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# South Africa's rural mental health human resource crisis: a situation analysis and call for innovative task-shifting

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**A** – Study Design, **B** – Data Collection, **C** – Statistical Analysis, **D** – Data Interpretation, **E** – Manuscript Preparation, **F** – Literature Search, **G** – Funds Collection

**Summary Background.** These data provide national estimates of the human resources and services available to address the mental health (MH) needs of over 17 million rural South Africans, reliant on public rural primary healthcare (PRPHC) facilities. With personnel regarded as the most valuable resource for service delivery within an MH system, this review's aim was to inform policy on bridging the mental illness treatment gap that is as high as 85% in low- and middle-income countries (LAMICs).

**Objectives.** The findings of three MH audits comprising 160 (98%) of South Africa's (SA) PRPHC facilities are synthesised here to provide a situation analysis of SA's PRPHC MH human resources and services.

**Material and methods.** The review was based on the analysis of both primary and secondary data. Primary data were collected by interviewing the clinical heads of PRPHC facilities during the audits, while secondary data comprised a desk review.

**Results.** Results indicate that MH nurses (MHNs), clinical psychologists, MH medical doctors (MHMDs) and psychiatrists are practicing in PRPHC areas at rates of 0.68, 0.47, 0.37 and 0.03 per 100 000 population, respectively; 96% of facilities do not have psychiatrists employed, while 81% have no MHMDs, 64% do not have clinical psychologists, and 61% have no MHNs; 69% do not receive specialist MH outreach services, while 78% do not have MH multidisciplinary teams.

**Conclusions.** The MH workforce shortages in PRPHC areas are discussed in terms of the evidence based approaches of task-shifting and transdisciplinarity.

**Key words:** Africa, mental health, mental health services, primary health care, health resources, health services accessibility.

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## Background

With neuropsychiatric conditions contributing to approximately 13% of the global disease burden, it is not surprising that MH disorders are the third largest cause of disability in the world [1]. Mental Health (MH) disorders are responsible for 30% of disability-adjusted life-years (DALYs), the disability component of the burden of disease calculation [2, 3]. With mental illness affecting a vast proportion of the global population, one could expect a proportionate quantity of MH practitioners available to address the afflicted population's needs. This is unfortunately not the case.

According to the World Health Organization (WHO), there is a global shortage of appropriately qualified medical health-care professionals [4, 5]. This is especially the case for low- and middle-income countries (LAMICs) [6–8].

Worldwide, the treatment gap for MH disorders is undeniable, with 85% of people in LAMICs and between 35% and 50% of people in high-income countries living with severe mental disorders receiving no medical treatment for their MH conditions [2, 3]. Africa, as a continent, has the highest concentration of LAMICs, and the disease burden of MH disorders rests even more heavily here than in the rest of the world, accounting for 19% of all disability in this continent. More than 85% of people suffering from MH disorders on this continent do not receive medical treatment for their MH conditions [9].

The WHO further recognizes serious socio-economical risk factors in Africa, and proposes that the disease burden of mental disorders is likely to increase on this continent in the foreseeable future [3]. South Africa (SA), a middle income coun-

try (MIC), shares the characteristics of its African counterparts when it comes to the MH workforce crisis and the socio-economical risk factors likely to increase mental illness [10].

Exacerbating the MH workforce crisis, SA and its African counterparts face a seriously unequal distribution of MH workers, with the majority these professionals practicing in urban and peri-urban settings [10]. SA is regarded as one of the most developed African countries, and is an economic powerhouse on the continent. Despite this, of its population of 52 million people, 53% live below the poverty line and approximately 40% live in rural areas [11–13]. It is in SA's public rural primary healthcare (PRPHC) areas where human resources for MH care are lowest [14, 15].

While WHO endorsed strategies such as task-shifting and transdisciplinarity have been developed to address primary healthcare (PHC) MH workforce shortages in LAMICs, SA's rural MH workforce remains unknown [16, 17]. MH human resource approximations for rural SA have historically been based on estimates from district analyses [14, 18, 19], leaving considerable knowledge gaps. This paper therefore asks the question: What is SA's rural MH workforce?

