Understanding medical students' motivation and preferences to select medical studies and work in rural areas in North India

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Human resource is one of the most important factors in the healthcare sector. It directly affects the quality of service delivery. Hence, human resources have been given priority in various health related goals and programs. Initiatives like Sustainable Development Goals focus on human resources for universal health coverage. Even after all these efforts the world is facing problems of dearth and inequitable distribution of health workers. These problems are more prevalent in middle and low income countries. The shortage and unequal distribution of health personnel leads to inequities in health services delivery and eventually to poor health outcomes.

The medical profession is one of the most reputed professions around the globe. Medical professionals are highly respected and are associated with high social status. Still, India has an acute shortage of medical professionals. The dearth of medical practitioners is even more in the rural parts of India. Several studies have been done worldwide to determine the factors influencing students' motivation to take up medical study. However, very few studies have been carried out in India. It is important to bridge this gap in literature to frame policies to counteract this acute shortage.

The objective of this PhD research was to thoroughly understand the motivational and demotivational factors of students to select medical studies and also their choice towards working in rural areas in India.

Chapter 1 contains the general introduction and description to the topic. It throws light on the current situation and the problems. Further in the chapter, the relevance and need of the study are discussed. The objectives of the research are also listed in the chapter.

Chapter 2 delineates the literature related to the motivation of medical students to pursue a career in the medical field. Studies investigating motivational factors that underpin students' selection of medical study were grouped and reviewed. Search of literature was executed with the purpose to identify the perceptions of medical students to enter medical studies. The search was carried out by two researchers independently in PubMed, Google

Scholar, Wiley and IndMED databases for articles published from year 2006 till 2016. A total of 38 combinations of MeSH words were used for search. Studies related to medical students and interns were included. The application of inclusion and exclusion criteria and PRISMA guidelines for reporting systematic reviews led to the final selection of 24 articles. The majority of the studies included were from high-income countries. Thematic analysis of selected papers was done. Motivating factors that turned out from the study were scientific (interest in science/medicine, social interest and academia, flexible work hours and work independence), societal (prestige, job security, financial security) and humanitarian (serving the poor and under privileged) in high, upper-middle and lower-middle income countries respectively. The findings were comparable to Maslow's hierarchy of needs theory of motivation. This study provides policy makers with the basic idea to understand the motivational factors and accordingly formulate policies.

Chapter 3 describes the development and validation of a reliable instrument for measuring the choice of medical students to study Bachelor of Medicine and Bachelor of Surgery (MBBS) in Indian settings using extensive literature review followed by Delphi technique. Two rounds of Delphi technique were conducted. The scale consisted of 12 items, 5 measuring intrinsic dimensions of motivations and 7 measuring extrinsic dimensions. The questionnaire was pilot tested on 20 students of a government college. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) validity, reliability and data quality checks were conducted on a sample of 636 medical students. The study was conducted in three northern states of Himachal Pradesh, Punjab and Haryana. Two government colleges from each state were included in the study. The study was ethically approved by the Institute's Ethical Committee, PGIMER, Chandigarh. Prior permission was sought from Principals of involved medical colleges. Informed written consent was obtained from the participants. The Motivation for Selection of Medical Study (MSMS) questionnaire consisted of 3 factors (subscales) and 8 items. The three main factors found after EFA were the scientific factor (e.g. research opportunities and the ability to use new cutting edge technologies), the societal factor (e.g. job security) and the humanitarian factor (e.g. desire to help others). The CFA conducted showed goodness of-fit indices supporting the 3-factor model. The study uncovers a novel three-faceted motivation construct based on scientific factors, societal expectations and

humanitarian needs. The tool validated from the study can be further used in similar settings.

Chapter 4 represents the critical interpretative synthesis of the existing literature to capture various aspects that lead to human resource shortage in India and the strategies deployed globally which could be replicated and scaled up in developing countries such as India. The predefined selection criterion used to assess relevant manuscripts in this literature review was to identify 'the reasons for retaining health workforce in rural and underserved areas'. PubMed, Google Scholar and IndMED search engines were used to identify relevant articles. Articles published in English from 2005 to 2014 were included. A total of 56 articles were included after screening of full text of the article. The different strategies for retention of health workforce in rural areas were discussed on the basis of four major retention interventions, viz. education, regulation, financial incentives and personal and professional support. Healthcare in India is delivered by a diverse set of providers. The results revealed that the distribution of manpower is unequal across states, urban-rural areas, gender and category of health personnel. India lacks in health system development and financing. Workforce education and training is not given priority. Poor governance, insufficient salary and allowances, along with inability of employers to provide safe, satisfying and rewarding work conditions are causing health worker attrition in rural India. The review suggests that the retention of health workers in rural areas can be ensured by multiplicity of interventions such as medical schools in rural areas, rural orientation of medical education, introducing compulsory rural service in lieu of incentives providing better pay packages and special allowances, and providing better living and working conditions in rural areas. Hence, evidence based strategies are needed to ensure context-specific and field tested solution to existing problems.

Chapter 5 outlines the development and validation of a scale identifying barriers for medical students for accepting rural postings in Indian settings using extensive literature review followed by Delphi technique. EFA followed by CFA was performed to identify the primary deterrents. The findings of the quantitative and qualitative study were mixed at the interpretation level to enhance, validate and provide explanation of the quantitative findings by using a mixed method approach. The final instrument included 29 items whereas the EFA and CFA highlighted 5 main factors, namely lack of professional

challenge, social segregation, socio cultural gap, hostile professional environment, and lack of financial incentives as underpinning students' demotivation towards working in rural areas. The developed Medical Student's De-motivation to work in Rural India (MSDRI) instrument is the first valid and reliable measure for identifying deterring factors for MBBS students to work in rural areas of India.

Chapter 6 depicts a cross-sectional, descriptive qualitative study in which Focused Group Discussions FGDs were used to display medical students' views about working in rural settings in India, in order to explore the discouraging and encouraging factors. A total of six focus group discussions each comprising 10-20 medical students were held in six medical colleges. The colleges were randomly selected, two from each state. The major factors highlighted were 'scientific and professional' (poor accommodation facilities and lack of necessary infrastructure; lack of drug and equipment supplies; inadequate human resource support, lesser travel and research opportunities) and 'societal'(less salary and incentives, social isolation, political interference, lack of security). The primary encouraging factors were 'humanitarian' (desire to serve poor, underprivileged and home community), 'scientific and professional' (preferential admission in post-graduation after working more than 2-3 years in rural areas) and 'societal' (achieving higher social status). These findings will help policy makers in formulating target specific policies.

Lastly, **Chapter 7** presents the general discussion, addressing the theoretical and methodological reflection on the main findings as presented in the previous chapters. It also provides recommendations for policy and practice as well as directions for future research. The mixed-method research methodology of collecting, analyzing and integrating quantitative (e.g. surveys) and qualitative (e.g. focus group discussions, in-depth interviews, Delphi technique) data along with literature reviews was applied to understand complex human behavior as a sequel to many inter-related factors behind their motivation to select medical studies and postings in rural and remote areas of India. In addition, two new measurement instruments were developed and validated for understanding the main motivation factors that influence students to opt for medical studies in India. This study encapsulates the important aspects that may be required to recruit and retain the future doctors in rural areas.