

UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICINE

A RETROSPECTIVE STUDY ON THE PREVALENCE OF
BREAST CARCINOMA IN THE CATCHMENT AREA OF THE
UNIVERSITY TEACHING HOSPITAL, LUSAKA.

By

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PHI
1997

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A Dissertation submitted in partial fulfilment of the

requirements for the award of the

MASTER OF MEDICINE (SURGERY)

degree of

the University of Zambia

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1997

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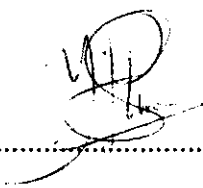
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The undersigned hereby certifies that the above is a true and correct copy of the original as the same appears in the records of the _____ Department of _____ State of _____

DECLARATION

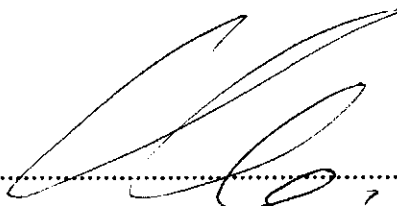
I hereby declare that the work presented in this study has not been presented either wholly or in part for any other degree.

Signed.....



Dr Yotham Phiri

Signed.....



Supervisor

Professor Krikor Erzingatsian FRCS(I)

DEDICATION

To all those who helped in any way in the long process whereby I hope, at last,
to qualify as a surgeon;

To all those who have known doubt and perplexity during the process of
learning the art and science of surgery, as I have;

And finally to; Our God, our help in ages past

Our hope for years to come

Our shelter from the stormy blast

And our eternal home;

this work is dedicated.

3 ACKNOWLEDGEMENTS

I wish particularly to thank the following: Professor Krikor Erzingatsian, under whose supervision this material was prepared - his enlightening and encouraging guidance will not soon be forgotten; Professor Lupando Munkonge for his understanding and granting me leave from normal duties to prepare this material into its final form; Dr Victor Mudenda, for allowing me free access to the records in the Pathology Department; and the Tumour Clinic and Cancer Registry staff for the help rendered in accessing information. Special thanks go to Mr Moses Jere of the Kabwata Reformed Baptist Church Publishing Ministry and Mr Douglas Kunda for the use of their Personal Computers, and for the enormous help rendered in transforming the written manuscript into the printed form now in the hands of the reader. Richard Phiri was a great encouragement during data processing. Professor Karashani's meticulous proofreading was greatly valued. Finally my wife, Elizabeth, and children (Tisa, Dekha and Yotham) for forgiving me for neglecting my family duties and the great help and encouragement they gave me in the course of writing this paper.

4 SUMMARY

A retrospective study of the prevalence of breast cancer in the catchment area of the University Teaching Hospital (UTH), Lusaka (determined on the basis of the documentation available at the Hospital during a five year period) is presented. A total of 547 breast biopsies were received in the Pathology Department: Breast cancer was the commonest diagnosis with 23%, followed by fibroadenomas 22.5%, inflammatory lesions 11.3% and fibrocystic diseases 8.3%. A total of 627 patients with different cancers attended the Tumour Clinic: the commonest single diagnosis was breast cancer with 109 patients, followed by lymphomas with 70 patients. The Cancer Registry notified 1792 cancer cases and breast cancer was the fourth commonest cancer. Reference is also made to how common breast cancer is in this sub-region of Africa.

5 INTRODUCTION

Cancer of the breast has been known to afflict mankind from ancient times and has been on record from as early as the days of Galen and Hippocrates. The term 'cancer' was coined from the naked-eye crab-like appearance of a scirrhous carcinoma of the breast (Steinfeld, 1975).

Breast cancer is the most common malignant tumour of women, with over 21,000 new cases reported each year in the UK alone, and accounts for 14,000 deaths annually in England and Wales making it the commonest cause of death in women between the ages of 35 and 55 years. It is estimated that in the UK one in 12 women will develop the condition. The incidence of the disease has increased markedly over the past three decades in the western world. In the United States breast cancer is the commonest malignant neoplasm in women, with an annual incidence of 70.9 per 100,000. About 1 in every 11 (9%) women develops the disease. Among women between 35 and 74 years cancer is the leading cause of death, with the largest bulk of deaths coming from breast cancer. Although the annual mortality rate from breast cancer has not changed in recent years despite improvements in medical treatment, the duration of survival for most women has improved modestly, but a rising incidence of breast cancer has resulted in a stable annual mortality rate.

Breast cancer is said to be five to six times more common in the USA and UK than in Africa or Asia (Pike and Ross, 1984). The lower incidence in Africa is

said to be related to early pregnancies, higher rates of parity, prolonged breast feeding, dietary differences, especially in relation to fat intake, and the low socio-economic status of the people. A review of "Cancer in Africa" by Davies in 1948 mentioned only one case of breast cancer, while a study from Uganda between 1931 and 1946 documented 69 cases (Davies 1949). Three cases of breast cancer were included in 50 consecutive malignant tumours seen among the Kikuyu in Kenya (Clark, 1948). However, more recent studies from Africa have shown that it may not be as uncommon as earlier thought. In a review of the Tanzania Cancer Registry between 1969 and 1973, 361 cases of breast cancer were found, of whom 33 were males (Hiza, 1976). Cancer of the breast was reported to be the fifth commonest tumour in Kenya with 1008 cases reported in a period of five years (Kodwawwala and Onyango, 1981). A study from Mozambique of 1251 histology reports of breast diseases over a twenty year period showed breast carcinoma to be the commonest disease at 30.3% (Garrido, 1989), and a preliminary report from Zimbabwe of histological diagnoses in 121 consecutive patients with breast disease over 6 months showed that breast cancer was the second commonest diagnosis at 22.3% (Naylor, 1985). A Ugandan report of histological diagnoses on 214 breast biopsies between March 1975 and February 1979 showed cancer in 33 patients (15.4%) (Ssali, 1984). A study of cancer in the European population of Harare in Zimbabwe from the population based Cancer Registry, breast cancer was found to be the second most frequent cancer in women (19.4% of registered cases) (Bassett et al, 1995). In a similar study of cancer in Kampala in Uganda, breast cancer was the third commonest cancer (11.4%) in women after cancer of the cervix uteri and Kaposi's sarcoma (Wabinga et al, 1993).