## Objectives

This situation analysis, a summary of three MH human resource audits [20–22], attempts to assist policy makers in filling the knowledge gap by providing a national evaluation of the MH workforce and services available to the approximately 17 million South Africans reliant on PRPHC health facilities. We discuss and explore the evidenced-based strategies of task-shifting and



transdisciplinarity to support human resources for MH, with the aim of informing policy development in rural areas.

## Material and methods

### Identification of data sources for the situation analysis

A comprehensive secondary data review revealed a dearth of available information regarding the human resources for mental healthcare (MHC) in SA's rural areas. This secondary data review comprised a literature review on both global and local studies on SA's MH human resources. International data were acquired from the World Health Organization's (WHO's) Mental Health Atlas (a comprehensive report covering 99.3% of the world's population) and the WHO Global Burden of Disease Report. Local sources included policies and reports by government departments such as the Department of Health (DoH) and the Health Professions Council of South Africa, non-profit organizations such as the Health Systems Trust, as well as statistical data from the census, and national household survey data from Statistics South Africa [23]. Using PubMed, Medline and PsychInfo, and not restricting the search to date, language or publication status, peer-reviewed works on SA's MH human resources status were identified using validated search strategies [24]. The *South African Medical Journal*, the *South African Journal of Psychiatry*, and the *South African Journal of Psychology* were hand-searched. In an effort to avoid publication bias, the literature search extended beyond scientific databases to grey literature and unpublished academic dissertations. Reading through the reference lists of key articles guided the inclusion of unpublished articles, and assisted in identifying key authors on the subject. The identified authors were contacted personally to ensure the inclusion of all relevant unpublished works.

The primary data for this situation analysis, collected between 2014 and 2016, were collected by three audits of the MH resources and services of MH professionals (mental health nurses [20], medical prescribers [21] and clinical psychologists [22]) in PRPHC health facilities. The aim of these audits and the subsequent synthesis of the data was to fill the secondary data analysis gaps with the goal of providing a comprehensive integrated view of the current PRPHC MH workforce situation.

### Procedure for primary data collection

The audits [20–22] were initiated by obtaining ethics approval (BE 416/13) from the University of KwaZulu-Natal (UKZN) Biomedical Research Ethics Committee (BREC). For each province a specific request to conduct research at their public institutions was completed, and gatekeeper permission was obtained. Worldwide, a major hurdle in rural health research is defining which areas are to be included as “rural” [25] and therefore evidence based strategies were used to ensure accuracy: to ensure inclusiveness, data purging and refinement was deemed necessary as the only secondary data available for public perusal on rural health facilities' classification [26] were almost a decade old. During the last decade, SA has seen several provincial legislature, boundary and name changes. Each participating provincial DoH's information management director was contacted to provide an updated list of public health facilities regarded as rural, as well as the approximate population that it serves. All participating provinces officially confirmed that the DoH's Human Resource Management Circular of 2004 [26] was used as the basis to define their health facilities as “rural”, but minor changes were made to the list, bringing the total number of health facilities included in the audits from the original 175 to an updated 163.

Provincial district managers were contacted via telephone and e-mail to request them to provide the researchers with the

names and contact details of chief executive officers (CEOs) and medical managers in the health facilities. CEOs have executive authority at health institutions and are required to personally approve the employment of health professionals at the facility where they are residing. Medical managers are medical doctors that manage all medical and allied health personnel at their institutions. The secondary data examination suggested that medical managers and CEOs should be included as key DoH stakeholders for the audit interviews as these professionals were judged to be in the best position to provide information about the MH human resources and services at their health facilities.

After obtaining informed consent, the medical managers/CEOs that agreed to participate in the audits were interviewed telephonically using a structured questionnaire developed by reviewing the WHO's audit tools [27] for situation analyses, as well as the DoH's strategic planning for MH resources [28]. The audits were constructed to obtain information about the human resources and services of a) Mental Health Nurses [20], b) clinical psychologists [22], and c) medical prescribers [21] (psychiatrists and medical officers dedicated to MHC). Where participants requested a written version of the questionnaire, an electronic version was sent to them via e-mail. In exceptional cases where facilities did not have CEOs or medical managers available for the interviews, nursing services managers (NSM) provided the institutions' information.

