A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

Edited by Asha George, Kerry Scott, Veloshnee Govender
Key for classifying research inference

- Descriptive
- Exploratory
- Explanatory
- Emancipatory
- Influence
- Predictive
Chapter 1.

Health worker profiles: boundaries, metrics and modelling

Kerry Scott and Asha George

1.1 Defining the chapter

This chapter explores research on health worker profiles in three ways: definitional boundaries, measurement metrics and planning models. First we highlight research that sets, broadens or questions the boundaries of who is included in the health workforce. Next we explore the methodological complexity in generating metrics that describe health workforce characteristics, including dimensions of human resources for health (HRH) shortages, skills imbalance and maldistribution. Finally we draw attention to research that supports planning on how to meet future health needs through HRH modelling.

In describing health worker profiles and health workforce characteristics (who counts as a health worker, how to measure the health workforce, and how to plan for the future), this chapter links closely to Chapter 2, which examines the social dynamics underpinning health workforce characteristics, and to Chapter 7, which examines the underlying political forces that shape the health workforce.

1.2 Background on health worker profiles

Who is included in HRH? We may think first of doctors, and then other formally trained and recognized health professionals such as nurses, pharmacists and dentists. But what about those people who may or may not have formal training, such as community health volunteers, informal providers and traditional midwives? A woman or other family member caring for aging parents? People who do not provide health services directly, such as health managers and public health researchers? People who may be outside the health sector but are essential for good health, such as nutrition counsellors, and water and sanitation technicians? Once we have decided where to draw the boundaries that define health workers, how do we count them and plan for health systems that support them to excel?

In the 2006 World Health Report, the World Health Organization (WHO, 2006, p. 4) defined health workers as “all people engaged in actions whose primary intent is to enhance health”. This broad and inclusive definition aligned with efforts by the Joint Learning Initiative and Global Health Workforce Alliance, working with national governments, civil society, academics, international and regional institutions, professional associations and the private sector, to highlight the shortage and maldistribution of HRH, improve measurement, and expand the number of occupations tracked in global HRH databases. Despite these global efforts to expand and strengthen systems of counting and classifying health workers, many people who engage in health work (particularly unpaid work in communities and at home) are still excluded due to practical data limitations combined with political bias.
Against this backdrop, health policy and systems research (HPSR) brings to the fore the profile and experience of various health cadres previously neglected by HRH policy, such as informal health-care providers (Sudhinaraset et al., 2013), informal medicine sellers (Cross and MacGregor, 2010), children caring for sick adults (Skovdal et al., 2009), volunteer carers (Maes et al., 2011), traditional birth attendants (Sibley and Sipe, 2006; Sibley et al., 2012), and traditional, complementary and alternative providers (Lakshmi et al., 2015).

Beyond bringing forward new categories of health workers previously neglected by HRH policy, HPSR contributions have built on social science research to broaden and problematize our conceptual understandings of HRH categories.

Instead of taking for granted established health workforce categories (such as public versus private providers, and formal versus informal sectors), new work describes the fluidity of continuums upon which the health workforce can be considered “mixed” (for example, from formal to informal, and from biomedical to traditional and complementary) (Sheikh et al., 2017). McPake et al. (2014) (discussed in depth in Chapter 2) examine how physicians in Mozambique, Guinea-Bissau and Cabo Verde are conceived of as both public and private actors, a duality not captured in national and international health worker databases. Health worker plurality, which is particularly common in low- and middle-income countries’ health systems, poses a challenge to classification but must be better understood to enable realistic consideration of HRH shortage and distribution. Similarly, Olaniran et al. (2017) explain how the term “community health worker” can be categorized into three groups by education and pre-service training, and into four categories by remuneration. Their review draws attention to the political implications of definitions, wherein different actors may understand health worker categorizations differently, with consequences for policy and practice (such as selection criteria, training, and whether and how much a cadre is paid). Furthermore, this work suggests that additional research is required to interrogate local meanings of globally accepted terminology and highlights the complexity of developing tools that enable classification and international comparison.

