Profile of patients seen at Pietersburg and Mankweng breast cancer clinics in Limpopo

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Background. Breast cancer is the most common cancer diagnosed among women worldwide. It is the most prevalent cancer and leading cause of death among South African (SA) women. The increasing incidence of breast cancer is a major health concern. Until now, the distribution of breast cancer demography, stage at first presentation, and histological characterisation have not been studied in Limpopo Province, SA.
Objectives. To record the demographic profile of breast cancer patients, to report the stage at the time of presentation and to characterise the pattern of malignant disease in Limpopo, SA.
Methods. We conducted a retrospective descriptive review of the records of patients managed at Pietersburg Hospital oncology and Mankweng Hospital breast cancer clinics during the period 1 March 2015 - 28 February 2017. Stata was used to analyse data.
Results. A total of 248 patients with a mean age of 55 years were included for analysis, 7 males (3%) and 241 females (97%). Capricorn and Vhembe districts constituted 32% and 27% respectively. The majority (69%) of patients were diagnosed with disease stage III or IV. The most common histological type was invasive ductal cell carcinoma (IDC) (87%).
Conclusions. More than one-third of patients were younger than 50 years. The majority (69%) had an advanced breast cancer (stage III or IV). We recommend provision of mammography services in regional hospitals.

Breast cancer is the most prevalent cancer and leading cause of death among women worldwide.[1] The average lifetime risk of breast cancer for a woman in the USA has been estimated at 12.3% with about 41 400 deaths reported in 2018.[1] The global incidence increased from 1.7 million in 2005 to 2.4 million cases in 2015[2] and in Africa is predicted to double by 2050.[3] Incidence rates are lower in low- and middle-income countries (LMICs) than in high-income countries; however, the rates are increasing very rapidly in LMICs owing to adoption of a western lifestyle, including such habits as shorter breastfeeding time, use of postmenopausal hormonal therapy, late age at first term pregnancy or lower parity. Another risk factor of breast cancer is physical inactivity, leading to obesity.[4] The incidence in sub-Saharan Africa was estimated to be 22.4 per 100 000 cases in 2018.[5] Breast cancer mortality rates in LMICs remain high as a result of late presentations and inadequate access to good healthcare.[6]

Breast cancer, along with cervical cancer, has been identified as a priority for the national healthcare services in South Africa (SA).[7] The SA National Cancer Registry reported breast cancer in 2014 as a leading cause of cancer deaths among women.[8] A 5-year mortality rate of 47% was recorded for SA women.[9] Breast cancer as a social problem has become an urgent challenge in LMICs. It is increasing dramatically, with 19.7 million cases projected to occur in the next decades.[10,11]

This present study is the first to report the demographic profile, stage at presentation, and the characteristics of breast cancer patients in Limpopo Province, SA. Before March 2015, breast cancer patients were managed by surgeons in the general surgery department, together with patients admitted for other surgical conditions. Breast cancer patients would wait 3 - 6 months for operations. In March 2015, a multidisciplinary clinic for the care of breast cancer patients was established at Mankweng Hospital. This hospital is a tertiary

teaching institution of the University of Limpopo located 30 km east of Polokwane, the provincial capital.

The clinic at Mankweng is the only such facility in Limpopo serving the population of 5.98 million people.[12] The clinic operates once a week, staffed with adequate personnel, but does not have its own oncology and radiation facilities; for these services, the clinic is dependent on the radiation department at Pietersburg Hospital 30 km away.

The main objective of this study was to record the demographic features of attending patients, stage at presentation and histological patterns of malignancy identified in breast cancer patients treated at Mankweng. We anticipate that the information obtained from this study will guide the authorities responsible for provincial policy on breast cancer prevention, treatment and resource allocation programmes.

Methods

We conducted a retrospective, descriptive, cross-sectional record review of patients managed at Mankweng breast cancer clinic during the period March 2015 - February 2017. Files with full correct data of all patients diagnosed with breast cancer were included in the study; incomplete records were excluded. The primary inclusion criterion was histological confirmation of breast cancer. A password-protected data bank in Excel (Microsoft 2013, USA) was created to record information on breast cancer patients. The clinic registers were used as a starting point for data collection. Patients' files were retrieved from the hospital archive to compile the data bank. The analysed variables were age, gender, home district of patient, stage of the disease and histological type of malignant tumours.

