An assessment of South African policy and strategic framework for the development of a sufficient, equitably distributed and well-performing health workforce for the implementation of the National Health Insurance

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Background. South Africa (SA), like the rest of the global village, is faced with the need to address health worker shortages, improve the performance of health workers and ensure an equitable distribution of health workers in all settings. This requires leadership, governance and stewardship acumen to put in place policies, practices and resources that are essential to recruit and retain human resources for health.
Objective. To determine whether SA possesses a strong and competent policy and strategic framework that would guide the development of a sufficient, fairly distributed and well-performing health workforce.
Methods. A cross-sectional descriptive quantitative study was undertaken using pretested anonymous questionnaires to solicit responses about the ability, strategies and policies needed to address health workforce challenges. The study was undertaken in SA with decision-makers and/or those who contribute to health sector reforms in SA in the realisation of the National Health Insurance (NHI). They were individuals and stakeholders who interact with and/or are in the employment of statutory health councils, regulatory bodies, medical aid administrators, medical schemes, voluntary bodies/organisations and healthcare workers who are registered with the SA Pharmacy Council, Health Professions Council of SA and SA Nursing Council.
Results. The findings indicate that the current policies and frameworks to address health worker shortage, their performance improvement and the rural-urban disparities in the distribution of health workers are not sufficient to address the current challenges. The study found that specific efforts to address policy shortcomings need to be embarked upon.
Conclusion. The current policies and strategies are not sufficient to address health workforce challenges to improve performance, maintain appropriate skills, improve working conditions and ensure an equitable distribution of health workers to address the healthcare needs of SA. Commitment to the NHI should be matched with the capacity to deliver health services, which is highly dependent on the availability of a qualified and motivated workforce. The capacity to deliver services aligned to the objectives of the NHI will require that policy-makers consider interventions aimed at addressing challenges related to recruitment and limitation of career opportunities. Performance and productivity challenges may best be addressed by meaningful engagements and collaboration with the private for-profit, voluntary and independent sectors.

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The human resource crisis in healthcare has been acknowledged globally, and a number of countries, including South Africa (SA), and global organisations including the World Health Organization (WHO), have embarked upon the development of strategies to deal with the crisis. This realisation has seen these entities crafting strategies by which they aim to overcome the challenges associated with production, equitable distribution and performance improvement of healthcare workers in order to attain universal health coverage. The SA situation around human resources for health (HRH) closely mirrors the global challenges and stands in the way of the attainment of the National Health Insurance (NHI) objective. Cometto *et al.*[1] state that there is growing recognition that the attainment of universal health coverage (UHC) is dependent on a sufficient, equitably distributed and well-performing health workforce. They further emphasise that the benefits of optimising the management of the health workforce are not only restricted to improving health outcomes.[1] Optimised management of the health workforce also enhances global health security and contributes to economic growth through the creation of appropriate employment opportunities in the health sector.[1] Similarly, the WHO, in its global strategy on human resources for health,[2] argues that mere availability of health workers is not sufficient to ensure effective service coverage.

The WHO strategy states that effective service coverage is achieved only when health workers are fairly distributed, accessible by the population, competent, motivated and empowered to deliver quality healthcare that is appropriate and acceptable to the sociocultural expectations of the population.[2] They also need to be adequately supported by the health system.[2] Health workforce challenges affect countries at all levels of socioeconomic development, albeit to varying degrees.[2] These challenges arise in the education, deployment, retention and performance of their workforce.[2] SA is not exempt from these.

Leadership acumen is required to put in place policies, practices and resources that are essential to recruit and retain HRH in order to address healthcare needs to enable UHC. SA is faced with

similar requirements to address health worker shortages, improve performance of health workers and ensure an equitable distribution of health workers in all settings. The skewed distribution of the health workforce in SA between the private and public sectors exacerbates inequities, leading to uneven quality in health systems between urban and rural areas, as noted in the NHI white paper.[3]

Reich *et al.*,[4] in a study involving 11 countries (Bangladesh, Brazil, Ethiopia, France, Ghana, Indonesia, Japan, Peru, Thailand, Turkey and Vietnam) representing diverse geographical, economic and historical contexts, noted that these countries faced major challenges in the production, performance and distribution of healthcare workers in relation to UHC goals. This study further noted that countries needed to match their UHC commitment with their capacity to deliver health services, which was invariably dependent on the availability of qualified and motivated healthcare workforce.[4] SA is not exempt from this requirement, and some points that are well documented in the key messages of the National Department of Health's 2030 human resources strategy for SA[5] include the following:

