ASSESSMENT OF FACTORS CONTRIBUTING AND AFFECTING AVAILABILITY AND RETENTION OF HEALTH WORKFORCE IN RURAL AND REMOTE AREAS OF ODISHA

Final Report

March 2012

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By

Indian Institute of Public Health (IIPH), Bhubaneswar and Delhi,

PUBLIC HEALTH FOUNDATION OF INDIA

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EXECUTIVE SUMMARY

The scarcity of qualified health workers in rural areas is a critical challenge for health sector in India. Diverse interventions have been instituted by central and state governments to attract health workers to rural areas and to enhance the retention of qualified workers. These include incentives by way of higher salaries or preferential admission to postgraduate education, and regulatory strategies, such as, educational bonds or compulsory rural service for medical graduates; still retention of health personnel particularly in rural and remote areas continues to remain a challenge. However the reasons for not willing to remain in rural and remote areas are still poorly understood. This study explores factors influencing health workers retention in rural and remote Odisha. It would provide timely evidence for decision making and policy development and contribute to the efforts of the government in establishing efficient mechanisms for health workforce development in the state, particularly on retaining health staff in rural and remote areas.

The study was carried out in six districts of Odisha. Data was collected using a mix method approach. A total of 226 semi structured interviews were conducted with different category of health staff (doctors, nurses, pharmacists, multipurpose health workers and lab technicians).

The study findings reflects that excepting few districts, the ratio of MPHW (F) to population is around 5000 in the state which is at par with the prescribed norms. The ratio of government allopathic doctor, laboratory technician and staff nurses to population are: 13000, 40000 and 15000, respectively. Majority of health staff perceive “strong personal will to serve people”, “physical infrastructure”, “training opportunities”, “support by seniors”, “good schooling for their children” and “promotion avenues after certain years of rural service” as very important for continuing to work in rural and remote areas. Majority of the doctors expressed that lack of infrastructure at the facility and accommodation for health staff as main challenges to serve in rural areas. Majority of health staff at rural health facilities was not happy with the available infrastructure.

The primary motivating factors for rural service were identified as monetary incentives, good infrastructure both at work place and govt accommodation, and transparent transfer and promotion policy. The major dissatisfiers for working in rural areas included existing promotional avenues after rural service, physical infrastructure, and schooling facility for their children. Five primary reasons ranked in order of priority cited by the study participants for continuing at the same place were, namely, permanent govt. service, pension facility, social service, source of regular income and job satisfaction

A combination of interventions like monetary incentives with enhanced career opportunities for professional growth (training, higher studies and promotion), scholarships and preference of seats in reputed (residential) schools to the children of staff working in rural and remote areas, would be more effective than financial incentives alone. There is a need for clearly defined human resource policy for health personnel across all cadres with defined parameters for performance appraisal, transfer and promotion. District level Human Resource Management Units (DHRMU's) may be developed in similar lines of SHRMU to facilitate district specific implementation of human resource policies related to recruitment, retention and capacity building.

Keywords: human resources for health, India, rural area shortage, retention of health workers.

Disclaimer: The findings, interpretations and conclusions expressed in this study are entirely those of the authors, and do not represent the views of the funding authority or institution.

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LIST OF ABBREVIATIONS

ANM	Auxiliary Nurse Midwifery
CHC	Community Health Center
CDMO	Chief District Medical Officer
DNBE	Diplomate of National Board Examination
IIPHB	Indian Institute of Public Health-Bhubaneswar
IIPHD	Indian Institute of Public Health-Delhi
KBK	Koraput – Bolangir- Kalahandi
LT	Lab Technician
MO	Medical Officer
MPHW(F)	Multi Purpose Health Worker(Female)
MPHW(M)	Multi Purpose Health Worker(male)
NPA	Non Practicing Allowance
NRHM	National Rural Health Mission
PHC	Primary Health Center
PHC(N)	Primary Health Center(New)
PG	Post Graduate
PHFI	Public Health Foundation of India
RKS	Rogi Kalyan Samiti
SHRMU	State Human Resource Management Unit
SC	Sub Center
TMST	Technical Management and Support Team

BACKGROUND

A health workforce adequate in size, with good skill mix and able to reach out to all sections of the population is necessary for achieving a high and equitable coverage of health services. Indian census estimates, adjusted for educational qualifications, reveal that the health worker density (including doctors, nurses and midwives) is approximately 8 per 10,000 population (Rao *et* al, 2009), well short of the suggested norm of 25 per 10,000 (WHO, 2006). The topographic distribution of India's health workforce is disturbing. Most (60%) health workers are present in urban areas where 28% of the population resides (Rao *et* al, 2009). This urban bias is consistent across all cadres of health workers; 40% of allopathic physicians, nurses and midwives, AYUSH practitioners and 20% of dentists are present in rural areas (Rao K *et* al, 2009). These differences are even more striking for female health professionals, particularly female doctors. Such skewed distribution of health workforce hinders the ability of rural population to access quality health services.

The government of India has made considerable efforts to place doctors and a variety of other health workers such as Multi-purpose Health Workers (MPHWs), staff nurses, lab technicians, pharmacists, etc. in rural areas through its vast network of health sub-centers (SC), primary health centers (PHC) and community health centers (CHC) in these areas. However, high levels of vacancies due to non-joining, absenteeism and dual practice have compromised this effort.

STUDY RATIONALE

In the context of state health systems, including that of Odisha, the problems of unequal distribution of health workers are receiving greater attention. Diverse interventions to enhance the retention of qualified workers have been planned or instituted. These include incentives by way of higher salaries or preferential admission to postgraduate education, and regulatory strategies, such as, educational bonds or compulsory rural service for medical graduates. Yet, less is known about the scale of the actual problem, the contexts in which these interventions are

put into practice, and their applicability in real world settings. Also, the outcomes of various interventions which have been introduced in recent times such as difficult areas incentives, promotion avenues and cadre restructuring have not yet been well analyzed.

Department of Health and Family Welfare, Government of Odisha has taken a proactive step in strengthening their human resources by creating a dedicated State Human Resource Management Unit (SHRMU) under the directorate of health services with an aim to revamp human resources for health. The state government has also been focusing on recruitment and retention strategies for various health personnel; still retention of health personnel particularly in rural and remote areas continues to remain a challenge. Particularly the reasons for not willing to remain in rural and remote areas are poorly understood. Keeping this in view TMST and SHRMU had commissioned a study to assess factors influencing health workers retention in rural and remote Odisha. The results of the study would provide timely evidence for decision making and policy development and contribute to the efforts of the government in establishing efficient mechanisms for health workforce development in the state, particularly on retaining health staff in rural and remote areas.

Present study was taken up to identify factors contributing and /or affecting availability and retention of health workforce (doctors, staff nurses, lab technician, pharmacist, health worker), in rural and remote areas of Odisha

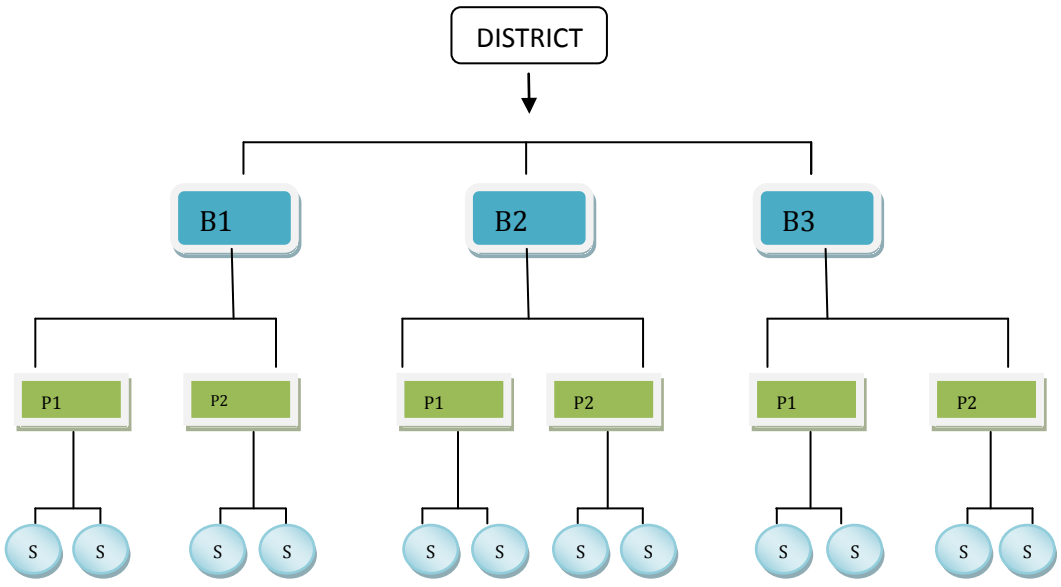
Specific Objectives

1. To map the availability of health personnel in rural and remote areas of Odisha.
2. To describe size, composition and distribution of health personnel working in rural and remote areas of Odisha.
3. To assess factors favoring the retention of health personnel in remote and rural Odisha.
4. To suggest context specific incentive schemes and strategies for retention of rural health personnel.

METHODOLOGY

This cross sectional study was carried out from Nov'2011 to March' 2012. Six districts were selected from three regions i.e. East, Central and Southern Odisha, two districts from each, to have an adequate representation from all segments of the state. More over it was also ensured that there is adequate representation from both *KBK Plus district* (two out of total 11 districts) and *non-KBK districts* (four out of total 19 districts). Randomly selected study districts were Nawarangpur, Gajapati from *KBK Plus* region while Deogarh, Baragarh, Balasore & Puri Districts from *Non KBK* region. In second stage from each district three blocks were selected randomly and in each block either the *block PHC (Primary Health Centre)* or the *Community Health Centre (CHC)* [which ever was present] was included in the study. In the next step two PHCs New under each block PHC/ CHC and two sub centers under each PHC New was randomly selected for the study. A multistage stratified sampling was used for selection of study participants.

Sampling Framework



B-Blocks CHC, P-PHC, S= Subcentres

Data was collected using a mixed method approach using both qualitative and quantitative techniques. Data collection comprised of three components – Profiling of health personnel, desk review and semi-structured interviews (**Annexure I**) with health personnel.

1. **Profiling of health personnel:** A proforma was designed to collect information of health personnel of all the districts. Secondary data available (as of 01.01.2012) from the SHRMU was compiled and analyzed. The data was tabulated showing district-wise availability and distribution of doctors, staff nurses, pharmacists, lab technicians and health workers.

2. **Desk review: All reports and do**cuments of government of Odisha related to retention for health personnel were reviewed. Also related documents from other states of India were accessed from their official websites and reviewed. A review of literature was done of published papers and reports on the topic of retention of health personnel, both generic as well as from websites such as: Central Bureau of Health Intelligence, National Health System Resource Centre, Government of India, National Rural Health Mission, WHO. The search terms used were: human resource, retention, health personnel AND retention AND intervention, retention AND underserved area, financial intervention AND rural, regulatory intervention AND rural, retention AND intervention AND India, retention AND intervention AND Asia, assessment AND retention AND intervention, best AND practice AND retention.

3. **Key informant interviews:** A semi-structured interview schedule was prepared, piloted and validated for data collection. Interviews with selected health personnel were conducted to collect information on their views and opinions regarding working in rural and remote areas. For the purpose of studying ‘retention’, it was decided to interview permanent government health staffs who have been working at their present place for more than two continuous years. The study participants included doctors, nurses, pharmacists and lab technicians and multipurpose health workers (Male and Female) working at CHC, PHC (New) and Sub-center. Health staff working at respective district headquarter hospital were not included in the study.

Quantitative data analysis was done by using MS-Excel and SPSS Version 16.0. Descriptive analysis has been done through cross-tabulations and frequencies. The qualitative data was analyzed using "frame work" approach (Ritchie & Spencer 1994). The approach combines both inductive and deductive processes. The steps involved in this approach are – familiarization with data, identifying broad themes, coding, thematic charting and interpretation of data. The coding was done by two analysts as per the fame work approach to improve reliability of interpretations from the data. Stress was given to take out the original meanings and inferences which respondents attributed to their experiences rather than taking openly stated views.

REVIEW OF LITERATURE

This section summarises findings of the literature review on factors influencing retention of health staff in rural and remote and areas.

Factors determining retention of workers in rural and remote areas

The Health personnel's choice of location in rural and remote areas have come to be categorized as "pull" and "push" factors (Awases 2004; Zurn et al 2003; Padareth et al 2003; WHO 2009]. "Pull" factors are identified as those which attract an individual to a new destination. These might include improved employment opportunities and/or career prospects, higher income, better living conditions or a more stimulating environment. "Push" factors are those which act to repel the individual from a location.

The individual level factors depend on a person's personal characteristics, such as age, gender, marital status, etc. However, the impact on an individual's decision-making is not constant and may change in a person's life and career cycle. A Malaysian study suggests that married women's chance of mobility is substantially influenced by fertility and family considerations whereas economics and labor market factors are more likely to influence married men's mobility (Smith and Duncan 1998). Rural upbringing increases chances of health workers returning to practice in rural communities (Dovlo 2004; Mullan and Frehywot 2007).

