Universal Health Coverage and Role of National Board of Examinations (NBE)-in Postgraduate Medical Education at District Hospitals in India: A Policy Analysis

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Abstract

Introduction: There is adequate evidence on the dearth of medical specialists in public sector hospitals along with other support staff in India and there are best cost-effective alternative approaches to address the issues. However, the understanding and interest of policy actors and policy decision-making processes may affect the adoption of sustainable alternative options. Further, it is not clear that why policy actors do not promote potential policy options for human resources for health (HRH) to have sustainable universal health coverage (UHC). This policy analysis may illumine the potential options for improvement of medical specialists' attraction and retention in divergent actor's environment.

Materials & Methods: We used the qualitative research method for policy analysis based on primary data collection supplemented with documents review. Semi-structured interviews were conducted with 15 key informants.

Results: The study findings show several interesting features in terms of policy actors experiences, interpretations, which may potentially influence DNB course promotion in public sector hospitals at the district level. The key facilitators include: available good infrastructure, a high number of patients inflow into government hospitals for exposure to post-graduate training, established DNB postgraduate curriculum and monitoring mechanisms, the eagerness of health administrators. The key barriers include limited teaching support system, the high workload for senior practitioners and limited time to teach trainees, lack of library and academic environment and a dearth of government pro-activeness to improve the working environment and higher medical education.

Conclusion: This paper unlocks a debate about how to move forward with twin initiatives of universal health coverage and human resources for health. The paper argues not only to adopt low cost best available medical specialists' attraction and retention strategies through DNB courses in district hospitals but also facilitate the current attempts to promote UHC in a sustainable fashion.

Keywords: Medical education, DNB program, health system, Universal Health Coverage.

Introduction

There is a growing demand for medical specialists' attention for critical medical services such as maternal care. Around 20% of the maternal mortality in India are preventable, but it requires specialists intervention in critical hours.(1) The post-partum haemorrhage, puerperal sepsis, and emergency surgical management demand teamwork of a group of specialists such as gynaecologist, anaesthetists, paediatricians and others. With timely interventions, the maternal mortality and morbidity can be prevented as it has been done in other countries decades back.(1) However, to create such teamwork, there is a significant deficit of medical specialist in the majority of the public sector hospitals in India.

Situation of Postgraduate Medical education in India

Currently, the postgraduate medical education in India is facing several impediments, which involve a limited number of post-graduate medical seats, a high ratio of undergraduate (UG) to postgraduate (PG) seats, a limited number of government medical colleges. The problem is mounted by mushrooming private medical colleges without adequate regulation on quality of education and increasing capitation fee [2].The capitation fee in private medical colleges especially for postgraduate medical education is unusually high apart from regular fees. There has been an unlawful exchange of money between parents and private medical colleges' management. The illegally paid money varies anyway between 1-10million USD per seat and approximately this amounts to an annual value of 60+billion INR in India.(3) Though the charging of arbitrary capitation fee is against the rule of law, however, there is a high prevalence of capitation fee across the country in the majority of the medical colleges.(4) Thus, the quality of education has been compromised as a result of increased commercialization and nexus of political leaders owning several medical colleges in the country further leading to deterioration of the medical education(2)

There are a growing number of medical colleges; India has nearly 414 medical colleges with approximately 50000 medical graduates passing out from the colleges.(5) However, there has been no proper study on the number of post-medical graduates joining

to public sector hospitals and their retention approaches.[1] In order to address problems in the health workforce, various state governments have devised human resources for health (HRH) policies and plans. Yet, substantial gaps exist between the policies and their implementation. As a result, all the states still face significant short of specialists.

