Analyzing Workforce Patterns in PHCs: An Economic Perspective from Raibag, Ramdurg, and Athani in Belgaum of Karnataka State

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Abstract:

Access to quality healthcare in rural India remains a persistent challenge, mainly due to inadequate staffing in Primary Health Centres (PHCs). This study investigates the workforce dynamics in PHCs across Raibag, Ramdurg, and Athani talukas of Belgaum district in Karnataka, using 2023 staffing data. The analysis reveals significant disparities in staffing levels, with nearly 48 percent of sanctioned posts remaining vacant. Critical roles such as Auxiliary Nurse Midwives (ANMs) and Health Information Officers (HIOs) exhibit the highest vacancy rates, severely impacting healthcare delivery. The study explores these shortages' economic and operational implications, highlighting issues such as inefficient resource utilisation, increased patient burden, and compromised service quality. It also identifies systemic challenges, including uneven staff distribution, high attrition, inadequate training, and poor working conditions. The findings underscore the urgent need for targeted policy interventions to improve recruitment, retention, and equitable workforce distribution in rural healthcare settings. This research contributes to the discourse on strengthening primary healthcare systems and ensuring equitable access to essential health services in rural India.

Key words: Primary Health Centres (PHCs), Healthcare Workforce, Rural Healthcare, Public Health Services, Staffing Shortages, Human Resource Allocation, and Health Infrastructure

Introduction:

Access to healthcare services is a fundamental human right. Yet disparities persist between the urban and rural healthcare systems. A well-functioning primary healthcare system is the cornerstone of equitable and accessible health services, especially in rural regions. Primary Health Centres (PHCs) are the first point of contact between the rural population and the healthcare system in India. These centres' effectiveness depends on the availability and adequacy of human resources, which directly influences service delivery, patient outcomes, and overall public health. We continue to face systemic barriers to accessing timely, affordable, and quality health services.

This study focuses on the workforce dynamics in PHCs across the Raibag, Ramdurg, and Athani talukas of Belgaum District, Karnataka. The Belgaum district, located in northern Karnataka, is a socio-economically diverse district with a rural population. According to the 2011 census, the district's total population is 4,779,661, with

74.66% residing in rural areas. The rural population comprises 1,811,094 males and 1,757,372 females, representing 50.75% and 49.25% respectively. This study provides a valuable context for investigating causes and impacts in rural Primary Health Centres. Despite significant investments in healthcare infrastructure, staffing shortages and imbalances remain persistent challenges in rural PHCs, affecting the quality and accessibility of healthcare services.

The present comprehensive data was collected from Taluka Health Offices in 2023. The study aims to assess the current workforce status, identify patterns of vacancies, and analyse the economic and operational implications of staffing imbalances on the staffing status of PHCs in the selected talukas, capturing both working and vacant positions across various healthcare roles. This data provides a critical lens to examine the workforce distribution's economic and operational implications in rural healthcare settings. The Government of Karnataka has implemented several healthcare policies to improve ordinary people's access to health services. Primary Health Centres (PHCs) in Karnataka provide a wide range of healthcare facilities that benefit the rural population, ensuring comprehensive and accessible healthcare.

This research aims to offer an economic perspective on workforce allocation, highlighting the disparities and challenges faced by PHCs in maintaining adequate staffing levels. The findings will inform policy recommendations for improving rural healthcare systems' human resource planning, recruitment, and retention strategies. This study strengthens primary healthcare in Karnataka and ensures equitable access to essential health services for all.

From an economic perspective, understaffed PHCs increase out-of-pocket expenditures for rural households, as patients are often forced to seek care from distant or private facilities. This imposes a financial burden, results in productivity losses, and worsens health inequities. Moreover, inadequate staffing affects the implementation of national health programs, data reporting, and emergency response capabilities.

This study contributes to the existing literature by offering a localised, data-driven analysis of workforce distribution in rural Karnataka. It seeks to fill a critical gap in understanding how staffing shortages affect healthcare delivery at the primary level and what policy measures can be adopted to address these challenges. The findings are expected to provide evidence-based recommendations for improving recruitment, retention, and equitable deployment of healthcare personnel in rural areas.

