

ENHANCE

EvideNce led co-created HeAlth systems interventioNs for MLTC-M CarE

Overview

The prevalence rates of multimorbidity (coexistence of multiple chronic conditions in a single individual) in South Africa is one of the highest among low- and middle-income countries (LMICs), with a growing burden of non-communicable diseases (NCDs). However, nationally representative estimates of prevalence for different disease combinations are difficult to determine reliably and consistently.

We used a novel statistical model to estimate the prevalence of disease combinations in South Africa, which showed the need to screen for comorbidities is greatest in patients with less common conditions, who tend to have relatively more comorbidities.

Uncovering the prevalence of chronic disease combinations in South Africa

Introduction ·

A recent systematic review estimated that 37% of the world's adult population is experiencing multimorbidity, although multimorbidity in LMICs is relatively underresearched. Africa has a rapidly aging population and faces an associated increase in NCDs which can be a challenge when healthcare systems have historically focused on communicable diseases.

In this context, South Africa is an important country in which to assess multimorbidity. It has the largest population living with HIV globally, more than double the prevalence of tuberculosis (TB) than the African average, as well as a higher prevalence of diabetes, hypertension and arthritis when compared to averages for sub-Saharan Africa. Moreover, South Africa has a large body of multimorbidity data, allowing novel methods to estimate reliably the prevalence of disease combinations.



Method

A three-step process was used to estimate the prevalence of different condition combinations in South Africa:

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Estimating the strength of association between different conditions, based on metaanalyses of previous South African studies.

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Estimating the prevalence of individual conditions, using nationally representative data sources.



Combining the results of steps (1) and (2) via a statistical model that estimates the national prevalence of each condition combination.

Twenty-one datasets were utilised to estimate disease combinations in South Africans aged 15 and older, from published epidemiological studies investigating multimorbidity in adults and databases with individual-level data.

The analysis focused on combinations of 10 conditions: arthritis, asthma, chronic obstructive pulmonary disease (COPD), depression, diabetes, HIV, hypertension, ischaemic heart disease (IHD), stroke and TB.

Key findings

By international standards, South Africa has very high levels of HIV (7.8 million people – 18.2% of population compared with 0.6% globally), hypertension (15.3 million), diabetes (4.6 million), and arthritis (5.1 million) (*Table 1*).

This is reflected in our estimates of the most frequent disease combinations. There are 3.5 million people living with hypertension and arthritis, 3.4 million people with hypertension and diabetes, and 2.2 million with hypertension and HIV (see Table 2).

Table 1: National prevalence estimates for individual conditions at ages 15+

	Number	%	Source						
Hypertension	15,315,000	33.9%	SANHANES 2012						
Diabetes	4,608,000	10.2%	SANHANES 2012						
HIV	7,762,000	17.2%	Thembisa 2021						
ТВ	545,000	1.2%	Thembisa 2023						
Depression	2,213,000	4.9%	SASH 2002-4						
COPD	819,000	1.8%	DHS 2016						
Asthma	1,600,000	3.5%	DHS 2016						
Ischaemic Heart Disease	2,529,000	5.6%	SANHANES 2012						
Stroke	1,174,000	2.6% SANHANES 201							
Arthritis	5,113,000	11.3%	WHS 2003						



The less common diseases, such as COPD (1.8% of the population ages 15+), asthma (3.5%), IHD (5.6%), and stroke (2.6%), have the greatest combinations of conditions that are most strongly linked, rather than merely most frequent.

For instance, individuals with COPD are 14.6 times more likely to have asthma and 9.8 times more likely to have IHD, while those with IHD are 7.2 times more likely to have experienced a stroke. Furthermore, people with COPD have the highest average number of comorbidities (2.3), followed by stroke (2.1), IHD (1.9), TB (1.7) and asthma (1.7).



Average number of comorbidities in people by index condition

Index condition

Table 2: Number of South African adults experiencing different disease combinations

	Diabetes	HIV	тв	Depression	COPD	Asthma	IHD	Stroke	Arthritis
Hypertension	3,382,000	2,171,000	160,000	918,000	525,000	788,000	1,658,000	842,000	3,452,000
Diabetes		554,000	74,000	342,000	201,000	296,000	662,000	267,000	1,127,000
ніх			223,000	453,000	106,000	225,000	392,000	182,000	600,000
тв				78,000	39,000	38,000	82,000	15,000	
Depression					134,000	218,000	321,000	186,000	597,000
COPD						255,000	269,000	102,000	278,000
Asthma							291,000	135,000	421,000
Ischaemic Heart Disease								318,000	825,000
Stroke									330,000



Policy implications

Reducing the burden of multimorbidity in South Africa requires health interventions that acknowledge the prevalence of different disease combinations, particularly focusing on patients with less common conditions who exhibit relatively higher levels of comorbidity.

There is a greater need to screen for NCDs. Primary healthcare systems, guidelines and health worker training needs to be reoriented to better manage the growing numbers of people living with NCDs and multimorbidity.

Longer consultations and increased multidisciplinary involvement are needed for index conditions that are inherently multimorbid. Health care workers should screen for comorbidities in people with COPD, asthma, IHD, and stroke, as these conditions show the strongest associations and have a higher average number of comorbidities.

Health interventions for the older population (aged 50 and over) should incorporate regular holistic screening programmes and appropriate management, as this group has a high prevalence of multimorbidity, particularly those already receiving long-term care.



About the project

This policy brief is part of the ENHANCE project. ENHANCE (EvideNce led cocreated HeAlth systems interventioNs for MLTC Care) is a research collaboration between four South African institutions -University of Cape Town, University of KwaZulu Natal, South African Medical Research Council, University of the Witwatersrand - three UK institutions -King's College London, University of East Anglia, Oxford University and the Delft University of Technology. With funding from the UK's National Institute for Health and Care Research, it aims to produce evidence-based scalable solutions for care, treatment and support systems for people living with more than one longterm condition to enhance their health and wellbeing.

A core activity was to use South African data to identify the most prevalent disease combinations to guide development of solutions for primary healthcare. The Enhance team has worked with stakeholders from the Western Cape and KwaZulu Natal Departments of Health and with people with lived experience to co-produce an intervention currently being tested among 1800 patients in 32 clinics with results expected in late 2025. For more information contact Dr Leigh Johnson - leigh.johnson@uct.ac.za

Johnson, Leigh F., et al. "A model-based approach to estimating the prevalence of disease combinations in South Africa." *BMJ Global Health* 9.2 (2024): e013376. <u>https://doi.org/10.1136/bmjgh-2023-</u> 013376

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