

Title:

Scaling up Human Resources for Health in Rural India to achieve health-related SDGs: Projections for 2030

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Conflicts of Interest:

None

Background:

The World Health Organization (WHO) lists India among the 56 countries with a critical deficit of human resources for health (HRH). The deficit is exacerbated in rural regions with two-thirds of the population but a third of India's HRH. The rural public health system faces severe deficits. We provide HRH deficit projections for India's rural public health system and estimate the required growth to achieve the SDG 2030 target.

Methods:

Average annual percent change (AAPC) at national and state levels for essential HRH (doctors, nurses, and midwives) at rural primary and community health centers for 2009-19 from Rural Health Statistics were analyzed using JoinPoint regression. Projections for 2020-30 were created based on AAPC values using exponential growth rate. HRH densities (per 10,000 people) were analyzed using the 2011 Census-based rural population projections adjusted for service utilization. The 2030 projected deficits (absolute differences) were assessed w.r.t 22.8 per 10,000 (WHO acute threshold), 44.5 (SDG Index threshold), and 55.5 (Govt. of India (GoI) SDG target).

Findings:

During 2009-19, the essential rural HRH density annually changed at 2.59% (95%CI: 0.93-4.28). National density was 8.85 in 2019 and it is projected to reach 11.47 in 2030, missing

all three thresholds. In 2030, national deficits will be 0.47, 1.39, and 1.83 million HRH as per WHO acute, SDG Index, and GoI target thresholds, respectively. The growth rates should be 8.84%, 15.66%, and 17.91% to achieve corresponding thresholds. Among states, Kerala will be an achiever while Bihar will have the largest deficit.

Interpretation:

Essential rural HRH in India's public healthcare is deficient with alarmingly low growth. At existing rates, India would not achieve the SDG HRH target density. Our focus on the rural public HRH and projections for SDG-2030 come at a critical time when India is reinvigorating its political commitment towards healthcare.

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ASAR **Scaling up Human Resources for Health in Rural India to achieve health-related SDGs: Projections for 2030**
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Background

The World Health Organization (WHO) lists India among the 56 countries with a critical deficit of human resources for health (HRH). (1) The deficit is exacerbated in rural regions with two-thirds of the population but a third of India's HRH (2). We provide HRH (Doctors, nurses/auxiliary nurse and midwives) density projections for India's rural public health system and estimate the required growth to achieve the WHO Acute threshold, Govt of India SDG target and SDG 2030 target of 22.8, 55, 44.5 rural HRH per 10,000 rural population.

Methods

- Data sources and variables**
- Rural Health Statistics Dataset 2009-2019
 - HRH in the Indian Rural Public Health System (Primary Health Centres (PHCs) and Secondary Health Centres (PHCs))
 - Annual Average Percentage Change (AAPC) in rural HRH in India
 - Census of India 2011
 - Current rural population and rural population projections for 2030.
 - National Sample Survey 75th Round
 - Service Utilisation Proportion (SUP) of public health system in rural India

Formulae Used

AAPC Calculation
 Current AAPC
 JoinPoint regression model

$$AAPC = \frac{\sum_{i=1}^n w_i \times APC_i}{\sum_{i=1}^n w_i}$$

$$w = \text{period of linear fit}$$

Required AAPC for achieving thresholds

$$AAPC^* = e^{\left(\frac{\log\left(\frac{N_t}{N_0}\right)}{y-x}\right)} - 1$$
 *Required to achieve thresholds

Findings

AAPC in rural HRH
 From 2009 to 2019, the stock of rural HRH grew at an AAPC of 2.59%. The figure depicts yearly AAPC from 2009-19 and shows projections for 2030.

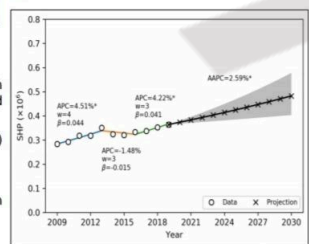


Fig 1. AAPC in rural HRH from 2009-19 and projections for 2030

Past, current and projected rural HRH density

India's rural HRH density has increased from 7.55 in 2009 to 8.85 in 2019 and is projected to increase to 11.46 per 10,000 population.

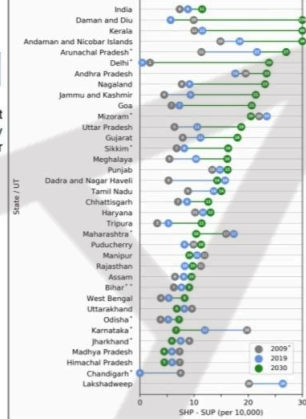


Fig 2. Past, Current and Projected rural HRH density in India

Projected growth rates to achieve thresholds

India's rural HRH stock needs to grow at an AAPC of 8.84%, 15.66% and 17.91% to cross the WHO Acute (22.8), WHO SDG (44.5) and GOI (55) thresholds by 2030.

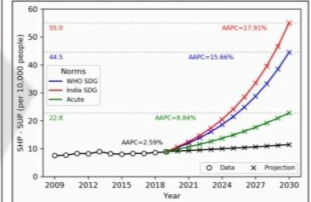


Fig 3. Required growth rates to achieve different thresholds

Conclusion

Rural HRH in India's public healthcare system is deficient with alarmingly low growth. At existing rates, India would not achieve the WHO Acute, the SDG HRH or GOI target rural HRH density

References

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- Anand S, Bärnighausen T. Human resources and health outcomes: cross-country econometric study. *Lancet*. 2004;364(9445):1603-9