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RESEARCH ARTICLE

Assessing challenges and opportunities of treating breast cancer in Lesotho

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ABSTRACT

Background: It has been estimated that, more than 60% of the new breast cancer cases and 70% of related deaths will be seen in Low-Middle Income Countries in the coming 20 years. In Lesotho, out of 228 women, 177 had heard about breast cancer while 72.9% had heard of breast cancer screening. Given limited treatment facilities and options in Lesotho, many patients die soon after diagnosis, before they are able to access treatment; to date this cannot be quantified. Another challenge that affects breast cancer management is treatment and travel-related costs, particularly for those not living close to the medical centre. Most patients are coming with advanced disease stage and are sent home for home-based care, some of which could have been prevented with early screening.

Aim: The aim of study is to determine challenges faced by breast cancer patients, the cost to the health system and the opportunities this may bring to the country.

Methods: A quantitative cross-sectional, prospective and retrospective study was conducted on 45 breast cancer patients who were initiated chemotherapy at the only cancer treatment centre in Lesotho; Senkatana oncology clinic located at the Botshabelo complex in Maseru.

Results: The majority of patients were facing challenges of arranging transport to the doctor (83.3%, n=15), of being far from the healthcare facilities even if transportation was available (77.8%, n=14), paying for healthcare (83.3%, n=15), paying for transport (77.8%, n=14) and paying for diagnostic test (88.9%, n=16) in all ages. Majority of patients who presented for care and treatment late faced challenges more than those who presented earlier. Diagnostic and monitoring laboratory test constituted 64.5% of total direct medical costs followed by 24.7 % from chemotherapy.

Conclusion: The challenges faced by breast cancer patients are of financial and practical nature and they get higher for patients who presented at advanced stage for care and treatment. In order to improve breast cancer care and treatment outcome at lower costs efforts for breast cancer awareness need to be intensified so that patients presented early at the health centers. In term of direct medical cost, the largest cost came from the diagnostic and monitoring laboratory tests.

Keywords: Challenges, cancer services, Lesotho, breast cancer.

Introduction

Globally, an estimated 19.3 million new cancer cases and almost 10.0 million cancer deaths occurred in 2020.¹ Female breast cancer is the most commonly diagnosed cancer, with an estimated 2.3 million new cases (11.7%).¹ In Africa, the cancer incidence count has increased from 715,000 in 2008 (29) to 1.1 million in 2020, and cancer mortality count has increased from 542,000 in 2008 to 711,000 in 2020.² Females accounted for 633,456 [525,277 – 763,915] cases and 387,546 [316,060 – 475,200] deaths in comparison to males (incidence: 475,753 [386,823 – 585,128]; deaths: 323,883 [258,540 – 405,740]). Geographically, breast, cervical, prostate and liver were the major cancer groups accounting for 48% and 45% of new cases and deaths, respectively, in Africa.²

In sub-Saharan Africa, 801 392 new cancer cases and 520 158 cancer deaths were estimated to have occurred in 2020.³ Cancers of the breast (129 400 female cases) and cervix (110 300 cases) were responsible for three in ten of the cancers diagnosed in both sexes. Breast and cervical cancer were the most common cancers. The risk of a woman in sub-Saharan Africa developing cancer by the age of 75 years was 14.1%, with breast cancer (4.1%) and cervical cancer (3.5%) responsible for half of this risk.³

According to Global Cancer Observatory (GLOBOCAN), the estimated cancer incidence in Lesotho was around 1,876 cases per year (670 of male and 1206 female incidences) in 2020.⁴ Based on World Health Organization (WHO) Global Burden of Disease estimates, cancer accounts for 17.2% of Non-Communicable Diseases (NCDs) and 4% of all deaths in Lesotho. However, the true cancer burden is not fully known and obtaining

accurate data is difficult due to lack of population-based cancer registration and surveillance system. In addition, data recording is not standardized in Lesotho as the International Classification of Diseases (ICD) coding system is not used. The main risk factors of cancer in Lesotho include smoking, alcoholism, obesity, Human Papilloma Virus (HPV), inappropriate diet and lack of physical activity. Cancer deaths have been estimated to be 1,335 with an age-standardized mortality rate of 86.7%, and cancer of the cervix is the leading cause of cancer deaths for women in Lesotho.

