

# BMJ Open Model of delivery of cancer care in South Africa's Eastern Cape and Mpumalanga provinces: a situational analysis protocol

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**To cite:** Chitha W, Swartbooi B, Jafta Z, *et al.* Model of delivery of cancer care in South Africa's Eastern Cape and Mpumalanga provinces: a situational analysis protocol. *BMJ Open* 2022;**12**:e058377. doi:10.1136/bmjopen-2021-058377

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2021-058377>).

Received 18 October 2021  
Accepted 04 January 2022



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## ABSTRACT

**Introduction** Cancer contributes to a significant proportion of morbidity and mortality globally. Low-income and middle-income countries such as South Africa tend to be characterised by poor and inequitable access to cancer services. Cancer resources are more likely to be found in urban areas, tertiary centres and quaternary hospitals. However, little is known about the linkages to care, continuity of care and packages of cancer care in rural South African settings. This study describes cancer service delivery for South Africa's Eastern Cape and Mpumalanga provinces.

**Methods and analysis** A mixed-methods qualitative and quantitative research methods of three substudies which include semistructured interviews with patients, focus group discussions with health providers and a quantitative record review that will be carried out at both Rob Ferreira hospital, Witbank hospital and Nelson Mandela Academic hospital in Mpumalanga and Eastern Cape province, respectively. Instruments assess demographic characteristics, explore packages of cancer care, explore challenges experienced by health professionals, and maps out the referral pathway of patients with a cancer diagnosis in the study sites. Numerical, quantitative data will be explored for normality using the Shapiro-Wilk test and reported using either the mean, SD and range or the median and IQR depending on the normality of the distribution. Qualitative data will be analysed using the phenomenological approach.

**Ethics and dissemination** Ethics approval was obtained from the Human Research Ethics Committee of Walter Sisulu University (040/2020) and the University of the Witwatersrand (M210211), South Africa. To the research team's knowledge, this is the first study presenting the model of cancer delivery in South Africa's Eastern Cape and Mpumalanga province. This will thus provide better understanding of cancer service delivery systems, packages of cancer care from primary care to quaternary care.

## INTRODUCTION

Cancer is one of the leading causes of morbidity and premature mortality

## Strengths and limitations of this study

- Mixed-methods design using quantitative and qualitative methods to evaluate the existing model of cancer care services in two rural South African settings.
- The medical records database is likely to include all patients in the two provinces' drainage areas allowing us an overview of the local cancer registry.
- A limitation is that this study is only confined to patients seeking cancer care in only two of South Africa's nine provinces.
- The record review is reliant on secondary data and is therefore likely to be impacted by quality of the data and could result in missing data.

worldwide.<sup>1</sup> In 2020, there were an estimated 19.3 million incident cancer cases and almost 10 million cancer deaths globally.<sup>1</sup> The global cancer burden is expected to have reached 28.4 million cases in 2040, a 47% rise from 2020.<sup>2</sup> The larger increase in burden will be felt in low-income and middle-income countries (LMICs) (64%–95%) versus high-income countries (32%–56%) countries due to demographic changes. This may be further exacerbated by increasing risk factors associated with globalisation and a growing economy.<sup>2</sup> As of 2020, female breast cancer had surpassed lung cancer as the most commonly diagnosed cancer, with an estimated 2.3 million new cases (11.7%), followed by lung (11.4%), colorectal (10.0%), prostate (7.3%) and stomach (5.6%) cancers.<sup>2</sup> Lung cancer remained the leading cause of cancer death, with an estimated 1.8 million deaths (18%), followed by colorectal (9.4%), liver (8.3%), stomach (7.7%) and female breast cancer (6.9%).<sup>2</sup> Efforts to build a sustainable

infrastructure for the dissemination of cancer prevention measures and provision of cancer care in LMICs are therefore critical for global cancer control.<sup>1</sup>

Cancer treatment is complicated and multifaceted because the outcome is determined by a number of factors, together with timely and accurate diagnosis and treatment.<sup>3</sup> Although evidence-based research has driven rapid changes in cancer treatment, the same cannot be said for management practices, as little is known about the ideal model of care for oncology settings.<sup>4</sup> Moreover, cancer care delivery has remained unchanged in response to the new realities of cancer survival and treatment complexity.<sup>4</sup> The number of health professionals and tests used in determining and evaluating interventions or treatments, as well as the complexity of the three cancer treatment modalities (medical, surgical and radiation), all have a significant impact on the structure, process and outcomes of care.<sup>4</sup> The complex decision-making, multiple handoffs between primary and specialty care providers, and coordination among cancer care team members complicate the care cascade even more.<sup>4</sup>