### Data analysis and presentation

The telephonic interviews with the medical managers/CEOs were digitally recorded and transcribed. The electronic questionnaires were transferred from the FluidSurveys' encrypted domain to a Microsoft Excel Spreadsheet. The data from the telephonic and electronic questionnaires were combined and analysed using IBM's Statistical Software Package: SPSS.

## Results

### Mental health human resources and rural population

One hundred and sixty out of the 163 (98.3%) South African PRPHC health facilities participated in the three audits [20–22]. One hundred and thirty-eight (86.3%) medical managers, 20 (12.5%) CEOs and two NSMs (1.3%) provided the data for their institutions. The rural South African population reliant on PRPHC institutions was estimated at 17 143 872 people [11, 23]. These health centres employ a total of seven psychiatrists, 63 medical doctors dedicated to MH (MHMDs), 81 clinical psychologists [22] and 116 MH nurses (MHNs) [20] at rates per 100 000 population of 0.03, 0.37, 0.47 and 0.68, respectively (Table 1).

### Human resource distribution within PRPHC areas

Table 2 represents the distribution of MHC professionals per province and indicates that 96.9% of the PRPHC healthcare facilities do not employ psychiatrists. The seven psychiatrists that are employed are concentrated in five facilities and available to only four of SA's provinces. The MHMDs in PRPHC areas are employed at 30 facilities, leaving 130 (81.3%) institutions without medical prescribers dedicated to MHC. Clinical psychologists are employed at 57 (35.7%) institutions [22] while MHNs are employed at 62 (38.8%) of the PRPHC health facilities [20].

### MHC supplementary and out-reach services

Of the 160 PRPHC facilities, 36 (22.5%) had functional MHC multidisciplinary teams (MDTs). Excluding the 63 MHMDs dedicated to provide MHC services at their institutions, a further

three facilities (1.9%) employ general (non-specialist) medical doctors (GMDs) with a weekly session dedicated to MHC, five facilities (3.1%) employ GMDs with bi-weekly dedicated MHC sessions, while in four facilities (2.5%) GMDs have three MHC sessions per week. Clinical psychologists provide outreach sessions to 26 (16.3%) facilities, monthly, and to 13 (8.1%) facilities on a bi-monthly basis [22]. With regard to specialist medical prescriber outreach services, 49 (30.6%) facilities receive monthly psychiatrist visits, with 12 (7.5%) facilities receiving bimonthly visits. A total of 99 (61.9%) PRPHC health facilities do not receive psychiatrist outreach sessions. Table 3 provides an overview of the supplementary and outreach MHC services at PRPHC institutions. Table 4 depicts SA's MH workforce compared to that of other high MICs according to the World Bank income group classification [1].

## Future employment of MHC specialists in PRPHC facilities

With psychiatrists and clinical psychologists regarded as the MH specialists employable in the DoH's public health sector, Table 5 indicates that 58 PRPHC facilities (36.3%) confirmed clinical psychologists [22] and 9 facilities (5.6%) confirmed psychiatrists as specialists in their future staff establishment plans.

## Human resource production

There appears to be a discrepancy in the numbers of prescribing and non-prescribing MH specialists trained with clinical psychologists trained at more than four times the rate of psychiatrists and MHNs over the last decade (Table 6).

