

CASE STUDY

Strengthening data for planning a sustainable health workforce: what data to collect for health workforce development and why

Eszter Kovacs¹, Edmond Girasek¹, Edit Eke¹, Miklos Szocska¹

¹ Health Services Management Training Centre, Semmelweis University, Budapest, Hungary.

Corresponding authors: Eszter Kovacs (email: kovacs.eszter@emk.sote.hu) and Edmond Girasek (email: girasek@emk.sote.hu)

ABSTRACT

Background: A strong and responsive health workforce (HWF) is essential for sustainable health care systems. Planning the appropriate HWF for provision of high-quality care and moving towards universal health coverage is a key issue for health policy, in which education and labour market dynamics should be taken into consideration. The macro-level trends and challenges significantly influence the operation of health care systems; thus, health care professionals and systems are expected to be responsive, resilient and able to undergo transformations to maintain sustainability.

Objective: The main objectives of this paper are to synthesize key findings from recent European Union projects on HWF education and labour market composition issues and to provide a comprehensive overview of the benefits of data complexity and data-driven policy-making in a rapidly changing environment.

Methods: Previous evidence and studies linked to the HWF were included in the review. Key projects, project policy documents, research papers, reports and books in the HWF field were identified through a process of expert reference and literature

searches, for which the inclusion criteria were set to include international projects focusing on the HWF in the European Union and WHO European Region.

Results: In terms of education and labour market composition, HWF data and policy show wide variety in different European countries. Global initiatives for harmonization were carried out regarding data collection, indicators and data content supporting HWF planning and overcoming critical challenges. No comparable international standards are in use, since HWF data management and planning are still matters of national competence.

Conclusion: Macro-level trends in the current rapidly changing environment show several challenges related to HWF, including altered care patterns, new skill requirements, shortages and/or maldistribution of health professionals and mobility. These cannot be handled in isolation. They can, however, be solved by using appropriate, valid and reliable data in data-driven health policy. This goal requires proper information flow and the collaboration of different stakeholders in the global arena.

Keywords: HEALTH WORKFORCE DEVELOPMENT, HEALTH WORKFORCE DATA, DATA-DRIVEN HEALTH POLICY INTERVENTIONS, MINIMUM DATASET FOR HEALTH WORKFORCE PLANNING

CONTEXT AND CHALLENGES OF A SUSTAINABLE HEALTH WORKFORCE (HWF)

To achieve the best possible operation of sustainable health systems, the right level of education and balanced labour market dynamics are essential (1). The first challenge to HWF comes from an alteration in care needs. Macro-level trends show that population needs are changing and patterns of care provision are also modified by several external factors. The ageing trend prevailing in Europe significantly influences the demography and disease profile of the population, as well as the composition and features of the HWF itself; it underlines the rise in life expectancy and mean age in both genders, as a result of which chronic conditions show increasing incidence and prevalence (2–4). This change in the health and disease profile affects care provision and therapies – particularly new forms of care, such as personalized and patient-centred care or long-term care (5). The emerging need for altered, transformed care may mean a significant challenge for HWF.

The second challenge relates to a need to develop new skills within the HWF. Rapid developments in medicine result in new methods of care and practice, new professional roles and task divisions, new medicines and new technologies for certain conditions (6, 7). More importantly, ageing also affects the HWF: professionals spend more years providing care and reach elevated years of age during their practice. In addition, continuous professional development (CPD) and education are required to keep knowledge fit to practice and skills up to date in the rapidly changing environment (8).

The third and fourth challenges to HWF relate to staff shortages or maldistribution and professional mobility. The macro-level population trends and challenges greatly influence patient care and the operation of health care systems: health care professionals and systems are expected to be responsive, resilient and able to undergo transformations to maintain sustainability. While coping with current challenges, some countries may experience variety in their health labour market, such as shortages and/or maldistribution of health professionals – including reduced numbers of entrants into medical or other health-related professions, reduced prestige of certain speciality areas and service types – resulting from uncontrollable and/or unattractive features (9) or increased levels of mobility (10).

Free movement of goods, services and professionals is enabled in the European Union (EU) through its basic principles. Among the key push and pull factors in health professionals' mobility, salary, working conditions and career options play crucial roles (11). Beyond economic reasons, professionals also consider perceived associated transaction costs and benefits, at both individual and collective levels, when dealing with cross-border movement (11). International mobility and migratory flows are present globally and may cause inequalities in distribution and supply of the HWF within Europe. Outflow mobility may result in shortages or surpluses of certain specialty areas, and relying on inflow may also generate difficulties in keeping the appropriate HWF for the health care system. Some countries (recognized as source or donor countries) experience high-volume loss, while others rely greatly on foreign HWF professionals (target or recipient countries) (12). Further consequences of inflow mobility include adaptation difficulties in a socially and culturally diverse environment. In a borderless global arena this phenomenon will doubtless continue, so global, regional, European and national health policy agendas should address the issue of HWF for sustainable health care systems in the future. Several countries have already recognized this need – particularly those losing critical numbers of professionals – and have initiated health policy interventions to retain domestic professionals (13) or to recruit them from different places (14). Alongside mobility, many other topics – including training, licensing, CPD and safety – need to be included in discussions around forming and managing a competent, strong and responsive HWF in a data-driven way, based on valid, reliable and comparable data.