Although almost all models of care promote patient-centred, interprofessional and collaborative approaches to patient care, no specific guidelines or steps are provided to realise this.<sup>4</sup> Interdisciplinary teamwork (ITW) is regarded as the gold standard for cancer patient care and is promoted by leading organisations such as the European Partnership for Action Against Cancer<sup>5</sup> and the American Society of Clinical Oncology, respectively.<sup>5</sup> ITW represents both a rationale and an ethical approach to care, given the numerous potential benefits and the goal of providing comprehensive care to all patients.<sup>5</sup> On the other hand, ITW entails a group of health professionals discussing individual cases and recommending treatment plans.<sup>5</sup> Even though collaborative teamwork involving various disciplines in cancer treatment services is pragmatically promoted on a global scale as an ideal model of care, there is little empirical evidence demonstrating its effectiveness on patient and organisational outcomes.<sup>5</sup>

As healthcare systems around the world strive to provide high-quality, patient-centred care, the patient perspective on care is gaining traction.<sup>3</sup> A growing body of evidence establishes links between patient experiences with care and clinical outcomes such as quality of life.<sup>3</sup> Care preferences among patients with cancer differ from those of other patient groups, which may be due to the severity of the disease and the risks associated with treatment.<sup>6</sup> If the goal is to ensure patient-centredness in healthcare, it is necessary to be aware of patient preferences when planning and improving care.<sup>7</sup> Understanding patient preferences is critical when developing standards or clinical guidelines with a clear patient attention.<sup>3</sup>

A 2006 Australian report tasked with the mapping of rural and regional oncology services, made several recommendations including a formal recognition of the problem of regional disparity and a collaborative government response, building regional oncology centres of excellence, establishing a national quality assurance framework

and short-term capacity-building measures such as investment in clinical data systems to audit, monitor and plan oncology services, investment in psychosocial support services for people in rural and remote areas who have been shown to have significant inequitable access to such services, support for distance education, mentoring and innovative models such as telemedicine in remote areas; and improved coordination of government-funded travel and accommodation schemes for patients with cancer and their families in remote areas.<sup>8</sup> In Canada, all provinces have a cancer agency whose mandate is cancer control for the province.<sup>9</sup> Some agencies provide, fund and manage the services, whereas in other provinces the agencies partly fund and manage services.<sup>9</sup> The management of cancer services is centralised through the British Columbia Cancer Agency (BCCA).<sup>9</sup> However, the province has four regional comprehensive cancer centres located throughout the province funded directly by the BCCA and providing a wide range of services that include patient assessment, diagnostic and therapy planning; radiation therapy; chemotherapy services; nursing care; patient; family counselling; nutrition counselling; pharmacy services; pain and symptom control service; teaching, applied research activities and cancer information library.<sup>9</sup> Networked models of care ensure that people with cancer in regional, rural and remote areas can access high-quality care by linking smaller centres to large specialist centres.<sup>9</sup>

Still in Canada, medical oncologists who transfer patients for chemotherapy in the community have the responsibility to ensure that the accepting medical doctor has the necessary knowledge, skill and ability to manage the type of patient and that the community facility meets the BCCA standards as defined by the Communities Oncology Network (CON).<sup>9</sup> The CON facilities are required to have at a minimum, appropriately trained and competent staff (nurses, doctors and pharmacists) to administer and manage the cytotoxic and hazardous products used to treat cancer. They are required to have access to clinical diagnostic services and the capability to provide all of the information required to monitor cancer therapy. Additionally, these communities are required to have the capabilities to respond to complications of therapy 24 hours per day.<sup>9</sup> Given some similarities in the existence of underserved populations within Canada and Australia, the South African health system could therefore benefit from learning from some of these models and adapt them for their context.

