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REVIEW ARTICLE

Post Covid-19 Agenda: Maximizing human resources for health towards Universal Health Coverage in Africa

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Abstract

Aim: To analyse options for maximising the capacity of human resources for health to achieve Universal Health Coverage (UHC) in Africa.

Methods: Articles were retrieved from a Pubmed search and additional snowballing was conducted to provide other relevant sources. Further utilizations were made of Campbell's modified framework of the Human Resources for Health (HRH) and Universal Health Coverage with the WHO labour market dynamics framework for Universal Health Coverage. Four sub-themes viz improved HRH performance, Labour Market Factors, Rural Health Workers Retention Factors, and Information Technology Factors were analysed.

Results: Labour market factors such as the dynamics of demand and supply of health workers determine the availability of health workers. Supportive supervision enables the health workers to improve in their performance and enhance optimised utilisation of available resources. This supervision can be more effective by complementing it with tools such as information technology that focus on improving the quality of health care, considering the growth in the number of internet and broadband users in the continent.

Conclusion: Expanding the training opportunities for health workers and also increasing the funding to human resources for health are useful policy options to consider. Cost-effective approaches such as a focus on community health committees which stimulate the demand for health services in rural communities to tackle the disproportionate distribution of health workers should be considered in the context of the uncertain economic aftermath of the covid-19 outbreak.

Keywords: Covid-19, Human Resources for Health, Supportive Supervision, Market factors, Information Technology.

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Conflicts of Interest

The authors declare no conflict of interest.

Author Contributions

MIA drafted the entire manuscript. ICE provided a critical review and made substantial contributions to the design of the manuscript.

Introduction

Africa is inundated with a dual burden of diseases (1). Communicable diseases are more prevalent on the African continent than elsewhere, and it is mainly linked with extreme poverty and the poor living conditions that many experience (1). Non-communicable diseases (NCDs) are also on the rise, especially among poorer communities: its under-reporting, however, makes the spectrum complicated to detect and treat. In countries like Namibia, Seychelles, and Mauritius, 50% of deaths among adults are attributable to NCDs (1,2). The covid-19 outbreak has exacerbated poor health outcomes in badly affected countries on the continent culminating in rising cases of NCD related morbidities and mortalities (3). This invariably overburdens health systems that are previously struggling to respond to health needs and further weakens the capacity of human resources to play a central role in mounting a robust response to the emerging health problems in the context of an epidemiologic and demographic transition (1,4). It has become imperative that "adequate, skilled, well trained and motivated" human resources for health is needed in the trajectory towards Universal Health Coverage (4). Many countries in Africa face socio-economic challenges, with constraints on their fiscal space and limited government expenditure on health (5). Some countries are only just emerging from conflict situations or security challenges, or natural disasters that impose specific limitations on the healthcare worker's availability. The number of healthcare workers present at the health centres and the actual number needed at these facilities is customarily imbalanced and although there have been attempts at planning workforce using epidemiological and demographic surveys, not much more attention has been given to the evolving market factors that also influence this situation (6,7). The shortage of health workers is a global challenge, but this is more prevalent in Africa with its perilous shortages projected to be up to 6 million health workers by 2030 (7). This shortage becomes glaring in the context of the rural-urban disproportionate health worker distribution despite a larger population size in rural communities (8). Beyond availability, possession of adequate competency, motivation to deliver quality health services provided in a culturally acceptable way as well as an equitable distribution of health workers are necessary considerations for effective coverage of the health system (7). Community Health Workers remain an integral part of the workforce in rural communities and have to deal with multifarious tasks and poor remuneration in carrying out their duties. Nevertheless, with attention to supportive supervision, it is suggested that this will enhance the motivation and the performance of these workers and also improve the quality of health care (9). Additionally, investment in innovative technologies for health systems has also been suggested as a cost-effective solution to challenges such as lack of trainers or quality guidance for the workers in the frontline (10). While the focus is on human resources for health, implementation and contextual factors limit interventions to improve health outcomes in Africa. This review seeks to analyse options for maximising human resources for health to achieve Universal Health Coverage in Africa.