**1.3 Illustrative primary research articles**

With this understanding of how HPSR contributes to advancing HRH profiles, we showcase six HPSR articles that review, describe and inform health worker profiles. These articles were selected from a pool collated from a doctoral seminar at the Johns Hopkins School of Public Health, a crowdsourcing exercise supported by Health Systems Global and subsequent searches using the bibliography of key articles and on relevant databases and search engines (PubMed, Google Scholar). The main criteria used to select the articles included diversity in region, cadre and methods as well as the quality of the studies based on standard guidelines.

The first two articles highlight nuances in HRH classification from two distinct methodological perspectives, discussing the framing of care work (Bedford, 2011) and how different metrics illuminate new aspects of health workforce migration (Arah, 2007). The next two articles present efforts to overcome data limitations and classification challenges to count and describe the existing health workforce in a robust manner (Ahmed et al., 2011; Rao et al., 2012). The final two articles discuss health workforce planning by presenting dynamic modelling tools and discussing the political processes that underpin health system decision-making (Crettenden et al., 2014; Jansen et al., 2014).
1.3.1 Research that affects our understanding of the dimensions of human resources for health profiles in low- and middle-income countries


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As mentioned earlier, social science research has questioned the boundaries set around health worker profiles, examining who is served by the definitions, measurement strategies and policy efforts to identify, enumerate, regulate and support health workers. Feminist theory in particular has highlighted that the framing of an issue is a political act that influences the daily experiences of men and women, including their expected workload, access to income, opportunities for advancement, respect in society and physical safety. Along these lines, Bedford’s policy analysis focuses on how the 2009 United Nations 53rd Commission on the Status of Women framed caregiving in the context of human immunodeficiency virus (HIV) and how this framing influenced, both positively and negatively, gendered power relations, disability rights and heteronormativity/conservative “family values”.

Bedford finds that the Commission’s theme, “equal sharing of responsibilities between women and men”, received widespread support from diverse groups, including “those interested in radically changing gender relations” and “conservative parties interested in defending what they understand to be the natural family” (p. 199). The Commission’s success in bridging such a common consensus was achieved by drawing attention to the need to shift the burden of caring for sick people from unpaid, predominantly female, family and community members and on to government-run programmes, in a widely supported challenge to the free market economic order. Despite this positive outcome, disability rights activists noted that the Commission’s emerging consensus also framed people with disabilities as “burdens”, lacking voice and control over how they were supported, and re-entrenching the historical power of care professionals. Furthermore, female-headed households, extended family and kinship support, and lesbian, gay, bisexual and transgender family units were marginalized by the reification of traditional nuclear family formations.

Other excellent articles using qualitative methods to question HRH boundaries include Pigg’s (1995) ethnography from Nepal that questions how traditional medical practitioners and traditional birth attendants are defined and understood. Pigg (1995) shows that the terms “traditional medical practitioner” and “traditional birth attendant”, and associated strategies to train them in biomedical practices, are generated internationally but applied to a complex reality of vast variation in roles, identities and practices among shamanic healers and women who play a role in childbirth. The failure to differentiate across terms and roles has a range of unanticipated (and often undocumented) outcomes, including “producing” new traditional birth attendants among women who had no role in childbirth but decided to attend training, missing women who attend births but do not identify as midwives (because in some places this is a lower caste role), and suggesting that healers take up medical roles (such as promoting family planning or oral rehydration salts) when they are exclusively focused on spiritual issues. More recently, Maes et al. (2015) have argued that international praise for Ethiopia’s salaried female Health Extension Worker programme is at odds with the country’s reliance on a larger, unpaid cadre of female health workers called the Women’s Development Army.
They show that narratives about saving lives, empowering women and creating model citizens mask the economically disempowering, gender-regressive and potentially coercive nature of the Women’s Development Army. In this sense, exploratory HPSR as exemplified by Bedford (2011), Pigg (1995) and Maes et al. (2015) serves to unearth the implicit implications and at times unintended consequences of HRH policy classifications.