In 2020, there were 108 168 new cancer cases in South Africa, bringing the risk of developing cancer before the age of 75 years to 20.7% (23.6% male and 18.7% female).<sup>1</sup> The top five cancers affecting women in South Africa are, breast cancer (27.1%), cervical cancer (18.7%), colorectal cancer (6.3%), lung cancer (4.9%) and cancer of the uterus (3.9%), while the top five cancers affecting men are; prostate cancer (25.8%), lung cancer (12%), colorectal cancer (7.3%), Kaposi sarcoma (4.9%) and non-Hodgkin's lymphoma (4.1%).<sup>10</sup> South Africa's most

prevalent cancers are preventable or potentially curable if diagnosed early.<sup>11</sup> Cancer mortality in South African rural areas may be due to late presentation of the disease, presence of comorbid disease including HIV, and limited access to early detection and treatment services.<sup>11</sup>

South Africa's cancer care services are currently limited by poorly developed care pathways; late presentation; inequitable distribution of care; shortages of specialised workforce; old, poorly functioning, non-serviced equipment; lack of standardised budgets within and between provinces; cancer registries lack resources and poor implementation of existing skills and programmes. The referral system is not fully functional due to either an inadequate number or lack of skilled health professionals in cancer management at district, provincial and central levels, resulting in centralised or urbanised cancer services.<sup>11</sup>

In South Africa, cancer care services exist primarily in academic centres, which are generally located in urban areas.<sup>11</sup> As a consequence, cancer services in non-academic centres, primary care facilities and rural areas are generally underdeveloped.<sup>12</sup> They lack the necessary infrastructure, resources and expertise to provide quality, safe and accessible radiotherapy, chemotherapy, palliative care services and surgical cancer services.<sup>12</sup>

For instance, Mpumalanga and Eastern Cape provinces of South Africa are both rural provinces.<sup>13</sup> Patients from rural communities, who generally cannot afford private healthcare and are dependent on state health services

for cancer care, are compelled to travel long distances to urban-based centres to access cancer care. For example, patients with cancer from Mpumalanga's Rob Ferreira Hospital (RFH) travel more than 400 km to Pretoria in search of quality cancer care. Patients from the Eastern Cape's Nelson Mandela Academic Hospital (NMAH) travel more than 200 km to East London to access therapeutic cancer care. These estimated distances both exclude the travel distances from their place of residence to the intermediate hospital (Rob Ferreira or NMAH). In this journey, patients and their caregivers or the state incur high costs in pursuit of access to care.<sup>14</sup> Literature suggests that such inequitable access could result in poor uptake of treatment by patients from rural areas.<sup>15</sup> This study, therefore, aims to describe the model of cancer service delivery used in Mpumalanga and the Eastern Cape provinces of South Africa. Table 1 shows a high-level summary of the cancer delivery pathway in and around the study sites.

This will be achieved through six objectives:

1. To describe the demographic characteristics of patients with cancer in the Eastern Cape and Mpumalanga provinces, South Africa.
2. To explore the existing package of cancer care services that is being provided in the Eastern Cape and Mpumalanga provinces, South Africa.
3. To assess the skills mix of cancer care providers for patients diagnosed with cancer in South Africa's Eastern Cape and Mpumalanga province.

**Table 1** Known facts about cancer delivery in and around study sites

Measure	Eastern cape*	Mpumalanga
Population <sup>20</sup>	±2911794	±4743584
Population density (people/km <sup>2</sup> )	±56	±62
Primary care	Screening (mostly cervical cancer), referral of symptomatic patients and positive screen test results to district hospitals.	Screening (mostly cervical cancer), referral of symptomatic patients and positive screen test results to district hospitals.
District hospitals	Screening (mostly cervical cancer), biopsy of skin, breast and cervical tumours, referral to NMAH for radiological staging and definite diagnosis of some cancers, for example, mammogram for early signs of breast cancer. Referral to regional hospitals for surgical intervention and to NMAH for definitive treatment.	Screening (mostly cervical cancer), biopsy of skin, breast and cervical tumours, referral to regional and/or tertiary hospitals for staging and definite diagnosis of some cancers, for example, mammogram for early signs of breast cancer.
Regional hospitals	Some surgical intervention, referral to NMAH for radiological staging, specialised surgical interventions and definitive treatment.	Radiological staging, some surgical intervention, referral to RFH and WH for specialised surgical intervention and definitive treatment.
Tertiary hospitals	None in this drainage area*	RFH: Radiological staging, mammogram, Surgical interventions, chemotherapy service since August 2019. and WH:
Quaternary (Central) hospital	Radiological staging, some surgical intervention, referral to an urban-based tertiary hospital in another district (±210 km away) for definitive treatment. Chemotherapy offered since 2018.	None: Province refers to Gauteng province for radiotherapy.
Palliative cancer services	Offered by non-profit organisations and the private sector.	Offered by non-profit organisations and the private sector.