Objectives of the study:

This study has the following objectives,

1. To understand the importance of staffing in Primary Health Centres (PHCs)
2. To identify the challenges related to staffing in Primary Health Centres.
3. To assess the current staffing status of Primary Health Centres (PHCs) in the study area.
4. To find the proportion of filled versus vacant positions in PHCs in the study area.
5. To examine the economic effects of workforce shortages and surpluses in rural PHCs,
6. To study workforce distribution and issues in recruitment.

Methodology:

The study uses secondary data from the Taluka Health Offices (THO) of Raibag, Ramdurg, and Athani talukas in Belgaum district.

Statistical Tools Used:

The current study uses statistical tools like tabulation, averages, percentages, and bar diagrams.

Importance of Staffing in Primary Health Centres:

Staffing in Primary Health Centres (PHCs) is critical to delivering effective, equitable, and accessible healthcare services in rural populations.

1. **Ensures Basic Healthcare Access:**
   Adequate staffing guarantees that rural populations receive essential medical services without needing to travel long distances. In the rural healthcare system, especially in remote areas, adequate staffing ensures that vital services like maternal care, immunisation, and treatment of common illnesses are consistently available.
2. **Improve Quality of Care:**
   A team of healthcare professionals ensures timely diagnosis, treatment, and follow-up, enhancing patient outcomes. A well-staffed PHC can provide continuous and comprehensive care, including preventive, promotive, curative, and rehabilitative services. Shortages in staff often lead to disruptions in service delivery, longer wait times, and reduced patient satisfaction.
3. **Reduces Burden on Higher Facilities:**
   Well-staffed PHCs can manage most primary health issues locally, reducing unnecessary referrals to Community Health Centres (CHCs) or district hospitals. This helps decongest secondary and tertiary care facilities.
4. **Supports Public Health Programs:**
   Staff are essential for implementing national health initiatives like immunization, maternal care, and disease control PHCs staff play a vital role in implementing national health programs such as National Health Mission (NHM), Reproductive and Child Health (RCH), National Tuberculosis Elimination Program (NTEP) etc. without implementation gaps.
5. **Builds Community Trust:**
   Consistent availability of healthcare workers fosters trust in the public health system, encouraging regular health-seeking behaviour. Consistent availability of doctors, nurses, and support staff builds community trust in the public health system. This trust is essential for encouraging health-seeking behaviour, especially among marginalised and vulnerable groups.
6. **Economic Efficiency:**
   From an economic perspective, understaffed PHCs lead to inefficiencies, patients may travel long distances for basic care, increasing out-of-pocket expenses and productivity losses. Proper staffing ensures cost-effective healthcare delivery at the grassroots level. It also reduces patient travel costs and time, making healthcare more affordable and accessible.
7. **Addresses Gender and Social Equity**:
   In rural areas, female healthcare workers like ANMs and ASHAs are crucial for reaching women and children. Adequate staffing ensures gender-sensitive care, helps address social determinants of health, and ensures inclusive healthcare delivery.
8. **Strengthens Emergency Response:**
   In emergencies, having trained staff on-site ensures immediate care, which can be lifesaving in rural areas. where is critical in remote areas with limited transport options.
9. **Supports Health Education and Awareness:**
   Staff are key in educating the community about hygiene, nutrition, family planning, disease prevention, and promoting healthier lifestyles.
10. **Improves Monitoring and Data Collection:**
    Adequate staffing ensures accurate health data reporting, which is essential for planning, resource allocation, and policymaking.

Challenges in staffing of Primary Health Centres:

The following are the challenges of Staffing in rural Primary Health Centres (PHCs):