**Table 1. PRPHC population sizes, health facilities, mental health human resources and rates per 100,000 population per province**

	Rural population reliant on PRPHC health facilities		Clinical psychologists [22]		MHMDs [21]		MHNs [20]		Psychiatrists [21]		Total MHC Providers	
	Population	Facilities (n)	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate
EC	3 333 810	31	0	0	10	0.3	13	0.39	0	0	23	0.69
FS	465 925	7	8	1.07	2	0.43	3	0.64	1	0.21	14	3.0
KZN	4 581 901	34	11	0.24	6	0.13	27	0.59	1	0.02	45	0.98
LIM	4 105 933	36	41	1.0	24	0.58	48	1.17	4	0.07	116	2.83
MPU	1 621 686	17	11	0.68	13	0.8	9	0.55	0	0	33	2.03
NC	173 248	10	0	0	0	0	0	0	0	0	0	0
NW	2 063 721	14	5	0.24	8	0.39	8	0.39	1	0.05	22	1.07
WC	797 648	11	5	1.0	0	0	8	1.0	0	0	13	1.63
<b>Total</b>	<b>17 143 872</b>	<b>160</b>	<b>81</b>	<b>0.47</b>	<b>63</b>	<b>0.37</b>	<b>116</b>	<b>0.68</b>	<b>7</b>	<b>0.03</b>	<b>266</b>	<b>1.55</b>

EC – Eastern Cape; FS – Free State; KZN – KwaZulu-Natal; LIM – Limpopo; MPU – Mpumalanga; NC – Northern Cape; NW – North West; WC – Western Cape; MHMD – Mental Health Medical Doctor (not specialized in psychiatry, but dedicated to Mental Health); MHN – Mental Health Nurse; \* The rural population for each province making use of the public health sector was obtained by calculating the health centres included in the audit's population, as well as their affiliated satellite clinics' population.

**Table 2. MH human resources distribution per province: MH professionals employed at PRPHC facilities**

	EC		FS		KZN		LIM		MPU		NC		NW		WC		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>Clinical psychologists [22]</b>																		
None	31	100	3	42.8	23	67.6	11	30.6	9	52.9	10	100	9	64.2	7	63.6	103	64.4
One	0	0	3	42.8	10	29.5	11	30.6	6	35.2	0	0	5	35.7	4	36.4	39	24.4
Two	0	0	1	14.3	1	2.9	11	30.6	1	5.9	0	0	0	0	0	0	14	8.8
Three	0	0	0	0	0	0	3	8.3	1	5.9	0	0	0	0	0	0	4	2.5
<b>Medical Doctors [21] dedicated to MHC</b>																		
None	26	83.9	5	71.4	32	94.1	23	63.9	13	76.4	10	100	10	71.4	11	100	130	81.3
One	2	6.5	2	28.6	1	2.9	8	22.2	1	5.9	0	0	1	7.1	0	0	15	9.4
Two	2	6.5	0	0	0	0	2	5.6	0	0	0	0	2	14.2	0	0	6	3.8
Three	0	0	0	0	0	0	1	2.8	0	0	0	0	1	7.1	0	0	2	1.3
Four	1	3.2	0	0	0	0	2	5.6	3	17.6	0	0	0	0	0	0	6	3.8
Five	0	0	0	0	1	2.9	0	0	0	0	0	0	0	0	0	0	1	0.6
<b>MHC Nurses [20]</b>																		
None	24	77.4	5	71.4	15	44.1	16	44.4	11	64.7	10	100	10	71.4	7	63.7	98	61.3
One	3	9.7	1	14.3	15	44.1	5	13.9	5	29.4	0	0	2	14.2	2	18.2	33	20.6
Two	3	9.7	1	14.3	3	8.8	6	16.7	0	0	0	0	1	7.1	1	9.1	15	9.4
Three	0	0	0	0	0	0	2	5.6	0	0	0	0	0	0	0	0	2	1.3
Four	1	3.2	0	0	0	0	7	19.4	1	5.9	0	0	1	7.1	1	9.1	11	6.9
Five	0	0	0	0	1	2.9	0	0	0	0	0	0	0	0	0	0	1	0.6
<b>Psychiatrists [21]</b>																		
None	31	100	6	85.7	33	97	33	91.6	17	100	10	100	13	92.8	11	100	154	96.2
One	0	0	1	14.3	1	3	2	5.5	0	0	0	0	1	7.1	0	0	5	3.1
Two	0	0	0	0	0	0	1	2.8	0	0	0	0	0	0	0	0	1	0.6

EC – Eastern Cape; FS – Free State; KZN – KwaZulu-Natal; LIM – Limpopo; MPU – Mpumalanga; NC – Northern Cape; NW – North West; WC – Western Cape; MHC – Mental Healthcare.