\*This is limited to 3/8 districts (OR Tambo, Alfred Nzo and Joe Gqabi) and parts of Amathole and Chris Hani districts. NMAH, Nelson Mandela Academic Hospital; RFH, Rob Ferreira Hospital; WH, Witbank Hospital.

**Table 2** Research methods summary

Substudy	Study design	Objectives	Analysis
1	Qualitative, semistructured interviews patients	<ul style="list-style-type: none"> <li>▶ Determine challenges experienced by patients</li> <li>▶ Explore current referral pathways.</li> </ul>	Inductive analysis approach to interpret emerging themes.
2	Qualitative, focus group interviews with health providers	<ul style="list-style-type: none"> <li>▶ Explore existing package of cancer care services</li> <li>▶ Determine challenges experienced by health professionals.</li> <li>▶ Explore current referral pathways</li> <li>▶ Assess the skills-mix of cancer care providers</li> </ul>	Inductive analysis approach to interpret emerging themes.
3	Quantitative, cross-sectional study	<ul style="list-style-type: none"> <li>▶ Describe sociodemographic characteristics of patients.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Frequency tables, percentages and graphs to summarise categorical variables.</li> <li>▶ Mean, SD and range to summarise normally distributed numerical variables.</li> <li>▶ Median and IQR to summarise skewed numerical variables.</li> <li>▶ Parametric and/or non-parametric tests to compare numerical variables between groups.</li> </ul>

4. To determine challenges experienced by patients in accessing cancer care services in Eastern Cape and Mpumalanga provinces, South Africa, South Africa.
5. To determine challenges experienced by health professionals in providing cancer care in the Eastern Cape and Mpumalanga provinces, South Africa.
6. To explore current referral pathways for cancer care patients in the Eastern Cape and Mpumalanga provinces, South Africa.

## METHODS

### Study design

This study will employ a mixed-methods research design. The study has three substudies which include semistructured interviews with patients (substudy 1), focus group discussions (FGDs) with health providers (substudy 2) and a quantitative record review (substudy 3). The rationale for the researcher to choose a mixed-methods research approach is that it will add more value through methodological triangulation than the use of a single research approach. The three dimensions offered by patients, health providers and objective data will allow for a good assessment of the delivery model. [Table 2](#) summarises the study design.

### Study setting

This study will be conducted in the OR Tambo health district in the Eastern Cape ([figure 1](#)) as well as Ehlanzeni and Nkangala health districts in Mpumalanga ([figure 2](#)) which rank among areas with poor healthcare delivery in South Africa.<sup>16</sup> Mpumalanga shares its borders with four of the nine provinces, namely Gauteng, Free State, KwaZulu Natal and Limpopo Province, as well as national borders with Mozambique and eSwatini. Eastern Cape

shares provincial borders with four of the nine provinces namely, Western Cape, Northern Cape, Free State and KwaZulu Natal, as well as national borders with Lesotho. According to the 2021 mid-year population estimates there are 6 676 590 people living in Eastern Cape which is 11.1% of South Africa's population.<sup>17</sup> Eastern Cape province is the second largest province in South Africa by land mass and has the fourth largest population, more than 70% of the eastern part of the Eastern Cape live in rural areas. Mpumalanga province has the sixth largest share of the South African population, constituting approximately 7.9% of the national population.<sup>17</sup> Mpumalanga is ranked the third most rural province in South Africa with 56% of its total population living in rural areas.<sup>13</sup> Most of the population resides in the former homelands of KwaNdebele and KaNgwane, areas that have historically lagged in terms of development and delivery of basic services such as health and education. For the Eastern Cape province, NMAH, a rural central hospital or quaternary level will be used as a base. In Mpumalanga province, Witbank hospital (WH) and RFH, are two developing tertiary hospitals that will be used as the study base.