(*i*) Even though SA is endowed with more health workers than other African countries, the health outcomes are not commensurate with this.
(*ii*) Improvement in health service access, quality and equity will require significant additional investment in the healthcare workforce.
(*iii*) A lack of national capacity, skills and appropriate and credible planning models hampers healthcare workforce planning.
(*iv*) Despite the high public health spend on healthcare workers (in 2019/2020, this constituted 63% of the healthcare budget), which in the eyes of an outsider might spell a comfortable position, there are still inherent challenges.

The 2030 HRH strategy notes that the challenges and dilemmas can only be addressed by a highly skilled and capable HRH function at national level, supported by high-quality, timely information on the health workforce in SA.

Hence the objective of the study was to interrogate the challenges that negatively affect efforts to address health worker shortage, improve the performance of health workers and address the inequitable distribution of health workers.

Methods

Study design and population

This was a cross-sectional descriptive quantitative study that was conducted in SA during the period 25 October - 6 December 2021. A descriptive quantitative research design was chosen in an attempt to establish cause-effect relationships among the variables. This study type enabled the researchers to gather information about the topic in its natural environment, to avoid any manipulation. Given the fact that the population was made up of participants from a wide range of settings in healthcare, this cross-sectional study allowed the researchers to study behaviour in this wider population. This choice of study also allowed the researchers to present the results in a format that makes it possible to arrive at numerical values in order to carry out statistical analysis, thus enhancing further research opportunities.

The target population was drawn from individuals and stakeholders involved in both policy formulation and implementation. They included those employed in statutory health councils, regulatory bodies, medical aid administrators, medical schemes and voluntary bodies/organisations. In addition, all healthcare workers registered with the health statutory councils were included, irrespective of their practice or place of work. The healthcare workers (HCWs) were included because they provide healthcare in both the private and public sectors, hence have inherent interest in developments around the NHI. In addition, these participants are regarded as important and interested stakeholders with the potential to contribute meaningfully to both policy formulation and implementation, owing to their wealth of experience in healthcare as well as the oversight they exercise in their current roles.

The statutory councils and regulatory bodies (SA Pharmacy Council (SAPC)), Council for Medical Schemes (CMS), Health Professions Council of SA (HPCSA), SA Nursing Council (SANC), Office of Health Standards Compliance (OHSC) and SA Health Products Regulatory Authority (SAHPRA)) are involved in both leadership and governance, including the promulgation of laws conducive to the implementation of NHI.

Voluntary professional bodies (Pharmaceutical Society of SA (PSSA), SA Medical Association (SAMA), Independent Community Pharmacy association (ICPA) and Board of Healthcare Funders (BHF), a voluntary medical aid industry body, are involved in shaping policy by advocating for their constituencies.

Finally, the target population also included individuals involved in healthcare operations, service delivery in the areas of healthcare funding and management (managed care organisations and medical aid schemes), medical products and technologies, information and research in healthcare.

Sample size

A sample size of 660 participants was determined to be adequate for the study. Given α=0.05, β=0.2 and df = 65, and using GPower 3.1.9.7 as inputs in the sample size calculation software, it was estimated that a minimum sample size of 660 was required to detect small to medium effect sizes of at least 0.25 ~80% of the time (have 80% power of test) with 95% confidence.

Data collection tool and data collection

The data collection tool was a 5-point Likert scale web-based anonymous survey questionnaire that was designed to collect data on: population demographics; questions and statements that addressed policy matters affecting equitable distribution; and a well-performing health workforce that will enable the implementation of the NHI.

Data analysis

The statistical data analysis was conducted using R Statistical computing software version 3.6.3 (R Core Team, USA). The results were presented in the form of descriptive and inferential statistics. Where applicable, the descriptive statistics of numerical measurements were summarised as the minimum, maximum, quartiles, interquartile range, means, standard deviation and coefficient of variation. Categorical variables were described as counts and percentage frequencies. The results were visualised in the form of bar charts, Likert and correlation plots. Cronbach's α was used to measure the internal consistency of items that were grouped into a section (construct). Kruskal-Wallis was applicable in testing differences in the scores between at least three groups, followed by Wilcoxon pairwise tests. All the statistical tests were conducted at a 5% level of significance (p=0.05).