It has been estimated that, more than 60% of the new breast cancer cases and 70% of related deaths will be seen in Low-Middle Income Countries (LMICs) in the coming 20 years.⁵⁻⁶ Breast cancer knowledge amongst women is key in early detection of breast cancer. In Lesotho, out of 228 women, 177 had heard about breast cancer, 72.9% had heard of breast cancer screening constituted.⁷ The same study reported that less than half of the women (40.1%) who have heard of breast cancer, have had a breast cancer examination. Almost half of the women (49.2%) reported knowing how to do a breast-self-examination.⁷ The results of the studies from sub-Saharan Africa reported that patients' lack of awareness of breast cancer symptoms and their seriousness are some of the reasons for patient delays between initial development of symptoms and diagnosis.⁸⁻¹⁰ A considerable lack of early detection programs and awareness results in a high percentage of women who present with late-stage disease, and lack of adequate treatment facilities, which in turn contribute to low breast cancer survival rates in LMICs.¹¹⁻¹² The current most effective strategy for reducing breast cancer mortality include early detection and linking patients to appropriate treatment.

In sub-Saharan Africa (SSA), most women undergo mastectomy because they present with advanced breast cancer disease stages and other contributing factors include shortage of chemotherapy and radiotherapy facilities.¹³ In addition, in two-thirds of SSA, there is lack of radiotherapy facilities, in countries where radiotherapy is available, they only cover approximately 18% of the breast cancer patients.^{11-12,14} Furthermore, in SSA countries, there are limited tumor marker histological classification and identification facilities, and hormonal therapies and other targeted treatments are also rare.¹³ Another challenge that affects breast cancer management is treatment and travel-related costs, particularly for those not living close to the medical centres.¹⁵

Over and above, in SSA, the shortage of health professionals with training in cancer diagnosis and care remains a serious challenge in breast cancer treatment. Furthermore, the poorest countries experience shortage of pathologists (and high-quality and reliable pathology laboratories) and medical oncologists.¹⁶⁻¹⁷ Recent studies suggest that utilization of remote pathology services may be a solution to the shortage of pathologists and build pathology capacity in rural areas.¹⁸⁻¹⁹ Skilled surgical oncology services are of vital importance in treatment of early breast cancer, but human resource capacity, associated services such as imaging, and financing for these services are highly limited in many SSA countries.²⁰ About 80% of the 15 million cancer cases predicted to be diagnosed by the end of 2015 will require surgical oncologic care, and 75% of these cases (mostly in LMICs) are predicted to lack access to safe, affordable, and timely surgical care.²¹ In addressing breast cancer control, surgical capacity-

building is gradually recognized as a vital part of the post-2015 global health agenda, and this must be a crucial and early part of creating prepared health systems.²² Task shifting models are being used and studied in places like Rwanda and Kenya, where they show early promise in facilitating cancer care in remote areas. These models work closely with nurses, clinical officers, and general practitioners who are based locally or remotely.²³⁻²⁵

There is only one cancer clinic in Lesotho. At present, most patients are coming with advanced disease stage and are sent home for home-based care, some of which could have been prevented with early screening.²⁶ The number of cancer patients who access pain management is unknown as many facilities lack analgesics (e.g., morphine). Another matter of concern is limited data sources and existing research to date, leaving significant gaps in understanding the number of patients presenting with late vs. early-stage breast cancer and/or who remain untreated or die of breast cancer.²⁶ Given limited treatment facilities and options in Lesotho, many patients die soon after diagnosis, before they are able to access treatment; to date this cannot be quantified. The study seeks to determine challenges faced by breast cancer patients and the cost the system bears to treat this type of cancer and assess the opportunities this may bring to the country.

Methods

Study Design: A quantitative cross-sectional study was conducted using a structured questionnaire for interviews and data collection form for abstracting data from patient records kept at the clinic.