METHODOLOGY

A review of recent EU projects on HWF education and labour market composition issues was undertaken, with the aim of providing a comprehensive overview of the benefits of data complexity and data-driven policy-making in a rapidly changing environment. Previous evidence and studies linked to the HWF were included in the review. Key projects, project policy documents, research papers, reports and books in the HWF field were identified through a process of expert reference and literature searches, for which the inclusion criteria were set to include international projects focusing on the HWF in the EU and WHO European Region. Study conclusions and the recommendations of the European Commission feasibility study on forecasting HWF needs, Mobility of Health Professionals (MoHProf), RN4Cast – Registered Nurse Forecasting in Europe, Health Prometheus: Health Professional Mobility in the European Union Study, Evaluating Care Across Borders: European Union Cross Border Care Collaborations (ECAB), Migración de Profesionales de la Salud entre América Latina y Europa: Creación de Oportunidades para el desarrollo compartido (MPDC), European Community Health Indicators and Monitoring (ECHIM), Joint Action on European Health Workforce Planning and Forecasting (JAHWF), Health Care Reform: the impact on practice, outcomes and costs of new roles of health professionals (Munros), Organisation for Economic Co-operation and Development (OECD) working paper series and WHO policy documents were summarized.

DATA SERVING HEALTH POLICY GOALS

Policy- and decision-makers establish development strategies for strengthening health system sustainability. Not surprisingly, evidence-based, evidence-informed or data-driven health policy, implementing actions and interventions and strategic planning require exact inputs that describe the retrospective trends and the current situation, as well as anticipating the future. Valid information that includes quantitative and qualitative data on HWF is crucial for health policies to manage health care appropriately in a changing environment: reliable data on HWF should be collected and examined to analyse trends and make projections. Improving the timeliness, availability, accessibility, accuracy, validity, reliability, coherence, consistency and comprehensiveness of HWF data and datasets also plays a crucial role in achieving a sustainable HWF.

HWF data collection, monitoring, planning and formulating of projections is a matter of national competence in EU countries, but global and European guidelines, recommendations and action plans exist to support countries in this field (15–17). The international scope requires harmonization and transparency to conduct solid comparisons and track the wider perspective. Data collection, including data content, sources and categories, can differ significantly between countries – even from the same region – based on national traditions and practice (18): national planning models utilize separate indicators or data coverage and follow different processes. Since HWF cannot be handled in isolation solely at the national level, international monitoring would be beneficial; this is also a prerequisite for reliable comparison of HWF-related information and knowledge exchange between countries. In the EU joint data collection was initiated in 2010 – via the OECD/Eurostat/WHO-Europe joint questionnaire on non-monetary health care statistics – to track the volume and changes in HWF supply. Previous research showed that remarkable gaps exist between national and international data categories, and that indicators used at the national level might not match internationally required data (18). Discussions and lively dialogue followed about the diversity of data collection, sources and categories in HWF monitoring, since HWF planning and forecasting need the application of prerequisite indicators, ideally harmonized within and between countries.

The most important national HWF data source might be a registry of health professionals that summarizes the numbers of professionals registered and licensed to practice in a given country. Registries in general show the number of new entrants and stock data by professions and subsectors, often including headcounts and sometimes full-time equivalents. Nevertheless, although registry data are considered to be a valid and reliable source, data categories and calculation methods can follow diverse formulas (18–20). Beside registries, additional data

collections can result in more focused and detailed information regarding the features of the HWF. A labour force survey and annual data collections by statistical offices or professional organizations such as chambers/orders can lead to more exact information and deeper understanding of changes in the HWF, and in specific specialty areas. Nevertheless, validation of HWF data should be ensured by in-country discussions, data exchange and data collection and reporting protocols. A national HWF-specific interlinked data warehouse could ease monitoring and planning mechanisms (19), and if all HWF-related data and datasets were organized into such data warehouses, they could serve health policy goals through evidence-informed policy-making. The process of HWF planning should not remain solely a quantitative exercise, since involving qualitative data in planning could increase its level of influence in real-life situations (21). Qualitative data can enrich current knowledge about the HWF and its features by gathering additional information on local characteristics to deepen understanding of specialties in certain fields and areas. Integration of the use of quantitative and qualitative methodology remains challenging in the field, however.