Arah OA (2007). The metrics and correlates of physician migration from Africa. BMC Publ Health. 7:83

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Innovative health systems research can also reveal new dimensions of HRH phenomena – in this case, different facets of the HRH migration and maldistribution crisis. Arah (2007) quantifies physician out-migration according to three metrics: total number of physician émigrés; emigration as a fraction of potential physician pool that ends up working in destination countries; and physician migration density defined as the number of physician émigrés per 1000 population of the African source country. Arah found that no country retained the same rank with all three different migration metrics. For example, Algeria lost the most physicians in absolute terms, Mozambique lost the highest proportion of its physicians, and Mauritius had the highest physician migration density (number of doctors lost per 1000 population). Arah also examines these three metrics across nine major destination countries (including the United Kingdom of Great Britain and Northern Ireland, the United States of America, France and Canada), showing again that the top source countries of African physician immigrants into these settings vary according to the metric used. For example, South Africa lost the most physicians (3509) in absolute terms to the United Kingdom, Malawi lost the highest proportion of its physicians (38%) to the United Kingdom, and Seychelles had the highest physician migration density (0.36 doctors per 1000 population) with regard to the United Kingdom. This analysis highlights that “metrics tell tales and quite often different ones, depending on the perspectives adopted” (p. 3). The way we quantify physician out-migration depends on which metric we look at, and using multiple metrics enables better understanding of the degree of the problem for African countries.

The articles discussed above use diverse research methods to show that decisions about “what counts” in HRH illuminate different aspects of the health workforce. By critically examining globally agreed upon categories, strategies and issues (such as focusing on health-care work in the home, promoting an equal caring role among men and women in families, and concern with physician out-migration from Africa), researchers are able to unmask new dimensions of the issue. Strategies and terms that achieve global consensus (“equal care work”) may be at odds with the needs of marginalized people (such as by excluding people living in extended or non-traditional family structures or alienating people with disabilities). Applying different measurement strategies for HRH problems (out-migration) can shift our understanding of how extreme a problem is and which countries to focus on.
1.3.2 Descriptive studies of health worker profiles

How do we move from the complexity inherent to HRH profiles to the pragmatics of counting how many and which people are in the health workforce? Over the past decade, global health workforce data expanded from counting only five health professions (doctors, nurses, midwives, dentists and pharmacists) in the WHO Global Atlas of the Health Workforce in the early 2000s (Dal Poz et al., 2006) to considering up to nine categories of health workers in the 2016 updated Global Health Workforce Statistics aggregated set, and up to 18 categories in the disaggregated set (WHO, 2016). These categories include environment and public health workers (such as district health officers, and health, food and labour safety inspectors), community and traditional health workers, medical assistants, nutritionists, personal care workers, health managers (such as health policy lawyers and medical records technicians), and support workers (such as ambulance drivers and building maintenance staff).

To count these health workers in a manner that enables international comparisons, the United Nations and the International Labour Organization guide countries in developing or revising their national records systems to map on to the International Standard Classification of Occupations, the International Standard Classification of Education, and the International Standard Industrial Classification of All Economic Activities (WHO et al., 2009). These three classification systems attempt to harmonize definitions of health workers, managers and support workers in the health sector and in other sectors (such as nurses working in schools). In addition, the new database brings together all available data on health workers in all 192 United Nations Member States.

Efforts to build and maintain an expansive global database to count HRH highlight major data availability challenges: the lack of standard HRH definitions and challenges in bringing together different data sources, with highly variable information quality, collection methods and criteria for coding and categorization (Dal Poz et al., 2006). This section showcases two articles that have grappled with the challenges of which cadres to count; whether and how to capture informal and community-level providers; and how to reconcile varying data sources and definitions to determine health worker profiles, including equity of distribution and deficit both in terms of numbers and types of health worker.