Study Setting: The study was conducted at Senkatana oncology clinic located at the Botshabelo complex in Maseru. Senkatana center of excellence was established in 2004 to address the Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome (HIV/AIDS) pandemic as the first site to pilot antiretroviral therapy (S+ART) in Lesotho. Senkatana oncology clinic was established through the Bristol Meyers Squibb Foundation (BMSF) Africa cancer disparities funding in 2020 as the first Lesotho cancer treatment clinic. Being the only oncology clinic, patients come from all over the country once diagnosed with cancer.

Study population and sample determination: The study population included all breast cancer patients receiving chemotherapy at Senkatana oncology clinic. There were 45 breast cancer patients who started Chemotherapy in Lesotho as of June 2022.

Inclusion and exclusion criteria: All breast cancer patients receiving chemotherapy for the first time at Senkatana oncology clinic files were used as a source of data as well as patient interviews.

Data collection instruments: Data collection forms were used to abstract information from patient files and structured questionnaires were used to collect data from cancer patients through interviews.

Data gathering process: Data collectors were trained before the collection of data for a period of a week. Prior to scaling up the data gathering process, a pilot study was conducted using both data collection tools (structured questionnaire and data collection form [DCF]) for first five patients. The pilot data was

analyzed and modifications made on the questionnaire and the form to ascertain that they captured the information intended. The patients who were included in the pilot study were re-interviewed with the updated tools. The data collection process was then scaled up over a period of 12 weeks where 40 more patients were interviewed.

Data analysis: Data was captured into Microsoft excel and analyzed using descriptive statistics on Statistical Package for Social Sciences (SPSS®) version 16.

Ethical Considerations: Ethical approval was granted by the Lesotho Ministry of Health (MOH), National Research and Ethics Committee (NHREC) (ID 04-2023). Permission to conduct the study was sought from the MOH Senkatana Oncology clinic. Only anonymous codes were used to identify the cases. All research hard copies are stored in a lockable cupboard and soft copies are stored on a strong password protected computer system. Informed consent forms were filled by patients who were interviewed. Confidentiality was undertaken between data collectors and researchers; confidentiality forms were filled.

Results

The patient population consisted of 45 breast cancer patients and all were targeted and information for all the 45 patients was obtained (100% response rate); through interviews and patients' files.

Demographic information

Table 1: Demographic information for breast cancer patients at Senkatana Oncology clinic

Variable	Category	Frequency (n)	Percentage (%)
Sex	Female	43	96.0
	Male	2	4.0
	Total	45	100.0
Age (in years)	20 – 39	7	15.6
	40 – 59	24	53.3
	60 – 6	7	15.6
	≥70	7	15.6
	Total	45	100
Marital status	Married	25	55.6
	Widowed	13	28.9
	Single	6	13.3
	Separated	1	2.2
	Total	45	100.0
Occupational status of active breast cancer patients (n=30)	Employed	8	17.8
	Retired	2	4.4
	Self-employed	1	2.2
	Scholar	1	2.2
	Unemployed	18	40.0
	*Not applicable	15	33.3
	Total	45	99.9
District	Butha-Buthe	4	8.9
	Maseru	23	51.1
	Mafeteng	1	2.2
	Mokhotlong	1	2.2
	Leribe	5	11.1
	Berea	6	13.3
	Mohale's Hoek	2	4.5
	Qacha's Nek	2	4.5
	Unknown	1	2.2
	Total	45	100.0

*: deceased/remission/palliative

Table 1 provides the distribution of breast cancer patients based on various demographic variables. The data includes information on sex, age, marital status, level of education, profession, religious status and the number of biological children. There were 45 breast cancer patients given chemotherapy at Senkatana oncology clinic. Among them 43

(96%) were females and mostly (51.6% n=23) resided in Maseru. The age of the majority of the breast cancer patients (53.3% n=24) was between 40 and 59 years old. Marital status of these cohort was mostly (55.6% n=25) married followed by widowed. Mostly, these patients were unemployed and very few were employed.