From the diversity of data sources, it can easily be recognized that the HWF data collection and monitoring process incorporates several key actors and stakeholders. Ministries, competent authorities, chambers, professional associations and further bodies play an important role in managing HWF-related information and developing the HWF. This multistakeholder arena needs to collaborate and connect in more areas to establish a valid overview and analyses for achieving health policy goals (22). Stakeholders should be aware not only of the detailed requirements for data but also of the crucial importance of the quality of data and the decisive role of data in health policy in achieving a sustainable HWF and in monitoring the impact of health policy interventions. European and national health policy agendas should address HWF complexity in a data-driven way, where both HWF stock supply side and demand side on population characteristics require continuous monitoring. It is crucial that all stakeholders know and understand health policy goals and planning mechanisms in order that they deliver all necessary support and data in relation to the issue.

DATA IN RESPONSE TO HWF CHALLENGES

A significant amount of evidence has been gathered during the last few decades to understand the composition of the HWF and its changes. For instance, there were around 17.1 million jobs in the health care sector in the EU in 2010 (17), and the total number of health professionals in hospital employment in Europe was 3.5 million in 2014 (23). A previous EU estimate of the available HWF projected 1 million missing health workers for 2020 (17), and a recent estimate called attention to an anticipated 80 million missing health care workers at the global level, and 18 million in the WHO European Region in 2030 (15). Important findings showed that changes occurred globally but challenges vary in different regions of the world. The shortage of health professionals is critical in Africa and South-East Asia, and several European countries also suffer from a significant lack of professionals, which endangers the quality of care provision in certain fields. For example, the density of skilled health professionals per 10 000 population in the WHO European Region was 71.9 in 2005–2013 – a significantly low figure. In the WHO African Region, however, this was 12.7; in the WHO South-East Asia Region it was 12.5; and the global average was 25 (24). It can thus be seen that the composition of the HWF and the shortages always need the context to be taken into account to draw relevant conclusions.

Previous research showed that HWF data availability, reliability, validity and comparability are hard to achieve, since huge gaps and diversity in understanding and interpretation can be experienced when focusing on the required data content (18). Some countries (including Finland, Belgium, the Netherlands) have a clear understanding of the stock – health professionals licensed, professionally active or practising in the field – even having a detailed breakdown of full-time equivalents (FTEs), while other countries can only draw on headcount numbers, sometimes aggregated solely for certain groups of health professionals (20). The OECD/Eurostat/WHO-Europe joint questionnaire on non-monetary health care statistics recommends standardization by providing three formulas for calculation of FTEs, as these differ significantly among countries, based on national data collection and

traditions. Studies on HWF planning recommend collection of data on health professionals licensed, professionally active or practising in the field (18) and data on FTE breakdown and headcounts (20) to gain more data and understanding. In HWF planning, these data and indicators should be utilized when preparing comprehensive analysis based on specific objectives.

Data use as a building block of HWF-related policy-making was also investigated in several projects. Previous recommendations pointed out that different datasets should be in use to carry out HWF monitoring, forecasting and planning. Knowing the current HWF inventory and assessing the existing situation should be followed by making future forecasts (19). The latest initiative of harmonized HWF data is the WHO National Health Workforce Accounts, in which 90 common indicators aim to capture the most important features of the HWF.

Many recommendations already propose optimal datasets: so-called “minimum datasets” that contain the least possible data required for HWF planning and development. Calculations and models exist focusing first on the available HWF stock data and then on other characteristics (such as gender, age, retirement age, country of first qualification). Minimum datasets are frequently used in planning models, but utilization of refined HWF planning models is characteristic in only a few countries (Belgium, the Netherlands and Finland). The minimum datasets for planning highlight stock and flow data on the supply side by profession (health education and training, activity status, retirement and mobility) and subsector (in- and outpatient care and so on) as well as population data on the demand side (health consumption, service utilization, patterns and incidence/prevalence of diseases). For example, according to the Eurostat estimation, the ratio of people aged over 65 years will increase from 28.8% in 2015 to 39% in 2030 (25). The rate of population with longstanding illness or health problems (chronic conditions) reached 32.5% in 2014 (26), while the rate of physicians aged over 65 years reached nearly 20% in that year (27). Thus, not only HWF stock and flow, particularly on the supply side, but also detailed information on the demand side needs to be tracked.