**Table 3. The supplementary and outreach MHC services received by PRPHC institutions [21]**

	EC		FS		KZN		LIM		MPU		NC		NW		WC		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>MHC MDT</b>																		
None	28	90.3	6	85.7	24	70.5	20	55.5	13	76.4	10	100	12	85.7	11	100	124	77.5
One	3	9.6	1	14.3	10	29.5	16	44.5	4	23.6	0	0	2	14.3	0	0	36	22.5
<b>GMD weekly MHC sessions</b>																		
None	30	96.8	7	100	26	83.4	34	94.4	17	100	10	100	13	92.9	11	100	147	91.9
One	0	0	0	0	0	0	2	5.6	0	0	0	0	1	7.1	0	0	3	1.9
Two	1	3.3	0	0	4	12.9	0	0	0	0	0	0	0	0	0	0	5	3.1
Three	0	0	0	0	4	12.9	0	0	0	0	0	0	0	0	0	0	4	2.5
<b>Clinical psychologists' outreach sessions [22]</b>																		
None	29	93.5	6	85.7	21	61.8	23	63.9	15	88.2	8	80	12	85.7	7	63.6	121	75.6
Monthly	2	6.5	0	0	10	29.4	9	25	1	5.9	0	0	2	14.3	2	18.2	26	16.3
Bi-monthly	0	0	1	14.3	3	8.8	4	11.1	1	5.9	2	20	0	0	2	18.2	13	8.1
<b>Psychiatrists' outreach sessions</b>																		
None	27	87.1	3	42.9	16	47.1	9	25	17	100	10	100	13	92.9	4	36.4	99	61.9
Monthly	3	9.7	3	42.9	16	47.1	20	55.6	0	0	0	0	1	7.1	6	54.5	49	30.6
Bi-monthly	1	3.3	1	14.3	2	5.9	7	19.4	0	0	0	0	0	0	1	9.1	12	7.5

EC – Eastern Cape; FS – Free State; KZN – Kwazulu-Natal; LIM – Limpopo; MPU – Mpumalanga; NC – Northern Cape; NW – North West; WC – Western Cape; MHC – Mental Healthcare; MDT – Multidisciplinary Team; GMD – General Medical Doctor.

**Table 4. SA's MH workforce compared to that of other high MICs per 100 000 population [1]**

MH Professionals per cadre per 100 000 population across healthcare settings				
	High Middle-Income Country Average		SA National Average	SA PRPHC
Clinical Psychologists [22]	1.47		2.6	0.47
MHMDs [21]	0.87		0.43	0.37
MHNs [20]	9.72		9.72	0.68
Psychiatrists [21]	2.03		0.27	0.03

MIC – Middle Income Country; MH – Mental Health; PRPHC – Public Rural Primary Healthcare; MHMD – MH Medical Doctor (not specialized in psychiatry, but dedicated to MH); MHN – Mental Health Nurse.

**Table 5. MHC Specialists: proposed future staff establishment at PRPHC facilities**

	EC		FS		KZN		LIM		MPU		NC		NW		WC		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>MH Specialists</b>																		
None	23	74.2	7	100	12	35.3	15	41.7	11	64.7	8	80	8	57.1	9	81.8	93	58.1
Clinical psychologists [22]	8	25.8	0	0	22	64.7	15	41.7	4	23.5	2	20	5	35.7	2	18.2	58	36.3
Psychiatrists [21]	0	0	0	0	0	0	6	16.7	2	11.8	0	0	1	7.1	0	0	9	5.6

EC – Eastern Cape; FS – Free State; KZN – Kwazulu-Natal; LIM – Limpopo; MPU – Mpumalanga; NC – Northern Cape; NW – North West; WC – Western Cape; MHC – Mental Healthcare; MH – Mental Health.