1. **Shortage of Qualified Personnel:**
   Doctors and specialists are often unwilling to work in remote or rural areas due to a lack of infrastructure, career growth, or personal preferences. Nurses, lab technicians, and pharmacists are also in short supply, affecting service delivery and limiting the ability of PHCs to provide essential health services.
2. **Uneven Distribution of Staff:**
   Healthcare professionals are often concentrated in urban areas, leaving rural PHCs understaffed. This urban-rural imbalance affects healthcare access and equity. Lack of incentives or support systems discourages relocation to underserved areas.
3. **High Attrition Rates:**
   Many healthcare workers leave PHCs for better-paying jobs in urban areas or the private sector. Contractual or temporary staff often do not stay long due to job insecurity.
4. **Inadequate Training and Skill Gaps:**
   Many PHC staff lack up-to-date training in clinical practices, digital health tools, and emergency care, reducing service quality. Staff members lack training in essential areas like maternal health and emergency care, and continuing medical education is often unavailable.
5. **Poor Working Conditions:**
   PHCs may lack basic amenities like electricity, water, or proper housing for staff. Staff are overburdened due to multitasking and a lack of support staff, making it challenging to attract and retain personnel.
6. **Administrative and Bureaucratic Hurdles:**
   Delays in recruitment, salary disbursement, and promotions demotivate staff, as do complex transfer policies and a lack of transparency in postings.
7. **Gender and Safety Concerns:**
   Female healthcare workers may face safety issues or a lack of accommodation in remote areas. Cultural barriers may also affect their ability to work effectively.
8. **Lack of Career Progression:**
   Limited opportunities for professional growth or specialisation. Absence of mentorship or leadership development programs. PHC staff often experience career stagnation due to a lack of promotions and professional development programs.
9. **High Staff Turnover and Lack of Job Satisfaction:**
   Frequent resignations and transfers disrupt the continuity of care. Many staff leave PHCs for better opportunities in private or urban healthcare settings. Poor pay, lack of recognition, and heavy workloads contribute to low morale among PHC staff, affecting performance and retention.
10. **Delayed Recruitment and Bureaucratic Hurdles:**
    Lengthy hiring processes, lack of transparency, and administrative delays discourage qualified candidates from joining or staying in PHCs. Bureaucratic red tape and slow hiring processes result in long vacancies and discourage potential candidates from applying.
11. **Political and Social Interference:**
    Local political pressures and community dynamics can influence staffing decisions and day-to-day operations and undermine professionalism. Frequent transfers, favouritism, and lack of transparency in postings can demotivate staff and disrupt service delivery.
12. **Contractual Appointments and Inadequate Compensation:**
    Low salaries and lack of financial incentives make PHC jobs unattractive, especially compared to private sector or urban government positions. Many PHC positions are filled contractually, offering little job security.

Designation and duties of staff in Primary Health Centres (PHCs)

Table 01 shows the medical staff's designation and responsibilities in Primary Health Centres (PHCs).

Table No.01

Sl. No	Designation	Role or duties
01	**Medical Officers (MO)**	Medical officers are the backbone of PHCs. They provide clinical services, manage health programs, and oversee the centre's functioning. They diagnose and treat patients, conduct health camps, supervise staff, and coordinate with higher-level health facilities.
02	**Staff Nurses**	Staff nurses play a crucial role in patient care. They provide nursing services, assist in deliveries, immunisations, and health education. They manage outpatient and inpatient services, administer medications, and support health promotion activities.
03	**Pharmacists:**	Pharmacists oversee drug procurement, storage, and dispensing. They ensure rational drug use and maintain pharmacy records. They manage the pharmacy, provide drug information, and collaborate with medical officers.
04	**Laboratory Technicians:**	Lab technicians perform diagnostic tests, collect samples, and maintain laboratory equipment. They conduct blood tests, urine analysis, and other investigations.
05	**Health Assistants (Male/Female)**	Health assistants assist in patient care, health education, and outreach activities. They support medical officers, conduct health camps, and promote preventive health measures.
06	**Support Staff:**	Support staff include FDA, SDA, attenders, cleaners, and security personnel. They maintain records and accounts, prepare reports, maintain cleanliness, assist patients, and ensure the smooth functioning of the PHC.
07	**Community Health Workers (ASHAs)**	Accredited Social Health Activists (ASHAs) are community-based health workers. They bridge the gap between the community and the PHC. Accredited Social Health Activists (ASHAs) are community-based health workers. They bridge the gap between the community and the PHC.

Present Staff Position in the study area:

The following Table No.02 shows the present staff positions in Primary Health Centers in Athani, Ramdurg, and Raybag taluks of Belgaum district.