6 OBJECTIVES

This retrospective study had the following objective

To find out the prevalence of breast cancer in the catchment area of the University Teaching Hospital, Lusaka based on documentation available at the hospital.

Public awareness of breast cancer is generally low in Zambia. Breast clinics and screening programmes for early detection of breast cancer do not exist. There has been no study done in Zambia to find out how common breast cancer is. The findings of this study will serve as a source of data for future prospective studies on breast cancer in the country and may help in deciding whether screening programmes should be introduced.

7 BACKGROUND

7.1 AETIOLOGY

Breast cancer is a multifactorial disease whose aetiology is obscure. However, there is some epidemiological evidence that women with excessive exposure to oestrogen, particularly when unopposed by progesterone, have a high incidence of breast cancer. Thus early menarche, late menopause, nulliparous women and women with late first full term pregnancy - especially those who have the first child at 35 or over (Pike and Ross, 1984) are associated with approximately double the average risk of developing breast cancer. Conversely, early first full term pregnancy is associated with a protective effect. The latter is the general trend in rural and peri-urban Zambia. Patients with oestrogen secreting ovarian tumours have an increased risk of developing breast cancer, while patients who have had bilateral oophorectomy before the age of 35 have a greatly reduced risk. The effect of exogenous hormone administration (e.g. oral contraceptive pills and oestrogen replacement therapy for menopausal symptoms) on the risk of developing breast cancer is still controversial. An American survey suggested that there was no convincing evidence that the long term use of oral contraceptives was associated with any increase in the risk of developing breast cancer (Cancer and Steroid Hormone Study Group, 1986). Less reassuring was a large UK study which reported an increased risk of breast cancer associated with oral contraceptive pills used by women in whom the disease was diagnosed before the age of 36 years (UK National Case Control Study Group, 1990). A study to quantify the risk of breast cancer related to the use of oral contraceptives while adjusting for known risk factors in Iceland, concluded that the use of oral contraceptives did not seem to increase the risk of developing breast cancer among women (Tomasson et al, 1996). The use of the oestrogen/progesterone contraceptive pill in urbanised Zambian women is believed to be high, but its significance is

yet to be determined. A study to find out the risk factors for breast cancer in Ugandan women showed that there was an increased risk with increasing age at first delivery; multiparity had a protective effect against breast cancer; breast feeding appeared to confer protection against breast cancer; there was no risk of breast cancer related to age at menarche, and there was no significant association with contraceptive use (Ssali et al, 1995).

Patients with breast cancer have a positive family history in over 15% of cases, but because of the prevalence of the disease many of these may be simple chance associations. However, about 10% represent true hereditary breast cancer where the patient is generally young (average 40-45 years) and tends to have an increased incidence of bilateral disease (Dunn and Farndon, 1991). A number of associated conditions (e.g. females with juvenile papillomatosis of the breast, ataxia telangiectasia, males with Klinefelter's syndrome) have an increased risk of breast cancer. However, no consistent pattern of inheritance has been identified.

A study carried out by Carroll (1975) involving 39 countries demonstrated that there was a direct relationship between the consumption of fat and the mortality from breast cancer. High intakes of nutrients derived from animal products have been found to be associated with increased risk of breast cancer (Russo, 1987). The association has been found to be with saturated fat intake in postmenopausal women (Howe, 1990). Owing to the poor state of the economy in Zambia, consumption of fat is believed to be low in the population although no study has been done. In Uganda no significant association was found with diet maybe because the population subsists on a low protein diet (Ssali et al, 1995).

Approximately 25% of all 'discrete' breast lesions are fibroadenomas or breast cysts in the UK. Their relationship to breast cancer has not been clearly defined although it would appear that palpable breast cysts are associated with some increased risk of breast cancer (Page et al, 1985). Women with fibroadenomas are not at an increased risk of subsequent breast cancer. It is considered that a carcinoma in a fibroadenoma occurs by chance rather than by any causal relationship (American College of Pathologists - Consensus Statement, 1986). The incidence of fibroadenomas in this sub-region of Africa seems to be high according to the current data (Naylor, 1985) (Garrido,1989).

There is general agreement that ionising radiation can induce cancer. The question of the risk of radiation to the breast has become highly important since the advent of breast cancer screening clinics using mammography. The maximum safe dose for radiation has not been determined, but the carcinogenic effects of radiation are likely to be greater in younger women. The National Academy of Sciences (UK) has reported that when carrying out mammography a skin dose of less than one centi Gray in a woman over 50 years is unlikely to represent a significant risk. In a study to evaluate the risk of breast cancer among women occupationally exposed ionising radiation in the United States of America, it was found that employment as a radiologic technologist did not increase the risk of breast cancer (Boice et al, 1995). Mammography for screening, or diagnosis of breast cancer is not carried out in Zambia.

A study investigating cigarette smoking in relation to the risk of breast cancer in Denmark concluded that smoking may increase the risk of breast cancer after 30 years of smoking (Bennicke et al, 1995).