The statistical software package Stata (Stata Corp., USA) was used for data analysis. Continuous variables were expressed as means and standard deviations (SDs). Patients were allocated by age to one of

five categories. Stages at presentation were grouped into early (stages I and II) and late (stages III and IV). The categorical variables were described as proportions and frequency tables. Ethical approval was obtained from the Pietersburg-Mankweng Research Ethics Committee (ref. no. PMREC-01UL2017).

Results

A total of 291 patients' files formed the primary database for this study. Forty-three patients' records were removed from the list because of incomplete information; therefore 248 patients' records were finally included for analysis. Table 1 shows data of the breast cancer patients during the 2-year study period. The mean age was 55 years. Women younger than 50 years of age comprised 38% of the total (Table 1); 8% were younger than 35 years. Females comprised 97% of all cases. The majority of patients admitted to the clinic came from the Capricorn district. Most of them were at an advanced stage III or IV (n=170; 69%); patients with

Table 1. Descriptive summary of breast cancer patients managed at the clinic (N=248)

Variables	n (%)*
Mean age (years)	55
Gender	
Males	7 (3)
Females	241 (97)
Age (years)	
20 - 34	21 (8)
35 - 49	75 (30)
50 - 64	84 (34)
65 - 79	55 (22)
>79	14 (6)
Home district	
Capricorn	80 (32)
Vhembe	68 (27)
Mopani	39 (16)
Waterberg	34 (14)
Sekhukhune	26 (11)
Stage at first presentation	
I & II	78 (31)
III & IV	170 (69)
Histological type	
Ductal cell carcinoma	217 (87)
Colloid carcinoma	9 (4)
Mucinous carcinoma	4 (2)
Papillary carcinoma	4 (2)
Lobular carcinoma	2 (1)
Ductal carcinoma *in situ*	7 (3)
Lobular carcinoma *in situ*	1 (<1)
Medullary carcinoma	1 (<1)
Mixed ductal and lobular carcinoma	3 (1)

*Unless otherwise specified.

stages I and II comprised only 31% of total admissions. We found that women aged 50 - 64 years were in much more advanced stages as compared with the other age groups (Fig. 1). The majority of patients (87%) presented with invasive ductal cell carcinoma (IDC). Colloid carcinoma was present in 3.6% and ductal carcinoma *in situ* (DCIS) in 3%, together constituting nearly 7%. Mucinous carcinoma was present in 2%, papillary in 2%, medullary in <1%, lobular carcinoma *in situ* (LCIS) in <1%, and mixed ductal and lobular carcinoma was found in a relatively small number (n=3; Table 1).

Discussion

The main objective of this study was to report patients' demographic profiles, stages of disease at first presentation, and characterise the histological type of breast cancer for all patients included in this research at Mankweng Hospital, a tertiary hospital in Limpopo.

Of the nine provinces of SA, Limpopo is the fifth largest, and covers 125 754 km². [12] The population is ~5.98 million, and Limpopo Province is administratively divided into five districts: Capricorn, Vhembe, Mopani, Sekhukhune and Waterberg. Each district has a regional hospital: Tshilidzini, Letaba, St. Rita's, Philadelphia, and Mokopane hospitals. Pietersburg and Mankweng are the tertiary hospitals in the province, situated in Capricorn district. All patients diagnosed with breast cancer in the public sector, with a confirmed histological diagnosis, attend the breast oncology clinic. Mammography services are only available at Pietersburg and Mankweng hospitals, dealing with all patients from the whole province, which results in long waiting lists for mammography investigations.

We found that 32% of the patients came from Capricorn district. There are various possible reasons for this; for example, it could be a true reflection since all breast cancer patients around Mankweng are referred directly to the clinic. Another explanation is that breast cancer patients from other districts seek alternative help because of complex pathways to access the clinic.

The mean (SD) age of breast cancer patients at the time of diagnosis was 55 (14.4) years. This is similar to other studies conducted in SA. In a study conducted at Chris Hani Baragwanath Academic Hospital, Johannesburg, results of mean (SD) age were similar: 54.4 (14.2).[13] A study conducted to understand the pathway of breast cancer diagnosis among women in Cape Town found the mean age to be 52 years.[14] In our series, 38% of patients were below the age of 50 years. Some studies from Africa also report mean age below 50 years.[15] The study by Azubuik et al.[16] recorded that breast cancer in Africa tends to occur in relatively younger age groups and among premenopausal women compared with the western population.