Table 2: Clinical characteristics of breast cancer patients

Variable	Category	Frequency (n)	Percentage (%)
HIV status	Positive	13	28.9
	Negative	31	68.9
	Unknown	1	2.2
	Total	45	100.0
Clinical staging	Not available	4	9.0
	IB	1	2.2
	IIA	5	11.1
	IIB	2	4.4
	IIIA	5	11.1
	IIIB	18	40.0
	IIIC	1	2.2
	IV	9	20.0
	Total	45	100.0
Treatment outcome	Active on treatment	31	68.9
	Deceased	3	6.7
	Remission	8	17.7
	Palliative care	3	6.7
	Total	45	100.0

Table 2 provides the information about breast cancer patients based on HIV test results, staging and treatment outcomes. With regard to HIV infection, majority of breast cancer patients (68.9%, n=31) were HIV negative. On patients' files, treatment outcomes were classified as active, deceased, remission and palliative care. The clinical staging of breast cancer was tabled

and majority of patients were diagnosed at stage IIIB (40%, n=18), while other patients were at stages IIIA (11%, n=5), IIIC (2.2%, n=1) and stage IV (20%, n=9). The results concerning treatment outcomes show that 31 patients are active and currently on treatment while 8 patients were on remission with mortality of 3 patients. There were 3 palliative care patients.

Challenges for accessing and utilising cancer services experienced by breast cancer patients

Table 3: Occupational status of breast cancer patients and challenges of accessing healthcare services

Challenges – Occupational status (Yes)	Number of participants, n	Percentage participants				
		Difficulty arranging transport to the doctor	Distance from healthcare facilities even if transportation is available	Paying for healthcare is a problem	Paying for transport	Paying for diagnostic test
Employed	8	4 (50.0)	5 (62.5)	4 (50.0)	4 (50.0)	5 (62.5)
Retired	2	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)
Self-employed	1	1 (100)	1 (100)	1 (100)	1 (100)	1 (100)
Scholar	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Unemployed	18	15 (83.3)	14 (77.8)	15 (83.3)	14 (77.8)	16 (88.9)
Total	30	21 (70.0)	21 (70.0)	20 (66.7)	19 (63.3)	23 (76.7)

Table 3 reflects the challenges that are constraining access to health care services of breast cancer patients in relation to their occupational status. Of the 30 patients, 18 (60%) were unemployed. The majority were facing challenges of arranging transport to the

doctor (83.3%, n=15), of being far from the healthcare facilities even if transportation was available (77.8%, n=14), paying for healthcare (83.3%, n=15), paying for transport (77.8%, n=14) and paying for diagnostic test (88.9%, n=16).

Table 4: Age of breast cancer patients and challenges to accessing healthcare services

Challenges – Age (Yes)	Number of patients, n	Percentage participants				
		Difficulty arranging transport to the doctor	Distance from healthcare facilities even if transportation is available	Paying for healthcare is a problem	Paying for transport	Paying for diagnostic test
20 – 39 years	7	5 (71.4)	6 (85.7)	5 (71.4)	5 (71.4)	5 (71.4)
40 – 59 years	17	12 (70.6)	11 (64.7)	12 (70.6)	12 (70.6)	13 (76.5)
60 – 69 years	4	2 (50.0)	2 (50.0)	2 (50.0)	1 (25.0)	4 (100)
≥70 years	1	1 (100)	1 (100)	0 (0.0)	0 (0.0)	0 (0.0)
Missing	1	1 (100)	1 (100)	1 (100)	1 (100)	1 (100)
Total	30 (100)	21 (70.0)	21 (70.0)	20 (66.7)	19 (63.3)	23 (76.7)

For all age categories the patients were challenged by arranging transport to the doctor, of being far from the healthcare facilities even if transportation was available, paying for healthcare, paying for transport and paying for diagnostic test. It was in the

age group of 60-69 years where half of the patients reported not to face challenges of arranging transport to the doctor, of being far from the healthcare facilities even if transportation was available and paying for healthcare.