A study in Navajo Area Health Services of India cited lack of housing, health care and schools for children as the reason for non-retention of health staff in in remote areas (Kim 2000). Remuneration has been quoted as one of the most important factors influencing retention of health sector staff (Kunaviktikul et al 2001; Van Lerbergheet al 2002). A Vietnamese study (Dieleman et al 2003) revealed that the appreciation received from managers, colleagues and the community was very important in determining job retention in rural areas. The desire for further professional training is also cited as a reason hampering retention of health workers in rural and remote areas (Awasis et al 2004).

A qualitative study in Chhattisgarh (IIPHD,PHFI,NHSRC and SHRC 2011)seeking to understand the reason behind some doctors being retained in rural areas conclude that the reasons

for joining rural practice are geographic and ethnic affinities; personal values of service and financial compulsions. In addition to these factors, the reason for extending stay in rural facility are outlined as rural upbringing, availability of school in the area, professional interest, good relationship with colleague. The contractual doctors mentioned that they have continuing to work in rural location because they anticipate their jobs to be regularized in future. The opportunity to work in the same location where their husbands also practice was mentioned as the reason for rural job retention by female doctors.

Types of interventions undertaken to retain health personnel in rural and remote locations

The intervention for the retention of health workers in rural and remote areas can be classified into following broad categories:

Compulsory Rural Service

Compulsory rural service is a mandatory mechanism in some countries such as India, Thailand, South Africa and Ecuador where the medical graduates have to work at government health facilities in the rural and remote areas for specific period. This compulsory rural service for medical graduates was introduced in eleven states of India (Assam, Arunachal Pradesh, Chhattisgarh, Gujarat, Kerala, Manipur, Meghalaya, Nagaland, Orissa, Tamil Nadu and West Bengal) for a duration varying from 1 to 5 years (Rao, Gupta and Sundaram 2011). In India, a bond is signed at the time of admission to medical school and the student has to sign a bond to serve the government for a predefined period. This bond value varies from state to state for eg. it is Rs.100000/- in Chhattisgarh, 150000/- in Gujarat, 700000/- in Assam and in Meghalaya it is 1000000/-. Even the service period varies between states such as in Gujarat a graduate need to do rural service for 3 years where as it is 5 years in Assam.

Other forms of compulsory rural service tried in India are compulsory rural service before and after post graduation. Three forms of these linkages exist: compulsory rural service for admission to PG programs (“Pre-PG Compulsion”), giving incentives to in-service public sector doctors in PG admission or towards the cost of a PG degree (“In-service PG incentive”), and compulsory rural service for all PG graduates (“Post-PG Compulsion”).

Pre PG compulsion

In India, the states like Arunachal Pradesh, Haryana, Himachal Pradesh, Jammu and Kashmir, Maharashtra, Manipur, Nagaland, Orissa, Sikkim, Tamil Nadu and Tripura have made two to three years of rural service compulsory for getting admission to PG courses. About 10-50% of the total PG seats are reserved for in-service candidates in states like Jammu and Kashmir, Nagaland, Orissa and Tamil Nadu.

Post PG compulsion

Compulsory rural service after PG was implemented in Tamil Nadu and Kerala states of India. In Tamil Nadu those specialists who are graduating from Government PG Colleges have to sign a bond to serve in rural areas for 5 years while specialists graduating from private colleges have to serve for 3 years against a bond of Rs.500000. In Kerala and Jharkhand the bond period is for 1 year of rural service against a bond of Rs. 500000. After post graduation if the candidates break the bond they will have to pay the penalty amount.

Rotation

Rotation is another strategy to ensure availability of health staff in rural and remote areas. The health staffs are transferred to identify hard to reach areas for a certain period of time on rotation basis. Every doctor working with the government health facility will be posted for pre-defined period in such locations and after serving for that specified period they will be given urban posting. However, in the absence of transparent transfer policies such mechanism fails to achieve the desired objectives.

Rural recruitment

In many states the health workers are selected from rural background with an assumption that they will serve and remain in their native rural and remote areas. One of such models is the SwalambanYojana that was started in Madhya Pradesh state in the year 2006-07 with the objective of reducing the lack of staff nurses in government health facilities. These sponsored students have to sign a bond to serve in the rural areas of Madhya Pradesh for a period of 7 years after they pass out from the nursing school; otherwise they will have to pay an amount of Rs.200000 to the government.

The assessment of regulatory intervention has not been conclusive and has been subjected to criticism for alienating people from profession (Dieleman 2011).

Incentive Motivation

Monetary incentive

Additional pay for Rural or Remote area practice

Additional monetary incentives are given in the form of higher salaries (than urban), allowances for working in identified hard to reach and remote locations, housing loan and education support for children. Such incentive was given in Indonesia where the extent of incentive commensurate with the geographical remoteness of the posting. In Niger, these incentives included telephone service, transport and accommodation.

In India, the financial incentive schemes were introduced in 18 states (Andhra Pradesh, Andaman & Nicobar, Chhattisgarh, Haryana, Himachal Pradesh, J& K, Kerala, Lakshadweep, MP, Maharashtra, Manipur, Nagaland, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura and Uttarakhand) to attract and retain the skilled health personnel in rural areas. In several states rural postings have been classified according to their degree of remoteness. Health workers, typically general and specialist doctors serving in rural areas get "difficult area allowance" in addition to their regular salaries.

In general additional monetary incentives are given only to doctors but five states namely; Haryana, Maharashtra, Nagaland, Rajasthan and Tripura give similar incentives to ANMs, nurses and paramedics. The amount of such monetary incentive varies between states (Rs.500 per months in Tamil Nadu and Rs. 25,000 per month in Haryana).

Financial interventions have received mix responses: positive result in developed countries and not very encouraging results in developing countries barring few exceptions [1](Dieleman2011).

[1]With the exception of Mali, Zambia and South Africa.

Non- Monetary incentive

Preferential admission to PG studies

Preferential admission to PG studies for the 'in-service' government candidates has been tried in some states of India. For eg. Andhra Pradesh, Assam, Chhattisgarh and Gujarat reserve about 10% to 30 % of the total post graduation seats for the in-service doctors completing two to three years of service in rural areas. The in-service doctors take the entrance examination but compete for the reserved seat which increases their changes of admission. In states like Kerala, Tamil nadu, Mizoram and Uttarakhand, preferences to in-service doctors are given in the forms of additional marks which are added to the total marks attained by the candidate in the qualifying PG exam. The marking are given according to the service tenure and location. In states like Tamil Nadu, to be eligible for the PG exam the candidates have to put in three years of rural service and those serving in tribal locations need just two years plus they also get extra marks. In the state of Arunachal Pradesh, doctors on completion of two years of rural service are eligible to be sponsored by the State, which will cover all expenses of their PG training. Tripura also sponsors in-service doctors for PG courses after they complete five years (with 3 years rural service) of service. In 2008 the state of Nagaland has introduced DNBE (Course on Family Medicine) which is equivalent to PG for in service doctors.

Additionally, a WHO background paper (2009) has chalked out the following conditions under which educational interventions are likely to be successful:

1. The likelihood of doctor's retention in rural practice increases if students from rural background with keen interest in rural practice are selected (Salafsky et al. 2005; Rabinowitz1999).
2. The rotation of medical students in the rural setting may influence their decision to work in underserved areas.
3. The adaptation of curriculum to include rural health issues will create interest in students and equip them to serve the rural population.
4. Loan repayment schemes, direct incentives and medical-resident programs have had the highest success in retaining doctors for rural placement.

Community housing

Community housing is a concept where all the peripheral staff are provided accommodation at one place. These accommodations will have the basic infrastructure like boundary wall, electricity, water supply and located nearby market place. States like West Bengal, Uttarakhand and Chhattisgarh have set up group housing colonies for the staff.

Bundled approach:

Thailand is one of the success stories of the bundled approach where doctors in rural areas received personnel and logistic support, peer recognition and award, and opportunities in career progression (Wibulpolprasert and Pengpaibon 2003). Ghana provides additional duty hour allowance, car and housing loans, postgraduate training opportunities, relaxed criteria for promotion and flexible contracts (Perry 2006).

Another systematic review of intervention studies for improving retention of health personnel make a strong case for a bundled approach that pays attention to multiple dimensions including living environments, working conditions and environments and development opportunities (Lehman et al 2008).

Strategies for retention of health staff in rural and remote areas by Government of Maharashtra

Information was gathered from key State level officials regarding the innovations done by the Government of Maharashtra as listed below.

In order to retain nurses in rural and remote areas, fresh appointment of retired nurses who are physically fit to join duties are conducted. To facilitate the process, the appointment powers have been given to Chairman of Executive Committee of RKS. Walk in interview are conducted on every second and fourth Thursday. In addition, campus placement, loan facilities, scholarships are also offered.

In all the doctor cadres half of all the posts are allotted for promotion based on seniority and half of the posts are filled directly through Maharashtra Public Service Commission based on

required mandatory qualification and certain years of minimum experience. 25% of all PG seats in medical colleges are reserved for in service candidates that have to be filled through common entrance examination. For every year of rural service, the allopathic doctor gets 2 marks maximum up to 10% of marks scored by the candidate in common entrance examination for post graduate courses. Also plane MBBS doctors (without any post graduate degree or diploma) get time bound pay scales but are not allowed to take any senior level positions.

There are identified hard to reach areas where incentives are given to ANM, Staff Nurse and Doctors. ANM is paid extra Rs. 4000/- per month, staff nurse is paid extra Rs. 6000/- per month and doctors paid extra Rs. 12000/- to 18000/- per month. In addition doctor gets one extra pay grade and NPA as 50% of his/her basic pay. Any specialist doctor who joins the services at rural hospital get three increments if he/she has diploma and six increments if degree in clinical subjects of Obstetrics and Gynecology, pediatrics or anesthesia. There is flexibility of hiring specialist doctors on contract basis or their services on case based payment services form local areas. These powers are decentralized and can be taken by local bodies of the hospital. MBBS doctors being posted as per willingness and their choice of posting and recently services of 1499 ad-voc MBBS MOs regularized by state cabinet. Appointment powers are decentralized to district and regional level and recruitment of MOs has been kept outside the purview of Public Service Commission. Also powers of posting of contractual specialists is given to head of the hospital with flexible monthly remuneration depending upon location of facility.

Odisha government strategies to attract and retain doctors and other health staff

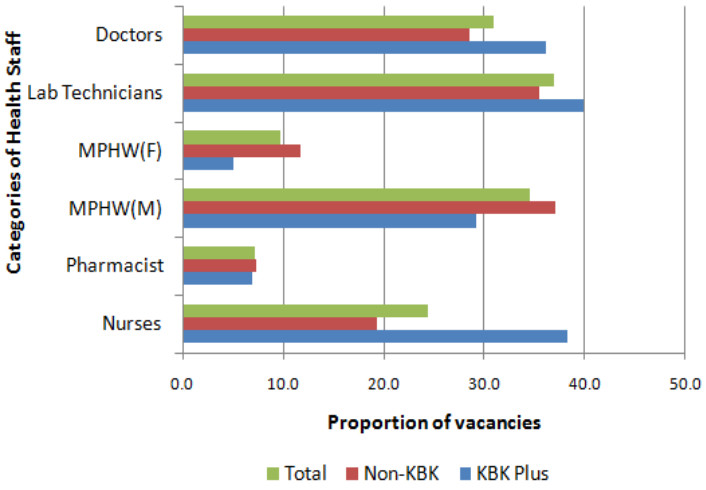
1. The entry level of Assistant Surgeon has been upgraded from class-II rank to the rank of junior class-I with scale of pay of Rs. 15600 to Rs. 39100 with grade pay of Rs. 5400.
2. Specialist allowance of Rs. 3000 to each specialist doctor has been sanctioned.
3. KBK allowance of regular M.O. has been increased from Rs. 4000 PM to Rs. 8000 in periphery health institutions and from Rs. 2000 PM to Rs. 4000 in SDH and DHH.
4. Restructuring of the cadre of medical officers has been done to create more promotional avenues.

5. Legislation has been made to prevent violence against medical personnel and medical institutions.
6. Retirement age of regular doctors has been enhanced from 58 to 60 years.
7. CCR rules have been relaxed to enhance promotion.
8. Recently it has been decided to add 10% of marks in PG entrance examination per year of service in tribal subplan and backward areas by in-service doctors with maximum marks of 30%.
9. NRHM provides monetary incentives to health staff working in hard to reach areas identified based on a vulnerability scale across the state.

OBSERVATIONS

This section describes the findings of analysis of data gathered from SHRMU and Key informants interview.

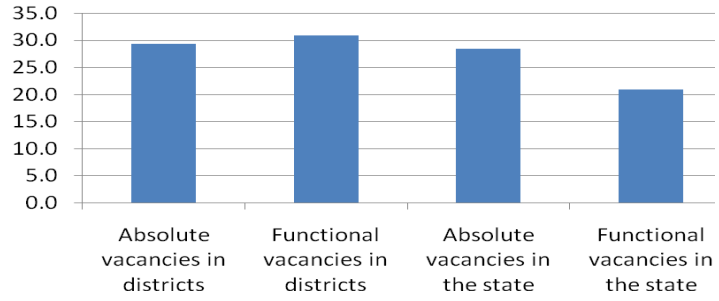
Figure:1-Proportion of Vacancies of various categories of health staff in Odisha



Sourse: SHRMU

There is an overall 31% functional vacancy of doctors' post in the districts. The vacancy positions for doctors are higher in *KBK plus districts* (36%) as compared to *Non-KBK districts* (28.5%). More than 1/3rd of lab technicians' posts in the state are vacant and the vacancy proportions are almost similar in KBK and Non-KBK region, whereas more than 90% of posts of pharmacists and MPHW (F) are presently filled.