Table 1 Statistical data on undergraduate and postgraduate courses/colleges in India

1	Number of Medical colleges	414	
2	Number of M.B.B.S Seats	49940	
3	Government vs. Private colleges	Government colleges	Private colleges
		194	215
4	UG seats MBBS	25830	24110
5	PG seats MD/MS	19946	
6	Pre-Clinical Seats	1987	
(i)	MD/MS Anatomy	723	
(ii)	MD Biochemistry	534	
(iii)	MD Physiology	730	
7	Para - Clinical Seats	3119	
(i)	MD Forensic Medicine	341	
(i)	MD Pathology	1283	
(ii)	MD Pharmacology	717	
(iii)	MD Microbiology	778	
8	Clinical Seats	14050	
(i)	MD Anesthesiology	1567	
(ii)	MD General Medicine	2363	
(iii)	MD Psychiatry	434	
(iv)	MD Dermatology & Venerology	531	
(v)	MD/MS Obstetrics & Gynecology	1401	
(vi)	MD Pediatrics	1209	
(vii)	MS General Surgery	2131	
(viii)	MS ENT	624	
(ix)	MD/MS Ophthalmology	838	
(x)	MS Orthopedics	991	
(xi)	MD Radiodiagnosis	797	
(xii)	MD Radiotherapy	198	
(xiii)	MD Pulmonary Medicine	797	
(xiv)	MD Emergency Medicine	48	
(xv)	MD Immuno-Hematology Blood Transfusion	52	
(xvi)	MD PMR	40	
(xvii)	MD Nuclear Medicine	9	
(xviii)	MD Transfusion Medicine	11	
(xix)	MD Geriatric	7	
(xx)	MD Family Medicine	2	
9	MD Social & Preventive Medicine	790	

Source: Medical Council of India-2015[5]

Potential problem in terms of specialist gap in district hospitals in India

As shown in figure 1, public health sector does require major requirement of specialists in India. However, the public sector hospitals are facing challenges to attract and retain the medical specialists. Though there is growing need for increasing the sanctioned posts, however, the government is not searching better approaches to fill the existing vacant sanctioned posts. The problem is more or less similar across the states in India.

Percentage of Sanctioned Posts of Specialists Vacant

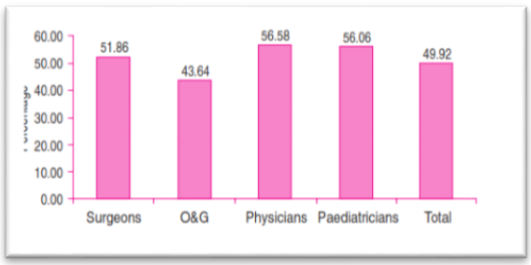

Fig. 1: Showing medical specialists gap in India

Source: Ministry of Health and Family Welfare[6]

Above figure shows nearly 50% of the specialist gap in India. This translates to approximately 13794 medical specialist gap in community health centres (CHCs)/block hospitals and District hospitals in India.[7] The gap may be up to 23000 if we include another specialist other than specialist mentioned in the figure for the entire country [6]**s**. For instance, Karnataka state of India alone has a gap of more 1000+ specialists' gap in the public sector hospitals when compared to sanctioned posts. Nationally, there is a requirement and in position gap of 2682 gynaecologists and 3029 paediatricians alone. These two specialists account more than 5000 in the requirement in public sector hospitals.[8]

National Board of Examinations (NBE)

In 1975, the National Board of Examinations was established by government of India to bring; a) uniformity in the standard of examination for postgraduate medical education; b) to strengthen the scope, function and composition of medical education related national examination bodies; c) to improve the standards of medical education and overall development of teaching and research. NBE has laid down guidelines and monitoring mechanism for PG Medical Education. There is an accreditation committee to review the various hospitals for the conduct of DNB courses across the country as per defined standards. NBE administers has a 3-year program leading to the award of DNB. The DNB qualifications are notified and established as equal to MD/MS for all purpose of the practice of medicine and employment. The NBE also provides super speciality training program in various recognised hospitals. At present, the NBE aims to train approximately 10,000 postgraduate medical students every year to fill the gap of medical specialists in the country [1]. In short, the National board of examinations has introduced several postgraduate courses in accredited hospitals in the country with intention of improving the quality of medical education.

Purpose of the study

The purpose of this study is to examine the experiences and perceptions on the role of National Board Examination from the actor-centric point of view. This may facilitate improved DNB course policy decision making the process at district. Further, the paper analyses the potential policy issues relevant to India by conducting primary research to address the specialist gap in government hospitals.

Objectives of the study

The primary objective of the study is to understand the policy actors 'experiences, perceptions in terms of their role, value and perspectives about the postgraduate medical education and their perspectives on DNB courses introduction in district hospitals (public sector). The secondary objective is to know the potential policy decision-making barriers for DNB courses in the context of health system strengthening to achieve universal health coverage.