Methods

The review uses themes from the Campbell's modified framework of the Human Resources for Health (HRH) and Universal Health Coverage (UHC) with the WHO labour market dynamics framework for Universal Health Coverage presented in the WHO global strategy for workforce towards UHC in 2030. By focusing on the common difficulties that affect health

worker training, retention, performance and quality of service provision according to the

HRH Strategy document (7), sub-themes were purposively determined to guide the analysis in this review. These include Labour Market and the availability of health workers, Retention of health workers in the rural areas, Training (supportive supervision) and Information Technology to improve performance. A detailed search was next conducted utilizing the Pubmed database. This database was selected because it comprises the largest collection of peer-reviewed articles globally. There are over 30 million citations on the database and full-text contents are linked with it. The search was guided by the four study sub-themes and conducted using several keywords including: "Market forces", "Market factors" "Human Resource for Health", "HRH", "Africa", "Retention", "Communities", "Rural", "Supportive supervision", "Quality", "Health care", "Universal health coverage"," UHC", "Information Technology", Appropriate Boolean terms "AND" "OR" were utilized to facilitate the search. No date filter was used and relevant articles to the topic were selected from a large pool of 173 articles at the first search. (Please refer to appendix). Targeted snowballing from the list of references was also conducted to complement the list of scientific publications used, following the guidance of: **Figure 1**. Human Resources for Health and Effective Coverage (Campbell et al, 2013 as cited by (7): p.11); **Figure 2**. WHO Labour Market dynamics. (Sousa A, Scheffler M R, Nyoni J, et al, 2013 as cited by (7): p. 13).

Results

The results will be presented considering, the main factors influencing the availability, accessibility, acceptability, and overall quality of HRH divided into four umbrella factors or subthemes namely, Labour Market Factors, Rural Health Workers Retention Factors, Health Workers Obligatory Education and Supportive Supervision Factors and Information Technology Factors. Furthermore, these four factors are underpinned by financial, professional, infrastructural, and procedural support, See **Figure 3** in the appendix.

Labour Market Factors

Attention should be focused on the health worker preferences and the dynamic labour market (6). Health workers may be interested in alternative positions or may emigrate against the health care needs that require their availability. Furthermore, there is an imbalance between the supply (health workers available) and the demand for health workers (health workers hired) resulting in either inefficiency of government spending or under-employment (6). The labour market in the health sector is determined by the interactions between the supply and the demand for health workers. The demand for health workers has hinged on the government, private or external donor readiness to pay (hire) health workers (6). This is a function of the flexibility of spending or the fiscal space from which health care expenses can be determined. Notably, per capita income and health worker density are both lowest in Africa compared to other continents (5,7,11). Supply of health workers, on the other hand, depends on the emoluments and upon other socio-economic, political and demographic factors. An analysis of these market conditions is necessary to guide policymaking concerning human resources for health towards achieving universal health coverage. Policies can be directed towards the increase of training opportunities for health workers when the challenge is supply related or towards increased government allocation of funds for the health workforce in when the challenge is demand related. Additionally, a more comprehensive approach will be a bidirectional policy inclination (6).

While the two options require major government spending to increase the availability of HRH, many African countries lack the capacity for flexible expenditure (5). A pragmatic way is to invest in more cost-effective spending such as funding community-based health workers. This category of health workers requires training of shorter duration and lower financial investment. They also play a prominent role in stimulating demand for health services in rural areas, expanding coverage of health services and improving health outcomes in neglected communities. This has been exemplified in countries like Ethiopia and Niger where constraining macroeconomic conditions informed this approach. Similarly, this category of health workers are shown to be more readily retained in underserved areas and not as easily affected by the conditions of the labour market in the health sector (6, 11, 12). Furthermore, wage bills can influence health workforce availability or the attractiveness of the health sector to unemployed health workers. Government wage bill policies have been implemented in some African countries such as Rwanda, Kenya and Zambia. Vujicic et al. (13) studied the consequences of the bill on the health workforce of these countries with mixed outcomes. Expansion of the health workforce occurred in Rwanda while the wages were maintained. In Zambia however, challenges with occupying budgeted posts were identified as the obstacle to expansion and in Kenya reduction of the wage bill prevented the growth of the workforce. In Ghana, Government spending on the public sector wage bill increased from 3.6 in 2000 to 6.7% in 2008, while the health sector wage bill rose as a percentage of the total wage bill from 9% to 15% (14). Although with minor changes, in monetary terms, the public spending on health increased. During the same period, while the wage bill increased by 5 times the health sector workforce increased substantially. With a largely decentralized health workforce to regions and districts, the resource allocation was channeled to districts, subdistricts and community-based committees and funding increased by 10%, while allocation to tertiary hospitals dropped by 3% (14).