Fig-2: Vacancies of government doctors under directorate of health services: Odisha

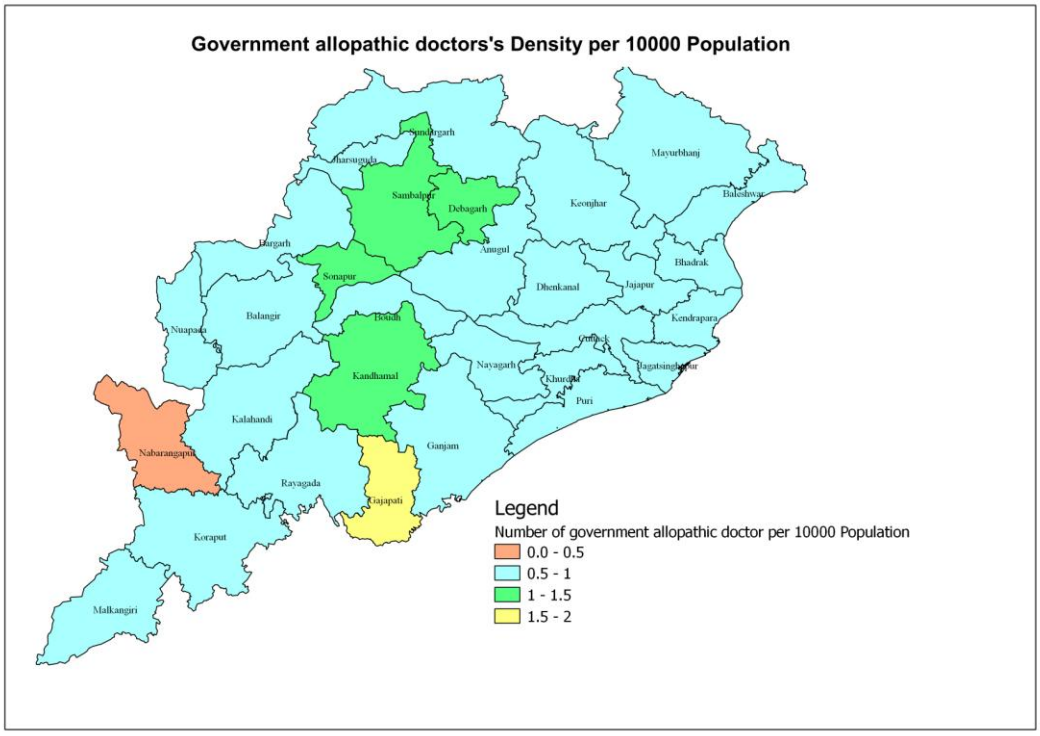


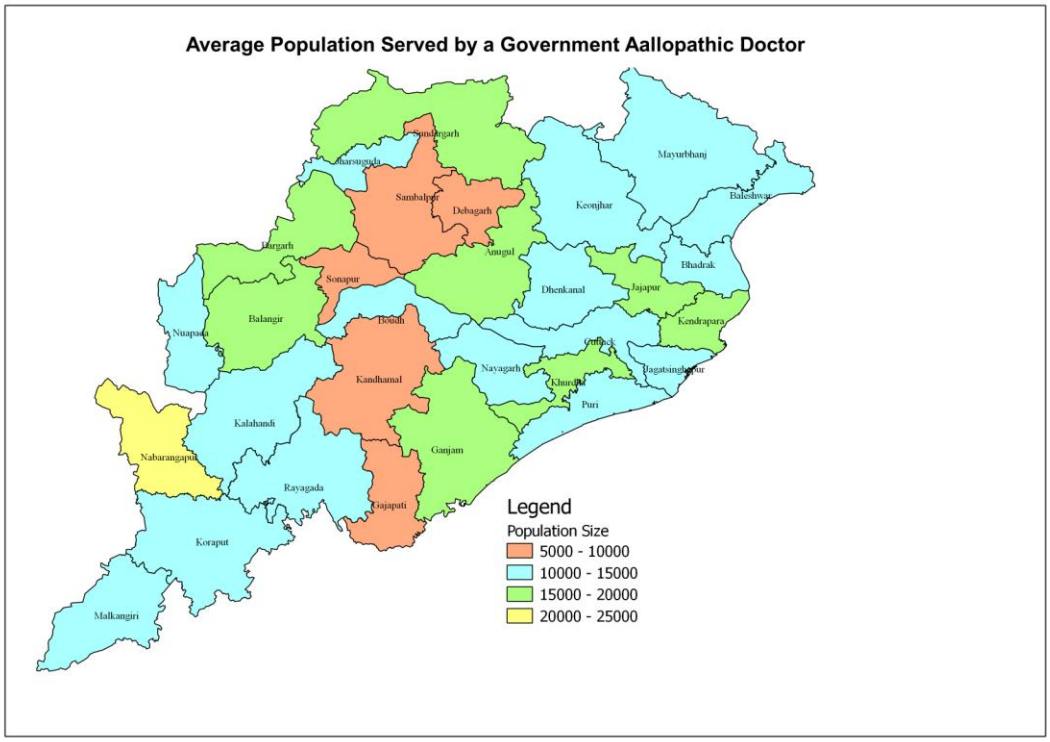
Source: SHRMU

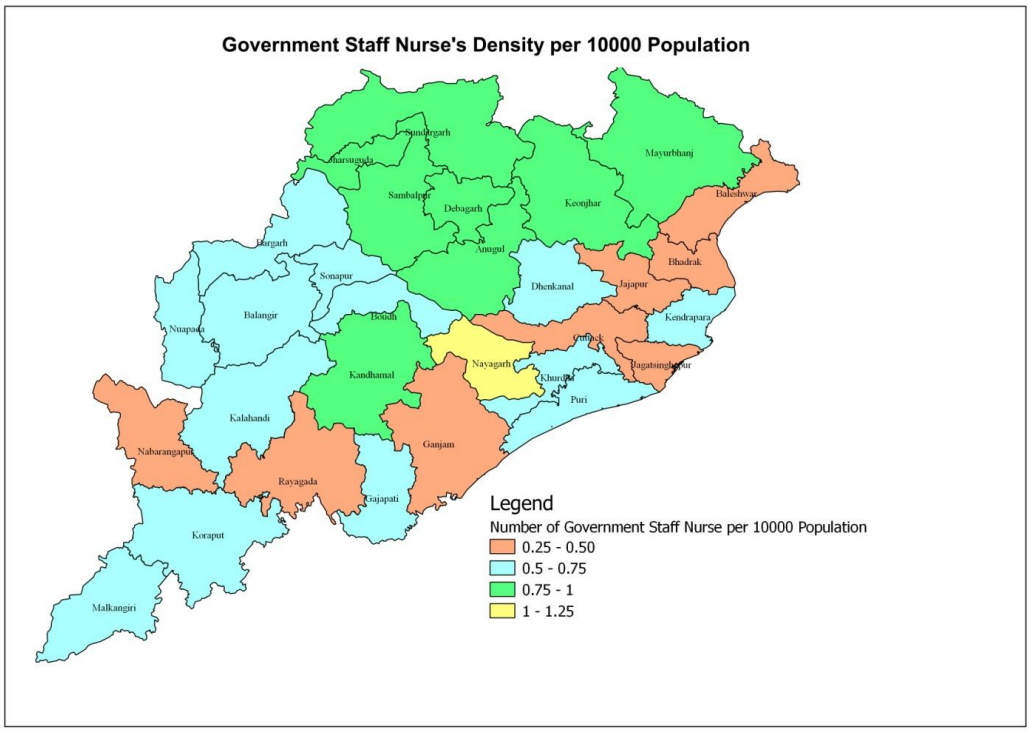
There are around 29% absolute vacancies of doctors altogether in 30 districts. However in terms of availability of doctors in these districts, the functional vacancy is around 31%. When we consider the doctors number of state headquarter, RGH and capital hospital the absolute vacancy for the state is around 28%. However there are additional 346 doctors either deputed to PG studies or working at medical colleges, municipalities and other departments that are not reflected by districts. When we take into account these doctors working in the state then the functional vacancies of doctors for the whole state comes to be around 20% (Fig2)

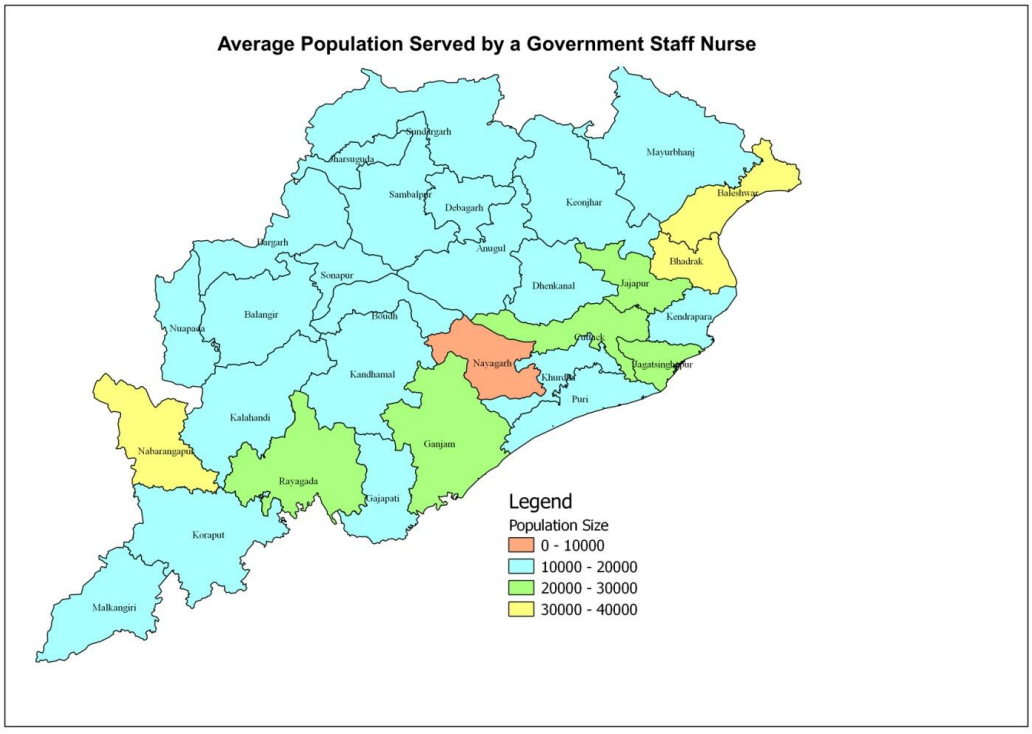
Analysis of size and composition of allopathic doctors working in government health facility in the state of Odisha was carried out in two steps. Average number of population served by an allopathic doctor in the state was calculated considering the number of sanctioned posts in different districts and number of doctors currently in position (as of 01-01-2012). There are 1.05 sanctioned posts of allopathic doctors for 10,000 population in the state. However, currently there are 0.74 allopathic doctors in position for 10,000 population (Figure 3 to 14). The analysis of health workforce density reveals that Laboratory technicians' density per 10,000 population in the state is 0.24. Similarly the densities of staff nurse and pharmacist per 10,000 population are 0.64 and 0.47 respectively. According to the sanctioned position of doctors in the state, one doctor is ought to cater to about 9500 population. But at present one doctor is catering to a population of near about 13000. There are 12 districts in which a doctor caters more population as compared to state's average (13,000). According to the current in-position lab technicians, there is one lab technician for 41,000 population in the state. However, there are 13 districts where one lab technician caters to more than 41,000 population. Similarly, one pharmacist is serving a population of 21,000 in the state; however, there are 17 districts where one pharmacist is serving a population of more than 21,000. One staff nurse is catering to a population of 15,000 in the state; there are 13 districts in which a single staff nurse is serving a population of more than 15,000. One multipurpose health worker (female) is serving on an average a population of 5,000 in the state. Whereas, there are 15 districts in which each MPHW (F) is serving a population of more than 5,000. All figures of health staff includes personnel working under directorate of health services only and do not include the health staff working under private sector, medical education, ESI, and other departments. The analysis of doctors include only allopathic doctors and not the AYUSH.