Materials & Methods

The analysis aimed at understanding the critical operational challenges in integration of DNB courses in district hospitals to strengthen medical specialists in India. The study scoped the key policy contents on DNB courses by examining the understanding and interpretation of DNB courses training in district hospitals policy decision to fill the gap of specialists from policy actors' perspective.

The action centred framework has been adopted for the study with emphasis on policy actors and processes.[9] Employed the Yanow's approach of interpretative policy analysis by underscoring on policy actors experiences and meaning they attach to the decision process.[10] The study was approved by the Research Ethics Committee at Indian Institute of Public Health-Bangalore, India.

The study methods adopted semi-structured interviews with key informants (N=15)having intimate knowledge about the higher medical education policies in India and health system actors at different level such as national, state and district level actors. The study also looked other criteria for study participants such as years of experience, the involvement of higher medical education policies, medical education administrative experiences and policymakers. The study participants were selected based on maximum variation for a different category.

Further, non-participant observations of the district hospitals infrastructural arrangements and the administrators' management of specialist shortage situations were documented by the researcher. The study focuses policy actors' experiences and decision process for integration of DNB courses into public sector hospitals in India in a particular context. The contextual factors include the health structures, organisational arrangements, complex social, professional interactions and negotiations among the policy actors. The data were transcribed and kept in a password-protected location. The quality check was done for each transcript by the researcher.

Data analysis

The interview data was analysed using framework approach as this approach is specifically used in applied policy analysis.[11] This approach involves both deductive and inductive approaches wherein the analytical theme emerges from the data. The data analysis was done using Atlas ti7 software. Initially, a priori codes were applied and planned emergent codes by close observation of the transcripts. The apriori codes were developed based on study objectives. Emergent codes were applied to emergent categories of interpretations and experiences. Further, analytical codes applied to group emergent themes. This paper focuses on analytical themes.

Results

Profile of the study participants

The study interviewed 15 informants at different levels such as national, state and districts from June 2013-Sept 2013. The respondents represent the key policy actors at both national and sub-national level. The majority of them had more than 20 years of experiences with substantial health system understanding. All the interviews were conducted at their working locations.

DNB course relevant policy content scoping

Table 2 summarises DNB courses relevant policy contents in different government policy documents. Firstly, the study presents the existing influential policy content issues reviewed from relevant policy documents. Next, the study presents the various experiences and perspectives of the key informants.

Table 2 DNB Relevant Policy Documents Content Scoping Matrix

Target issue on DNB courses policy document	DNB courses related components/Relevant Policy (ies) objectives	Approach/Strategy /activities expected of organization	Responsible organization	Remarks
Recognition of DNB qualifications and inclusion in First Schedule of Indian Medical Council Act.	The DNB degrees are recognised by the Government of India and a Gazette order is published.(V-11015/17/83 –ME(Policy) dated 19th September 1983)	Government Order	Government of India	Under section 11 subsection 2 of IMCA act, 1956 (102 of 1956) change of nomenclature of the medical qualification granted by NBE, New from M.N.A.M.S to Diplomate of National Board
Equivalence of DNB with MD/MS qualifications	MoHFW's notification no. V-11025/6/94 –ME(UG) dated 3rd October 1994	Government Order	Government of India	Qualification awarded by NBE – recognised & equated with MD/MS
Government of India letter to all health secretaries in 2006	All states related to DNB qualification consideration for appointment (V-11025/13/2004 –ME(P-I) dated 1st June 2006)	Consideration of DNB courses for recruitment process as teachers in medical institutions	All state governments	D.N.B qualification awarded by NBE - Equivalence of Board's qualifications for appointment as teachers
Gazette notification related DNB courses recognition by Medical Council of India recognition	Official Gazette notification(V.11025/12/2004-MEP-(I) dated 20th February 2009)	Government order	Government of India	Qualification awarded by NBE – recognised & equated with MD/MS
Supreme Court orders	With regard to DNB course recognition in for teaching position in tertiary care institutes[14]	Consideration of DNB qualified candidates for teaching position	Kidwai Institute of Oncology	The court had unequivocally indicated that the qualification of Diplomat of National Board which is equivalent to a Master Degree (MD/MS). Further, the court referred the relevant MCI and government of India documents and given an order.
Karnataka Medical Registration act	Recognition of DNB courses[15]	Recruitment purpose	State Government of Karnataka	Any medical qualification registered in MCI schedule-1 will be automatically accepted for Karnataka medical registration.