7.2 PATHOLOGY

Most breast cancers are invasive carcinomas arising from the ductal or lobular epithelium. The vast majority of patients, about 75% have the classic form of infiltrating ductal carcinoma. A minority have infiltrating lobular carcinoma (about 12%), which carries the same prognosis as infiltrating ductal carcinoma. Metachronous contralateral breast carcinoma is much more common in lobular than in ductal carcinoma. The progressive rise in in the annual incidence rates of contralateral breast cancer, together with the absence of a link between clinical prognostic factors of the first cancer and contralateral breast cancer, suggests that contralateral breast cancer can be considered as a second primary breast cancer (Broet et al, 1995). Another variety of breast cancer is the in-situ carcinoma which is of two types; ductal carcinoma in-situ (DCIS) arising from the epithelium of the ducts, and lobular carcinoma in- situ (LCIS) arising from the epithelium of the breast lobules. DCIS is much more common of the two. After simple biopsy of DCIS residual tumour tissue is found in a large proportion of patients due to frequent multicentric origin of the lesion (Carter and Smith, 1977) and assessment of risk of progresion of DCIS to invasive carcinoma is difficult. It is estimated that 25-30% of women with untreated microscopic foci of DCIS will develop invasive tumour within 15 years (Rogers, 1986). If all tumour tissue is removed, patients with an intraduct carcinoma have an excellent long-term prognosis (Westbrook and Gallager, 1975). Variants of ductal carcinoma include the following; medullary carcinoma, mucoid carcinoma, tubular and cribriform carcinoma, squamous carcinoma, adenoid cystic carcinoma, inflammatory carcinoma and Paget's disease of the nipple. There are histological subtypes whose recognition by the pathologist is important because of different prognostic implications. Some tumours occur in mixed rather than pure forms; in these cases the tumour is classified according to its predominant pattern.

7.3 STAGING

Staging refers to the classification of breast cancer according to the anatomical extent of the disease, each stage serving to aggregate cases having an approximately similar prognosis. The choice of treatment decision is facilitated by the information gained from histological examination of the tumour and its clinical and pathological staging. The major influence of histology on treatment of carcinoma is whether the tumour is non-invasive or invasive. Staging can be based solely on clinical evaluation (clinical stage), or on information gained following surgical resection by careful examination of the tumour, the surrounding breast tissue and regional lymphnodes. Although pathological staging is more accurate, the choice of treatment is usually made on clinical staging. Staging provides a useful basis for selection of treatment and for comparing results of alternative methods of treatment. The Manchester classification developed at the Christie Hospital and Holt Radium Institute in Manchester, England in 1940 provides one of the most commonly used staging classifications (Appendix 1). Other classifications such as the Portman, Haagensen and Stout's criteria of inoperability or the Colombian clinical classification are more commonly in use in North America. The other most commonly used classification and perhaps the most useful is the TNM classification. This was initiated by the International Union Against Cancer (UICC) in 1954 and is based on a meticulous description of the primary tumour (T), the regional lymph nodes (N) and the distant metastases (M). The categories of T, N and M are then subgrouped in various combinations to describe four stages. The currently accepted version of the TNM classification was agreed in 1978 by the UICC (Appendix 2). Although the system has advantages in that it can be used as both a clinical classification and a pathological one, its complexity makes it difficult to use in practical terms, particularly in an initial clinical assessment.

7.4 EARLY PRESENTATION AND SCREENING

Although the incidence of the disease has increased quite markedly over the past three decades, mortality has not increased at a similar rate in the western world. The improved survival has been partly attributed to earlier detection of the small tumour (Joesuu & Tolkkänen, 1991). Breast cancer screening in the UK, based on the Forrest Report of 1986, recommended screening of women between the ages of 50 and 64 years at 3 yearly intervals using mammography. Provided there is a reasonable rate of patient compliance (70%) the screening programme should prevent 1250 breast cancer deaths each year in the UK. Breast screening is now becoming an essential part of medical services in the western world. Recent views expressed in the USA (Shapiro, 1989), Sweden (Holmberg et al, 1989) and the UK (Forrest, 1989) suggest a benefit in reducing breast cancer mortality by up to 30%. A study in the USA showed that there was a dramatic increase in the incidence rates of ductal carcinoma in situ correlating with the widespread adoption of modern mammographic screening (Ernster et al, 1996), and a twenty year follow - up breast screening project concluded that routine yearly breast screening with mammograms and physical examination can usually detect very small nonpalpable cancers that have a high survival rate (Letton et al, 1996). However, controversy still exists regarding the benefits of breast screening. Other views lend less support in terms of cost/benefit analysis while some are not convinced that early detection alters the natural history of the disease. In Africa, where there appears to be a lot of complacency regarding breast cancer because of the presumed low incidence, screening has not yet become part and parcel of medical care despite vigorous attempts made at introducing primary health care. Studies available show that breast cancer tends to present late in Africa (Hiza & Aziz, 1985; Ssali, 1984). In 238 women seen at a Nairobi Breast Clinic over a 3 year

period, abnormalities were found in 10% and breast cancer in 2.6% (Kodwawala, 1991). Breast clinics can teach and promote self breast examination. In women who practice self breast examination the mortality from breast cancer is lower because of early detection, less delay, early clinical stage at detection, small tumour size and the presence of fewer axillary node metastases. The breast screening programme can be used to identify women at high risk of breast cancer in order to offer them and their relatives access to genetic counselling and appropriate screening (de Silva et al, 1995).

7.5 TREATMENT OPTIONS

Treatment options available are surgery, radiotherapy, chemotherapy, hormonal manipulation and symptomatic terminal care. To choose among the options the clinician must decide whether the patient has early or advanced breast cancer. Many operations and treatments were devised for patients with early disease. Until late last century, treatment for breast cancer was simple mastectomy. Halsted (1894), based on information from Virchow (1863) that lymphnodes were effective filters for tumour cells, devised the operation of radical mastectomy. In this operation, the breast was removed together with the pectoralis major and minor muscles and the whole of the lymphatic and fat contents of the axilla. This reduced the frequency of local recurrences from 50% to 5%. Later, when it was appreciated that tumours in the medial quadrants might spread to involve internal mammary nodes, these too were removed. Similarly, in the so-called supra-radical mastectomy, the supraclavicular nodes were removed. In the period immediately following World War I, stimulated by Handley, extensive local surgery was supplemented by irradiation to skin flaps, axilla and mediastinal nodes. In the majority of centres, however, the standard treatment was simple mastectomy with axillary dissection and radiation therapy or modified radical mastectomy.