Rural Health Workers Retention Factors

The disproportionate distribution of health care workers between rural and urban areas despite a majority of the population residing in rural communities, results in higher mortality rates from these remote and rural areas. This leaves many residents seeking primary care and overcrowding the health centres in urban areas (8). This inefficient delivery of health care causes skilled workers to be underutilized and consequently overburdened; this could also be complicated by emigration of these workers for a more rewarding income package. Against this backdrop, the WHO provided evidence-based recommendations to improve retention of health workers in rural communities (8). These include a focus on training (enrolling students with a background in the rural communities), regulation (such as ensuring a required posting in rural and remote areas) and providing enabling incentives in the form of financial and/or professional support (8,15). In Nigeria, recruitment at the Primary Health Centre (PHC) is at the call of the local government (for junior workers) and the state government (senior cadres). Due to this form of governance, health worker attrition is highest at the PHC and unlike the doctors and nurses, only the community health workers are readily available at the PHCs (16). In Zambia, HRH decentralization was also recommended for easy resource allocation to enable task shifting for essential service provision where trained professionals are unavailable (15). Community health committees which are recognized in the National health policy, along with the PHCs form an

extra tier of governance that plays a key role in the retention of health workers at the PHC in Nigeria. These committees are made up of key persons in the community such as teachers, religious leaders and other respectable persons in the community.

They support the retention of health workers by intervening when salaries to health workers are delayed or not paid and also provide social and financial support of these workers in rural communities. The resurgent awareness of the role of community health committees in retaining health workers in rural communities calls for policies that reinforces the establishment of these committees. The Government and policy analysts should consider the role of community engagements such as educating the workers on their various roles to adequately uphold the provision for the scheme. Notably, also, community engagements through the community health committee offer various incentives for retention of worker with or without financial investment (16). In Zambia, the Ministry of Health introduced strategies to facilitate retention of health workers at rural communities (15). These incentives included adjunct allowances such as on-call allowances, hardship allowance, retention allowances etc. However, there was no relationship between these strategies and the worker's desire to remain in the sector. Thus, it was recommended that strategies that enable the health workers to perceive and understand the context and the characteristics of working in the facilities should be implemented. Similarly, updating the financial incentives in line with the realities of inflation as it affects the cost of living should be considered for the different training duration, working hours or level of experience (15). Implementation of the WHO recommendations on retention of health workers in rural communities requires contextualization according to individual country's need. South Africa contextualized it's strategies to deal with a HRH crisis. In the aspect of education, it focused on training health workers in underserved communities, it also developed a social accountability framework to better respond to the communities need. Other strategies included having students trained from communities where the need is greatest as well as using target community health and social needs to guide education (17).

Health Workers Obligatory Education and Supportive Supervision Factors

At the heart of achieving universal health coverage is the certainty of quality of healthcare. Clients are not willing to utilize healthcare in situations where the services are poor, hindering realistic achievement of UHC. And in some situations where the health service is still utilized, the health outcomes are also undermined. There are few, sufficiently trained and motivated health care staff with the requisite resources to offer essential health care in many African countries which: this culminates in poor quality of care (18,19). Continuous Professional Development (CPD) has been identified as a means of maintaining knowledge capacity through 'on the job' training of nurses and midwives to function competently and attain Universal Health Coverage (20). About 70% of the Anglophone countries (n=21) including Nigeria and Ghana and only Rwanda among francophone countries (n=20) have demonstrated evidence of mandatory CPD being operational. These programs are run by the nursing councils and the health professional councils. Through this obligatory system of education, targeting Global Health indicators such as HIV is made possible vis the WHO Afro region dictating licensure from specific CPD modules. Also, some countries require CPD points to ensure license renewal on an annual basis. Nevertheless, only 10 member states in the WHO-Afro-region make CPD a mandatory program to complete, and there is still a shortage of nurses as well as a lack of interest among

nurses which slows the movement towards UHC and SDG attainment in the region (20). Supportive supervision is a process that promotes quality at all levels of the health system by strengthening relationships within the system, focusing on the