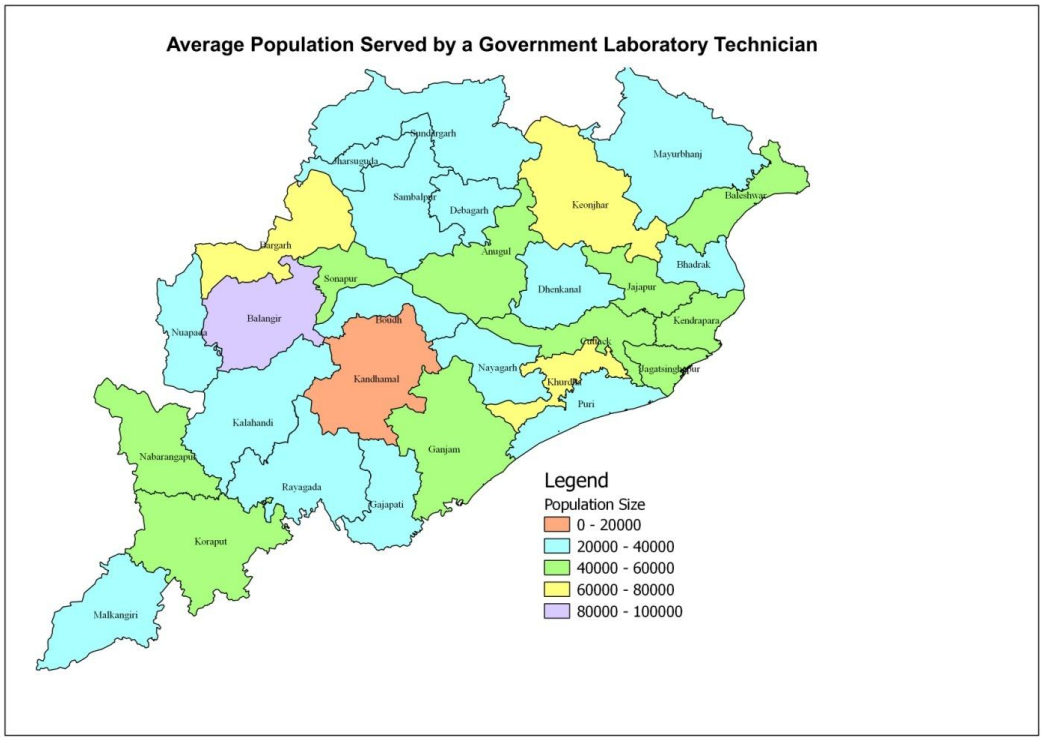
There are around 28% vacancies of doctors on managerial posts and vacancies of clinical specialists doctors are around 36%. This might be because of many clinical specialists doctors have been promoted at managerial posts recently.

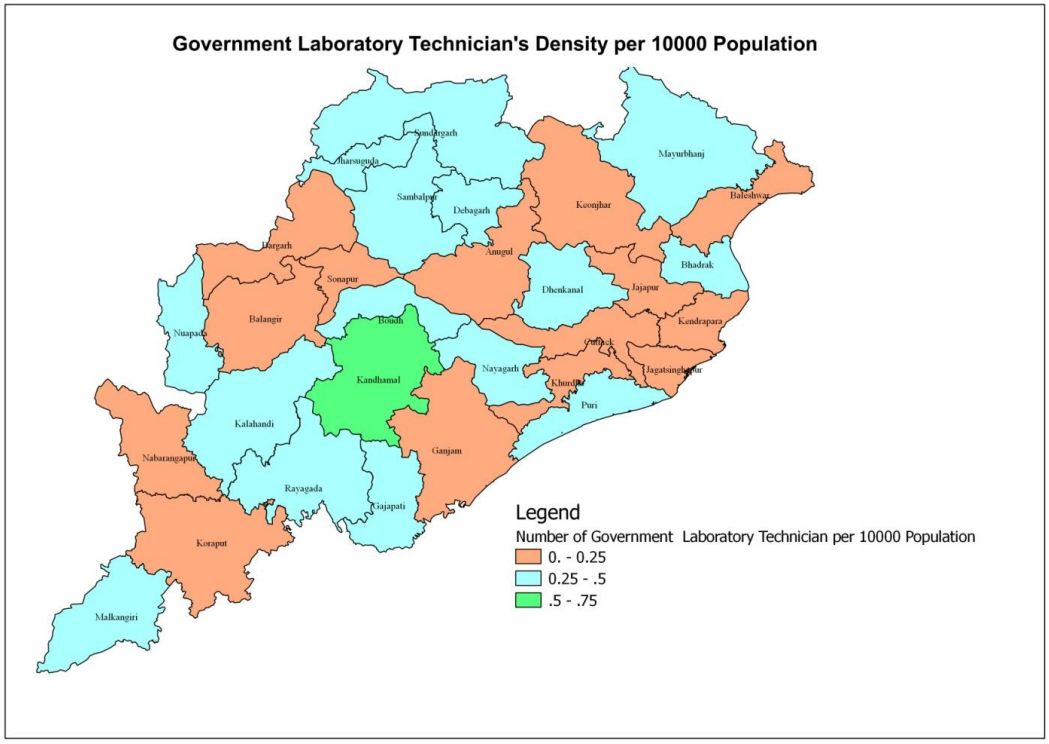


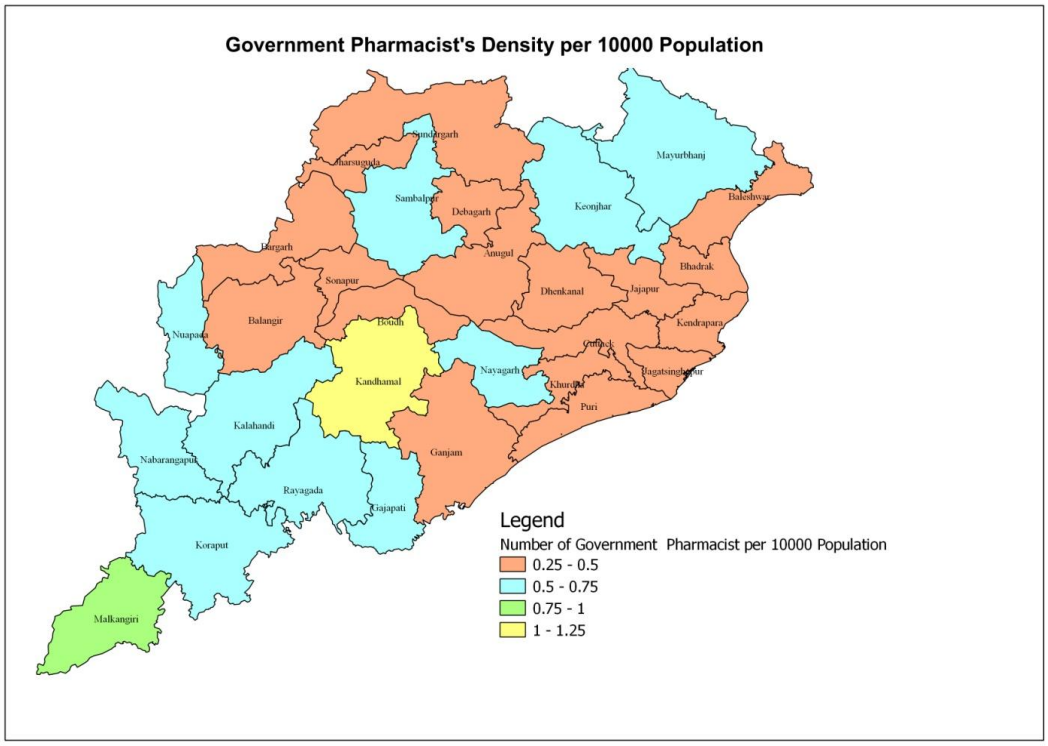


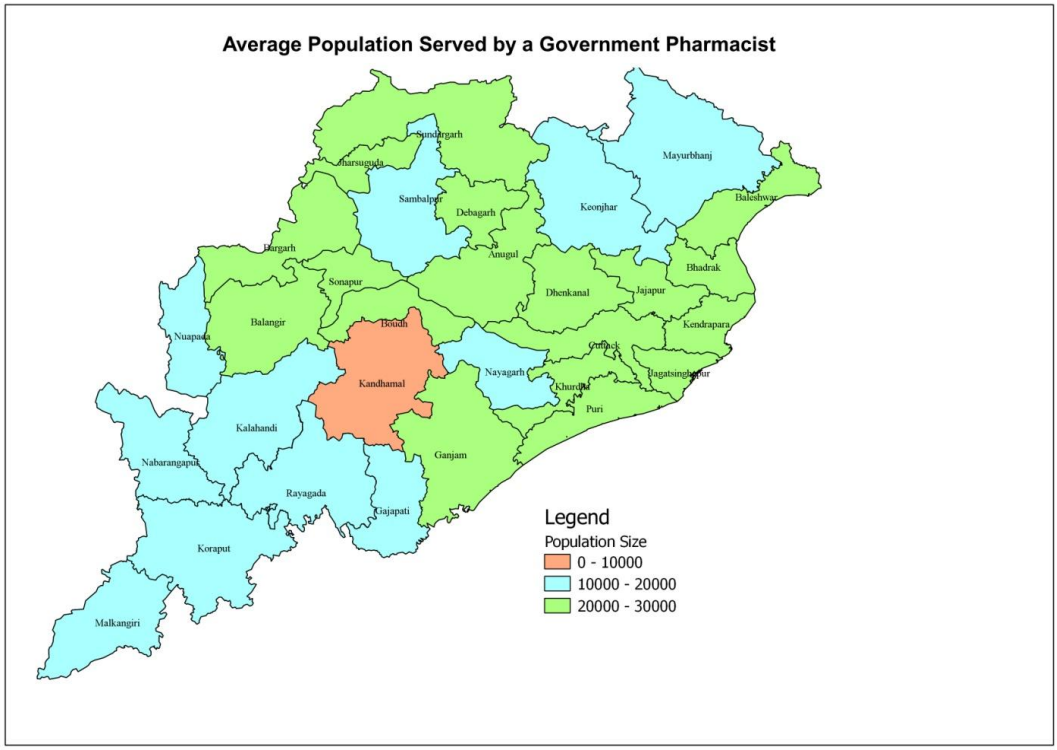

Government Staff Nurse's Density per 10000 Population
Sundargarh
Jharsuguda
Mayurbhanj
Sambalpur
Debagarh
Keonjhar
Baleshwar
Bargarh
Anugul
Bhadrak
Sonapur
Dhenkanal
Jajapur
Balangir
Boudh
Kendrapara
Nuapada
Cuttack
Nayagarh
Jagatsinghpur
Kandhamal
Khurda
Puri
Kalahandi
Ganjam
Nabarangapur
Rayagada
Gajapati
Koraput
Malkangiri
Legend
Number of Government Staff Nurse per 10000 Population
0.25 - 0.50
0.5 - 0.75
0.75 - 1
1 - 1.25

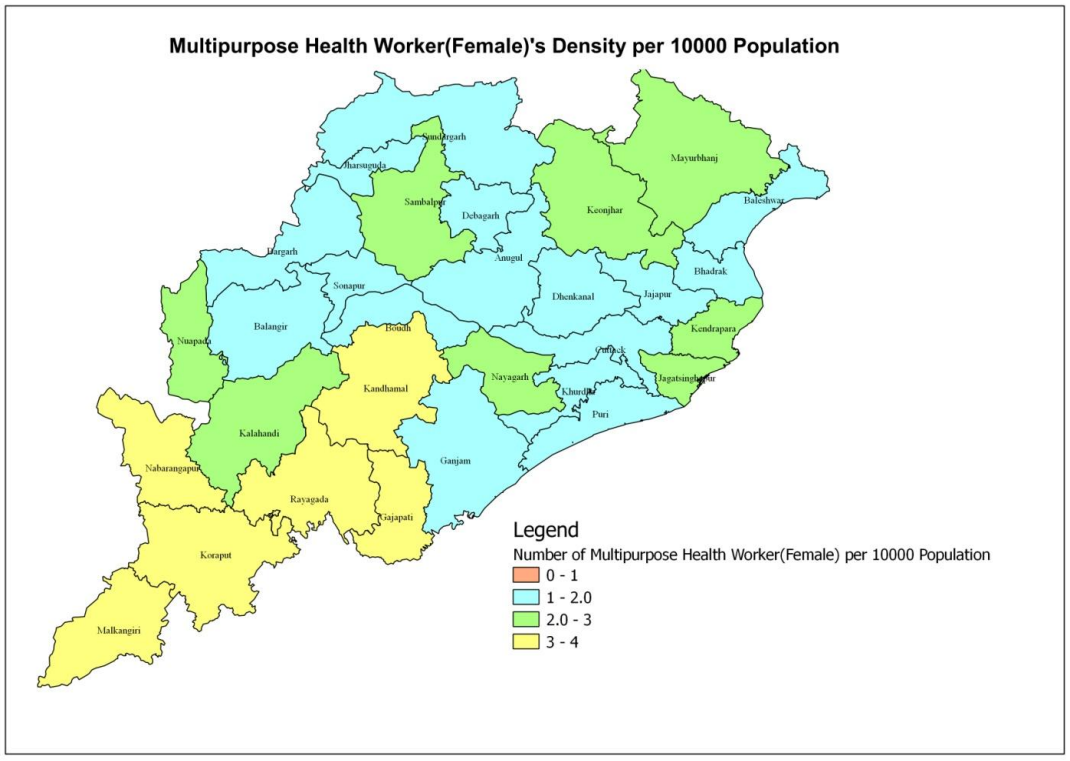

Average Population Served by a Government Staff Nurse
Sundargarh
Jharsuguda
Mayurbhanj
Sambalpur
Debagarh
Keonjhar
Baleshwar
Bargarh
Anugul
Bhadrak
Sonapur
Dhenkanal
Jajapur
Balangir
Boudh
Kendrapara
Nuapada
Cuttack
Nayagarh
Jagatsinghpur
Kandhamal
Khurda
Puri
Kalahandi
Ganjam
Nabarangapur
Rayagada
Gajapati
Koraput
Malkangiri
Legend
Population Size
0 - 10000
10000 - 20000
20000 - 30000
30000 - 40000