**Table 6. MHC professionals employed in the PHS qualifying per year from 1995 to 2014 [29]**

	Year											Total
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		
<b>MHC Professionals</b>												
Clinical psychologists [22]	101	130	126	107	134	98	118	133	159	132	1238	
MHNs [20]	UN	UN	37	35	56	42	55	41	123	UN	389	
Psychiatrists [21]	26	31	24	41	28	32	25	19	15	32	273	

MHC – Mental Healthcare; PHS – Public Health Sector; MHN – Mental Health Nurse; UN – Information not available.



## Discussion

### A disproportionate MH human resource distribution

Of SA's population of 52 million people, more than 44 million (84.6%) are reliant on the public health sector (PHS) for their healthcare needs [23, 30]. Within the PHS, approximately 17 million people (32.7% of SA's total population and 38.6% of the PHS) are reliant on PRPHC health facilities. This study's findings suggest an uneven distribution of MH human resources within the PHS. Globally, nurses are the most representative category of MHC professionals [31]. While this is also the case for SA, with this cadre practicing on a national level at a rate of 9.7 per 100 000 population [1], this study suggests MHNs rates are at 0.68 in PRPHC settings. Non-specialist medical doctors working in MHC are nationally represented at a rate of 0.43 per 100 000 population and at 0.37 at PRPHC level. There are 762 psychiatrists registered in SA [32], with 302 (39.6%) practicing in the public sector [33] and only seven (0.9%) in PRPHC areas. The official South African psychiatrist to 100 000 population ratio is 0.27 on a national level [1, 2, 4], while this situation analysis indicates that it is 0.03 in PRPHC areas. Of the 2786 clinical psychologists practicing in SA, 1213 (43.5%) are working in the public sector at a national rate of 2.6 per 100,000 population [34] and at a rate of 0.47 in PRPHC areas [22].

### A MH prescribing human resource crisis

SA, rated by the World Bank as a high-MIC, [1] compares poorly to its counterparts with regard to psychiatrists and medical doctors working in MH settings (Table 5) [31]. According to official WHO statistics [1], MHNs' representation appear to be on par with other high MICs. The MHN's audit of this situation analysis [20], however, suggests a much lower rate of this cadre practicing in the PHS' PRPHC areas. Clinical psychologists (non-prescribing MH care specialists) are practicing in SA's PHS at rates higher than that of other high-MICs [34]. Across all cadres, the high-MIC average rate of MH professionals is 29.1 per 100 000 population. This situation analysis suggests that the total average across all MH professionals is 1.55 per 100 000 population in SA's PRPHC areas. Table 5 depicts SA's MH workforce compared to that of other high MICs, according to the World Bank income group classification [1].

### Strategies for increasing Mental Health Human Resources

#### Human resource production

While the scaling up of MHC services has been advocated not only as a service delivery strategy, but also as a human rights and development priority in LAMICs [10, 31, 35, 36], the MH treatment gap remains enormous [6, 9, 36, 37]. The futility of relying solely on an increase of the number of MH professionals to close this treatment gap is well-documented [14, 15, 36]. SA has, since the advent of its democracy and the introduction of its PHC focused health system, been struggling to produce sufficient human resources to meet its population's MHC demands [10]. Table 6, depicting the training of MHC professionals in SA over the last decade, suggests that prescribing MHC professionals will remain at a significant shortage for the foreseeable future with only modest gains made in numbers trained [29, 32, 38]. The discrepancy in the numbers of prescribing and non-prescribing MH specialists trained provides the opportunity to investigate task-shifting and transdisciplinarity as alleviation strategies [22].