identification and the resolution of problems. It also helps to optimize the allocation of resources'. (9: p.989) It involves enabling the health workers to always get better at the performance of their work in a non-forceful but respectful manner through supervisory visits (21). A reported increase in the proportion of health workers (community health workers), improved quality of care and sustained performance as a result of supportive supervision has been documented in the literature (22). In a systematic review of supportive supervision carried out on PHC workers in low and in middle-income countries in Africa, it was revealed that efficiency, quality of care, motivation and job satisfaction were positively influenced (22). Critical to the improved motivation and performance was an open two-way communication and feedbacks, a fervent team spirit and the development of mutual trust between the supervisor(s) and the health worker(s) (22). The performance of community health workers is a function of the interaction with the complex health system, and it may also be influenced by intrinsic factors such as the personality of an individual. A supportive environment is thus needed to enable these health workers to play their roles as agents of social change. This implies a need to be skilled in building confidence, solving problems and communicating well with the immediate community (23). Perceptibly, the higher-level health workers do not regard the inputs or efforts of these community health workers, hence organizing joint training sessions of the higher-level health workers and the community health workers aids in building better relationships between both categories. The supervisors also need to be trained about the significant roles community health workers play in strengthening the relationship with the community and its people. Management and technical skills should be inculcated into the training. Likewise, team building activities should be included in the training of supervisors to reduce the social distance between the supervisor and the community health workers; this will result in better relationships and an overall better performance. The community will more likely recognize the community health worker due to better supervision occurring within the health sector (23). To make supportive supervision more effective Renggli et al. (19). in their Tanzanian study described the effectiveness of an electronic tool to improve the quality of health care (e-TIQH). It was found that across different contexts in Tanzania, the quality standard of primary health care was improved, and it was demonstrated to have shown a direct impact on the overall quality of care that was obtained. With strong supervision, a 'virtuous cycle' is built. There is an increase in community health worker's confidence, more cohesion between all cadres of health workers, a sense of inclusion with the health system and recognition by the community, as well as an effective referral system (22). Supportive supervision, however, is not without its problems. These include the propensity for diverting attention to quantity rather than quality, also supervisory visits may be fragmented, infrequent, and inconsistent. A gap also often exists between what is known and what is done. There is often no ownership of quality development activities at the facility level without feedback on this development up to the council level as described in countries like Tanzania. Similarly, supervision could be de-motivating when carried out with fault-finding and can be irregularly executed. Weak supervisions can also lead to a 'vicious' cycle of neglect among the health workers, absence of technical assistance, weak referral of patients and bad treatments (19, 24).

Information Technology Factors

Between 2007 and 2011, the number of subscribers for mobile broadband in developing countries rose astronomically to 458

million from 43 million, representing over 10-fold increase in the number of users (10). This implies more users of mobile devices, as well as increased access to the internet. The internet and mobile devices are also fast becoming essential tools for the health professionals in urban and rural communities. The use of mobile devices to practice medicine and public health has facilitated services in the difficult terrains and geographically inaccessible areas in developing countries. The adoption of this technology has been proposed to limit the rural health worker isolation that is usually experienced, and a study revealed that mobile dependent technologies are gradually being embraced by the health workers. It is transformative and can bridge the existing gap in human resources for health accessibility and acceptability (10). Information technology can be utilized to support communication between the health providers and the clients as well as enable the capacity building of the health worker which engenders more demand for a high quality of care from the community. Health workers are usually exposed to standard educators through webcasting, recording, and video conferencing. This mode of training is shown to be more cost-effective compared to educational programs held face to face. It is not considered an alternative to face-to-face education, rather it aids in reducing the challenges faced by this traditional method. It has been reported that presenting educational content and gaining competency is the goal of an educational strategy and when complemented by information technology, this goal can be essentially achieved (10). In a study on a post-conflict setting on the utilization of information technology for the retention of health workers, there was a positive perception about information technology among health worker(s) even in a setting where the applications of information technology were rare and remote. Thus, there is a need to increase investments in information and technology, mobilise health workers and train the workers on the use of information technology for the delivery of health services (25). Additionally, studies have proposed that information technology can serve as a major boost to health worker retention apart from other traditional strategies for retention (25,26). Despite the general benefits of information technology, there are barriers to its implementation. These barriers include unreliable internet connection, unstable power supply, lack of knowledge on information technology, expensive access to computers and lack of effective policies on information technology (25). Other barriers include cultural barriers and deficient interoperability between technologies and platforms (10). In addressing some of these challenges, interventions on information technology should be prioritized especially at post-conflict settings as well as for rural communities. Computers are not indispensable, as smartphones can be provided for health workers in the rural communities which are useful in accessing health information and communication with professional colleagues. Incentives might be required to enable health workers to accept information technology and overcome their reluctance with the approach. Similarly, the collaboration between relevant ministries such as information, finance, education and health are important to develop a synergy and proper coordination of information technology use among health workers (10, 25).