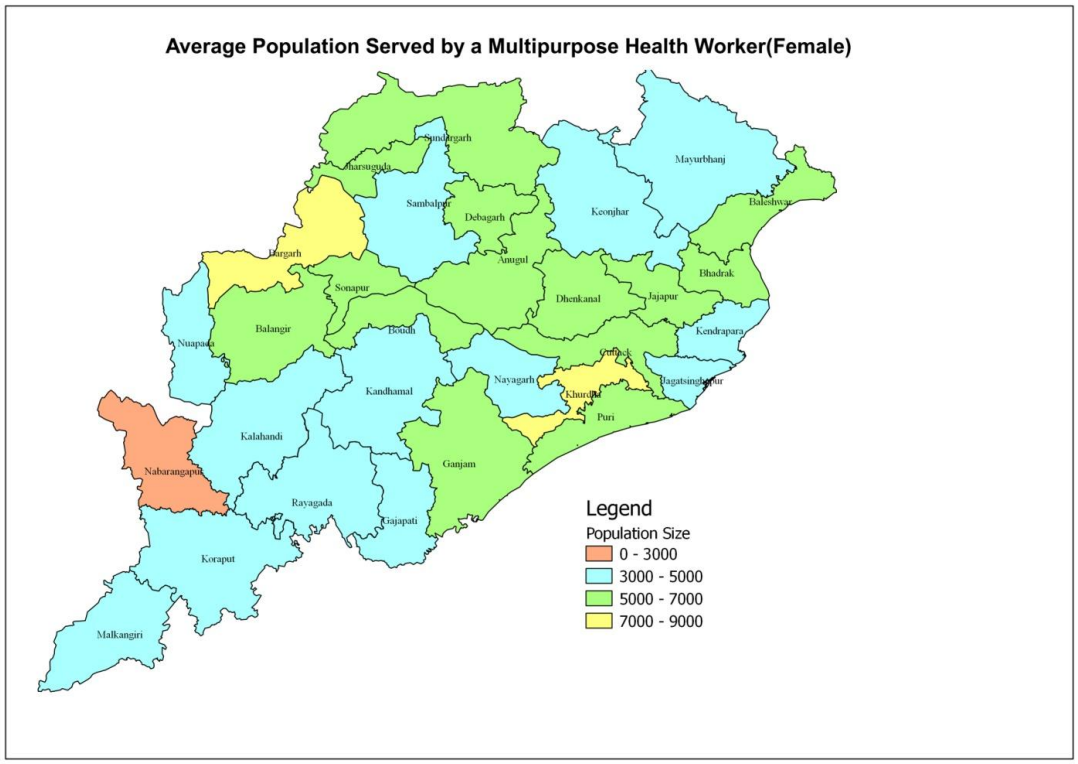

Average Population Served by a Government Laboratory Technician
Sundargarh
Jharsuguda
Mayurbhanj
Sambalpur
Debagarh
Keonjhar
Baleshwar
Bargarh
Anugul
Bhadrak
Sonapur
Dhenkanal
Jajapur
Balangir
Boudh
Kendrapara
Nuapada
Cuttack
Nayagarh
Jagatsinghpur
Kandhamal
Khurda
Puri
Kalahandi
Ganjam
Nabarangapur
Rayagada
Gajapati
Koraput
Malkangiri
Legend
Population Size
0 - 20000
20000 - 40000
40000 - 60000
60000 - 80000
80000 - 100000

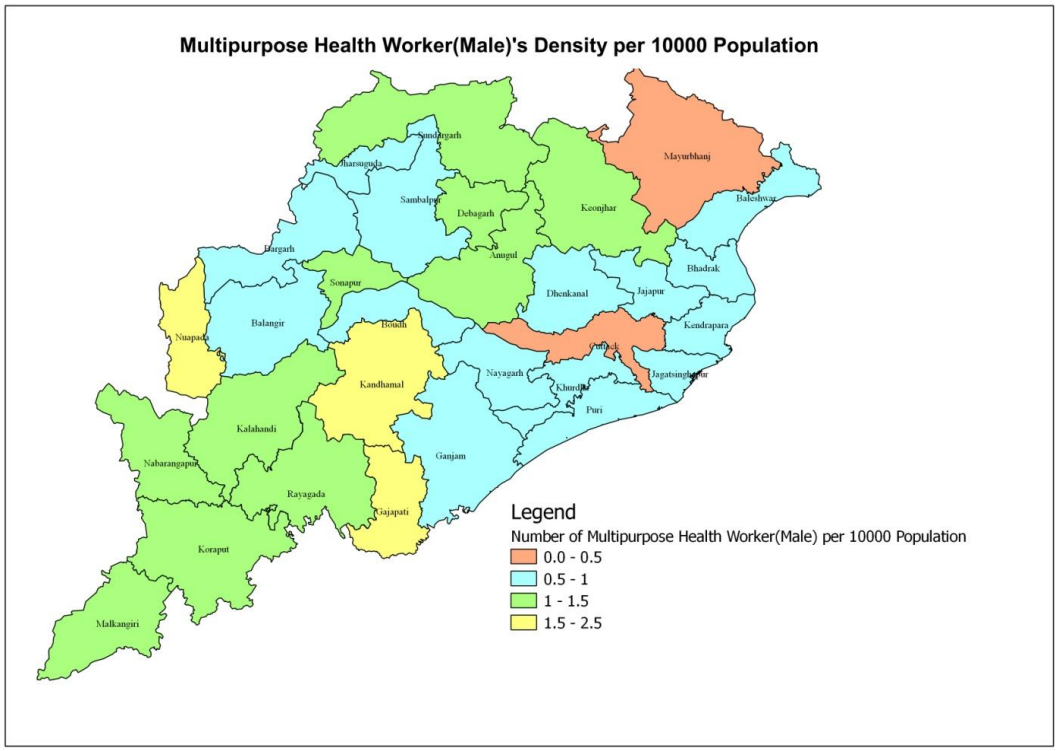

Government Laboratory Technician's Density per 10000 Population
Sundargarh
Jharsuguda
Mayurbhanj
Sambalpur
Debagarh
Keonjhar
Baleshwar
Bargarh
Anugul
Bhadrak
Sonapur
Dhenkanal
Jajapur
Balangir
Boudh
Kendrapara
Nuapada
Cuttack
Nayagarh
Jagatsinghpur
Kandhamal
Khurda
Puri
Kalahandi
Ganjam
Nabarangapur
Rayagada
Gajapati
Koraput
Malkangiri
Legend
Number of Government Laboratory Technician per 10000 Population
0. - 0.25
0.25 - .5
.5 - .75

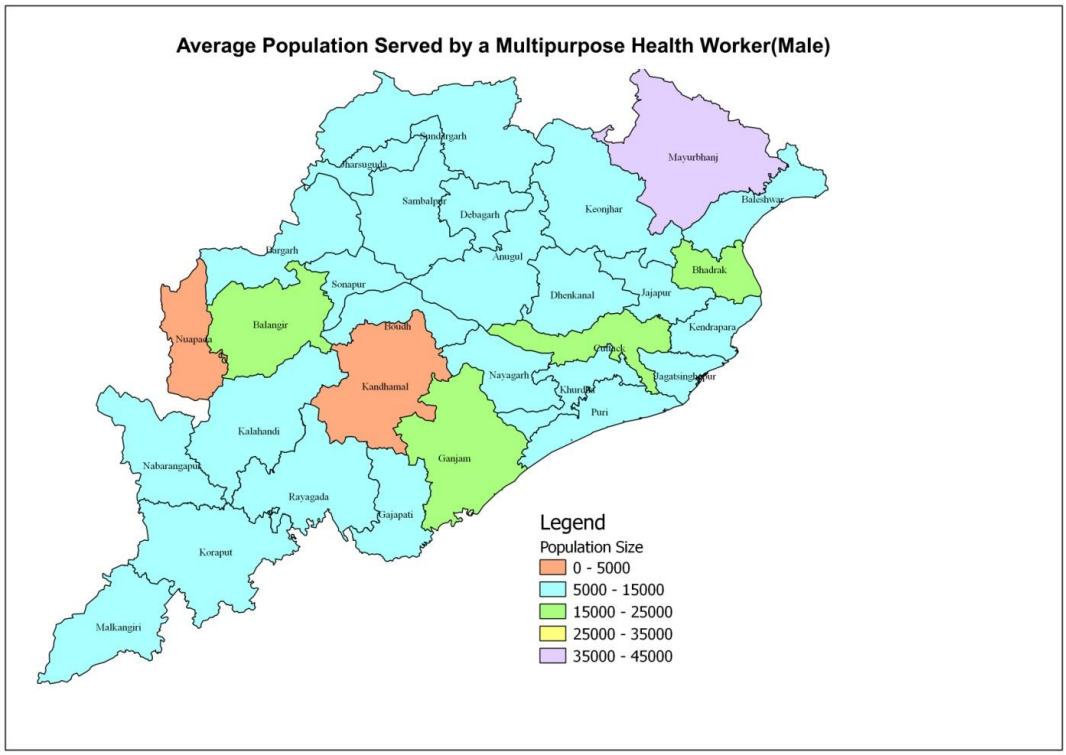

Government Pharmacist's Density per 10000 Population
Sundargarh
Jharsuguda
Sambalpur
Debagarh
Mayurbhanj
Keonjhar
Baleshwar
Bargarh
Anugul
Bhadrak
Sonapur
Dhenkanal
Jajapur
Balangir
Boudh
Kendrapara
Nuapada
Cuttack
Kandhamal
Nayagarh
Jagatsinghpur
Khurda
Puri
Kalahandi
Ganjam
Nabarangapur
Rayagada
Gajapati
Koraput
Malkangiri
Legend
Number of Government Pharmacist per 10000 Population
0.25 - 0.5
0.5 - 0.75
0.75 - 1
1 - 1.25


Average Population Served by a Government Pharmacist
Sundargarh
Jharsuguda
Sambalpur
Debagarh
Mayurbhanj
Keonjhar
Baleshwar
Bargarh
Anugul
Bhadrak
Sonapur
Dhenkanal
Jajapur
Balangir
Boudh
Kendrapara
Nuapada
Cuttack
Kandhamal
Nayagarh
Jagatsinghpur
Khurda
Puri
Kalahandi
Ganjam
Nabarangapur
Rayagada
Gajapati
Koraput
Malkangiri
Legend
Population Size
0 - 10000
10000 - 20000
20000 - 30000


Multipurpose Health Worker(Female)'s Density per 10000 Population
Sundargarh
Jharsuguda
Sambalpur
Debagarh
Mayurbhanj
Keonjhar
Baleshwar
Bargarh
Anugul
Bhadrak
Sonapur
Dhenkanal
Jajapur
Balangir
Boudh
Kendrapara
Nuapada
Cuttack
Nayagarh
Jagatsinghapur
Kandhamal
Khurdha
Puri
Kalahandi
Ganjam
Nabarangapur
Rayagada
Gajapati
Koraput
Malkangiri
Legend
Number of Multipurpose Health Worker(Female) per 10000 Population
0 - 1
1 - 2.0
2.0 - 3
3 - 4


Average Population Served by a Multipurpose Health Worker(Female)
Sundargarh
Jharsuguda
Sambalpur
Debagarh
Mayurbhanj
Keonjhar
Baleshwar
Bargarh
Anugul
Bhadrak
Sonapur
Dhenkanal
Jajapur
Balangir
Boudh
Kendrapara
Nuapada
Cuttack
Nayagarh
Jagatsinghapur
Kandhamal
Khurdha
Puri
Kalahandi
Ganjam
Nabarangapur
Rayagada
Gajapati
Koraput
Malkangiri
Legend
Population Size
0 - 3000
3000 - 5000
5000 - 7000
7000 - 9000


Multipurpose Health Worker(Male)'s Density per 10000 Population
Sundargarh
Jharsuguda
Sambalpur
Debagarh
Mayurbhanj
Keonjhar
Baleshwar
Bargarh
Anugul
Bhadrak
Sonapur
Dhenkanal
Jajapur
Balangir
Boudh
Kendrapara
Nuapada
Cuttack
Nayagarh
Jagatsinghapur
Kandhamal
Khurdha
Puri
Kalahandi
Ganjam
Nabarangapur
Rayagada
Gajapati
Koraput
Malkangiri
Legend
Number of Multipurpose Health Worker(Male) per 10000 Population
0.0 - 0.5
0.5 - 1
1 - 1.5
1.5 - 2.5


Average Population Served by a Multipurpose Health Worker(Male)
Sundargarh
Jharsuguda
Sambalpur
Debagarh
Mayurbhanj
Keonjhar
Baleshwar
Bargarh
Anugul
Bhadrak
Sonapur
Dhenkanal
Jajapur
Balangir
Boudh
Kendrapara
Nuapada
Cuttack
Nayagarh
Jagatsinghapur
Kandhamal
Khurdha
Puri
Kalahandi
Ganjam
Nabarangapur
Rayagada
Gajapati
Koraput
Malkangiri
Legend
Population Size
0 - 5000
5000 - 15000
15000 - 25000
25000 - 35000
35000 - 45000

KEY INFORMANT INTERVIEWS

Although a total of 234 Key informant interviews were planned, 226 interviews were conducted in the selected 6 districts. It was decided to visit total of 18 CHCs, 36 PHCs and 72 Sub-centres. However, to achieve the required sample additional health institutions were also visited, since many of the health staff working in some of the institutions were not fulfilling the selection criteria. Thus, 34 CHCs, 60 PHCs and 72 Sub-centers were visited.