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<td>Geographical area</td>
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Rao et al. (2012) explain that routine sources of information on the health workforce in India are fragmented and generally unreliable. Professional councils in many low- and middle-income countries, including India, do not maintain live registers; there is a lack of standardization in measurement, definitions and even the existence of cadres across states; and certain categories of health worker, such as physiotherapists, medical technicians, rural medical practitioners (that is, unqualified allopathic providers) and faith healers, are not recorded in state-level registers. The absence of data on informal or unqualified rural medical practitioners is particularly concerning because these are often the first point of contact for medical care for the rural population.
To overcome the shortcomings of routine health worker data, Rao et al. (2012) applied the National Occupational Classification to 2001 Indian census data and to 2004 National Sample Survey data to quantify the size, composition and distribution of health workers in India. These efforts enabled the identification of many practitioners, including doctors, homeopaths, ayurvedic practitioners, medical assistants and faith healers. To avoid misclassifying rural medical practitioners, who commonly call themselves “doctors” but have no formal qualification or licence, Rao et al. extrapolated data from the 2001 census on self-reported roles and compared them with data on qualifications from the National Sample Survey to determine how many practising health workers were unqualified.

Overlapping job specifications prevented the authors from differentiating between nurses, midwives and traditional birth attendants. In addition, they could not capture community health workers because the census and sample survey data, which used National Industrial Classification and National Occupational Classification codes, did not have a separate classification code for them. Despite these limitations, Rao et al.’s analysis enabled them to quantify the overall shortage of qualified health workers in contrast to the high portion of unqualified providers (36%), geographical maldistribution, skewed nurse/doctor ratios (heavily in favour of doctors) and underrepresentation of women in the Indian health workforce.

More recent work has assessed the Indian health workforce, including the proportion of unqualified providers in India, using occupation and qualification data from the 2001 census alone (Anand and Fan, 2016) and from the 2011–2012 National Sample Survey alone (Rao et al., 2016). Rao et al.’s 2012 analysis took place before data on educational qualification from the 2001 census were available and before the 2011–2012 National Sample Survey was completed. Thus, the 2012 analysis is exemplary both for its detailed discussion on the strengths and limitations of various data sources and because it showcases how different data sources (2001 census and 2004 National Sample Survey) can be combined to produce timely information on health worker profiles despite data availability limitations.


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<td>Research methods</td>
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In light of the dearth of comprehensive data in Bangladesh, Ahmed et al. (2011) undertook a nationally representative survey to determine the number and type of health workers in Bangladesh. The survey drew randomly from the nationally representative primary sampling units (a cluster of around 200 households) used by the Bangladesh Bureau of Statistics for its Sample Vital Registration System, enabling estimates to be made up to the district level. Because it was designed specifically to measure all active health-care providers in the formal and informal sectors, the survey included classification codes for typically overlooked or sometimes misclassified cadres, including community health workers, unqualified village doctors, medicines salespeople and others in the informal sphere.
A comprehensive list of all practising health-care providers was developed through accessing rosters from public and private health-care facilities and conducting free listing exercises with multiple community informants. Names provided by key informants were cross-checked to avoid omission or double-counting due to a provider using multiple names (such as nickname, family name or title); in cases of confusion, providers were visited on the spot. Ahmed et al.’s extensive efforts enabled them to detail more accurately the low density of qualified providers, even in comparison with other south Asian countries, the sharp increase in unqualified providers, the problematic ratio of doctors to nurses (2.5 doctors to every nurse), and the persistent overwhelming urban bias of formally qualified health-care practitioners.

Ahmed et al. (2011) and Rao et al. (2012) showcase two different strategies that health systems researchers can engage to overcome the dearth of routine health information data when seeking to describe the health workforce in low- and middle-income countries: re-analysing pre-existing sources of data, such as the census and sample surveys, (Rao et al., 2012) or conducting new surveys with innovative community-informant engagement and cross-checking (Ahmed et al., 2011). Both have advantages and drawbacks. Re-analysing existing data can be cost- and time-efficient but places researchers at the mercy of the initial dataset’s quality and classification systems. As Rao et al. (2012) note, they were unable to differentiate between some cadres such as nurses, midwives and traditional birth assistants because the original data showed overlapping job functions. In addition, in many countries, census and survey data are out of date or inaccessible to the public. Although new surveys such as that conducted by Ahmed et al. (2011) can provide highly specific information, such as on community health workers, they require extensive financial and human resources, which may not be available in struggling health systems, and in some cases fail to achieve national representation.