#### Task-shifting and transdisciplinarity

Task shifting can be defined as the delegating of tasks to either new or existing professionals with less, or more narrowly focused training [6]. In MHC, this approach has historically been

adopted to expand the role of MHNs and MHMDs to take over tasks like prescribing psychiatric medications and managing cases from psychiatrists. Task shifting within MHC has been found to be practical, effective, safe and cost-cutting [6, 15, 39, 40]. SA already has a policy in place to allow for MHMDs and non-medical prescribers like MHNs, trained in MHC, to take over prescribing and case management roles from psychiatrists at PHC level [1]. This situation analysis indicates, however, that the current human resources in PRPHC areas provide insufficient MHNs and MHMDs to whom these tasks can be shifted.

These findings necessitate the need to develop other MHC professionals' capacities to deliver more holistic treatment solutions and to whom MHC tasks could be shifted at PHC level. SA has historically been at the forefront of innovation and policy with regard to PHC [41], and its DoH has placed major recent emphasis on the re-engineering of MHC within this system [42, 43]. An example of such innovation was the establishment of new cadres of health professionals such as clinical associates within the PHC system. Clinical associates (a mid-level PHC health practitioner), for example, are allowed to prescribe limited psychotropic medications with some legal restrictions, even though they are not specialist trained in MHC. Clinical associates and medical students have also now started to receive practical training in rural and PHC settings [44], an approach advocated as having positive effects on healthcare students' opinions of later working in these settings [45].

While the creation of mid-level practitioners and rural studentships are steps towards scaling-up MHC human resources and services, SA's dire human resource shortages at PHC level requires an even more creative problem-solving approach. Transdisciplinarity, or the transcendence of traditional professional boundaries by integrating knowledge from other health disciplines into its practice [46, 47], is one such creative approach that can be followed.

The 2015 World Psychiatric Association's (WPA) Annual Congress, themed "Primary Care Mental Health: Innovation and Transdisciplinarity", focused on the integration of MHC into PHC. The need to review, adjust and adapt traditional roles of healthcare professionals in order to achieve this integration has since been highlighted as a strategy to meet rural, underserved PHC populations' MHC needs [48]. The WPA adopted the Bucharest Statement on Collaborative and Integrated Care, calling for the inclusion of collaborative and integrated MHC in the updated United Nations Sustainable Development Goals [49]. The support for integration, innovation and transdisciplinarity within MHC has been met with so much support that the Bucharest Statement gave rise to the MH Reform Act of August 2015 in the USA [50]. If a country with a much larger number of MH human resources than LAMICs [1] deems it necessary to consider innovative solutions, it is suggested that other LAMICs follow suit.

Applying a transdisciplinarity approach to the training of health practitioners can lead to the development of new cadres of health professionals. Applying this approach to the continuous professional development of established cadres of MHC practitioners has led to successful task shifting which has had promising results [42]. An example is transforming PHC family physicians into comprehensive MHC providers to whom tasks traditionally allocated to psychiatrists could successfully be shifted.

### Limitations of the study

Even though 160 PRPHC health facilities (98%) were included in the audits, the lack of definitive current provincial and national documentation on PRPHC facility classification may have led to some institutions being omitted. The unavailability of official recent PRPHC records also proposes that the population reliant on PRPHC facilities should be interpreted with caution. Even though this calculation was done by triangulating primary (as discussed in the Method section) and secondary sources [11,

12, 23], the numbers should be regarded as a conservative approximation [12, 33].

## Conclusions

The situation analysis conducted in this paper addresses the question regarding SA's rural MH human resources. It provides a synthesis of not only the national estimates of MH human resources in SA's PRPHC settings, but also of its services. The findings of this paper suggest dire shortages with a disproportionately low distribution of MHC professionals in rural PHC areas. These findings indicate that traditional scaling up strate-

gies such as redistributing and training more MHC professionals alone would prove to be inadequate to meet the MH needs of the population reliant on PRPHC. Innovative strategies such as task-shifting have been implemented, but the severe MH workforce shortages at PHC level suggests insufficient MHC professionals to whom tasks can be shifted. In order for SA to make tangible in-roads into the MH human resource crisis at PHC level, it requires more MHC personnel to whom traditional tasks dedicated to psychiatry can be shifted. This could be achieved by using evidenced based transdisciplinarity principles in the training of both new cadres of MHC professionals and already established MHC professions.

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