Table-1: Details of Key Informant Interviews

Sl. No.	Category	Doctor	Pharmacist	Nurse	Lab Technician	Health Worker
1	Total interviews attempted	84	69	47	17	73
2	Non Respondents	32	18	13	1	0
2.1	Vacant	2	3	10	0	0
2.2	Not fitting in criterion	19	14	3	0	0
2.3	Not available (%)	11 (13.1%)	1(1.4%)	0(0%)	1(5.9%)	0(0%)
3	Total Interviewed (1-2)	52	51	34	16	73

To meet the sample size we attempted to interview 84 doctors, 69 pharmacists, 47 nurses, 17 lab technicians and 73 multi-purpose health workers. Out of 84 doctors who were attempted to interview, 32 doctors did not meet the criteria because 10 were AYUSH, 9 had service less than 2 years, 5 were absent and another 6 were not available because they were on deputation and long leave and 2 positions were vacant. Out of total 60 PHCs visited, the doctors were not available at around one-fifth of the PHCs and another 12% PHCs were managed by only AYUSH doctors. Out of total 69 pharmacists who were attempted to interview 18 did not meet the criteria because 14 were contractual, 3 posts were vacant and 1 was absent. Out of 47 nurses who were tried to contact, 13 did not meet the criteria because 10 posts were vacant and 3 were contractual. Out of 17 lab technicians tried to interview, 1 could not be contacted because he was absent. All the 73 health workers interviewed could be contacted in first attempt. Thus among all health staff, almost all the in-position health staff can be contacted during the visit except allopathic doctors.

Socio-Demographic profiles of the key informants:

The category wise distribution of different respondents with their mean age is shown in Table-1. More than 80% of the respondents were currently married in all categories except for health workers (78%).

Out of the total 52 doctors interviewed, 52% were from CHC and 48% were working at PHC. Eighty-eight percent of interviewed nurses were working at CHC while 12% were from PHC. All the health workers were placed at sub-centers. Similarly, all lab technicians interviewed were from CHCs. Of the pharmacists interviewed, 59% were working at PHC while 41% were from CHC.

Table 2 Category wise distribution of respondents along with their mean age

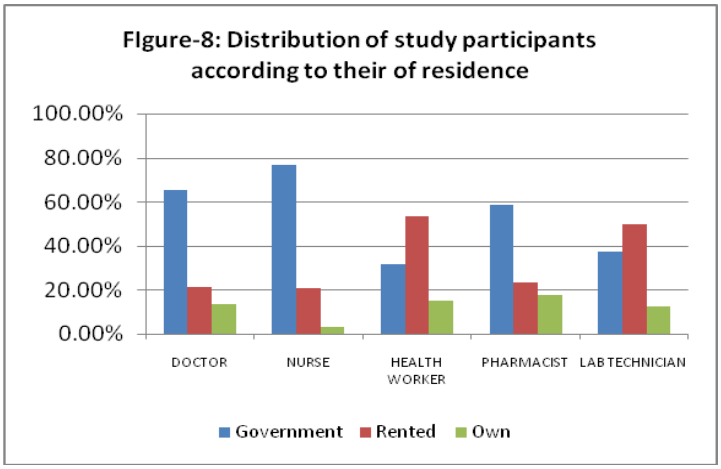
Designation	Number	Mean age (years)	Std. Deviation
Doctor	52	41.71	9.384
Nurse	34	37.71	7.522
Health worker	73	40.27	9.877
Pharmacist	51	44.73	5.258
Lab technician	16	45.38	9.394
Total	226	41.58	8.809

Majority of health staff are found to stay within one km of their place of work. While, 88% nurses live within 1 km, 59% of health workers stay within one kilometer. Out of total 52 doctors interviewed, 17% of them stay at a distance of more than 10 kilometer from their workplace. About 6% of nurses live at a place more than 5 kilometer from hospital.

Table 3 Distance of present residence from workplace of different categories of health staff

	Distance of Present Residence from Workplace			
Designation	<1KM	1-5 KM	5-10KM	>10KM
Doctor	37(71.2%)	5(9.6%)	1(1.9%)	9(17.3%)
Nurse	30(88.2%)	2(5.9%)	1(2.9%)	1(2.9%)
Health worker	43(58.9%)	13(17.8%)	11(15.1%)	6(8.2%)
Pharmacist	41(80.4%)	4(7.8%)	4(7.8%)	2(3.9%)
Lab technician	11(68.8%)	2(12.5%)	1(6.2%)	2(12.5%)

Majority of doctors (65%), nurses (76%) and pharmacists (58%) are staying at accommodation provided by government (Figure-8). However health workers (53%) and lab technicians (50%) stay in rented houses.



Further, 31% of interviewed health staff have their present workplace within one Km of block headquarter. Out of these health staff 73% stay in government quarters. Whereas, 9% of interviewed health staff have their workplace more than 30 Km away from block headquarter and only 26% of them live in government quarters.

Average length of service for all categories of health staff is 15 years ranging from 2 to 37 years.

Factors influencing to work in rural and remote areas:

Majority of health staff perceive the factors namely, “strong personal will to serve people”, “physical infrastructure”, “training opportunities”, “support by seniors”, “good schooling for their children” and “promotion avenues after certain years of rural service” as very important for continuing to work in rural and remote areas. However some of them feel that “having same socio-cultural environment” and “being from same geographical area of workplace” are not important factors.

Table 4 Perceived importance of different factors among health staff.

S. No.	Theme	Not important No. (%)	Important No. (%)	Very important No. (%)	Total
1.	Importance of Promotion after rural service.	6(2.7%)	77(34.1%)	143(63.3%)	226(100%)
2.	Importance of Additional Monetary incentive.	6(2.7%)	86(38.7%)	130(58.6%)	222(100%)
3.	Important of physical infrastructure.	10(4.5%)	54(24.1%)	160(71.4%)	224(100%)
4.	Importance of better housing facilities.	0(0%)	85(37.6%)	141(62.4%)	226(100%)
5.	Importance of good school.	5(2.3%)	62(27.9%)	155(69.8%)	222(100%)
6.	Importance of strong will to serve rural people.	3(1.3%)	53(23.7%)	168(75.0%)	224(100%)
7.	Importance of support by senior.	3(1.3%)	62(27.8%)	158(70.9%)	223(100%)
8.	Importance of support by local community.	2(0.9%)	82(36.6%)	140(62.5%)	224(100%)
9.	Importance of training Opportunities.	3(1.3%)	61(27.2%)	160(71.4%)	224(100%)
10.	Importance of same geography (Native).	89(39.7%)	79(35.3%)	56(25.0%)	224(100%)
11.	Importance of similar Socio-cultural Environment.	65(29.3%)	86(38.7%)	71(32.0%)	222(100%)
12.	Importance of working same location with spouse.	12(5.4%)	58(26.1%)	152(68.5%)	222(100%)
13.	Importance of trust & respect of Patients.	21(9.3%)	96(42.5%)	109(48.2%)	226(100%)
14.	Importance of extra income.	23(10.3%)	95(42.4%)	106(47.3%)	224(100%)
15.	Importance of responsible and accountable.	6(2.8%)	90 (41.3%)	122(56%)	218(100%)

Majority of health staff are not satisfied with existing promotion opportunities, physical infrastructure and schooling facility for their children. However, most of them are satisfied with the available support from seniors, local community and respect and trust of patients.

Table 5 Perceived satisfaction for different factors among health staff.

S. No.	**Theme**	**Not Satisfied**	**Satisfied**	**Total**
1	Satisfied of Promotion after rural Service.	133(66.5%)	67(33.5%)	200(100%)
2	Satisfied with physical infrastructure.	135(60.5%)	88(39.5%)	223(100%)
3	Satisfied with existing school.	143(65.6%)	75(34.4%)	218(100%)
4	Satisfied with senior's support.	40(17.9%)	184(82.1%)	224(100%)
5	Satisfied with support by local community.	32(14.3%)	192(85.7%)	224(100%)
6	Satisfied with present Training.	67(29.8%)	158(70.2%)	225(100%)
7	Satisfied working at this place.	32(14.2%)	193(85.8%)	225(100%)
8	Satisfied with respect & trust by Patients.	10(4.4%)	216(95.6%)	226(100%)

Detailed analysis of key factors:

1. Physical infrastructure and housing:

When asked about importance of physical infrastructure of the workplace, 80% doctors and 75% of lab technicians told that it is very important. Two third of nurses, health workers and pharmacists felt that physical infrastructure of workplace is very important so as to continue working in rural and remote areas. However, with respect to the level of satisfaction with the existing infrastructure, it was found that health workers were not satisfied with the existing physical infrastructure (71.8%), followed by doctors (62.7%) and lab technicians (56.2%). Around half of the pharmacists were reported to be satisfied (52.9%).When compared the perceived satisfaction about physical infrastructure between regions, it was found that 56% health staff of *KBK* plus districts were not satisfied as compared to 63% of non-*KBK* districts.

Better housing facilities were perceived as very important by 71% of doctors, 73% of nurses, 60% of health workers and around half of pharmacists and lab technicians. Majority of the doctors expressed that lack of infrastructure at the facility and accommodation for health staff as main challenges to serve in rural areas. Lack of basic hospital equipments and irregular drug supply were perceived as de-motivating factor for the health personnel. Almost all health staff at rural health facilities was unhappy with the available infrastructure. Majority of the health personnel not staying at government quarters quoted "non-availability of quarters" & "poorly maintained quarters" as main reasons for not staying at present place of work. Concerns related to infrastructure at staff accommodation included: poorly maintained staff quarters, no boundary wall (issue of safety), poor water supply, interrupted electric supply and poor mobile phone connectivity/telephone/internet facilities.

Relatively very high proportion of doctors (82%) and nurses (88%) felt that good schooling is very important for their children. More than half of the respondents in all categories were not satisfied with the existing school facility for their children - highest dis-satisfaction being reported by doctors (86%) followed by nurses (73.5%). The level of satisfaction seems to be relatively higher for pharmacists.

Further, it is observed that there is difference in the level of satisfaction with respect to existing school facility between KBK and non-KBK category of study participants. Seventy-four percent of interviewed health staff in KBK district was not satisfied with the schooling facilities as compared to 60% respondents in non-KBK district. Moreover, it was observed that the children of more than half of the health staff interviewed in KBK districts go to school outside the district where they work.

2. Incentives and professional growth:

All the health staff felt that promotion after certain years of rural service is important. Majority of doctors (73%), health workers (68%) and around half of nurses and pharmacists considered promotion after certain years of rural service to be very important. However, all categories of health staff expressed their dissatisfaction with the existing promotional avenues following rural service, with doctors having the highest level of dissatisfaction (77.8%), followed by health workers (65.2%), pharmacists (64.4%) and nurses (63.3%). Around fifty percent of lab technicians were satisfied with their promotional avenues. Particularly, doctors expressed their dis-satisfaction with the non-transparency of the current HR (transfer & promotion) policy. They emphasized on the need for setting of objective parameter for transfer and promotion. There have been instances where doctors have served in rural and remote areas for extended duration, as long as 20 years.

More than 80% doctors and nurses told that making training opportunities available for them is very important and half of lab technicians felt the same. Satisfaction level with present training has been reported to be the highest among the Nurses (88.2%), closely followed by health workers (87.7%) and lab technicians (80%). However, majority of doctors (53.8%) have reported to be unsatisfied with their present training opportunities followed by pharmacists (45.1%).

Two-third of doctors, nurses and health workers, and around half of pharmacists and lab technicians told that additional monetary incentives for working in rural and remote areas is very important. Out of 82 health staff interviewed in KBK-Plus districts, 29 (35%) found to receive additional monetary incentives. However, out of these 29 health staff, only 9 are satisfied with the incentives and 27 showed their willingness to get transferred given an opportunity. The major

reasons quoted for transfer were: going to the native place, education of children, already completed 5 years in *KBK* region, looking after parents and physical security.

Out of 144 health staff interviewed in Non-KBK districts, only 23 (16%) received additional monetary incentives. Given an opportunity, 11 out of 23 expressed their willingness to get transferred. Some of the major reasons cited were: preferences for urban posting, completion of more than 15 years of service and intention to remain with the family. Half of the health staff of non-KBK districts getting additional monetary incentives told that they did not want to be transferred and the major reasons quoted were: already well settled in the area and children continuing education.

Two-third of doctors, health workers, pharmacists and lab technicians, and 88% of nurses considered support of senior colleagues as 'very important' to continue working in rural areas. More than three-fourth of all respondents were found to be satisfied with the kind of support they were receiving from seniors. Highest number of satisfied respondents were from lab technicians category (86.7%) followed by pharmacists (84.3%) and health workers (80.8%). On the other hand, one-fifth (21%) of interviewed doctors were not satisfied on the above.