### Participants and sampling

#### Substudy 1: qualitative, semistructured interviews: patients

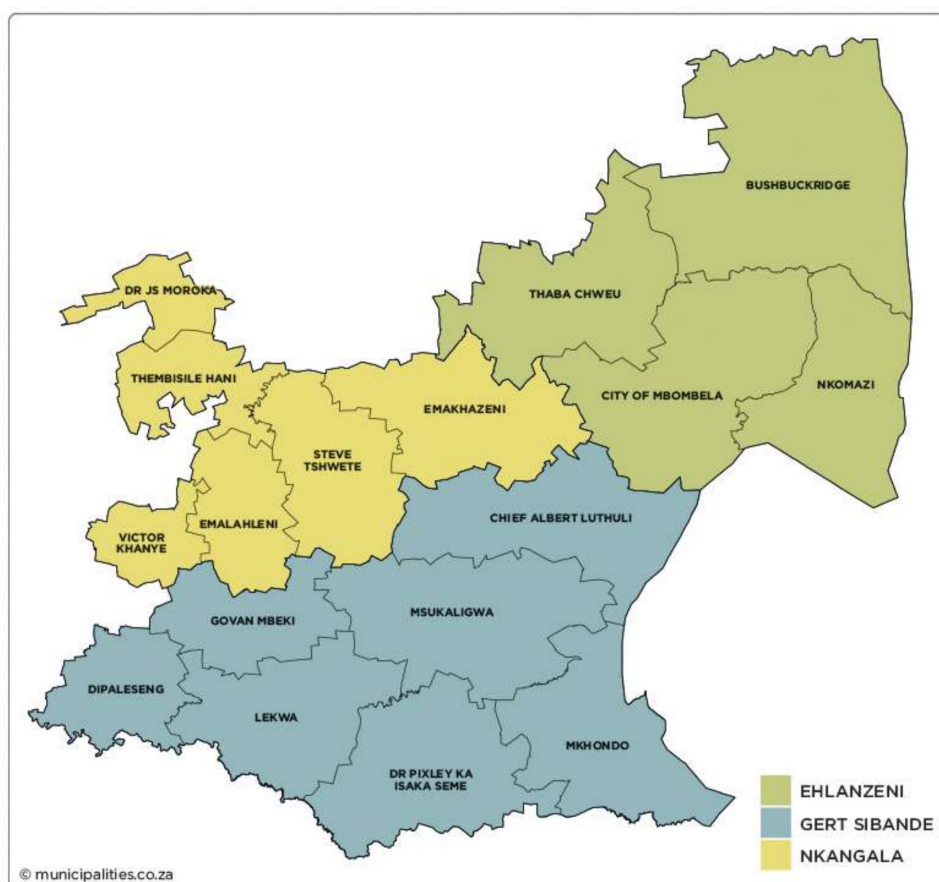
Adult patients (older than 18) with a cancer diagnosis receiving care in the three hospitals will be recruited through purposive sampling until saturation is reached. The study will aim to recruit 10 patients from each of the three sites. A phenomenological approach will be employed to determine the lived experiences of patients with a cancer diagnosis at NMAH, WH and RFH. Patients who receive cancer care in the three health facilities will be conveniently recruited based on ability to communicate



**Figure 1** Eastern Cape provincial map with health districts (Nelson Mandela Academic Hospital in OR Tambo district).<sup>21</sup>

without discomfort, willingness to participate and availability on the day of recruitment. The literature describes phenomenological approach as a form of qualitative enquiry that emphasises experiential, lived aspects of a

particular construct.<sup>18</sup> The phenomenological approach will help the researchers to describe one or more individuals' experiences of the phenomenon experienced by patients, of living with cancer.



**Figure 2** Mpumalanga provincial map (Rob Ferreira Hospital is in Ehlanzeni district and Witbank hospital in Nkangala district).<sup>22</sup>

### Substudy 2: qualitative FGDs: health workers

Four streams of focused group discussions will be set up with hospital staff of the two oncology centres separated by role and responsibility. The focused groups will be separated into; management (chief executive officer, clinical manager, nursing service managers and heads of department), medical, nursing and allied health services. Except for the nursing and medical streams which will host three and two sessions of FGD sessions, respectively, all other streams will have a single FGD session per hospital. FGDs will have 3–12 participants. Where there are more willing participants than the required number, the hospital will use a process of compromise to reduce the number but still ensuring representation of all functional care units of the hospital.