Descriptive statistics were generated on each item comprising the structural challenges that might affect the implementation of the NHI in response to the research questions.

Results

A total of 678 responses were received, exceeding the calculated sample size of 660, a response rate of 102%. The items measured on the health workforce theme were found to be consistent with a Cronbach's α 0.776 (>0.7).

The results were grouped into themes and subthemes representing the details of the NHI function health workforce.

The population demographics and the results of the challenges relating to health workforce are presented in this article.

Participant demographics

The demographic data of the participants relates to their area of work and/or employment in both the public and private healthcare sector. The highest percentage of responses (67%) was received from the healthcare workforce, with just over 13% of responses from medical products and technologies, and 1.3% responses received from NHI implementers.

Participant responses per subtheme

In the health workforce theme, we interrogated the challenges that affect efforts to address health worker shortages, improve the performance of health workers and address the inequitable distribution of health workers, and how stakeholders can find ways of galvanising their contributions to attain the objectives of the NHI. The results were presented under each of the aspects of the health workforce theme as subthemes. First, descriptive statistics representing the participants' responses (Fig. 1) are presented. The participants' responses by occupation to the NHI initiatives were then examined to establish if there were significant differences in the responses per occupation based on the Kruskal-Wallis test. Finally, using the correlation results, the relationship between the subthemes was examined.

Addressing the health worker shortage

The majority of the participants (59%) were in support of expanding the recruitment pool and offering flexible career opportunities and non-traditional entry points to health workers, as with the introduction of the mid-level worker across the health professional spectrum to address the health worker shortage, with only 23% not in favour of this approach. A significant portion of the participants' responses (48%) showed that they did not resist the introduction of mid-level workers, but rather the way this group of health workers was introduced.

Improving the performance of health workers

An overwhelming majority (77%) of the participants agreed that the performance of healthcare professionals in both sectors can be improved by holding healthcare workers accountable for their performance, through introducing specific standards of care. Sixty-six percent believed that introducing incentives, including pay-for-performance measures that link financing more explicitly to performance, will improve health worker performance. Finally, an 87% majority believed that the success of the NHI was premised on improving the performance of healthcare professionals by ensuring that the best of teams with a suitable skills mix, and the availability of vital supplies and equipment from the private or public sectors, are in place.

Ensuring a more equitable distribution of health workers

Sixty-three percent of the participants believed that the NHI policies and regulatory framework in place were insufficient to deal with the rural-urban disparities in the distribution of healthcare workers.

Participant reactions to NHI health workforce initiatives by occupation

It is important to note that of the eight occupations, the occupation 'other' had only two participants. This was excluded from the statistical inference involving comparison of the scores between the groups. As such, the total number of participants appears as n=676, instead of n=678.

Some of the themes' components showed a statistically significant difference by occupation, based on the p-values shown in Table 1. The subthemes 'health worker shortage' and 'resistance to reforms' showed statistically significant differences in responses by the different occupation groups, with a p-value of 0.026 (p<0.05). The other two subthemes, 'improving the performance of health workers' and 'more equitable distribution of health workers' did not show statistically significant differences in the responses, where the p-values were 0.109 and 0.543, respectively (p>0.05).