3. <u>Personal, family and social consideration</u>:

More than 80% lab technicians and 75% doctors, nurses and health workers felt that there should be a 'strong will to serve rural people' for working in rural and remote areas. Majority of doctors (50.0%), nurses (55.9%) and lab technician (50.0%) considered trust & respect by the patients as a 'very important' factor to work in rural and remote areas. The study found that all categories of health staff continued to receive high level of respect and trust from patients. Almost all health workers and pharmacists (98.6% and 98.0%, respectively) reported to be satisfied with the level of respect and trust they received from their patients, closely followed by nurses (94.1%), lab technicians (93.8%) and doctors (90.4%).

Three-fourth of doctors and nurses opined that the 'support of local community' is very important for working in rural and remote areas whereas half of pharmacists and lab technicians had the same opinion. More than half of the respondents across all categories reported to be satisfied with the support of local community. Almost all health workers (95.9%) reported to be

satisfied, closely followed by pharmacists (90%) and lab technicians (86.7%). On the other hand, about one-third of doctors (32.7%) reported that they were not satisfied with the local community support.

Fifty percent of doctors, 47% nurses, 60% lab technicians and 40% pharmacists did not consider that 'belongingness to same geographical area' was an important factor for working in rural areas. However, 36% health workers did feel that working in same geographical area of their native place as 'very important' to continue working there. There was a mixed opinion amongst respondents with regard to the importance of similar socio-cultural environment for working in rural areas.

More than two-third of the doctors (69.2%), nurses (79.4%), health workers (78.9%) and lab technician (66.7%) felt 'working at same location as of spouse' is a very important factor to work in rural and remote areas. More than three-fourth of respondents across all categories reported to be satisfied with their current place of posting - almost all pharmacists (94.1%), more than three-fourth of health workers (87.7%) and doctors (80.8%). Some nurses were found to be dissatisfied (20.6%) with their current place of work - the highest among all categories.

When asked if given opportunity, whether they wish to take transfer from the current workplace, there was varied response among various categories of health staff as below.

Staff category	Reasons for opting for transfer	Reasons for NOT opting for transfer
Doctors	- Poor infrastructure in present location - Relocate to my native place or district, serve my own community - Due for transfer/ promotion - To have better schooling or higher education for children	- Well adjusted here, good community support - Currently living in or near to native place - Recently shifted to this place - Will retire soon
Nurses	- To join with my family (children, husband, parents) - To have better schooling or higher education for children - Poor infrastructure in present location	- Living with my family/parents here - Currently living in or near to native place - Children are in school, can't move now

Health worker	- To join with my family (children, husband, parents), relocate to my native place. - Poor schooling and other infrastructure in present location	- Currently living in or near to native place - Children are in school, can't move now
Pharmacist	- To join with my family (children, husband, parents), relocate to my native place - To have better schooling or higher education for children - Poor infrastructure such as quarter, electricity and water supply in present location	- Living with my family/parents here - Well adjusted and I am happy in this location
Lab technician	- Relocate to my native place - Poor infrastructure in present location	- Well adjusted here, good community support - Will retire soon - Working for long duration in rural

KEY FINDINGS

1. The distribution of health workforce across thirty districts reveals that there are high vacancies amongst doctors, lab technicians, nurses, MPHW (M), whereas almost all the posts of pharmacists and MPHW (F) are filled.

2. Excepting few districts, the ratio of MPHW (F) to population is around 5000 in the state which is at par with the prescribed norms. The ratio of government allopathic doctor, lab technician and staff nurses to population is: 13000, 40000 and 15000, respectively.

3. Majority of health staff perceive "strong personal will to serve people", "physical infrastructure", "training opportunities", "support by seniors", "good schooling for their children" and "promotion avenues after certain years of rural service" as very important for continuing to work in rural and remote areas. There is mixed opinion among the participants on importance of having same socio-cultural background and being from same geographical area as that of the workplace.

4. Majority of health staff are not satisfied with existing promotion opportunities, physical infrastructure and schooling facility for their children. However, most of them are satisfied with the available support from seniors, local community and respect and trust of patients.

5. Seventy-four percent of interviewed health staff in KBK district was not satisfied with the schooling facilities as compared to 60% respondents in non-KBK district. Moreover, it was observed that the children of more than half of the health staff interviewed in KBK districts go to school outside the district where they work.

6. The primary motivating factors for rural service were identified as monetary incentives, good infrastructure both at work place and govt accommodation, and transparent transfer and promotion policy.

7. Most of the participants were found to be satisfied with the support they received from their seniors and the local community, and respect and trust of their patients. However, one-third of doctors were not satisfied with the local community support.

8. Around half of the doctors and pharmacists were not satisfied with present training opportunities.

9. Opportunity for higher studies like special consideration for PG, consideration for promotion after certain years of rural service, good physical infrastructure at work place, adequate support staff, govt transport facility were suggested by the participant doctors as major incentive strategy to motivate health personnel towards working in rural remote areas.

10. One-third of health staff interviewed in KBK-Plus districts were found to receive additional monetary incentives. However, only one-third of them are satisfied with the incentives and almost all showed their willingness to get transferred given an opportunity. The major reasons quoted for transfer were: going to the native place, education of children, already completed 5 years in *KBK* region, looking after parents and physical security.

11. Around one-fifth of health staff interviewed in Non-KBK districts received additional monetary incentives. Half of the health staff who are getting additional monetary incentives told that they did not want to be transferred and the major reasons quoted were: already well settled in the area and children continuing education.

12. Five primary reasons ranked in order of priority cited by the study participants for continuing at the same place were, namely, permanent govt. service, pension facility, social service, source of regular income and job satisfaction

13. The main reasons for not wanting transfer were: being near to native place, good local community support, nearing retirement, not willing to relocate soon.

14. Review of literature suggests that a combination of various interventions has more impact on retention of health staff in rural and remote areas than any single intervention.

RECOMMENDATIONS

1. Basic infrastructural improvements (such as safe water, electricity, toilets, and boundary wall) to health facility and staff quarters need to be taken up on a priority basis.

2. Scholarships and preference of seats in reputed (residential) schools could be provided to the children of staff working in rural and remote areas, considering education of children as one of the strong factor affecting retention of staff in remote and tribal areas.

3. Monetary incentives should be given to all the health staff (not just to doctors) working in the identified difficult and hard to reach areas across the state. The monetary incentive for rural service need to be lucrative linked with performance.

4. Community housing at the block level for all the staff working at CHC and PHCs could be a long term and sustainable option in solving concerns related to staff accommodation. In addition, good quality staff retiring rooms at PHCs (24X7 services) can be developed for health staff on night duties.

5. Explicit human resource policy for health personnel across all cadres with pre-defined criterion for transfer, promotion and performance appraisal.

6. District level Human Resource Management Units (DHRMU's) may be developed in similar lines of SHRMU to facilitate implementation of human resource policies related to recruitment, retention and capacity building.

7. A combination of interventions such as preferential admission in reputed schools to the children of staff working in rural areas, additional monetary incentives and community housing for health staff at block level could be tried on a pilot basis for assessing their acceptance and effectiveness.

8. Keeping in mind the different pattern of cadre for doctors vis-a-vis non doctor there need to have different strategies for them e.g, paramedical staffs can be given preferential postings nearer to their native places and for doctors there should be a fixed term rotational postings in remote and rural areas with assurance of taking them back to periurban and urban areas. However, monetary incentives for working in identified hard to reach areas should be given to all the staff proportionate to their salaries.

LIMITATIONS OF THE STUDY

The present study was conducted within a short period of four months that includes review of literature, secondary data analysis, primary data collection and analysis and report writing. Hence a limited sample of key informant interviews was taken but it was ensured that it is well distributed across the state. This has limited the analysis of primary data to some extent that analysis could be done for the state as a whole but not for individual selected district. Since retention is a complex issue influenced by multiple factors, it was tried to identify the factors influencing retention based on the perceptions of key informants using a semi-structured interview schedule with closed and open ended questions so as to identify various factors that they feel influential. Hence this study is not an evaluation of current individual policies by the state, however the study has revealed a list of factors including some of the state's policies that influence retention of health staff in rural and remote areas. Although the selection of blocks, CHCs, PHCs and sub-centres was not done based on vulnerability scale but it was taken care by selecting one nearby and two far away blocks from each district so as to get appropriate rural and remote areas.

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ANNEXURE I

Table 1: Perceived importance of promotion after rural service among different categories of Health Staff.

	Importance of Promotion after rural service.			
Designation	Not important	Important	Very Important	Total
DOCTOR	3(5.8%)	11(21.2%)	38(73.1%)	52(100.0%)
NURSE	0(0%)	15(44.1%)	19(55.9%)	34(100.0%)
HEALTH WORKER	0(0%)	23(31.5%)	50(68.5%)	73(100.0%)
PHARMACIST	2(3.9%)	20(39.2%)	29(56.9%)	51(100.0%)
LAB TECHNICIAN	1(6.2%)	8(50.0%)	7(43.8%)	16(100.0%)
	6(2.6%)	77(34.0%)	143(63.2%)	226(100%)

Table 2: Perceived importance of additional monetary Incentive among different categories of Health Staff.

	Importance of Additional Monetary incentive			
Designation	not important	Important	very important	Total
DOCTOR	1(1.9%)	16(30.8%)	35(67.3%)	52(100.0%)
NURSE	0(0%)	11(32.4%)	23(67.6%)	34(100.0%)
HEALTH WORKER	1(1.4%)	28(40.6%)	40(58.0%)	69(100.0%)
PHARMACIST	2(3.9%)	25(49.0%)	24(47.1%)	51(100.0%)
LAB TECHNICIAN	2(12.5%)	6(37.5%)	8(50.0%)	16(100.0%)
	6(2.7%)	86(38.7%)	130(58.5%)	222(100%)

Table -3: Perceived importance of physical Infrastructure among different categories of Health Staff.

	Important of physical infrastructure			
Designation	not important	Important	very important	Total
DOCTOR	0(0%)	10(19.2%)	42(80.8%)	52(100.0%)
NURSE	1(2.9%)	10(29.4%)	23(67.6%)	34(100.0%)
HEALTH WORKER	5(7.0%)	17(23.9%)	49(69.0%)	71(100.0%)
PHARMACIST	4(7.8%)	13(25.5%)	34(66.7%)	51(100.0%)
LAB TECHNICIAN	0(0%)	4(25.0%)	12(75.0%)	16(100.0%)
	10(4.4%)	54(24.32%)	160(72.0%)	224(100%)

Table-4: Perceived importance of better housing facilities among different categories of Health Staff.

	Importance of better housing facilities		
Designation	Important	Very important	Total
DOCTOR	15(28.8%)	37(71.2%)	52(100%)
NURSE	9(26.5%)	25(73.5%)	34(100%)
HEALTH WORKER	29(39.7%)	44(60.3%)	73(100%)
PHARMACIST	25(49.0%)	26(51.0%)	51(100%)
LAB TECHNICIAN	7(43.8%)	9(56.2%)	16(100%)
	85(39.3%)	141(63.5%)	216(100%)

Table 5: Perceived importance of good school among different categories of Health Staff.

	Importance of good school			
Designation	not important	Important	very important	Total
DOCTOR	0(0%)	9(17.3%)	43(82.7%)	52(100.0%)
NURSE	0(0%)	4(11.8%)	30(88.2%)	34(100.0%)
HEALTH WORKER	1(1.4%)	25(34.7%)	46(63.9%)	72(100.0%)
PHARMACIST	4(8.2%)	18(36.7%)	27(55.1%)	49(100%)
LAB TECHNICIAN	0(0%)	6(40.0%)	9(60%)	15(100%)
	5(2.2%)	62(27.9%)	155(69.8%)	222(100%)

Table 6: Perceived importance of strong will to serve rural people among different categories of Health Staff.

	Importance of strong will to serve rural people			
Designation	not important	Important	very important	Total
DOCTOR	0(0%)	12(23.5%)	39(76.5%)	51(100.0%)
NURSE	1(2.9%)	6(17.6%)	27(79.4%)	34(100.0%)
HEALTH WORKER	2(2.7%)	16(21.9%)	55(75.3%)	73(100.0%)
PHARMACIST	0(0%)	17(34.0%)	33(66.0%)	50(100.0%)
LAB TECHNICIAN	0(0%)	2(12.5%)	14(87.5%)	16(100.0%)
	3(1.3%)	53(23.8%)	168(75.6%)	224(100%)

TABLE-7: Perceived importance of support by senior among different categories of Health Staff.

	Importance of support by senior			
Designation	not important	Important	very important	Total
DOCTOR	2(3.8%)	12(23.1%)	38(73.1%)	52
NURSE	0(0%)	4(11.8%)	30(88.2%)	34
HEALTH WORKER	0(0%)	25(34.7%)	47(65.3%)	72
PHARMACIST	1(2.0%)	16(32.7%)	32(65.3%)	49
LAB TECHNICIAN	0(0%)	5(31.2%)	11(68.8%)	16
	3(1.3%)	62(27.8%)	158(70.8%)	223(100%)

TABLE- 8: Perceived importance of support by local community among different categories of Health Staff.

	Importance of support by local community			
Designation	not important	Important	very important	Total
DOCTOR	1(2.0%)	13(25.5%)	37(72.5%)	51(100.0%)
NURSE	1(2.9%)	7(20.6%)	26(76.5%)	34(100.0%)
HEALTH WORKER	0(0%)	32(43.8%)	41(56.2%)	73(100.0%)
PHARMACIST	0(0%)	23(45.1%)	28(54.9%)	51(100.0%)
LAB TECHNICIAN	0(0%)	7(46.7%)	8(53.3%)	15(100.0%)
	2(0.8%)	82(36.6%)	140(62.5%)	224(100%)

Table-9: Perceived importance of training opportunities among different categories of Health Staff.