Table 5: Staging and challenges faced by breast cancer patients

Staging	Difficulty arranging transport to the doctor		Difficulty paying for transport		Difficulty paying for diagnostic tests		Number of patients (n)
	Yes	No	Yes	No	Yes	No	
IB	0 (0.0)	2 (100)	0 (0.0)	2 (100)	2 (100)	0 (0.0)	2 (100)
IIA	0 (0.0)	2 (100)	0 (0.0)	2 (100)	0 (0.0)	2 (100)	2 (100)
IIB	0 (0.0)	2 (100)	1 (50.0)	1 (50.0)	2 (100)	0 (0.0)	2 (100)
IIIA	3 (75.0)	1 (25.0)	4 (100)	0 (0.0)	4 (100)	0 (0.0)	4 (100)
IIIB	3 (75.0)	1 (25.0)	3 (75.0)	1 (25.0)	3 (75.0)	1 (25.0)	4 (100)
IV	5 (83.3)	1 (16.7)	4 (66.7)	2 (33.3)	4 (66.7)	2 (33.3)	6 (100)
Unknown stage	9 (90.0)	1 (10.0)	7 (70.0)	3 (30.0)	8 (80.0)	2 (20.0)	10 (100)
Total	20(66.7)	10(33.3)	19(63.3)	11(36.7)	23(76.7)	7(23.3)	30(100)

Majority of patients that presented late for care and treatment (stage IIIA to IV) faced challenges more than those who presented earlier for care and treatment.

Table 6: Costs incurred (Grant total cost = M2, 827, 956.10)

Clinical Stage	Number of patients (n)	Laboratory tests	Cost per patient	‡Chemo therapy	Cost per patient	Surgery	*Cost per patient	Palliative and other medicines	Cost per patient
IIA	5	301,638.30	60,327.66	130,686.20	26,137.24	10,000.00	5,000.00	19,053.85	3,810.77
IIB	2	159,596.10	79,798.05	38,015.67	19,007.84	0.00	0.00	387.45	193.73
IIIA	5	221,511.70	44,302.34	43,915.09	8,783.02	10,000.00	5,000.00	437.13	87.43
IIIB	18	707,754.10	39,319.67	245,360.60	13,631.14	15,000.00	5,000.00	144,401.80	8,022.32
IIIC	1	35,909.62	35,909.62	36,515.15	36,515.15	0.00	0.00	7,203.57	7,203.57
IV	9	322,659.20	35,851.02	112,705.00	12,522.78	10,000.00	5,000.00	64,052.24	7,116.92
Unknown stage	5	74,820.24	14,964.05	90,043.21	18,008.64	5,000.00	5,000.00	21,290.12	4,258.02
Total cost (M)	45	1,823,889.00	40,530.87	697,240.9	15,494.24	50,000.00	5,000.00	256,826.2	5,707.25
Cost profile (%)	-	64.5	-	24.7	-	1.8	-	9.1	-

*Only patient who actually underwent surgery were considered (n=10). ‡ For chemotherapy, sessions varied from patient to patient; ranging from one to twelve sessions.

A total of M1,823,889.00 was incurred on diagnostic and monitoring laboratory test while chemotherapy cost amounted to M697,240.90 translating to 64.5% and 24.7% respectively of the total medical cost. The highest laboratory and chemotherapy cost per patient was incurred on patients

diagnosed at the clinical stage IIB. At advanced clinical stages the highest palliative care costs per patient are incurred (the cost per patient at stage IIIB is M8,022.32, cost per patient at IIIC is M7,203.57 and cost per patient at IV is M7,116.92).