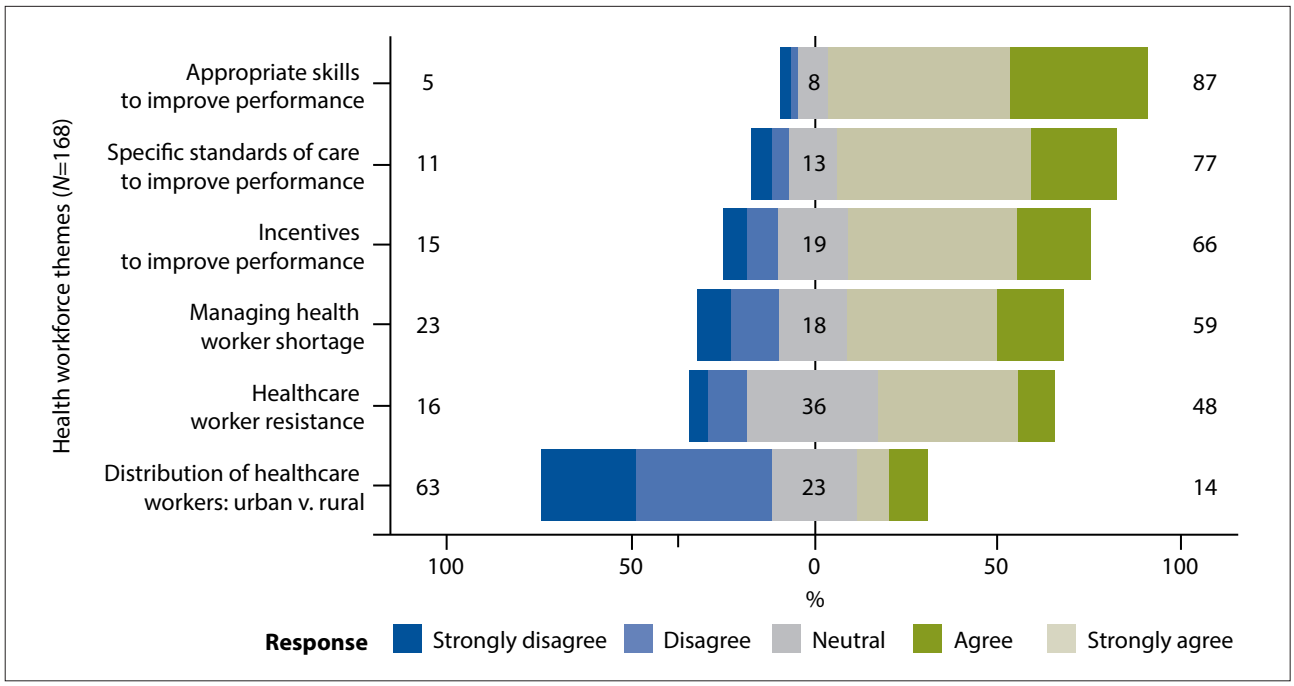

Fig. 1. Participants' responses to health workforce challenges (N=678).

Table 1. Health workforce subthemes by occupation

	Health workforce	Healthcare financing	Leadership and governance	Medical products and technologies	Other - academia	Implementer of the NHI	Information and research – service delivery	*p*-value*
n	454	10	73	90	18	9	22	
Health worker shortage and resistance to reforms								
Mean (SD) (CV%)	-	-	-	-	73.3 (22.8) (31.0)	74.4 (15.9) (21.4)	-	
Median (Q1 - Q3)	70.0 (60.0 - 80.0)	80.0 (70.0 - 87.5)	80.0 (70.0 - 80.0)	70.0 (60.0 - 80.0)	80.0 (62.5 - 87.5)	80.0 (60.0 - 80.0)	70.0 (60.0 - 80.0)	0.026
n (minimum - maximum)	454 (20.0 - 100)	10 (20.0 - 100)	73 (30.0 - 100)	90 (20.0 - 100)	18 (20.0 - 100)	9 (50.0 - 100)	22 (30.0 - 80.0)	
Improving the performance of health workers								
Mean (SD) (CV%)		74.7 (20.1) (26.9)	-	-	-	85.2 (8.01 (9.4)	-	
Median (Q1 - Q3)	80.0 (73.3 - 86.7)	80.0 (65.0 - 85.0)	80.0 (73.3 - 86.7)	80.0 (73.3 - 86.7)	83.3 (75.0 - 93.3)	86.7 (80.0 - 86.7)	76.7 (68.3 - 80.0)	0.109
n (minimum - maximum)	454 (20.0 - 100)	10 (33.3 - 100)	73 (40.0 - 100)	90 (20.0 - 100)	18 (33.3 - 100)	9 (73.3 - 100)	22 (26.7 - 93.3)	
More equitable distribution of health workers								
Mean (SD) (CV%)	-	48.0 (21.5) (44.8)	-	-	-	46.7 (28.3) (60.6)	-	
Median (Q1 - Q3)	40.0 (20.0 - 60.0)	40.0 (40.0 - 60.0)	40.0 (40.0 - 60.0)	40.0 (40.0 - 60.0)	40.0 (40.0 - 75.0)	40.0 (20.0 - 60.0)	40.0 (20.0 - 60.0)	0.543
n (minimum - maximum)	454 (20.0 - 100)	10 (20.0 - 80.0)	73 (20.0 - 100)	90 (20.0 - 100)	18 (20.0 - 100)	9 (20.0 - 100)	22 (20.0 - 100)	

NHI = National Health Insurance; SD = standard deviation; CV% = coefficient of variation.
*Kruskal-Wallis test.