Discussion and conclusions

The post-Covid-19 agenda must include Human Resources for Health as a key critical component. Human resources for health forms an essential component of any health system. Yet this component of the health

system is faced with immense crisis that borders on the shortage, maldistribution, and performance. Market factors such as demand and supply issues, wage bill increments as well as socioeconomic factors play a role in influencing human resources availability. Existing rural-urban inequalities create a disproportionate distribution of health workers in the African region which demands steps to ensure health workers are retained especially in rural communities and post-conflict communities. Considering the limited fiscal space and constrained macro-economic environment in many African countries, cost-effective interventions should be adopted to ensure the sustenance in the delivery of quality health care in the remote and inaccessible areas. Thus, approaches that utilize the services of community health workers who play a crucial role in stimulating demand for health care should be applied. The duration of training is shorter, they can be recruited from communities with highest health need, they form a pragmatic alternative to higher earning and higher cadres of health workers and are usually closer to the members of the community. Supervision of these health workers is a vital part of the promotion of the delivery of quality health services. By focusing on the virtuous cycle created by strong supervision of community health workers, a cohesive and confident health workforce with a strong connection with the community is built and inherent in this approach is health system strengthening. Embracing information technology also presents an effective means of maximizing human resources for universal health coverage. By multi-stakeholder collaboration, the challenges with the use of technology can be overcome and technology can be utilized to prevent the isolation of health workers in remote areas, encourage their retention at rural communities, facilitate their training and interaction with other health professionals. Policy formulation should, therefore, focus on market factors that influence health worker retention, as well as developing sustainable supportive supervision of community health workers and the establishment of pathways for utilizing information technology as leverages in the trajectory towards Universal Health Coverage in Africa.

Recommendations

1. Financial Support: The need to improve financial investment in education and training of health workers cannot be overemphasized. More attention should be given to the provision of incentives for health workers in remote and largely inaccessible areas.
2. Professional Support: A broader view into health worker demand and the availability of health workers to deliver the needed services especially in the context of a post-covid-19 era reveals the need for the delivery of essential health services through delegated roles in form of task shifting with a combination supportive supervision to maximize the performance.
3. Infrastructural Support: Considering the growth in the number of users of mobile technology on the continent and the benefit it brings to the health system, efforts should be directed at removing the outlined barriers such as unstable internet and irregular power supply to aid its proper functioning in maximizing HRH capacity.
4. Procedural Support: An improved understanding of the contextual factors that influence retention of health workers especially at remote and rural communities is expedient for the decision-makers and government stakeholders in health. There is an urgent need to correct negative

trends leading to health worker attrition especially at the lower tiers of governance in member states' health systems.