After the second World War, McWhirter of Edinburgh questioned the necessity for radical mastectomy. It was noted that radical mastectomy and supra radical mastectomy failed to improve survival (Fisher et al, 1985, 1989, Wagensteen et al, 1952). This was followed by anecdotal reports of local excision of small localised cancers by Crile (1965) and others. Radiation therapy often followed this approach. The era of ever increasing radical operations was ending. More conservative approaches aimed at preserving the breast were being advocated. Although breast conservation has a long history stretching back to the 1920s, it is only in the last 2-3 decades that it has gained universal acceptance as an alternative to mastectomy for early disease (e.g. $T_{1-2} N_{0-1} M_0$).

Two large randomised trials have been particularly influential in demonstrating the safety and effectiveness of the conservative approach. In the first Milan trial (1973 - 1980), 700 women were randomised to either radical mastectomy or quadrantectomy with axillary surgery and breast radiotherapy for $T_1 N_0 M_0$ breast cancer. The 13 year overall survival rates were the same in both groups (Veronesi et al, 1981). In the National Surgical Adjuvant Breast Protocol B06 trial, 1500 women with $T_{\leq 4} N_{0-1} M_0$ breast cancer were treated by axillary dissection with randomisation to mastectomy versus complete local excision alone versus complete local excision plus breast radiotherapy. The results showed a clear advantage for breast radiotherapy in reducing the risk of recurrent tumour in the breast from 40% to 10% but no difference in overall survival (Fisher et al, 1989). These and other trials clearly indicated that wide local excision (lumpectomy) with axillary node sampling and radiation therapy to the remaining breast provides results that were as good as more radical procedures (Calle et al, 1978; Sarrazin et al, 1984; Veronesi et al, 1977). Axillary sampling became a staging procedure rather than the previously held

concept of increasing the cure rate by removal of metastatic nodes . This has been called breast conserving therapy. Thus local excision and breast radiotherapy can be offered as an alternative to mastectomy in the majority of women presenting with early stage breast cancer.

The goal of the surgeon in treating women with stage I and II breast cancer is to achieve local control. A secondary goal, but one that most oncologists consider very important, is to stage the cancer. Surgery for staging has become extremely important because of the growing appreciation of breast cancer as a systemic disease in which decisions about what systemic treatment to give must be made.

Some recent publications have observed that breast conserving operations are not being performed as often as they might be in the treatment of breast cancer. In the USA for example surgeons in the teaching hospitals more frequently carried out lumpectomy along with axillary dissection for staging and radiation to the remaining breast. Larger urban hospitals next in frequency and survival was highest in patients treated in such institutions. In smaller hospitals, surgeons more frequently performed modified radical or even radical mastectomies (Lee Fieldstein et al, 1994, Lazovich et al, 1991, Hand et al, 1991). Possible reasons advanced for these epidemiological observations include factors such as the age of patients, age of surgeons and attitudes about breast cancer. Younger patients may seek out teaching hospitals for breast conserving procedures. An older generation of surgeons may not be convinced that lumpectomy is as good as modified radical mastectomy (Baue, 1995) .

7.6 RADIOTHERAPY

Radiotherapy uses ionising radiation to treat malignant diseases. It reduces the incidence of local recurrence. It is indicated in locally advanced disease for control of local recurrence and possibly in axillary gland involvement. It is also given to the preserved breast. However, radiotherapy following surgery can be associated with problems which should be considered in patient management. Reduced shoulder mobility has been demonstrated in patients receiving adjuvant radiotherapy (Aitken et al, 1989). It has also been noted that adjuvant radiotherapy after simple mastectomy for early breast cancer produces a small excess late mortality from other cancers and cardiac disease (Haybittle et al, 1989). It should also be noted that survival from breast cancer is not improved by post-operative radiotherapy.

7.7 ADJUVANT SYSTEMIC THERAPY

The use of chemotherapy or endocrine therapy in the phase immediately following primary treatment is usually called adjuvant systemic therapy. Most women with breast cancer receive systemic therapy at some point in the course of the disease. For many patients it is given with curative intent in the period of time immediately following the initial therapy of breast cancer. In other patients, particularly those with advanced or grossly metastatic breast cancer, it is given with the hope of prolonging and improving the quality of the patient's life. Collective analyses of large trials now show statistically significant prolongation of life when such therapy is given as adjuvant to local surgery and radiotherapy. Systemic treatment may be either with an anti-oestrogen (e.g. tamoxifen) or with chemotherapy.

The mechanisms through which anti-oestrogens and chemotherapy influence the disease differ. Anti-oestrogen therapy denies the tumour the growth stimulating effects of oestrogen and is therefore cytostatic, whereas the aim of chemotherapy is to achieve cell kill; i.e. it is cytotoxic. Oestrogen deprivation can be achieved in a number of ways; reduction of circulating levels of oestrogens (e.g. by oophorectomy or gonadotrophin releasing hormone analogues), inhibition of peripheral synthesis (e.g. by aromatic inhibitors) or prevention of its cellular action (e.g. by tamoxifen). The choice of therapy for a patient with metastatic breast cancer requires an understanding of the natural history of the disease and a careful evaluation of the individual patient as not all breast cancers are equally sensitive to these agents. Sensitivity to anti-oestrogen therapy is influenced by the presence of oestrogen receptor protein which is essential to oestrogen action. Whereas those tumours without this binding mechanism are generally non-responsive to anti-oestrogens, the detection of receptor protein does not however guarantee response. The hormone receptor status of the patient is not as important as it used to be thought. It was widely accepted that endocrine therapy was unlikely to benefit a patient with breast cancer in whom the tissue lacked a hormone receptor protein.