Correlation of subthemes identified in health workforce

Correlation analyses were used to examine the relationship between the subthemes identified in the health workforce theme, a lever that could be used to establish a cause-and-effect relationship that could be used to determine the controls that are supposed to be in place to realise the attainment of NHI in SA.

The relationships between the subthemes were described on a continuum from weak to strong in order to sketch a picture of how dire the situation is, ranging from crisis to moderate to no crisis (Table 2). For the purpose of interpreting the relationships between the themes in this study, the researchers decided to look at the correlation from three cut-off points: 0 - 0.33 (weak correlation); 0.34 - 0.66 (moderate correlation) and 0.67 - 1.00 (strong correlation).

However, we found that though the subthemes were positively correlated, their relationships was too weak to conclude that there could be a cause and effect between them.

Discussion

We evaluated the policies and strategic interventions that are meant to shape the successes and provide solutions to the challenges of the health workforce that might negatively affect the efforts of SA towards attaining UHC and health security. The results were discussed under each of the themes identified under the construct 'health workforce'. The subthemes for the health workforce had a weak correlation, implying that cause-and-effect relationships between the subthemes could not be established from experimental data.

Addressing the health worker shortage

The study found that strategies and policies to increase the production of and retain health workers to meet the growing and changing demands for health services do not match the commitment to UHC in terms of the capacity to deliver health services.

The findings of the study identified two approaches that could be employed to address the health worker shortage: (*i*) broaden the recruitment pool; and (*ii*) offer flexible career opportunities and non-traditional entry points to health workers, as with the introduction of the mid-level worker across the health professional spectrum. These approaches are clearly lacking, or are not at the centre of the policy initiatives, with some facing resistance and challenges in the healthcare system.[6,7] Such was the case with the introduction of clinical associates (Clin-As) – a cadre that is meant to support primary healthcare (PHC) and manage common illnesses and diseases in SA.[6,7] The challenges faced by the Clin-As included, among other things, stakeholder resistance, rapid implementation, scope of practice ambiguity, inadequate supervision, unclear roles, limited Department of Health (NDoH) support, funding deficits, perceived underpayment and overwork, degree recognition issues and inadequate medical autonomy.[6,7] This is despite the fact that Clin-As are one of the government's responses to the shortage of healthcare workers, and have broadly been welcomed by multiple stakeholders.[6,7] The present study established that SA is unlikely to meet the growing and changing demand for health services if these strategies are not developed.

Several studies support these findings. A study by Yakubu *et al.*[8] looking at the impact of migration governance systems supports the study finding that SA's strategies to retain healthcare workers do not match the capacity to deliver services. The insight offered is that skilled healthcare workers should play the role of 'interest mobilisers' to advocate for the governance approaches in migration policies.[8]

The findings of a study to strengthen the entry-level healthcare workforce (EHCW) in the USA is one such study that supports the need for intentional strategies to incorporate EHCWs if countries are

to match capacity and delivery of service.[9] The US study explored strategies to strengthen the EHCW by answering and addressing the four identified challenges: training, recruitment, retention and systems. The study identified a variety of policies, programmes and activities that organisations could take into account to enhance the role of the EHCW in the USA. These opportunities might include encouraging the adoption of best practices and the use of promising technologies, fostering learning through collaborative models, and identifying and funding research priorities.[9] A report and synthesis from the 11-country case study by Reich *et al.*[4] urges countries to consider flexible career paths and non-traditional points of entry, especially those aimed at health workers from rural and underserved communities, in order to complement existing modes of healthcare worker education and deployment.[8] The report also suggests the use of a comprehensive and multipronged approach to address the maldistribution of health workers, including education policies, labour market regulations, and monetary and non-monetary incentives.[4]

A commentary published by the *Lancet Global Health* in 2023 cites efforts meant to deal with health worker shortages where countries took steps to protect and invest in the healthcare workforce.[10] Bhutan is said to have dealt with attrition by creating unique career and performance management systems for healthcare workers.[10] Other countries are implementing even more non-conventional means that shows sensitivity to certain societal ills to retain healthcare workers. Brazil is said to be actively establishing co-operative and collaborative actions for decent work in health by reducing workplace violence based on discrimination by gender, race, ethnicity, etc., to ensure that healthcare workers are appreciated.[4] Similarly, Egypt has also implemented measures to retain and appeal to healthcare workers by introducing a package to alleviate the effect of cost of living on those working in health and education.[10]