REFERENCES

1. Narayan K, Donnenfeld Z. Envisioning a healthy future: Africa's shifting burden of disease. African futures Paper. ISS. 2016. Available from: https://media.africaportal.org/documents/african_futures18.pdf. (accessed: October 10, 2020).
2. World Health Organisation. Available from: https://www.who.int/nmh/ncd-tools/who-regions-african/en/(accessed: October 10, 2020).
3. Mbunge E. Effects of COVID-19 in South African health system and society: An explanatory study. Diabetes Metab Syndr Clin Res Rev. 2020. Available from: https://www.sciencedirect.com/science/article/abs/pii/S1871402120303696?via%3Dihub (accessed: October 10, 2020).
4. Mozart S, Marie-Paule K, Ruediger K, et al. Human resources for universal health coverage: from evidence to policy and action. Bull World Health Organ 2013: Available from: https://www.who.int/bulletin/volumes/91/11/13-131110.pdf (accessed : July 18, 2020).
5. World Health Organisation;2017.Available from: https://www.who.int/health-topics/health-accounts/#tab=tab_1 (accessed: July 18, 2020).
6. McPake B, Maeda A, Correia Araújo E, et al. Why do health labour market forces matter? Bull World Heal Organ; 2013. Available from: https://www.who.int/bulletin/volumes/91/11/13-118794.pdf (accessed July 18, 2020).
7. World Health Organisation.; 2016. Available from: http://www.who.int/hrh/resources/p (accessed July 18, 2020).
8. Buchan J, Couper ID, Tangcharoensathien V, et al. Early implementation of WHO recommendations for the retention of health workers in remote and rural areas. Bull World Heal Organ. ;2013 ;91:834–840.
9. Kok MC, Dé Rique Valliè Res F, Tulloch O, et al. Does supportive supervision enhance community health worker motivation? A mixed-methods study in four African countries. Health Policy Plan. 2018;33:988–998.
10. Bollinger R, Chang L, Jafari R, et al. Leveraging information technology to bridge the health workforce gap . Bull World Heal Organ.2013;91:890–892.
11. Wakabi W. Extension workers drive Ethiopia's primary health care. Lancet. 2008; 372: 880-880.
12. Amouzou A, Habi O, Bensaïd K. Reduction in child mortality in Niger: A Countdown to 2015 country case study. Lancet. 2012;380(9848):1169–1178.
13. Vujicic M, Ohiri K, Sparkes S. Working in Health : Financing and Managing the Public Sector Health Workforce. Washinghton, DC: World Bank Publications;2009.
14. Ebenezer A, Christopher HH, Agnes S, et al. Toward Interventions in Human Resources for Health in Ghana: Evidence for Health workforce planning and Results. Washinghton, DC: World Bank; 2013.

15. Goma FM, Murphy GT, Mackenzie A, et al. Evaluation of recruitment and retention strategies for health workers in rural Zambia. Hum Resour Health. 2014. Available from: https://human-resources-health.biomedcentral.com/articles/10.1186/1478-4491-12-S1-S1 ub_globstrathrh-2030/en/ (accessed :July 18, 2020).
16. Abimbola S, Olanipekun T, Igbokwe U, et al. How decentralisation influences the retention of primary health care workers in rural Nigeria. Glob Health Action 03 May 2015. Available from:https://www.tandfonline.com/doi/full/10.3402/gha.v8.26616 (accessed July 18, 2020).
17. World Health Organisation; 2010 Available from: https://apps.who.int/iris/bitstream/handle/10665/44369/9789241564014_eng.pdf?sequence=1 (accessed: July 18, 2020).
18. Johnson MC, Schellekens O, Stewart J, et al. SafeCare: An innovative approach for improving quality through standards, benchmarking, and improvement in low-and middle-income countries. Jt Comm J Qual Patient Saf; 2016 ;42(8):350-360.
19. Renggli S, Mayumana I, Mboya D, Charles C, Mshana C, Kessy F, et al. Towards improved health service quality in Tanzania: Contribution of a supportive supervision approach to increased quality of primary healthcare. BMC Health Serv Res. 2019; 19(1):848-864
20. Baloyi OB, Jarvis MA. Continuing Professional Development status in the World Health Organisation, Afro-region member states. Int. J. Africa Nurs. Sci.2020 Jan 1;13:100258.
21. World Health Organisation;2008. Available from: https://www.who.int/immunization/documents/mlm/en/ (accessed :July 18, 2020).
22. Snowdon DA, Leggat SG, Taylor NF. Does clinical supervision of healthcare professionals improve effectiveness of care and patient experience? A systematic review. BMC Health Serv Res. 2017;17:786-797.
23. Kok MC, Broerse JEW, Theobald S, et al. Performance of community health workers: Situating their intermediary position within complex adaptive health systems [Internet]. Vol. 15, Hum. Resour. Health.2017;15(1):59-66
24. Ludwick T, Turyakira E, Kyomuhangi T, Manalili K, Robinson S, Brenner JL. Supportive supervision and constructive relationships with healthcare workers support CHW performance: Use of a qualitative framework to evaluate CHW programming in Uganda. Hum Resour Health. 2018. Available from: https: https://human-resources-health.biomedcentral.com/articles/10.1186/s12960-018-0272-1 (accessed:July 18, 2020).
25. Yagos WO, Tabo Olok G, Ovuga E. Use of information and communication technology and retention of health workers in rural post-war conflict Northern Uganda: Findings from a qualitative study. BMC Med Inform Decis Mak. 2017;17(1):1-7
26. Mbemba G, Gagnon MP, Paré G, Interventions for supporting nurse retention in rural and remote areas: An umbrella review. Hum Resour Health.; 2013. Available from: https://human-resources-health.biomedcentral.com/articles/1