Table 7: Comparison of staging, outcome and cost of care and treatment

Staging	Outcome											
	Active			Remission			Palliative care			Deceased		
	Number of patients (n)	‡Cost (*Maloti)	Cost per patient (Maloti)	Number of patients (n)	Cost (Maloti)	Average cost	Number of patients (n)	Cost (Maloti)	Average cost	Number of patients (n)	Cost (Maloti)	Average cost
IIA	4	339,487.25	84,871.81 ±23776.16	1	122,654.40	122,654.40	0	-	-	0	-	-
IIB	2	197,999.18	98,999.59 ±106425.71	0	-	-	0	-	-	0	-	-
IIIA	2	135,895.04	67,947.52 ±39919.71	3	216,011.46	72,003.82 ±36506.32	0	-	-	0	-	-
IIIB	14	810,279.27	57,877.09 ±23632.66	3	202,276.10	67,425.37 ±33176.14	0	-	-	1	27,539.49	27,539.49
IIIC	1	55,566.64	55,566.64	0	-	-	0	-	-	0	-	-
IV	5	362,297.11	72,459.42 ±26726.73	1	64,547.99	64,547.99	1	13,562.50	13,562.50	2	104,595.89	52,297.95 ±
Unknown stage	3	137,363.15	45,787.72 ±41798.14	0	-	-	2	42,880.84	21,440.42 ±12129.80	0	-	-
Total	31	2,038,887.64	65,770.57	8	605,489.95	75,686.24	3	56,443.34	18,814.45	3	132,135.38	44,045.13

*1 USD = 19.10 Maloti as at 8th September, 2023

‡Cost included diagnostics and monitoring laboratory tests, cost of chemotherapy, surgery where it was carried out and other medicines including morphine tablets. It did not imply that the treatment was completed except those who are on remission and those who are deceased. Time of treatment was also not considered as patients need different types of chemotherapy medicines and did not start treatment at the same time.

According to Table 7, the survival rate of patients over the year that they presented for treatment is high (93.3%, n=42). There were 14 patients who were currently undergoing cancer treatment and average cost of treatment per patient was M57 877.09. However, the highest average cost is M98 999.99 per patient in active patient who presented to the clinic at stage IIB. The highest cost of treatment (M122 654.00) on patients who are on remissions is the one on stage IIA.

Discussion

Demographic results reflect that majority of breast cancer patients were females and more than half of the breast cancer patients were the age range of 40 to 59 years old. This is in agreement with the recent studies that showed

that in sub-Saharan Africa there is a trend of increasing incidence of breast cancer among younger women²⁷⁻³¹. Most patients in the present study resided in Maseru (capital city of Lesotho). According to Togawa *et al.* on urbanization area of residence, most patients resided in the cities in sub-Saharan Africa³². Mostly, these patients were unemployed and very few were employed. These results are consistent with Hapazari who indicated that 1 in 5 Basotho is unemployment and higher rates applies to women.³³ Around two-thirds of the breast cancer patients were HIV negative and studies indicate that there is no evidence of association between HIV infection and breast cancer.^{30,34} Most of the patients were diagnosed at stage IIIB to IV. Most breast cancer cases are not detected early in sub-Saharan Africa.

Logistical constraints in the healthcare facilities play a major role in delaying treatment. Breast cancer patients experience long delays between symptom onset, being diagnosed, and initiating treatment.³⁵ In the present study, patients faced physical challenges such as arranging transport to the doctor and being far from the healthcare facilities. Transportation barriers make cancer patients to miss doctor's appointments or have limited access to desired treatment facilities, which result in compromised treatment outcomes or even lead to the stopping of treatment.³⁶ In five sub-Saharan African countries namely Namibia, Burkina Faso, Cote D'Ivoire, Kenya, and Lesotho, Addo *et al.* stated that long travel distance to health facilities is associated with a lower rate of breast cancer services.³⁷

Joko-Fru indicated that among patients with known stage 64.9% were diagnosed at a late stage (III and IV), with 18.4% being metastatic at diagnosis (stage IV).²⁸ According to Jedy-Agba *et al.* found that late-stage disease was positively correlated with mean tumour size and consistent with delays in access to health care.³⁸ Majority of the deceased patients in the current study presented at the clinic at stage IV. Consistently, in a pilot survey of breast cancer management in sub-Saharan Africa, Vanderpuye *et al.* indicated that advanced stage at presentation is linked to poor treatment outcome for breast cancer and consequently increasing costs and reducing the available treatment options.³⁹