The problem of weak implementation and absorptive capacity is highlighted in an article for the global symposium on health systems research by Stuckler *et al.*,[11] which notes that in the absence of essential point-of-entry PHC delivery, it is very difficult for health policy-makers and practising healthcare workers to build a functioning system or to implement change effectively.[11] The article notes SA as an example where the government's efforts to expand public infrastructure during the transition to democracy after 1994 was not successful, as deprived geographical regions could not absorb resources effectively.[11]

In recognition of the impact of political economy challenges as an impediment to UHC, the International Labour Organisation (ILO), in paper 13 of its social protection policy papers, urges member countries to implement inclusive legislation in line with fiscal space assessments, and to close the gaps in accessibility of healthcare.[12] These gaps, according to the ILO, are lack of financial protection and an insufficient number of health workers who are trained, recruited, provided with decent working conditions and distributed in an equitable way across rural and urban areas.[12]

Interestingly, underfunding of the healthcare system has not come up as an issue in SA, compared with other countries on the continent. SA's healthcare spend, similar to other countries outside of Africa, exceeded the benchmark of 15%, and in 2020 the healthcare spend was 15.29%.[13] Although this substantial proportion (>15%) of general government expenditure on healthcare is said to ensure satisfactory salaries for healthcare workers in other countries, and therefore contribute to retaining skilled professionals, the same cannot be said of SA, hence the need to re-examine strategies and policies to increase the production of health workers, as well as their retention.[13]

Improving the performance of health workers

A WHO report by Dieleman and Harnmeijer[14] attributes poor performance of healthcare workers to three factors: insufficient staff numbers; not providing care according to standards; and not being responsive to the needs of the community and patients.[14] Similarly, the WHO strategy on human resources report[2] suggests that performance and productivity are more than likely to improve with an improvement in management systems and working conditions for HRH, and by using the support of and collaboration with the private for-profit, voluntary and independent sectors.[2] Both WHO reports align with the findings of our study that improving the performance of healthcare professionals from the private and public sectors can best be achieved by holding healthcare workers accountable for their performance, through introducing specific standards of care. In the case of SA, the introduction of standards across both the public and private sectors remains a concern.

A scoping review study by Yanful *et al.*[15] found evidence that poor provider competence across a range of health services remains an ongoing issue, particularly in low- to middle-income countries (LMICs), presenting a considerable barrier to the provision of timely, safe and effective quality of care.[15]

Given the findings of our study it is important that SA prioritises strategies to improve the performance of healthcare workers in pursuit of UHC, as studies suggest that inequities remain in both LMICs and high-income countries regarding the quality of care received by different populations.[15]

The present study found that introducing pay-for-performance measures as an incentive that links financing more explicitly to performance will improve health worker performance. This finding is supported by other studies that describe organisational factors influencing provider competence, including performance appraisal, continuing education, incentives and remuneration and payment mechanisms.[12] These studies went further, to discuss how delays in provider reimbursement, as observed in Ghana, demotivated healthcare providers and decreased providers' willingness to exert maximum effort on assigned tasks, compromising the quality of care.[12] This low level of care particularly affects vulnerable populations, who are more likely to receive care from lower-level health facilities such as health centres.[12] However, in SA, pay-for-performance as an incentive remains a policy issue with very limited implementation in the health sector, except for limited implementation in the private health sector.[16]

Finally, the study found that the success of NHI is premised on improving the performance of healthcare professionals by providing the best of teams with an appropriate skills mix, and by the availability of essential supplies and equipment from the private or public sector. This finding is supported by Cometto *et al.*,[1] who found that

Table 2. Correlation of health workforce subthemes ($p<0.001$)

Variable 1	Variable 2	Correlation	*p*-value
Health worker shortage and resistance to reforms	Improving the performance of health workers	0.480	<0.001
Health worker shortage and resistance to reforms	More equitable distribution of health workers	0.351	<0.001
Improving the performance of health workers	More equitable distribution of health workers	0.311	<0.001

intentional efforts to create a positive practice environment, with a focus on involving staff in making decisions and assessing workplace priorities, have resulted in improved motivation and performance of health workers in several LMICs, specifically Morocco, Uganda and Zambia.[1] Similarly, a US study found that creating a positive work environment safeguards against burnout.[7] Education for other members of the care delivery team in advance of recruitment of EHCW, and competitive compensation and benefits that increase with experience, contribute to successful retention and consequently improvement in performance.[7]