0.1186/1478-4491-11-44 (accessed :July 18, 2020).

APPENDIX

Overview of Article Selection

Because no date filter was initially used at the first search, a total of 173 articles emerged. This was via the use of keywords and bolean terms on PubMed as stated in the main text. The titles and abstracts of these publications were next evaluated for suitability based on the two guiding frameworks: The Human Resource for Health and Effective Coverage and the WHO labour market dynamics. The number of articles were thus reduced to 40 articles for consideration. Selection criteria was then determined. These included publications not older than 20 years, WHO bulletins and publications and a targeted snow balling from key WHO articles on the themes. This was independently agreed upon by the two authors, MIA and ICE. Consequently, this led to a final selection of 22 articles used for the review.

Figure 1. Human Resources for Health and Effective Coverage

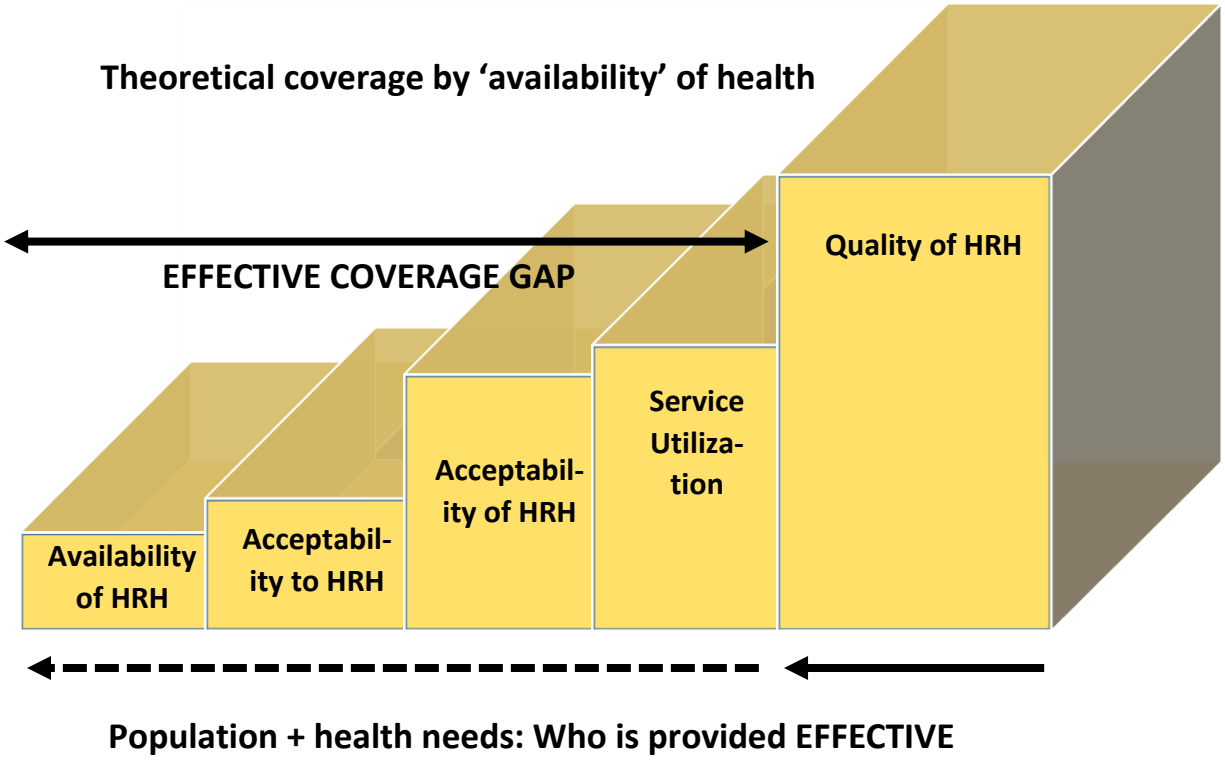

Figure 2. WHO: Labour market dynamics

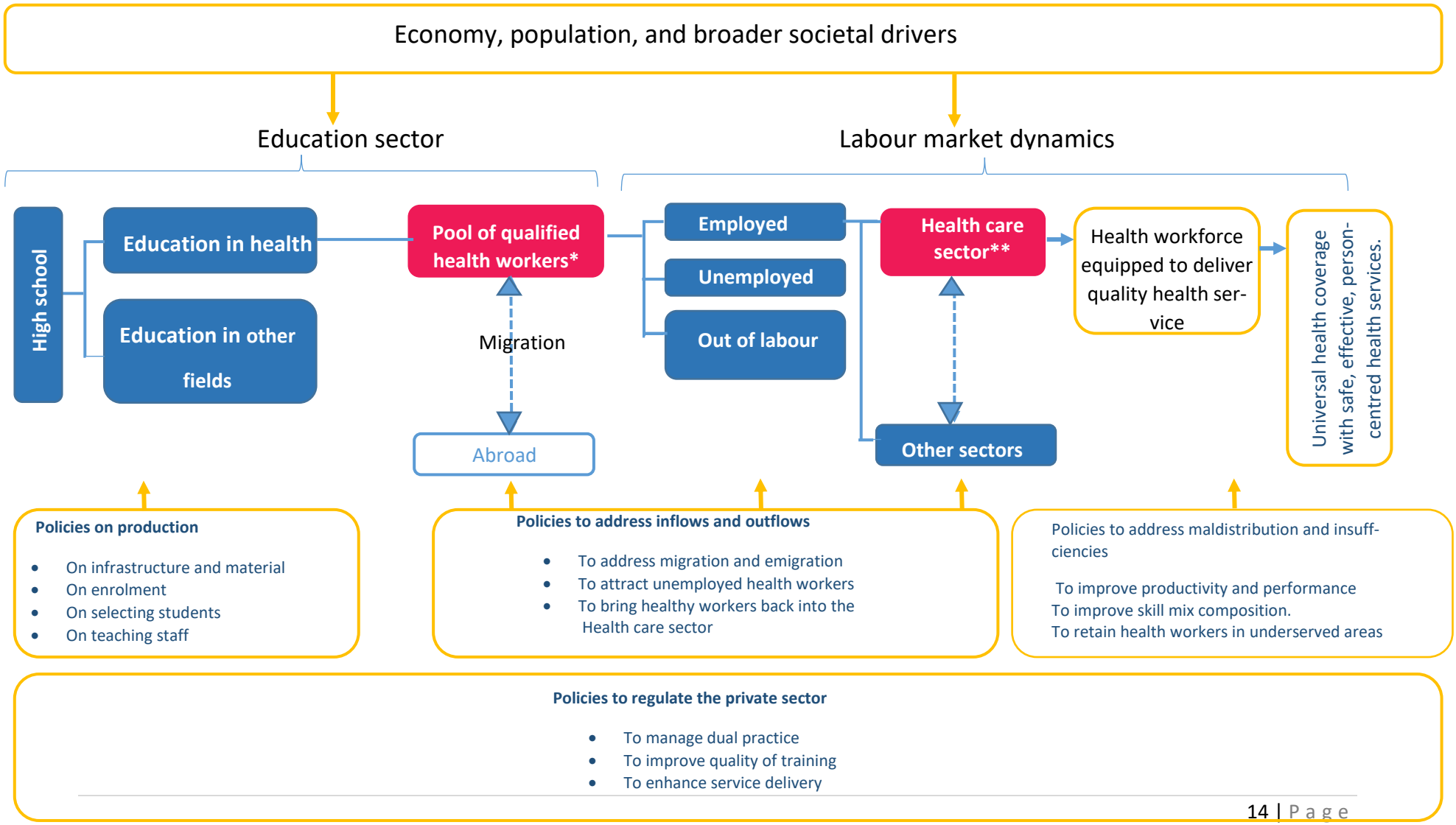

Figure 3. Factors influencing the maximizing of human resources for health towards Universal Health Coverage in Africa.