Some studies have suggested that hormone receptors may also be of value in selecting chemotherapy, in that oestrogen receptor negative patients appeared to respond better than oestrogen receptor positive patients (Lippman, 1983). Other studies showed just the opposite result (Chang, 1981), while others have concluded that there is no difference in response rates or response durations between hormone receptor- negative and positive patients. Given the bulk of the evidence, the latter conclusion appears most likely.

8 MATERIALS AND METHODS

Data for this research project during the period January 1991 to December 1995 was collected from four sources: (i) the Pathology Department, (ii) the Department of Surgery Audit, (iii) the Tumour Clinic, and (iv) the Cancer Registry, all situated within the University Teaching Hospital, Lusaka. In the Pathology Department surgical specimens are received from the whole country except the Copperbelt Province, where the major hospitals have their own histopathological services. The Pathology Department has register books which record the name, age, sex, number, biopsy site and the hospital which has sent the specimen. Using these registers histopathological reports were traced and recorded.

In the Department of Surgery patients with breast cancer are seen by five general surgical units. These patients may be either referrals from other health institutions in the country or local residents. All surgical operations done by the units in the Department of Surgery have been recorded in the monthly mortality and morbidity Audits. These records were inspected and the number of operations done for breast cancer was recorded by the investigator.

The register books in the Tumour Clinic were inspected to find out the number of patients with breast cancer who attended the clinic. The name, sex, diagnosis was noted.

Finally the records of the Cancer Registry of Zambia situated in the University Teaching Hospital were studied. Data was collected on the number of patients notified by doctors or the Registry clerks and their names, sex, age, diagnosis and stage.

9 RESULTS

9.1 DEPARTMENT OF PATHOLOGY

A total of 547 breast biopsy specimens were received in the Department of Pathology of the UTH, Lusaka in a period of 5 years between 1 January 1991 and 31 December 1995. The commonest pathologies reported were breast carcinoma 129 (23.6%), fibroadenoma 123(22.5%), non-specific inflammatory lesions 62 (11.3%), abscesses 52(9.6%) and fibrocystic disease 45 (8.3%) fibrous mastopathies 10 (1.8%) and lactating adenomas 13 (2.8%). The average age of patients with fibroadenoma was 22.6 years. There were no histology reports available for 42 (7.8%) biopsy specimens received. Tuberculosis of the breast was found in 5 (0.9%) patients (Table 1).

There were 27 specimens from males. Gynaecomastia was the commonest pathology reported in males with 12 (2.2%) cases. The average age of gynaecomastia patients was 39.6 years with the oldest patient at 60 years and the youngest at 14 years of age.

Malignant breast diseases constituted 129 biopsies (23.8%) from 120 patients. The commonest malignancies were carcinomas (predominantly ductal carcinomas 91.6% followed by lobular carcinomas). There were 3 cases of malignant fibrous histiocytoma, all coming from St. Francis Hospital , Katete with an average age of 23 years. There were surprisingly 2 cases of lymphoma (1 Hodgkin's, 1 non-Hodgkin's) and one case of melanoma. One case was reported as "carcinoid tumour" arising from the breast of a 17 year old female patient (Table 2). The average age of breast carcinoma patients was 45.7 years. Only 6 (5%) cases of breast cancer occurred in males. The average age for males was 63 years while for females it was considerably lower at 47.7 years. Age was not stated in 15 patients. Figure 1 shows the age distribution of patients with breast carcinomas. There was a clustering of patients between the 35-49 years age range, with a peak at 30 to 44 years. A second peak was