Table No. 02

Staff Position in all PHCs of Athani, Ramdurg and Raybag Taluka

Sl. No	Designation	Total Sanction	Total Working	Total Vacant
1	Medical Officers	32(100)	22(68.8)	10(31.3)
2	PHCO (ANM)	194(100)	74(38.1)	120(61.9)
3	Pharmacists	35(100)	27(77.1)	8(22.9)

4	Lab Tech	30(100)	21(70.0)	9(30.0)
5	Nursing	38(100)	37 (97.4)	2(2.6)
6	SDA	12(100)	9 (75.0)	3(25.0)
7	Group D	102(100)	51 (50.0)	51(50.0)
8	HIO	87(100)	25 (28.7)	62(71.3)
9	FDA	27(100)	24 (88.9)	3(11.1)
10	Driver	12(100)	7 (58.3)	5(41.7)
	Total	**570 (100)**	**297 (52.1)**	**273 (47.9)**

Source:

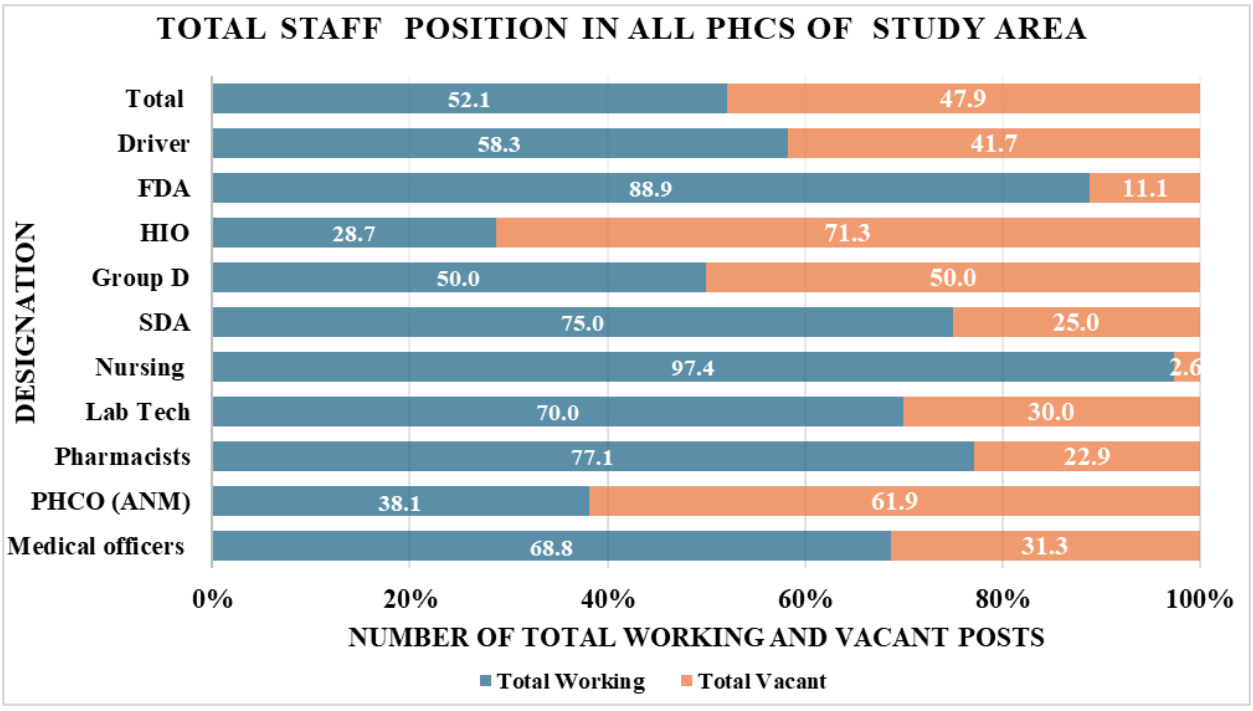
Staff Position report 2023 of Taluka Health Office (THO) Athani, Ramdurg and Raybag.

Note: Figures in the brackets show percentage, and the data does not indicate the contractual workers.

Table No.02 shows the Total sanctioned, working, and vacant posts in all Primary Health Centres (PHCs) in three talukas in the selected study areas. Out of 570 sanctioned posts, only 297 (52.1 percent) of the workforces are engaged, and the remaining 273 (47.9 percent) posts are vacant, considering the Medical Officers in all PHCs of the study area.