Once the appropriate minimum data on HWF stock and flow are attained, further features should be taken into account that might influence the interpretation of these data. Former studies investigated scope of practice and task-sharing in different professions (ECAB, JAHWF, Munros). Findings showed that vocational/graduate and postgraduate training to gain specialization requirements are quite well harmonized in the EU (through Directive 2005/36/EC amended by Directive 2013/55/EU), but there are widespread diversities in daily practice and CPD-related processes. For example, nurses are entitled to prescribe medicines in Portugal (28) and nationwide e-prescriptions have been introduced in Denmark and Sweden (29) so that the workload of doctors can be relieved. The ECAB project investigated the scope of practice of general practitioners, obstetricians, gynaecologists and orthopaedic surgeons and found that clinical organization of services of obstetricians and gynaecologists widely varied among countries (30). The number of administrative tasks performed during working hours among orthopaedic specialists varied country by country, ranging from 60% in Hungary to 50% in Belgium and 40% in the Netherlands (31). Technology played an important role in advancing the scope of care, while creating new opportunities and challenges. For example, the time dedicated to doctor–patient relationships and patient care varied greatly, based on the tasks completed in a working day. These trends indicate that modified skills and skill sets might be required and suitable for different professions in different countries (7, 8).

Altered skill profiles are often captured in recognition, licensing and revalidation processes, even in the internal market of the EU. Being registered and licensed as fit to practice is a minimum requirement for practising in several health professions, and includes elements such as knowledge of the domestic language of the target country. Mutual recognition of qualifications aims to ensure automatic recognition of sectoral professions within the EU (Directive 2005/36/EC) and provides reference to requirements for non-EU professionals. Health systems also differ by having established mandatory or voluntary revalidation processes or registration/licenses that are valid non-time bound or lifelong (32, 33). Mandatory revalidation processes might be linked to specific CPD requirements. For example, many EU countries have revalidation periods every fifth or seventh year (Hungary, the Netherlands and Slovenia). The United Kingdom introduced revalidation first in 2011, which was necessary due to the

high inflow of professionals. The new system of revalidation involves a very detailed performance assessment and evaluation process that aims to cover individual learning and CPD.

All these issues touch on the topics of mobility, recruitment and retention (14). In Europe, health professionals traditionally cross borders to provide care in another country than their country of origin or residence. Since mobility trends show growth and stable pathways of south–north, east–west and movement between neighbouring countries (10, 11), WHO prepared the *Global Code of Practice on the Recruitment of International Health Personnel* and elaborated the *Global strategy on human resources for health: Workforce 2030*, which focuses on the framework for action towards a sustainable HWF that ensures continuity for the previous global and European actions (17, 19). Notably, mobility also has new forms, like parallel service provision in more than one country, either by crossing borders regularly for a short time (weekend duties, or working two-week-long shifts in two countries) or even without crossing borders (including telemedicine and radiology diagnostic and consultancy services). Following these types of mobility alternatives by tracking data raises even more specific challenges. Indicators for measuring health professional mobility have been investigated for a long time, and the common indicators of foreign-trained, foreign-born and foreign-nationality professionals are in use in many countries, including Belgium, Germany, Hungary, the Netherlands, Norway, Portugal, Slovakia and Spain (19, 34). Considering the new mobility types and context, further data and indicators could refine the situation analysis, which would enable the real volume of mobility to be realized (19, 34).

CONCLUSIONS

Several research projects, academic debates and policy dialogues aimed to address HWF issues, including the topics of HWF monitoring, planning and related fields, sometimes from very different angles. These projects often ran in parallel, although research initiatives related to certain policy or research goals were not completely harmonized, and at times the global and comprehensive strategic approach was hard to identify. The usefulness of evidence and data collected at the national and international levels is doubtless emphasized in policy actions of HWF planning and development.

Macro-level trends in the rapidly changing environment influence the operation of the HWF and raise several challenges regarding the sustainable HWF. Anticipated challenges encompass altered care patterns, new skill requirements, shortages and/or maldistribution of health professionals and mobility, which cannot be handled in isolation. They can, however, be overcome by using appropriate, valid and reliable data in data-driven health policy. This means that data should be interpreted and utilized adequately: the data and minimum datasets should be collected properly, and the right data used for the right purposes.

HWF development, monitoring widespread HWF characteristics in a rapidly changing environment with precise data needs a comprehensive approach and HWF-specific national data warehouses. Up-to-date, valid and well-protected HWF data warehouses should be based on efficient use of existing datasets, interlinked data sources, well organized data flows and collaboration of different stakeholders in the global arena. Furthermore, HWF data warehouses could be supported by precise health information systems, big data and e-health solutions. Health policy should discuss and revise HWF data and indicators regularly, when monitoring the implementation of actions, the impact and effectiveness of health policy interventions. These data-related actions may strengthen the success of HWF development, coping with HWF challenges and planning sustainable HWFs.

In summary, strengthening data for a sustainable HWF is essential. Global, European and national health policy agendas should address complex HWF issues for sustainable health care systems in a data-driven way.

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