AGE DISTRIBUTION OF BREAST CANCER PATIENTS

1991 - 1995

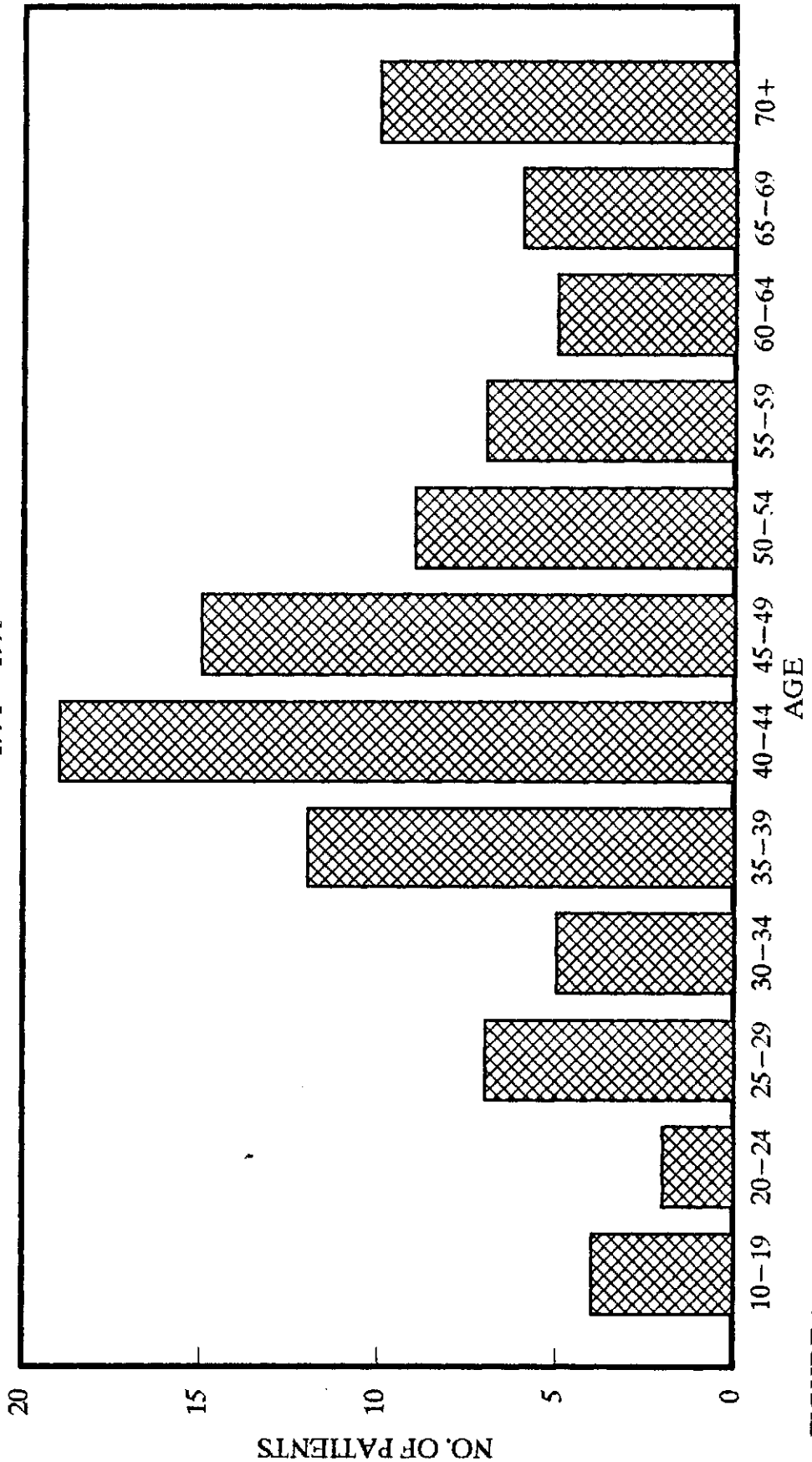


FIGURE 1

observed in the 70+ age group. Surprisingly there were 4 patients under 20 years and 2 in the early twenties.

Table 1

<u>Non - neoplastic breast lesions</u>	<u>No.</u>	<u>%</u>
Fibroadenoma	123	(22.5%)
Non-specific inflammation	62	(11.3%)
Abscesses.....	52	(9.5%)
Fibrocystic diseases	45	(8.2%)
Lactating adenoma.....	13.	(2.3%)
Gynaecomastia.....	13	(2.3%)
Fibrosclerosis.....	11	(2%)
Fibrous mastopathy.....	10	(1.8%)
Normal breast.....	10	(1.8%)
Cysts	6	(1.1%)
Lipoma.....	6	(1.1%)
Tuberculosis of breast.....	5	(0.01%)
Duct ectasia.....	4	(0.01%)
Intraductal papillomatosis.....	3	(0.005%)
Mammary dysplasia.....	2	(0.004%)
Keloid	2	(0.004%)
Foreign-body granuloma	1	(0.002%)
Epidermal papilloma.....	1	(0.002%)
Capillary haemangioma	1	(0.002%)
Epitheliosis	1	(0.002%)
Fibromyosis	1	(0.002%)
No breast tissue.....	1	(0.002%)
Autolysed tissue.....	3	(0.005%)
No report available	42	(7.6%)
Total	418	
Malignancies.....	129	(23.6%)
Grand Total	547	

Table 2

<u>Malignant breast lesions</u>	<u>No.</u>
Carcinoma.....	112
Malignant fibrous histiocytoma.....	3
Non- Hodgkin's lymphoma.....	1
Hodgkin's lymphoma.....	1
Fibrosarcoma.....	1
Malignant melanoma.....	1
Carcinoid tumour.....	1
Total.....	120

The majority of breast biopsy specimens for breast cancer i.e. 80 (67.2%), originated from within the University Teaching Hospital, followed by St. Francis Hospital, Katete 12, (10.1%) and Monze Hospital, 7 (5.9%) (Table 3). The hospitals on the Copperbelt Province of Zambia have their own histopathological services and were not included in the study.

Only one specimen was sent from Ndola on the Copperbelt Province. The furthest hospitals to send biopsy specimens were Yuka hospital in Kalabo, Western Province and St. Paul's in Nchelenge in Luapula Province.

Table 3 Source of specimens

UTH.....	80	Yuka Hospital.....	1
SFH, Katete.....	13	Kashikish, Nchelenge.....	1
Monze Hospital.....	7	Ndola.....	1
MCMH, Lusaka.....	3	Mangango.....	1
Zambezi.....	3	Mazabuka.....	1
Lewanika, Mongu.....	2	Macha.....	1
Kabwe.....	2	ZCCM, Lusaka Hospital.....	1
Choma.....	2	Primary Care Clinic.....	1
Chikankata.....	1		

Note: UTH = University Teaching hospital, SFH = Saint Francis Hospital. MCMH = Monica Chiumya Memorial Hospital, ZCCM = Zambia Consolidated Copper Mines Hospital.

Breast cancer was the seventh among the twenty commonest malignant disorders observed in Zambia between 1980 and 1987 (Elem and Patil, 1991) .

(Table 4)

Table 4

Cervix.....	1148	(17.6%)
Skin (excluding Kaposi).....	625	(9.6%)
Kaposi.....	548	(8.4%)
Lympho-reticular.....	439	(6.7%)
Bladder.....	398	(6.1%)
Liver (primary).....	346	(5.6%)
Breast.....	268	(4.1%)
Prostate.....	205	(3.1%)
Stomach.....	178	(2.7%)
Eye.....	177	(2.7%)
Oesophagus.....	172	(2.6%)
Colorectal.....	161	(2.4%)
Penis.....	140	(2.1%)
Oropharynx.....	122	(1.8%)
Lung.....	96	(1.4%)
Larynx.....	93	(1.4%)
Maxillo-facial.....	89	(1.3%)
Corpus uteri.....	85	(1.3%)
Ovary.....	76	(1.1%)
Vulvo-vaginal.....	76	(1.1%)
Total.....	5460	(83.1%)

9.2 SURGICAL AUDIT RECORDS

During the same period the Audit (Mortality-morbidity) records in the Department of Surgery, showed that 58 operations for breast cancer were carried out (i.e. apart from incisional biopsies for breast lumps) by the five general surgical units.