To date, there has been no evidence related to high risk of breast cancer in the HIV-positive population. However, strong evidence suggesting younger age at diagnosis for the HIV-positive population as compared with the HIV-negative population has been presented. An SA report by Van Zyl et al.[17] found the mean (SD) age at presentation of breast cancer in the HIV-positive group to be ~10 years younger (44.86 (9) years), compared with the entire population (54.56 (13.62) years) and the HIV-negative group (53.18 (12.48) years). Another study, by Kohler et al.,[18] reported that in Malawi, 55% of cases occurred in women below the age of 50 years. We do not know why many patients
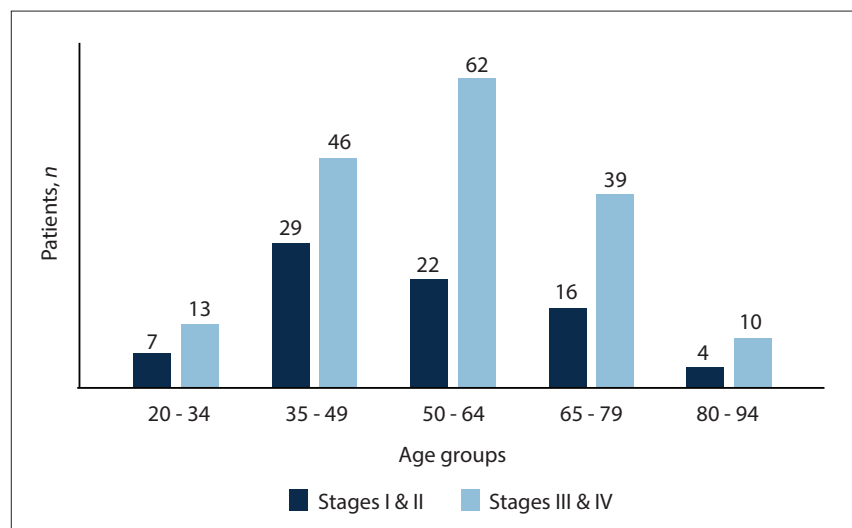

Fig. 1. Distribution of patients by breast cancer stage and age.

in our study are young. Globally, breast cancer occurrence in young patients (<40 years) constitutes 7% of all diagnosed breast cancer.[19]

Nearly 70% of the patients in our study were diagnosed with already advanced cancers. However, the 50 - 64-year-old age group presented much later as compared with other groups. In this subgroup, 83% of patients came markedly late. Advanced stage at presentation has been reported in an LMIC, Kenya, with as many as 89% of patients with a late stage of cancer.[20] In an urban SA clinic in Johannesburg, two-thirds of patients presented with locally advanced breast cancers.[21]

Early diagnosis has a profound implication for prognosis, survival and personal or social costs; therefore early detection of breast cancer should be prioritised.[22] Primary healthcare services have an important role to play in breast care education, and promotion of cancer symptoms awareness. In Limpopo, there are no mammography facilities in any regional hospitals. Consequently, patients have to travel up to 300 km to Pietersurg or Mankweng for mammograms. This is expensive for patients, makes waiting lists much longer, and establishing the final diagnosis is significantly delayed. Many of these patients present too late to health service facilities, contributing to higher mortality, morbidity and also to considerably high costs. Regional hospitals in Limpopo should be equipped with well-functioning mammography facilities which are essential in early diagnosis of breast cancer. In addition, they should be staffed with personnel trained on breast cancer care.

Most of the women in our study had IDC (87%). A similar trend was found in Malawi where IDC was the most common histological type (86%).[18] Nearly 80% of patients required mastectomy.

The best treatment for advanced breast cancer is surgery, chemotherapy and radiotherapy. In addition, endocrine therapy and monoclonal antibody trastuzumab is required according to hormonal and HER 2-receptor status. The surgical treatment is often the only modality available in most low-resource settings where modified radical mastectomies are the most commonly performed operations.

Conclusion

In conclusion, this study has defined the breast cancer population in the newly established breast cancer clinic in the rural province of Limpopo, northern SA. More than one-third of our participants were younger than 50 years and nearly 10% were younger than 35 years (8%). Most of them came from Vhembe and Capricorn districts. Advanced stage at presentation is still a challenge in this institution.

A further investigation to determine the factors contributing to advanced stage at presentation would provide information on the causes and reasons for such undesirable delays in the health service system. Information obtained from this study may help in guiding the establishment of prevention strategies. Mammography machines should be made available in regional hospitals.

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