### Substudy 3: quantitative record review: patients

A record review of patients who received cancer care at NMAH, WH and RFH between the 1 April 2017 and the 31 March 2018 will be undertaken. This substudy will aim to include all patients who meet the above inclusion criteria.

### Data collection

#### Substudy 1: qualitative semistructured interviews: patients

A semistructured interview (online supplemental appendix A) guide will be used for collecting data from patients attending or receiving oncology services at NMAH, WH and RFH. This instrument asks questions on challenges experienced by patients in accessing cancer care services, and on current referral pathways for cancer care patients. A phenomenological approach will be employed to determine the lived experiences of patients with a cancer diagnosis. The interview guide will be translated into local languages such as isiXhosa, siSwati and isiZulu to accommodate participants who might not be comfortable with English. The interviewer will be conversant in the primary language of interview and will be trained on the guide. Considering COVID-19 regulations and possible interruptions, interviews will be recorded, held either as face-to-face or using virtual platforms, for example, Microsoft teams, telegram, Zoom, Google meet and alternatives based on participants' preference and/or network availability and/or connectivity strength. Data are scheduled for collection between November 2021 and January 2022.

#### Substudy 2: qualitative FGDs: health workers

The main aim for conducting FGDs is to provide for group interactions that will reveal common experiences among health workers about the existing cancer model. This will help us get a perspective of what is happening on the ground as against the ideal. A focus group interview guide (online supplemental appendix B) will be used to guide FGDs so that topics that can be difficult to engage adequately in a structured questionnaire can be probed. FGDs will explore the existing package of cancer care services that is being provided, current referral pathways,

determine challenges experienced by health professionals in providing cancer care and assess the skills-mix of cancer care providers. An audiorecorder will be used to capture the interview if permission has been granted by the participant. In addition to the audiorecorder, a notebook will be used to capture the discussions. These interviews will be transcribed verbatim before analysis. For interviews that were conducted in a different language from English, translation of transcripts will be undertaken before analysis. Two researchers will randomly sample two transcripts to confirm correctness of transcripts. Data are scheduled for collection between November 2021 and January 2022.

#### Substudy 3: quantitative record review: patients

A validated and standardised data extraction tool (online supplemental appendix C) will be used to extract patients' demographic information, cancer diagnosis and referral pathways for patients with a cancer diagnosis in the selected provinces between 1 April 2017 and 31 March 2018. This tool was validated by two experts (clinical radiation oncologist and a public Health Medicine Specialist). Data collection is scheduled for collection between January and June 2022.

### Data management and analysis

Qualitative data (semistructured interviews and FGDs) will be analysed using inductive thematic content analysis approach. The transcripts will be examined for themes to assist in understanding participants' views on the topic. Interviews will be coded into themes and subthemes, this will be done until no new themes emerge, and the research reaches saturation.<sup>19</sup> Analysed data will be interpreted in the context of existing literature to show how it corroborates existing knowledge or bring new insight to the existing body of knowledge. Thematic content analysis will afford the opportunity to connect the themes in current cancer service delivery at NMAH, WH and RFH to the literature.

Quantitative data analysis will include capturing patient record review data into a Microsoft Excel Office 2016 and exporting the data into STATA V.17.1 (STATA) for analysis. Frequencies, percentages, and graphs will be used to summarise categorical data. Numerical data will be explored for normality using the Shapiro-Wilk test. If normally distributed, the mean, range and SD will be used. If not normally distributed, then the median and IQR will be used. The one-way analysis of variance test or Kruskal-Wallis test will be used to compare the mean or median age of patients with cancer by cancer type and between the three sites depending on the normality of the distribution of age and/or the equality of variances. This comparison is undertaken to note for differences in demographic and clinical characteristics between the three sites.

### Limitation

The study will only be conducted in two of South Africa's nine provinces. Findings may not therefore necessarily be

generalisable. It is, however, anticipated that there will be lots of similarities between similar underserved settings in South Africa and other LMICs. The record review is reliant on secondary data and is therefore likely to be impacted by quality of the data and could result in missing data. This will be mitigated through noting of possible errors and two-way communication with the information management teams of the health facilities to try and resolve the challenge. If still not resolved after numerous attempts, missing data will be analysed through the use of complete case analysis.