Ensuring more equitable distribution of health workers

The study found that the NHI policies and regulatory framework in place are not sufficient to deal with the rural-urban disparities in the distribution of health workers. Cometto *et al.*[1] discuss how the six main action fields (leadership, finance, policy, education, partnership and human resources management systems) impact health workforce management policy. They assert that in planning the health workforce, the requirements should be addressed holistically, rather than by occupational groups, and be informed by population and health system current and expected future needs.[1] A common recommendation is to strengthen human resources databases that provide policy-makers, planners, researchers and other potential users with valid, reliable, up-to-date and easily accessible data on the health workforce.[1] A study by Nasiri *et al.*[17] that aimed to assess the distribution of a number of healthcare professionals, including general practitioners (GPs) in the Qazvin and South Khorasan provinces in Iran, before and after the implementation of a health transformation plan, found that there was no change in the distribution of healthcare workers, especially GPs, who are key players in PHC initiatives.[14,15] This indicates that equitable distribution should be an intentional policy decision, and not an incidental result of health system transformation efforts.

SA does not fare any better than many other LMICs when it comes to the maldistribution of health workers. An 11-country case study shows that many LMICs are grappling with a maldistribution of health workers, irrespective of their UHC policy and status.[4] Hence an analysis of global health workforce distribution by 2030 concluded by providing convincing evidence as to why governments and global health development partners need to accelerate investments in health worker education, to facilitate the recruitment of new health workers, and to overcome fiscal space constraints that would otherwise jeopardise the progress attained in the last decade.[19] Similarly, a consensus statement from an Equinet regional meeting report[20] suggests various approaches to promote relevant production of healthcare workers to ensure their equitable distribution and retention. The report states that it is important to select students appropriately, locate training within career paths and provide incentives that recognise the health workers trained within the public health sector as essential.

Study strengths and limitations

The primary goal of this study was to interrogate the challenges that negatively affect efforts to address health worker shortages, improve the performance of health workers and address the inequitable distribution of health workers in the implementation of NHI in SA, thus gaining more knowledge about participants' attitudes and perceptions of the transition towards NHI. However, caution must be exercised when making generalisations based on the findings of this study, as delimitations and limitations apply. The researchers noted the following limitations of the study:

(*i*) Participants' responses were self-reported, and it is assumed that participants gave honest responses.
(*ii*) The data were gathered using a web-based survey questionnaire that was designed based on the context of the challenges that might affect the implementation of NHI as defined in the NHI white paper.
(*iii*) The survey did not provide a means for participants to write short responses to qualify answers given.
(iv) Years of service, levels of experience and levels of exposure to the healthcare challenges may have led to different responses from varied participants.
(*v*) The positive correlation between the health workforce subthemes does not imply causality, and therefore the temptation to jump to the conclusion that a change in one variable can cause a change in the other should be avoided.
(*vi*) The positive correlations could have been influenced by, among other issues, the sample size.

Conclusion

The attainment of the UHC objectives in the SA NHI initiative will require strong leadership and governance commitment to develop and implement policies, practices and resources that are needed to recruit and retain HRH where they are needed. The broadening of the recruitment pool and offering flexible career opportunities and non-traditional entry points to health workers has been found to be a challenge. A further challenge lies in the fact that performance and productivity are unlikely to be improved if the prevalent management systems and working conditions for HRH are not improved by using the support of, and collaboration with, the private for-profit, voluntary and independent sectors.

Data availability. The authors confirm that the data sets generated and analysed during this study are not publicly available since the manuscript stems from a dissertation to be submitted by SVM in partial fulfilment of the requirements for the degree of Doctor of Philosophy – Pharmacy Practice at the University of KwaZulu-Natal; supervisor: PN. SVM can be contacted at vuyomokoena@lantic.net to request the data from this study.
Declaration. The data sets generated and analysed during this study are part of the manuscript for a dissertation to be submitted by SVM in partial fulfilment of the requirements for the degree of Doctor of Philosophy – Pharmacy Practice at the University of Kwa-Zulu Natal; supervisor: PN.
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