1.3.3 Strategies for estimating health workforce requirements to assist with planning for the future

Beyond describing the health workforce, countries must plan how best to distribute their existing health workers in the short term and cultivate a workforce for the longer term. The Workload Indicators of Staffing Need (WHO, 2010a, 2010b) software and user manual support health planning based on measuring the specific population needs per health centre and have been used in many countries, including South Africa (Daviaud and Chopra, 2008), Uganda (Namaganda et al., 2015) and Namibia (Wesson et al., 2015), to model and plan their workforces. Instead of using standardized staffing norms, the Workload Indicators of Staffing Need estimates workforce need based on workload and is customized to the country context by defining workload components, setting activity standards (time it takes for a trained, well-motivated member of a particular cadre to perform an action to standard in the country’s context), available working times, and existing staffing statistics. Theoretical models can also determine ideal health workforces for specific cadres, such as physical therapy (Jesus et al., 2016) or for evolving disease profiles, such as interdisciplinary chronic disease management (Segal and Leach, 2011) or HIV/AIDS (Bärnighausen et al., 2007).
To illustrate cutting-edge work in planning, we first showcase Crettenden et al.’s (2014) research on dynamic stock and flow modelling for Australia’s workforce. We selected this article because it highlights how health workforce planning must take into account the dynamic and complex nature of health systems, rigorous predictive modelling, and also political will, consultation and validation.

The article presents national-level workforce planning for doctors, nurses and midwives in Australia, using scenario analysis and national-level data to project the impact of various policy options. The researchers modelled how the workforce’s ability to serve the population would be influenced by a range of future scenarios, including improved productivity through innovation, improved workforce retention of nurses, different levels of reliance on immigrant health professionals, increased and decreased population demand for health care, and capped working hours for doctors to reduce their working time per week. They projected the future supply and demand for each of the three health professions across the various scenarios, using national data on the current labour force, training capacity of schools, immigration and population demand. What makes this manuscript exemplary is not only the presentation of these prediction models but also that the research team engaged in extensive consultation and review processes.

While typical workforce modelling and planning tend to be top-down and focused on the technical details of prediction (and often on only one profession or disease), this exercise engaged a technical working group, the public, workforce participants and clinical leads across the three professions to validate the modelling strategies, understand the context of workload capacity and generate alternative scenarios. These stakeholders commented on the appropriateness of the assumptions underpinning the research (such as the nature of possible changes in population demand) and how to ensure best practice in quantifying education and training capacity and workload measures. For example, consultation and review from nurses flagged the fact that the recent rate of exit from the profession was markedly lower than earlier rates (probably because of the impact of the tighter economic environment on superannuation savings), and that higher exit rates should be assumed for the model rather than carrying forward the most recent rates. These consultations strengthened the models and also bolstered stakeholder trust and support across sectors, enabling the results to be “accepted as an evidence base upon which policy decisions are made” (Crettenden et al., 2014, p. 6).

The models produced enabled policy-makers to identify the most important policy levers that could be adjusted to achieve change and led to evidence-informed policy recommendations. For example, improving workforce retention of nurses had the greatest impact on minimizing potential future workforce shortages, leading to the development of a retention plan that coordinated action by government, industry, the higher education sector and national nursing organizations. Overall, this article provides an exemplary description of the integration of technical modelling with actor engagement to inform workforce policy development to best match community health needs. The emphasis on complexity, iteration and consultation with a range of stakeholders to develop technically robust and politically actionable models makes this an excellent example of HPSR for health workforce projection.
Part A. Who are included as health workers, where and why?