### Patient and public involvement

The planning of the cancer service expansion involved community representatives through hospital boards in workshops and meetings. Patients will be informed of the study at all stages through consultations and public notices in the study sites.

### Ethics and dissemination

Ethical approval was obtained from the faculties of health sciences of Walter Sisulu University Human Research Ethics and Biosafety Committee (reference: 040/2020) and from the University of the Witwatersrand Human Research Ethics Committee (reference: M210211). Access approval was obtained from the Eastern Cape (reference: EC\_202010\_012) and Mpumalanga (reference: MP\_202011\_002) Provincial Health Research Committees respectively. The study will be conducted in accordance with the International Conference on Harmonisation guidelines for good clinical practice in the conduct of research in human participants in South Africa and abide by the four ethical principles of autonomy, beneficence, non-maleficence and justice.

Written informed consent will be obtained from participants. The informed consent process will be implemented with an independent third person (the 'witness') for illiterate participants or when translation is required, for example, patients who use sign language. In this instance where a witness is required, the witness will sign the consent form together with the participant and the researcher. Additional consent will be sought to audio record interviews before commencement (online supplemental appendices A, B and D).

Due to limitations of COVID-19, contingency measures will be undertaken to conduct interviews virtually using Microsoft Teams, ZOOM or WhatsApp video to limit disease spread. Where interviews are conducted physically, social distancing measures will be undertaken.

Participation in the study will be free and voluntary. Any participant can withdraw from the study at any stage and without giving any reason for the decision to do so, and this withdrawal will have no consequences whatsoever for the level or standard of care given.

There are no risks involved in participation. There is no direct benefit to the participant, but the results of the study will benefit the health system of South Africa with local evidence-based knowledge on existing cancer care

model of care. All participant records will be identified by means of a unique study number. All records will be stored securely in locked filing cabinets with restricted and secured access. All listings which link participant identification numbers to other identifying information will be stored in a separate locked file which has limited access. All electronic information as well will be securely stored on a network system with password-restricted access, which is limited to the investigator and other designated staff.

Findings will be disseminated widely to all stakeholders, including participants; and will be used to inform both provincial and national strategies to expand and sustain provision of redesigning cancer and high-quality cancer care. Results will be presented at annual partner meetings, national and international conferences. Results will also be published in open access peer-reviewed journals to facilitate broad access to findings.

### Research significance

This study will contribute towards strategies to achieve national health priorities including reduction of waiting times, improvement in patient safety, identify barriers to access of cancer care and assess equity of access to quality cancer care. Findings from this study will further be compared with international models. This will, thus, provide better understanding of cancer service delivery systems and packages of cancer care from primary care to quaternary care. The findings will also help to understand the patient needs, challenges experienced by staff and the skills-mix providing cancer care in rural South African settings. These will in-turn enable the attainment of efficient, accessible and equitable quality cancer care for rural populations in South Africa and other similar settings. It is also likely that the findings from this study will assist to attain the secondary goals which include reducing long distance travel when seeking cancer care, reducing costs of seeking cancer care and reducing unnecessary and/or late referral of patients with cancer.

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**Acknowledgements** The authors would like to thank the support received from patient representatives and officials of the participating hospitals and the provinces for their assistance.

**Contributors** WC devised the research, sourced funding, engaged stakeholders, completed the first draft of the manuscript and jointly approved final draft. BS edited and commented on versions of the manuscript and incorporated, addressed feedback from the coauthors and addressed the comments from the reviewers. IF secured funding and edited versions of the manuscript. SAM and VE, joint senior authors, edited versions of the manuscript provided methodological strategy and jointly approved the final draft. BS facilitated ethics and research access approvals,



and edited version of the manuscript. ZJ is the content expert, edited and commented on versions of the manuscript. IF, KM, DH, LG, ORM, NW, LB, SK, CZ, SS, AM and OG edited versions of the manuscript.

**Funding** This work was supported by the Bristol Myers Squibb Foundation grant number (1028).

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**Competing interests** None declared.

**Patient consent for publication** Not applicable.

**Provenance and peer review** Not commissioned; externally peer reviewed.

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