	Importance of training Opportunities			
Designation	not important	Important	very important	Total
DOCTOR	0(0%)	6(11.5%)	46(88.5%)	52(100.0%)
NURSE	1(2.9%)	5(14.7%)	28(82.4%)	34(100.0%)
HEALTH WORKER	0.0%	25(34.7%)	47(65.3%)	72(100.0%)
PHARMACIST	1(2.0%)	19(37.3%)	31(60.8%)	51(100.0%)
LAB TECHNICIAN	1(6.7%)	6(40.0%)	8(53.3%)	15(100.0%)
	3(1.3%)	61(27.4%)	160(72.0%)	224(100%)

Table -10: Perceived importance of same geography (native) among different categories of Health Staff.

	Importance of same geography (Native)			
Designation	not important	Important	very important	Total
DOCTOR	26(50.0%)	10(19.2%)	16(30.8%)	52
NURSE	16(47.1%)	12(35.3%)	6(17.6%)	34
HEALTH WORKER	18(25.0%)	28(38.9%)	26(36.1%)	72
PHARMACIST	20(39.2%)	23(45.1%)	8(15.7%)	51
LAB TECHNICIAN	9(60.0%)	6(40.0%)	0(0%)	15
	89(39.7%)	79(35.5%)	56(25.2%)	224

Table- 11: Perceived importance of similar socio-cultural environment among different categories of health staff.

	Importance of similar Socio-cultural Environment			
Designation	not important	important	very important	Total
DOCTOR	21(41.2%)	18(35.3%)	12(23.5%)	51(100.0%)
NURSE	8(23.5%)	16(47.1%)	10(29.4%)	34(100.0%)
HEALTH WORKER	17(23.6%)	25(34.7%)	30(41.7%)	72(100.0%)
PHARMACIST	15(30.0%)	20(40.0%)	15(30.0%)	50(100.0%)
LAB TECHNICIAN	4(26.7%)	7(46.7%)	4(26.7%)	15(100.0%)
	65(29.2%)	86(38.7%)	71(31.9%)	222(100%)

Table-12: Perceived importance of working at same location with spouse among different categories of Health Staff.

	Importance of working same location with spouse			
Designation	not important	important	very important	Total
DOCTOR	4(7.7%)	12(23.1%)	36(69.2%)	52(100.0%)
NURSE	0(0%)	7(20.6%)	27(79.4%)	34(100.0%)
HEALTH WORKER	2(2.8%)	13(18.3%)	56(78.9%)	71(100.0%)
PHARMACIST	5(10.0%)	22(44.0%)	23(46.0%)	50(100.0%)
LAB TECHNICIAN	1(6.7%)	4(26.7%)	10(66.7%)	15(100.0%)
	12(5.4%)	58(26.1%)	152(68.4%)	222(100%)

Table- 13: Perceived importance of trust & respect of patients among different categories of Health Staff.

	Importance of trust & respect of Patients			
Designation	not important	Important	very important	Total
DOCTOR	3(5.8%)	23(44.2%)	26(50.0%)	52(100.0%)
NURSE	3(8.8%)	12(35.3%)	19(55.9%)	34(100.0%)
HEALTH WORKER	11(15.1%)	28(38.4%)	34(46.6%)	73(100.0%)
PHARMACIST	2(3.9%)	27(52.9%)	22(43.1%)	51(100.0%)
LAB TECHNICIAN	2(12.5%)	6(37.5%)	8(50.0%)	16(100.0%)
	21(9.2%)	96(43.2%)	109(49.0%)	226(100%)

Table-14: Perceived satisfaction with promotion after rural Service among different categories of Health Staff.

	Satisfaction of promotion after rural Service		
Designation	Not satisfied	Satisfied	Total
DOCTOR	35(77.8%)	10(22.2%)	45(100.0%)
NURSE	19(63.3%)	11(36.7%)	30(100.0%)
HEALTH WORKER	43(65.2%)	23(34.8%)	66(100.0%)
PHARMACIST	29(64.4%)	16(35.6%)	45(100.0%)
LAB TECHNICIAN	7(50.0%)	7(50.0%)	14(100.0%)
	134(66.7%)	67(33.5%)	200(100%)

Table- 15: Perceived satisfaction with physical infrastructure among different categories of Health Staff.

	Satisfaction with physical infrastructure		
Designation	Not satisfied	Satisfied	Total
DOCTOR	32(62.7%)	19(37.3%)	51(100.0%)
NURSE	19(55.9%)	15(44.1%)	34(100.0%)
HEALTH WORKER	51(71.8%)	20(28.2%)	71(100.0%)
PHARMACIST	24(47.1%)	27(52.9%)	51(100.0%)
LAB TECHNICIAN	9(56.2%)	7(43.8%)	16(100.0%)
	135(60.5%)	88(39.5%)	223(100%)

TABLE -16: Perceived satisfaction with existing school among different categories of Health Staff.

	Satisfaction with existing school		
Designation	Not satisfied	Satisfied	Total
DOCTOR	43(86.0%)	7(14.0%)	50(100.0%)
NURSE	25(73.5%)	9(26.5%)	34(100.0%)
HEALTH WORKER	40(56.3%)	31(43.7%)	71(100.0%)
PHARMACIST	26(54.2%)	22(45.8%)	48(100.0%)
LAB TECHNICIAN	9(60.0%)	6(40.0%)	15(100.0%)
	143(65.5%)	75(34.5%)	218(100%)

Table -17: Perceived satisfaction with senior's support among different categories of Health Staff.

	Satisfaction with senior's support		
Designation	Not satisfied	Satisfied	Total
DOCTOR	11(21.2%)	41(78.8%)	52(100%)
NURSE	5(15.2%)	28(84.8%)	33(100%)
HEALTH WORKER	14(19.2%)	59(80.8%)	73(100%)
PHARMACIST	8(15.7%)	43(84.3%)	51(100%)
LAB TECHNICIAN	2(13.3%)	13(86.7%)	15(100%)
	40(17.8%)	184(82.2%)	224(100%)

Table-18: Perceived satisfaction with support by local community among different categories of Health Staff.

	Satisfaction with support by local comm.		
Designation	Not satisfied	Satisfied	Total
DOCTOR	17(32.7%)	35(67.3%)	52(100.0%)
NURSE	5(14.7%)	29(85.3%)	34(100.0%)
HEALTH WORKER	3(4.1%)	70(95.9%)	73(100.0%)
PHARMACIST	5(10.0%)	45(90.0%)	50(100.0%)
LAB TECHNICIAN	2(13.3%)	13(86.7%)	15(100.0%)
	32(14.3%)	192(85.7%)	224(100%)

Table -19: Perceived satisfaction with present training among different categories of Health Staff.

	Satisfaction with present training		
Designation	Not satisfied	Satisfied	Total
DOCTOR	28(53.8%)	24(46.2%)	52(100.0%)
NURSE	4(11.8%)	30(88.2%)	34(100.0%)
HEALTH WORKER	9(12.3%)	64(87.7%)	73(100.0%)
PHARMACIST	23(45.1%)	28(54.9%)	51(100.0%)
LAB TECHNICIAN	3(20.0%)	12(80.0%)	15(100.0%)
	67(29.7%)	158(70.3%)	225(100%)

Table- 20: Perceived satisfaction with working at current place among different categories of Health Staff.

	Satisfaction working at current place		
Designation	Not satisfied	Satisfied	Total
DOCTOR	10(19.2%)	42(80.8%)	52(100.0%)
NURSE	7(20.6%)	27(79.4%)	34(100.0%)
HEALTH WORKER	9(12.3%)	64(87.7%)	73(100.0%)
PHARMACIST	3(5.9%)	48(94.1%)	51(100.0%)
LAB TECHNICIAN	3(20.0%)	12(80.0%)	15(100.0%)
	32(14.3%)	193(85.7%)	225(100%)

Table- 21: Perceived satisfaction with respect & trust by Patients among different categories of Health Staff.

	Satisfaction with respect & trust by Patients.		
Designation	Not satisfied	Satisfied	Total
DOCTOR	5(9.6%)	47(90.4%)	52(100.0%)
NURSE	2(5.9%)	32(94.1%)	34(100.0%)
HEALTH WORKER	1(1.4%)	72(98.6%)	73(100.0%)
PHARMACIST	1(2.0%)	50(98.0%)	51(100.0%)
LAB TECHNICIAN	1(6.2%)	15(93.8%)	16(100.0%)
	10(4.4%)	216(95.6%)	226(100%)

ANNEXURE II

Qualitative Data Analysis findings:

Reasons for not living at present work place

Most of the health personnel said that non-availability of government quarter and non-inhabitable quarter as the main reasons for not living at present place of work. The other reasons mentioned were currently living at native place, poor infrastructure and lack of schooling facility at the place of work.

Preference on transfer

If given an opportunity majority of the health personnel across all categories of staff including doctors, nurses, pharmacist, lab technician and health workers are opting for a transfer. The given below tables shows the key reasons why the health staff are opt for or not opt for a transfer

Staff category	Reasons for opting for transfer	Reasons for NOT opting for transfer
Doctors	- Poor infrastructure in present location - Relocate to my native place or district, serve my own community - Due for transfer/ promotion - To have better schooling or higher education for children	- Well adjusted here, good community support - Currently living in or near to native place - Recently shifted to this place - Will retire soon
Nurses	- To join with my family (children, husband, parents) - To have better schooling or higher education for children - Poor infrastructure in present location	- Living with my family/parents here - Currently living in or near to native place - Children are in school, can't move now

Health worker	- To join with my family (children, husband, parents), relocate to my native place or district - Poor schooling and other infrastructure in present location	- Currently living in or near to native place - Children are in school, can't move now
Pharmacist	- To join with my family (children, husband, parents), relocate to my native place or district - To have better schooling or higher education for children - Poor infrastructure such as quarter, electricity and water supply in present location	- Living with my family/parents here - Well adjusted and I am happy in this location
Lab technician	- Relocate to my native place or district - Poor infrastructure in present location	- Well adjusted here, good community support - Will retire soon - Working for long duration in rural

Challenges of working in rural and remote areas

Lack of Infrastructure

Majority of the doctors expressed that one of the main challenges to serve in rural areas is lack of infrastructure at the facility and at accommodation of health staff. Almost all health staff at rural health facilities were unhappy with the available infrastructure. The doctors have emphasized the lack of or inadequate accommodation facility.

Concern related to infrastructure at staff accommodation includes un-inhabitable staff quarters, no boundary wall (issue of safety), poor water supply, interrupted electric supply and poor mobile phone connectivity/telephone/internet facilities.

Concerns related to facility level infrastructure include lack of basic hospital equipment and irregular drug supply, which acts as a de-motivating factor for the health personnel.

Inadequate staffing and HR policies

Inadequate staffing results in excessive work load on the existing health staff. This excessive work load hampers the quality of health care and causes burn out among the staff. Most of the doctors said that there is need to recruit additional doctors in order meet the health care demand in rural and remote areas.

There has been evident resentment among doctors serving in rural and remote areas about the non-transparency of the HR (transfer & promotion) policy. The doctors have alleged that there is no objective parameter used for transfer and promotion which they feel is unjust. As a result of non-transparent policy the people who are well connected are posted in urban health facility and others continue to serve in rural and remote areas. There have been instances where doctors have served in rural and remote areas for extended duration, as long as 20 years.

Safety and Security

Concern related to infrastructure at staff accommodation such as absence of boundary wall, gate, toilets outside the quarter and remote location of health facility. Health staff who serve at Maoist inflicted areas have expressed their concerns regarding security more vigorously. Concern over security matters was highlighted by a female doctor who has served in remote tribal areas for 25 years of her tenure and she has cited her experience as follows:

The doctors said that there is high influence of local politicians in day to day functioning of health facility. For instance the local politicians a play a vital role in the recruitment of grass root level health workers. This interference acts as a bottleneck in outreach activities of the health facility.

Lack of transport facility

The health workers have highlighted lack of proper communication facilities (road, public transport, office vehicle/ambulance) as a hindrance for dispensing essential health care.

Cultural factors

Understanding the local language and customs has been emphasized by doctors for dispensing effective linkages with community and delivering services. Hence, they have suggested that the employed health personnel should belong to the same cultural milieu will result in better belongingness with the community.

Community features

The health personnel have mentioned that illiteracy of the rural and remote areas can inhibit the effective dissemination of health messages given by the health provider through IEC activities.

Rampant alcoholism in some communities has also been cited as a nuisance for the health personnel in delivering their duties.

Factors motivate in retention of health workers

Though the main challenge for serving in rural areas is lack of infrastructure both at workplace and at place of living, the most important factor to retain health staff in rural and remote areas is monitory incentives as said by almost all the health staff.

The other important motivating factors to serve in rural areas include provision of government quarter for all categories of staff, infrastructural improvements both at work place and govt accommodation/quarters, and transparent transfer and promotion policy.

Other less quoted factors include reservation for higher studies like special weightage for PG selection (for doctors), provision better education facilities for the children of staff, improved communication and transportation facilities such as provision of govt vehicle, supportive supervision from the higher authorities and recruitment of adequate staff.