9.3 TUMOUR CLINIC

A total of 627 patients with malignant diseases attended the Tumour Clinic during the same period .The commonest disease was breast cancer, i.e. 109 patients with breast cancer (both new and old) attended the clinic. (Table 5.)

Table 5.

Breast.....	109	(17.4%)
Lymphomas.....	70	(11.2%)
Eye.....	48	(7.7%)
Colorectal.....	22	(3.5%)
Hepatoma.....	20	(3.2%)
Mandibular tumours.....	17	(2.7%)
Wilm's Tumour.....	15	(2.4%)
Larynx.....	14	(2.2%)
Thyroid.....	13	(2.1%)
Oesophagus.....	11	(1.8%)
Pancreas.....	11	(1.8%)
Maxilla.....	10	(1.6%)
Multiple myeloma.....	10	(1.6%)
Osteosarcoma.....	10	(1.6%)
Unspecified cancers.....	74	(11.8%)
Others.....	173	(27.6%)
Total.....	627	

9.4 CANCER REGISTRY

During the same period 96 patients were notified as breast cancer in the Cancer Registry of Zambia. The Registry is a data collecting unit for the Ministry of Health. The model adopted for cancer notification to the Registry depends upon voluntary notification of cancer cases by doctors. This is usually supplemented by active search for records (clinical and pathology) by registry clerks. Only 8 cases of breast cancer were notified from across the country in 1991; this increased to 16 in 1993 and to 32 in 1995. All 8 notifications were done by doctors in 1991 while in 1992, 6 were notified by doctors and 14 were notified by the Cancer Registry clerks upon active search for cases from the Pathology Department of the University Teaching Hospital. In 1993 notification by doctors dropped to 4, for the whole year, all from St. Francis Hospital Katete, while the rest, 12 were done by clerks. Notifications by doctors still remained low at 4 in 1994 versus 24 by clerks, but increased to 20 in 1995.

Notifications by clerks in 1992 included one patient with lactating adenoma, and in 1993 included one 18 year old patient with fibroadenoma. The number of fibroadenomas notified as breast cancer increased to 9 in 1994 and 12 were histologically breast carcinomas. In the 1995 notifications by doctors, an intraductal papilloma later revised to carcinoma, a fibroadenosis and a giant fibroadenoma were included

The stage of breast cancer was included in 13 notifications. The majority presented at stage III (8) while two presented at stage II and one presented at stage IV. Out of the 42 notifications by doctors 18 were diagnosed clinically and 24 were diagnosed histologically. Most of the notifications which depended on clinical diagnosis only were from hospitals most distant from Lusaka. Table 6 shows the sources of notifications by doctors and registry clerks. Only 2 notifications by doctors were made in four years (1991-1994) from the UTH but there was a significant increase to 17 in 1995, all from the Tumour Clinic (UTH). St. Francis Hospital, Katete was the most consistent in the first four years but notified none in 1995, and so was Lewanika General

Hospital, Mongu for only 2 years. There were only 2 notifications from the Copperbelt Province. Most of the government general and district hospitals in the country were not represented at all.

Table 6

Sources of Notifications

<u>Hospital</u>	<u>by Doctors</u>	<u>by clerks</u>
UTH.....	19 (17 in 1995).....	34
St. Francis, Katete.....	9.....	4
Lewanika, Mongu.....	5(1991-1992).....	1
Konkola.....	2.....	Nil
Kasama.....	2.....	Nil
Kalene.....	2.....	Nil
St. Paul's Nchelenge.....	1.....	Nil
Zambezi.....	1.....	Nil
Chitokoloki.....	2.....	Nil
Chinsali.....	1.....	Nil
Monze.....	Nil.....	6
MCMH, Lusaka.....	Nil.....	2
Mangango, Kaoma.....	Nil.....	2
Livingstone.....	Nil.....	1
Yuka, Kalabo.....	Nil.....	1
Choma.....	Nil.....	1
St.Margaret' Kasaba Bay.....	Nil.....	1
Hilltop, Lusaka.....	Nil.....	1
Total	44	54

Breast cancer was the fourth on the list of the 12 commonest malignancies notified by the Cancer Registry during the same 5 year period under review (Table 7). It is noted that cancer of the cervix uteri and Kaposi's sarcoma were the first and second respectively.

Table 7

The Commonest Cancers in the Cancer Registry.

Cervix.....	321
Kaposi sarcoma.....	175
Prostate.....	104
Breast.....	96
Bladder.....	89
Liver.....	86
Malignant melanoma.....	79
Buccal cavity	54
Stomach.....	37
Ovary.....	25
Vulva/ vagina.....	15
Bronchus/lung.....	15
Others.....	684
Total.....	1793

10.DISCUSION

The histopathology results of 547 breast biopsies from the Pathology Department showed a great variety in the pattern of breast diseases. The commonest pathologies found were, cancer constituting 23.6%, fibroadenomas 23.6% and inflammatory breast diseases 20.8 %. The classification of some breast diseases is difficult. Some would classify fibrocystic diseases, fibroadenosis, fibrous mastopathy, duct actasias and dysplasias as one disease forming one spectrum and call all of them fibrocystic diseases or benign mastopathies (Ssali 1984). These constituted another large group of breast diseases found in 9.4 %. These results correlated with the findings in the Mozambican study where the commonest pathologies found were carcinomas 30.3% followed by fibroadenomas 29%, fibrocystic diseases 26.6% and gynaecomastia 10.7% (Garrido 1989). No inflammatory lesions (e.g. abscesses) were included in the Mozambican study. Gynaecomastia in both studies was the commonest pathology found in males. In a similar study from Zimbabwe the incidence of fibroadenomas was slightly higher than that of carcinomas (Naylor, 1985). A similar Ugandan study showed cancer in 15.5 %, inflammatory lesions 5% and adenoma (probably fibroadenoma), 11%. It is not possible in these studies to find out whether cancer was suspected in all cases in which biopsy was done. It is certainly questionable whether breast abscesses needed further histological confirmation. Most breast abscesses in the University Teaching Hospital are drained without tissue diagnosis, thus the incidence of inflammatory diseases of the breast is higher than the Department of Pathology figures suggest. The studies also show that breast lumps in a young female are more likely to be fibroadenomas than cancer and hence may not need open biopsy. Some are of the opinion that only those breast lumps which cause pain, which are unduly tender, or cause disfigurement and those which cause anxiety should be removed (Loefler, 1984). Recourse to cheaper and more conservative methods for diagnosis such as the triad of clinical

suspicion, fine needle aspiration cytology and mammography would be more appropriate.