Consequences of specialist services gaps in the public sector hospitals

The low or non-availability of medical specialists in public sectors hospitals may lead to serious healthcare problems. The maternal and child health care services in government hospitals are suffering, consequently, people are losing lives and their morbidity and mortality increasing. For instance, the specialists say that

"I have been working in the public sector as a paediatrician, I am in-charge of out-patients, in-patients as well as neonatal intensive care unit. I rarely remember sleeping 6 hours at a stretch. I am unable to concentrate and provide quality services. We lost last year around 40 babies, mostly underweight."-**Specialist Public Sector Hospital.**

"Our hospital is the only secondary care hospital in this area but we are unable to provide specific speciality medical services. The workload is high and we have two specialists in place of seven. Therefore, we refer the patients to go other hospitals or we try our best with available manpower. As a result, the quality of care is compromised."-**Specialist, District Hospital.**

"The government services are free, we are unable to provide basic services such as normal delivery, caesarian section as the number of cases are very high and we have only one gynaecologist. If the poor people want to go to private hospitals, then they have to cough

up huge money and they cannot afford to go. As result, there is a loss of quality of care and sometimes loss of lives".-**Block level health officer.**

The consequences of low or non-availability of specialist medical services are causing deep distress among a vulnerable section of the society. The public sector hospitals are performing their best despite that there is a huge gap in demand and supply of healthcare services, especially in the specialist service area.

The study respondents are confident that if the specialists are an inadequate number, they could significantly ease the speciality services required in the public sectors hospitals and provide reasonably good quality services.

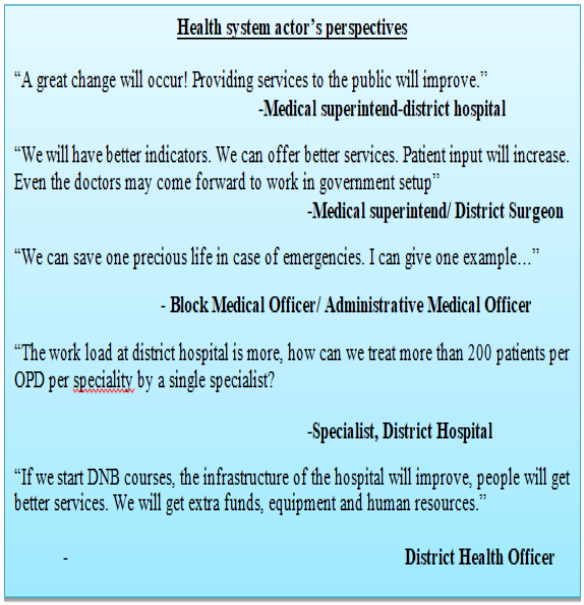

Fig. 2

Postgraduate education status

Human resources for health are a complex task for any government. India's medical specialist production and formal position in public sector hospitals are not meeting the demands and speed of the requirement. There are several barriers to the production of requirements number of postgraduate medical specialists resulting in a shortage of specialists in health. The key problems expressed by some respondents were as follows.

"The seats are less and there is reservation… 5years, 4 years, 3 years (of service) besides general reservation"-**Medical Officer.**

"Majority of doctors when they write exams, are married. Due to family and the work, one cannot concentrate to read for the entrance exams. The exams are very tough"-**Medical Officer, Casualty.**

"What's the use of seats like anatomy and physiology for a government hospital? I know an anatomy specialist doing a job of taluk health officer!"-**Medical Officer, Primary Health Centre.**

Limited seats

There has to be long-term, context-specific human resource planning is essential in large scale to fulfil the entire country's requirement. Thus, sound medical education through interconnections between medical education and recruiting for the formal position is critical. The health workforce production could be adaptable to new and growing challenges of health system demands. However, it has not adapted to the rapid requirement of specialists in the health sector in India. According to a senior program officer at the state level,

"The numbers of post-graduate medical seats are limited. Further, there are limited numbers of seats reserved for in-service government doctors. The government is not looking at the demand and supply needs. Further, private medical college lobby is strong and they will not allow the more post-graduate seats to government doctors"-**State program officer.**

