were carried by methods borrowed from Persia, Afghanistan, china and Arabian states. Unani Tibb, executed through the comprised of herbalist, apothecary.

### Review of Pharmaceutical and Clinical Services in Health Care System

The pharmacist are key important to deliver all services related to the pharmacy practice [11]. They are currently working in pharmacy practice, dosage form & drug designing, pharmaceutical care, hospitals/ clinical setting, quality assurance and research. Because of this admirable role of pharmacy professionals, the local population and health authorities of individual states are convinced to deploy appropriate pharmaceutical patient's care. The objectives, visions and mission statements are designed with major aspiration of improving the overall public health to achieve MDG's [12,13]. Providing the clinical and pharmaceutical care at affordable, accessible and equitable ways is also potentially desired. Moreover; the government's officials are generally convinced to establish pharmaceutical service structure to assure a quality health care system. For this purpose a chronological comparison of pharmacy human resource; addition, total, gender, population vs. pharmacist, percent (%) addition and yearly population growth during last thirty four years in Punjab province of Pakistan is presented in Table 1 (Figure 2).

Moreover, the problems were provoked by migration of trained pharmacists to developed urban part of the states. That produced a space in certain critical areas of subcontinent [14]. Thus; World

Health Organization, Ministry of Health and Health Department have started to emphasize the drugs and patients in every stage of clinical and pharmaceutical care to connect the current imbalance of drug experts. However; the induction of new hospital pharmacy and deployment of drug regulatory officers has provided the essential health care modules at the doorsteps. MDGs access to pharmaceutical services and the development of infrastructure are impeded by geopolitical conditions and the low population density of the continent. However; 80% of the population has accessibility to basic health facilities in rural areas and 100% in cities with almost standard pharmaceutical care [15]. Thus, the achievement of the MDGs may help us to improve the pharmaceutical care, minimize the therapeutical errors, reduce medical discrepancies and decrease the burden of diseases.

### Pharmacist Population Ratio

Pharmacist Population Ratio World Health Organization has introduced a standard pharmacist population ratio of 5: 10,000 or 1: 2000 by 2020 for developed countries [15]. The government authorities, pharmaceutical institutions and health professionals are working to achieve this task. The demand of pharmacy experts is also created in market to maintain the charm of this profession. Whereas, the pharmacist population ratios is extensively varies from  $\leq 0.5$  [16] to as high as  $\geq 20$  in world. [17] The normal ratio in the Western Pacific region is approximately 25 times higher than that of the African region. The proportion is also correlated with the financial condition of the country. In South Africa; currently there is one pharmacist available for every 3,752 people. However, this proportion reduces to 1: 4,499. While; there were 1.9 pharmacists per 10,000 people in 1960. Since, in 1998 there were 2.7 pharmacists available for 10,000 people [18]. This shows that proportion is increasing rapidly than the population during the last 38 years, from 1960 to 1998. Thus; if the pharmacists working full time are included, the ratio decreases to 2.2 pharmacists per 10,000 people [19].

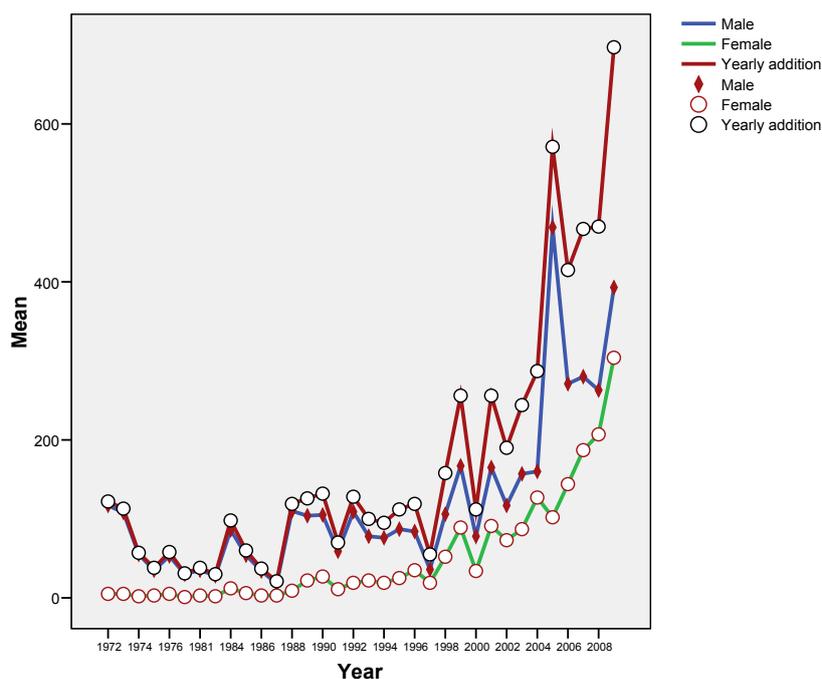


Figure 2: Chronological review of male, female and yearly addition of pharmacists during last thirty four (34) years; 1972-2009; in Punjab province of Pakistan.

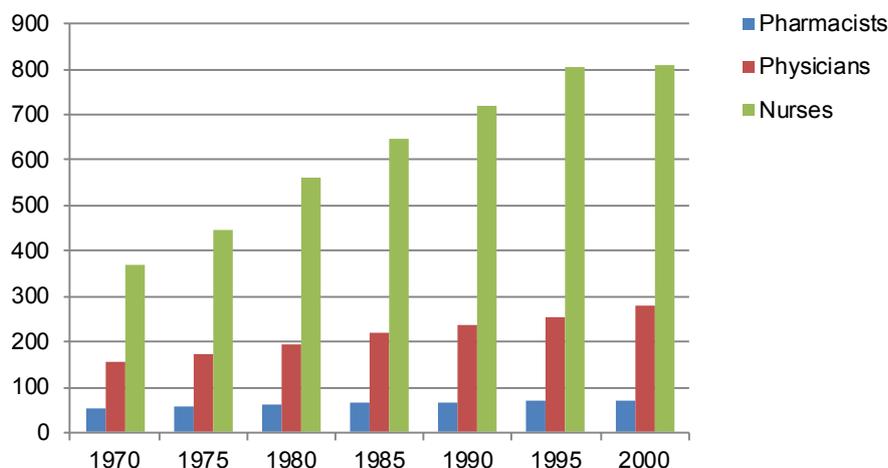


Figure 3: Estimated supply of Physicians, pharmacists and registered nurses and their population ratios per 100,000 Population, 1970-2000 in USA [22].

In the 1950's; there were only 30 pharmacists in Malaysia. Therefore, Malaysian government is working actively to attain the pharmacist population ratio of 5: 10,000 (or 1: 2000) up till 2017. The Malaysian Health Minister Liow Tiong Lai expressed that the entire registered Malaysian pharmacists stood at 7,298 last year. That gives a ratio of one pharmacist for 3,878 people and will hit 22,000 in 2020 [20]. The non-clinical role of pharmacist has also been discouraged by drafting various regulations related to pharmacy or health practice. Hence, the situation had been changed during the last fifty years [21-23] (Figure 3).

## Conclusion

The current pharmaceutical scenario needs the legislative and strategic support to assure appropriate pharmaceutical and clinical care in Indian subcontinent. It is also enviable to assign the exact scientific and professional roles to pharmacy professional instead of irrelevant managerial and clerical tasks. That will potentially reduce the irrational drug usage and poor pharmaceutical care. Otherwise serious vulnerable health problem may potentially be posed and then harbored to other parts of the world.

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