To our knowledge, this is the first economic study of breast cancer care in Lesotho. However, only direct medical costs were obtained; namely laboratory tests, chemotherapy, surgery and palliative care. Both direct non-medical and

indirect costs could not be found but patients were allowed to share experiences in that regard. The present study reveals that the laboratory tests represented the largest expenditure of the total cost. In a retrospective cohort analysis performed to determine the cost of an episode of care for treatment of breast cancer in Groote Schuur Hospital in South Africa, Guzha *et al.* specified that diagnostic and monitoring tests were the leading costs; accounting for 41.4% of the total direct medical cost expenditure (laboratory tests = 14.1% , scans and imaging = 27.3%). Consistently with the present study, chemotherapy is the second leading cost at cost profile of 33.7% of total direct medical cost expenditure (chemotherapy and dispensing fee = 25.4%, chemotherapy administration = 8.3%).⁴⁰ In southern Iran, Jalali *et al.* revealed that radiotherapy attracted majority of direct medical costs at cost profile of 39.67%. In Lesotho, there are currently no radiotherapy services of breast cancer.⁴¹

In our study, the majority of the breast cancer patients reported to face financial challenges including paying for healthcare, transport and diagnostic tests. Studies have identified financial hardships as major for cancer patients and those who have survived cancer including problems of paying bills, depletion of savings, delaying or skipping needed medical care, and potential bankruptcy due to high cancer treatment costs.^{42,43} The prominence of financial constraints have been highlighted mostly in sub-Saharan Africa due to low health budgets; leading to large out-of-pocket payments for direct and indirect medical expenses which most patients and their families consider excessive.⁴⁴ The same challenges were faced mostly by patients who presented late for care and treatment at advanced stage of the

disease (from stage IIIA) in our study. McGravey *et al.* comprehensive analysis of multiple cancer types demonstrated significantly higher mean annual and cumulative costs of care per patient during the first four years post cancer diagnosis among those diagnosed at late-stage versus early-stage.⁴⁵ Consistently, Blumen *et al.* compared treatment cost of advanced- versus early-stage breast cancer.⁴⁶ The findings of present study revealed that incremental costs are significantly higher for advanced-stage disease than for early-stage disease. Other studies have also shown that for advanced stage at presentation costs increases consequently reducing available treatment options.^{39,47}

Implications of the study

The study has highlighted the need for intensified screening to Basotho as the results showed that when the breast cancer treatment was given for the first-time majority of the patients were encountered at advanced disease stage implying that patients are not being reached on time. While the survival rate within one year remains acceptable, the cost of treatment escalates with advanced disease stage so earlier detection could reduce costs. This information is important in that it informs the need for awareness, early detection and treatment. The finding of the study information regarding the cost of breast cancer treatment with chemotherapy giving the opportunity for the country to budget and project treatment costs accordingly. Regarding future research, follow up on a full pharmacoeconomic evaluation of breast cancer is recommended.

Conclusion

The study has revealed challenges for breast cancer patients that are arranging transport to the doctor or being far from the healthcare

facilities even if transportation was available, paying for transport and difficulty in paying for diagnostic test. The challenges are associated to employment status and stage that patients presented at for care and treatment. Further the study portrayed that costs incurred to treat a cancer patient get higher when they presented late for care and treatment.

Recommendations:

Based on the findings it is recommended that MOH should intensify efforts for breast cancer awareness using existing structures as village health worker programme. Further, within one year of treatment in the only one system in Lesotho survival rates of breast cancer are promising and MOH may consider expanding services of Chemotherapy services to the ten districts of Lesotho for ease of access to many Basotho.

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Conflict of Interest:

The authors declare that they have no financial or personal relationships that may have inappropriately influenced the writing of this article.

Authors' contribution

MR has been the principal investigator (PI), leading the preparation and writing of the manuscript, sourcing funds, LM was a co-principal investigator (Co-PI), and her contribution was in preparation of the manuscript, SM was also a Co-PI for the study and was involved in writing of the manuscript, data cleaning and developing tables for the manuscript, and MAS involvement was also in writing the manuscript, data analysis. Another Co-PI was MM involved in the writing and in addition was responsible for proofreading and making sure that organization of the manuscript is in line with the journal requirements. KAM is a PI and was responsible for proofreading the manuscript to make sure that cancer facts are correct according to ethos and practice of oncology.

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