Capitation Fee

The capitation fee becoming another challenge for improved medical education, as per one of district-level physician,

"The capitation fee is a big menace in postgraduate medical education. If the private medical colleges have an opportunity for more seats then they will sell the seats for a huge sum of money. For namesake they conduct entrance but they all will be reserved for the candidates who have paid huge money"-**Physician, District Hospital.**

As per the study respondent, the key activity of human resource for health comprises of recognising the need and assessing the appropriate size of specialists for the right place in right time. At the moment the government is not taking an active role in assessing the required number of specialists and future requirements. Further, the private market for production of specialists is unregulated in terms of fee, unlawful donations, resulting in an imbalance in operation of policy tools for achieving the desired health workforce goal.

Physical Infrastructure, Facilities

Health system actors at district and state level have respondent in principle believe that majority of the district hospitals are having equal or more than 200 beds and necessary infrastructure. The recent NRHM initiatives have significantly improved infrastructural issues. NRHM also upgraded several block-level public sector hospitals. However, there may be specific requirements may need to be full filled. For instance, health administrator at state level comments that:

"We have the much-needed infrastructure in all district hospitals but we may need to improve postgraduate training required specific initiatives such as the library, computer lab, lecture halls. These limitations can be improved within a short span of time as there is an available budget and if need we can request a special budget for next year"-**Health Administrator, State level.**

"If the DNB courses are introduced in district hospitals then we hope to get good library infrastructure, regular seminars and academic discussions. This may improve and update our academic knowledge '-**District hospital specialist.**

Working Environment

There are certain critical challenges for improving public sector specialist workforce. As per the study respondents, the working environment is a significant deterring factor for non-entry of specialist into public sector health services. The following responses illustrate problems of key working environment issues.

"specialists are not opting for government service because of place (rural), the environment of working place, the housing problem, schooling problems (for children)"-**District health officer.**

"All the specialists prefer to work in cities because of better amenities"-**District health program officer.**

"We do not get a competitive salary, most of the time we have to work in harsh conditions, huge workload. Further, we do not get salary as they get it in private"-**Medical specialist, district Hospital.**

One more concern they have expressed that the workload at the taluk hospitals and CHCs. In most of the health facilities, the number of working specialists is less, sometimes only one or two. The qualities of services offered by these specialists are affected by the increased workload.

"They work 24 hours a day in a rural set up with no time to relax. Sometimes he won't get 1-2 hours' time for his own primary basic needs!"-**Specialist, block Hospital.**

"(Specialists join medical colleges) mainly (because of) fixed hours of duties in medical colleges"-**Block health administrator.**

"As far I remember the government has done specialist recruitment only once. Only a few have joined the service."-**Block health administrative officer.**

"Even the in-service doctors are leaving the service (after completing the course)"-**District health officer.**

The speciality services are offered in a team manner. For example, for doing a surgery, one needs a surgeon, sometimes an assistant, an anesthesiologist, a physician for assessing fitness, a good laboratory report, a radiologist for a report on X-rays, a blood bank officer, apart from equipment and paramedical staff. Lack of one of the members of a team leads to unnecessary referral of or a medical complication which in turn affect the patient causing him out of pocket expenditure and unnecessary suffering.

"If we operate on an ischemic heart disease, and if something goes wrong, then we have shift whole patient to tertiary care centre because of lack of physician"-**Physician, district Hospital**.

For simple procedures like removal of a lump, treatment of simple ailment likes chest pain and for diagnostic procedures, patients are referred to higher centres leading to unnecessary expenditure and burden to the patients. This, in turn,, will lead to increased workload in the district hospitals and tertiary care centres affecting the quality of services.

"If a patient comes with chest pain, whether it is angina or gastritis, we have to refer; we don't want to take the risk now a day"-**Physician, Block level Hospital.**

Barriers and Facilitators

Following are the key barriers and facilitators to DNB program starting in district public sector hospitals. The study respondents emerging pattern of findings have been broadly grouped as facilitators and barriers as shown below.