There were 32 sanctioned posts only 22 (68.8 percent) officers were working and remaining 10 posts (31.3 percent) were vacant, same 194 PHCO (ANM) posts were sanctioned out of these only 74 (38.1 percent) staffs were working and remaining 120 posts (61.9 percent) were vacant, and same as 35, 30, 38, 12, 102, 87, 27, and 12 sanctioned posts of Pharmacists, Lab Technicians, Nursing, SDA, Group D, HIO, FDA and Driver respectively,

Figure No.01



Source: Table No. 02.

and 27 (77.1 percent), 21 (70 percent), 37 (97.4 percent), 9 (75 percent), 51 (50 percent), 25 (28.7 percent), 24 (88.9 percent), and 7 (58.3 percent) of post are filled respectively but reaming 8 (22.9 percent), 9 (30 percent), 2 (2.6 percent), 3 (25.0 percent), 51 (50.0 percent), 62 (71.3 percent), 3 (11.1 percent) and 5 (41.7 percent) of Pharmacists, Lab Technicians, Nursing, SDA, Group D, HIO, FDA and Driver post were vacant respectively.

Findings:

The present article represents the following findings,

1. Out of the 570 sanctioned posts in PHCs across Athani, Ramdurg, and Raybag talukas, only 297 (52.1 percent) are filled, leaving 273 (47.9 percent) positions vacant.
2. A total of 32 Medical Officer posts are sanctioned in the selected study area, 22 are filled (68.8 percent), and 10 are vacant (31.3 percent).
3. Out of 194 sanctioned PHCO (ANM) posts, only 74 were filled (38.1 percent), 120 were vacant (61.9 percent), the highest vacancy rate among all posts.
4. Among 35 sanctioned Pharmacist posts, 27 were filled (77.1 percent), and 8 were vacant (22.9 percent).
5. There were 30 sanctioned Lab Technician posts, only 21 of which were filled (70 percent), and 9 were vacant (30 percent).
6. Nursing Staff: 38 sanctioned, 37 filled (97.4 percent), and only 01 vacant (2.6 percent), the best staffing rate.
7. There were 12 SDA (Second Division Assistants) posts sanctioned, 9 posts filled (75 percent), and only 3 posts vacant (25 percent).
8. 102 posts were sanctioned as Group D in the selected area; only half (50 percent) are filled and vacant.
9. In 87 posts of Health Information Officers (HIO) sanctioned in all PHCs of selected talukas, but only 25 filled (28.7 percent), 62 were vacant (71.3 percent), the second-highest vacancy rate.
10. In the study area, 27 FDA (First Division Assistants) posts are sanctioned, 24 are filled (88.9 percent), and 03 are vacant (11.1 percent).
11. Considering the Drivers post, only 12 are sanctioned and filled, 07 posts (58.3 percent) and 05 (41.7 percent) are vacant.
12. Overall, staffing considerations are critically low in key roles like ANMs and HIOs, which are essential for outreach and data management.
13. The study highlights a significant urban-rural staffing imbalance, with rural PHCs facing acute shortages.
14. The present study points out that Economic inefficiencies arise due to understaffing, such as increased patient travel costs and reduced productivity.
15. The present study findings underscore the need for urgent policy interventions in recruitment, retention, and equitable distribution of healthcare workers.

Limitations of the study:

The present research is limited to the following limitations:

01. The scope of study is limited to only Athani, Raybag and Randurg talukas in Belgaum district of Karnataka.
02. The present study is based only on the staff position reports 2023 of PHCs.
03. The study used data from the Taluka Health Offices (THO) of selected talukas.
04. Staff Position is not considered contractual staff working in PHCs.

Conclusion:

This study reveals critical staffing deficiencies in Primary Health Centres (PHCs) across rural Belgaum, Karnataka, with nearly half of the vacant sanctioned posts. The most affected roles include Auxiliary Nurse Midwives (ANMs) and Health Information Officers (HIOs), vital for service delivery and data management. These shortages compromise healthcare accessibility, efficiency, and equity. Addressing these gaps through targeted recruitment, improved working conditions, and strategic workforce planning is essential to strengthen rural healthcare infrastructure and ensure universal health coverage.

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