Another excellent example of HPSR modelling and political engagement is Jansen et al.’s (2014) work on HRH requirements in Guinea. Jansen et al. explain that while countries that have already achieved universal health care can use service demand modelling, which predicts future demand based on prior utilization, needs-based modelling is more appropriate for countries such as Guinea with a high current unmet need. Instead of predicting HRH requirements based on utilization, Jansen et al. developed a model based on estimated need for health care, and further combined this method with deterministic modelling of future health sector supply and demand to account for projected mismatch between population needs, health worker availability (supply), and budgeted positions available (demand). Jansen et al. engaged in policy dialogue and discussions between stakeholders from various levels within the health system and from non-health sectors in order to select interventions for further analysis. In their rich discussion of the process, they note that “improving the evidence-base does not necessarily imply that workforce decisions and investments are made in a more rational way from a technical point of view” (p. 229) because of political sensitivity around prioritizing regions, health needs or cadres, and bureaucratic limitations on reorganizing budget items.

1.4 Research challenges, gaps and future directions

1.4.1 Accounting for plurality in human resources for health

There is increasing recognition that the health workforce is plural and complex. Local understanding of health worker functions are diverse, and health workers change roles and move geographically over their lifespans, while carrying multiple simultaneous identities (such as across the public and private sectors, or across allopathic and traditional medicine). Researchers must consider how to measure and account for this plurality, and how to reconcile this complexity with the need for standardization and pragmatism. New conceptual models and theoretical frameworks are needed to enable low- and middle-income country-centred understanding of health worker profiles in rapidly changing plural health systems.

Despite the fact that global health workforce databases have expanded the range of people included as HRH, national data availability, quality and compatibility in low- and middle-income countries have not caught up. Descriptive data on the health workforce in low- and middle-income countries remain concentrated on the “main five” health workers (doctors, nurses, pharmacists, dentists and midwives). Many men and women engaged in actions whose primary intent is to enhance health continue to go uncounted, including the health system management, clerical and administrative workforce, which is estimated to make up almost a third of the total health workforce (WHO et al., 2009). Defining, describing and planning for the health workforce involves political processes wherein health workforce problems are agreed upon and potential solutions prioritized and implemented. When some health workers go uncounted, they are also excluded from official counts and discussions.

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1.4.2 Improving routine data quality and use

The scope and quality of routine data should be improved through bolstering country-level technical and financial capacity to capture internationally standardized data on the wide range of health worker occupations, sectors and educational classifications. Census and sample survey data often overlook or misclassify informal providers or lack the specificity to distinguish between separate cadres (such as nurses, midwives and traditional birth attendants). Even for the health worker cadres that are commonly counted, such as doctors and nurses, routine datasets maintained by governments or professional bodies are often unreliable, as they lack transparent classification standards, fail to remove people who leave the workforce, or miss people working in the private sector.

In addition to improving quality, researchers and policy-makers must ensure existing statistics on the health workforce in low- and middle-income countries are used to measure and understand HRH profiles, including census and survey data, professional and educational registers, routine administrative rosters, facility assessments, and health-care-seeking surveys (WHO et al., 2009). Public access to and analysis of existing data must be bolstered.

1.4.3 Creating a more inclusive foundation for human resources for health planning

Developing boundaries or deriving new metrics can enable invisible health work to be seen or highlight new dimensions of a problem, thereby improving health worker well-being or generating support for new political strategies. It can also, however, delegitimize forms of health work (such as the caring work done within non-traditional families or by unqualified practitioners) or define a problem in ways that limit possibilities for radical change or equity. Health policy and systems researchers must ask: Who benefits from boundaries, metrics and models? Who is illuminated or made invisible? What problems are constructed and prioritized? And whose interests are served by health workforce models and plans?

HPSR can showcase methodologies for amplifying the voices of overlooked workers, highlighting their role in the health system, and improving health policy and planning to account for their needs and contributions. In addition, HPSR approaches can push health workforce planning beyond a techno-centric focus on supply and demand and changing disease burdens. HPSR can highlight the power dynamics inherent to identifying priorities and allocating resources for the future, thus enabling potentially divergent stakeholder interests to be understood and more productively engaged towards equity-oriented health workforce planning.

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Part A. Who are included as health workers, where and why?

References