Table 1: Showing Facilitators and Barriers for beginning of DNB course

Barriers	Facilitators
"First thing is that standards should be fulfilled. The major problem is teaching faculty" **-District Hospital Superintendent**	"If we start DNB courses, the infrastructure of the hospital will improve, people will get better services. We will get extra funds, equipment and human resources." **-District health officer**
"In some district hospitals like Bagalkot, there is hardly any specialists and also in some hospitals, there is lack of other infrastructure" **-Specialist, state hospital**	"Our hospitals have a variety of patients. The students will get exposure in all aspects." **-Specialist, district hospital**
"How can they teach when there is so much workload in district hospitals?" **-Medical Officer, Block Health Officer**	"Our specialists have experience of more than 15 years. Plus they have practical knowledge. Their teaching is sometimes better than so-called academicians" **-District Health Officer**
"He (administrator) should be free of clinical things. A lot of problems in hospitals is due to lack of proper administration. Government should appoint administrators to these hospitals, provided he should be a medical person" **–Surgeon, district hospital**	"Many people can't get into PG. People who are really interested in doing PG, they won't get PG. DNB is a solution for them at least!" **-District health officer** "We have ten government medical colleges. We can use their services" **-State Health Administrator** "Once it comes through the government, then there should be no barriers. Everyone will follow the rule"

"Major barrier is the lack of teaching faculty. Most of the district hospitals have 1-3 specialists in each speciality, the workload is more. The quality of services and teaching will suffer further if they have the additional responsibility of teaching." **-Health activist**	**-District health officer** DNB course is a recognised degree by medical council of India and the degree awarded by NBE is equivalent to MD/MS degrees **–Gynaecologist, district hospital** "Lack of teaching faculty could be managed by utilising the services of the teachers from the government medical colleges." **-Specialist district hospital**

Several respondents desired to improve commitment of the government to solve the problem of deficiency of the specialist doctors. Different respondents have expressed reservations about DNB program owing to several barriers. But some of the respondents also offered potential solutions as shown in the table.

Discussion

The most interesting feature in our study findings is emerging various policy actors' experiences and interpretations and their views on facilitators and barriers on the introduction of post-graduate medical DNB courses at the district hospital. The key barriers for introduction for DNB courses at district level seemed to present as a health system issue. They include lack of adequate attention on the short and long-term impact on health service delivery issues and its impact on community health, poor working environment, lack of administrative support system to improve additional infrastructure, limited focus on training in-service medical professionals. But, the health system approach with sustainable system development options can catalyse the improvement of overall universal health care access.

The key findings related to facilitators are the availability of reasonable infrastructure in district hospitals such as laboratories, blood banks, operation theatres, diagnostic services. This can certainly fortify the argument for the commencement of the postgraduate medical course. Further, the clinical exposure of candidates enrolling for this course too could be significantly enriched as there are a large number of patients and a variety of cases which approach the government hospitals and a significant number of them opting to have treatment at the district hospital itself. Moreover, the specialists working in the district hospitals are having more than 10-15 years of experience with them. Therefore, the key informants believe that the quality of education rendered by them may not be a matter of concern. All of these stand out as strong enablers for the introduction of this course at the district hospital level.

Our findings also revealed some interesting issues with regard to working conditions as an important barrier. It has been noted that there is reluctance on the part of specialists to join government hospitals on account of lower wages, longer working hours, limited specialists leading to high workload, lack of satisfactory amenities in the rural areas. The dilemma of having to work for a minimum period of five years before being considered for an in-service post-graduation MD/MS seat also adds to this situation. The seats are limited as compared to those available in the private sector and quite often the discipline /course of study which the candidate eventually manages to get admitted to may be of limited less clinical value. There has been a surge of more and more in-service specialists quitting government services after remitting the requisite fine or bond obligation. This may adversely affect the economically disadvantaged population who wish to get services from public sector hospitals. A closer reflection would also reveal some major barriers. There are currently insufficient numbers of specialists in the public sector hospitals. To recruit a specialist with minimum 5-7 years of experience in the district hospitals would be a major challenge. Most importantly, there has been no visible exhibition of commitment from the government side to address the specialist gaps in the hospitals.

Despite these arguments, DNB as a master's course could help provide a practical solution to the current dearth of specialists at tertiary care centres. The feasibility aspect of the course must be studied well by the Government in the light of the enablers, barriers and critiques discussed above. Compliance with DNB standards would have to be ensured. One way to approach would be to pilot the programme in a few eligible district hospitals before scaling it up across the state. Initially, teaching faculty from government medical colleges could be utilised as well as the services of retired teachers. Over time, the problem of inadequate teaching faculty could be addressed as the pass outs from the programme would eventually become faculty. Also, specialists could be recruited at district hospitals by a policy of rotational transfers. All measures including an increment of wages should be seriously pursued to retain in-service specialists.

Implication on public sector hospitals

Even though India has a high number of medical colleges in India, there has been a high specialist positions vacancy in public sector hospitals. The medical specialist's gap in government hospitals at district and sub district hospitals varies around 40-60% against the sanctioned posts/positions.[7] The gap of specialists exists more in maternal and child health departments such as obstetrics & gynaecology, paediatrics, emergency medicine, surgery, anaesthesia, radiology, orthopaedics, psychiatry, general medicine, ophthalmology, dermatology and neurology.[8]

Consequent to limited availability of medical specialists in public sector hospitals, there is a no significant reduction in maternal and neonatal morbidity and mortality among vulnerable sections[8] This demands serious attention among policymakers in India and thus, there is dire need of all state governments to engage in innovative mechanisms, innovative processes such as National Board of Examination (NBE) to conduct post-graduate medical education in public sector district hospitals.[16] This may help to attract and retain medical specialists in public sector hospitals as it is cost effective and provides post-graduate training in existing infrastructure with minimal additional investments.

Further, to produce a postgraduate medical graduate in public sector the average cost is around 4 lakhs (approx. 7000USD) per year. The cost of production of postgraduates is less in public sector because of already existing infrastructure. However, the average cost of post-graduate education is approximately 50 lakhs (approx. 75000USD) [17] Thus, medical education cost in private institute is higher than the public sector and commodification of medical education may not help to serve doctors in public sector hospitals.

Study limitations

The current study is region specific within the state and looks at the issue from the purview of available study respondents' data only. As geographical and regional disparities lie within India, the study and its conclusions may not be said to be truly reflective of the scenario of the entire country. It would be interesting to explore the long-term implications of starting such courses by looking at regions, if any, where such arrangements are in existence. DNB comes out as a potential solution, but its viability from a resource allocation and policy perspective would have to be investigated. Other alternatives to address the current scenario would also have to be considered in-depth.

Conclusion and Recommendations

India faces serious shortages of specialist doctors especially in the public sector hospitals, the scarcity of medical specialists will continue to deteriorate in years to come. With rising disease burden and lack of adequate measures to replenish the specialist workforce as well as augment further capacity building, the barriers of inadequate production of specialists and systemic organisational limitations in capacity building, attracting and retaining talent in the public sector needs to be addressed. From the current study, we have identified the potential barriers and facilitators to address these areas and have also suggested innovation in health systems such as utilising the existing infrastructure and captive spectrum of disease burden in the district hospitals owned by the State Governments to introduce Diplomate National Board postgraduate programmes in key disciplines at these hospitals. National Board of Examinations, an organisation established by Ministry of Health & Family Welfare, Government of India has established its credentials in delivering a low cost and innovative training and service model by way of its established Diplomate National Board programme. The DNB programme which has predominantly been conducted in large-scale public and private sector hospitals including defence forces as well. It has the potential of having a vibrant impact on the quality of health care service at the District hospitals where these programmes shall be implemented. The study brings up empirical findings on barriers and facilitators to start DNB course in public sector District hospitals. The policymakers can make use of these findings to undertake policy decision for rapid changes to suit the requirements of Indian health system and improve the postgraduate higher medical education system in India while promoting quality and excellence in higher medical education. There is need to incorporate innovative workforce retention approaches by respective state governments to pave way for desiring to stop the preventable maternal and neonatal mortality, morbidity and this shall have a multiplier effect towards augmentation of medical specialist's human resource requirement for universal health coverage for India.

Funding: The study has not received any funding

Acknowledgements: We sincerely thankful to the department of health and family welfare government of Karnataka state India for giving the opportunity to undertake this study.

Ethical approval: The study has received ethical approval from Indian Institute of Public Health-Bangalore, India

Conflicts of interest: There are no conflicts of interests

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