The pattern of malignancies correlates with the general pattern expected. Infiltrating ductal carcinomas were by far the commonest, followed by lobular carcinomas. The curious findings were the 2 cases of lymphoma and 3 cases of malignant fibrous histiocytoma and one case of carcinoid tumour in a 17 year old girl.

The age distribution in breast cancer patients showed a peak in the mid-forties and a second peak emerging in the seventies an average age of 44.7 years. These findings correlate well with findings of studies in Uganda (Ssali, 1984) and Mozambique (Garrido, 1989). The disease tends to occur in a younger age group in Africa, as compared with the western world, often in the fourth decade. This may explain its less favourable course. The reason for not finding many cases of breast cancer at the advanced ages may be the much lower life expectancy in Zambia as compared to the western world. The women may not be growing old enough to develop breast cancer. There was a surprise finding of 4 cases of breast cancer in patients under 20 years. Breast cancer occurred in an older age group in males (average age 63 years) compared to females (average age 47.7 years). Men form about 1% of patients in western countries, while the rate is between 5-10% in Africa (Garrido, 1989; Hiza, 1976). In the University Teaching Hospital, breast carcinoma in males was detected in 5% of specimens sent to the Department of Pathology.

Although the origin of the breast biopsies in the Pathology Department were from many hospitals, the majority were from Lusaka. (It should be noted that Monica Chiumya Memorial Hospital, Zambia Consolidated Copper Mines Lusaka Clinic and Primary Care Clinic are located in Lusaka). Histopathological services are scarce in the country, and are only found in Lusaka and the Copperbelt. The pattern of specimen referrals in this study showed that mission hospitals, which had an active surgical service, sent biopsy specimens for histological diagnosis whereas the majority of the

government hospitals did not. This is an indication that there may have been more cases of breast cancer which did not get proper attention and hence did not get documented.

A review of the Surgical Audit for operations carried out by the general surgical units showed that 58 operations were carried out for breast cancer during the period under review, excluding incisional biopsies. The stage of the disease at which the patient presented was not included in the records. The majority of the cases in which the stage of the disease was indicated showed that the patients presented with late disease, at stages III and IV. This corresponds with experience in Uganda (Ssali 1984,) and Tanzania (Hiza and Aziz, 1985) where it was noted that breast cancer patients usually presented in the late stages. One of the reasons for poor attendance and late presentation of patients at medical institutions African countries is that there is poor understanding of health matters in the general population. There are still many people who still prefer attending traditional medical practitioners who do provide readily available statistics. The older generation among women who mostly live in the rural areas of the country are especially likely to avoid hospitals in preference for traditional practitioners,. They may attend hospitals as a last resort. These are expected to have a higher incidence breast cancer.

The Cancer Registry which is supposed to receive notifications of cases of cancer from the whole country had a total of 96 notifications for breast cancer for the period 1991 to 1995. Only 42 of the notifications were done by doctors, which was a very low figure indeed. Active search for records by registry clerks for breast cancer tended to fluctuate over the years. The records in the Registry also seem to have been inaccurate as it was found that some cases of fibroadenoma were notified as breast cancer. Moreover, only few hospitals seem to have been consistent in notifications, with the majority of the hospitals in the country defaulting. The pattern of notifications from these few hospitals shows that there may be many other cases of breast cancer that did not get

notified at all. The majority of the hospitals in the country serve a rural population and do not notify cancer cases.

Although this study yielded important results (e.g. breast cancer is commoner than expected) it also demonstrated the limitations of a retrospective study. Some of the documents examined lacked necessary data, and the majority of the hospitals in the country do not notify cases of cancer to the Cancer Registry of Zambia leading to a gross under - reporting of cancer cases. Future studies of this nature should be prospective to eliminate such limitations.

10. CONCLUSIONS

The conclusions that can be drawn from this study are the following;

Breast cancer is common not only in Lusaka but in Zambia. Other findings which have emerged in the course of this study show that the predominant histological type of breast cancer is the ductal carcinoma, breast cancer presents in the younger patient and its frequency in the male is higher compared to the western world. There is under- reporting in the Cancer Registry.

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Appendix 1.

The Manchester classification can be summarised as follows;

- Stage 1 The growth is confined to the breast; involvement of the skin directly over and in continuity with the tumour may be present provided the area is small in relation to the size of the breast
- Stage 2 The growth is confined to the breast but palpable, mobile axillary lymphnodes are present
- Stage 3 The growth extends beyond the mammary parenchyma shown by either skin invasion or fixation over an area larger than the tumour or to skin ulceration or to tumour fixation to the underlying muscular or fascia or axillary lymphadenopathy
- Stage 4 The growth extends beyond the breast area as shown by fixation of the axillary lymphnodes, complete fixation of the tumour to the chest wall, deposits in the supraclavicular nodes or to the opposite breast, satellite nodules or distant metastases

Appendix 2.

The TNM Classification

- TIS Pre-invasive carcinoma, so-called carcinoma in situ, non-infiltrating intraductal carcinoma or Paget's disease of the nipple with no demonstrable tumour
Note: Paget's disease associated with demonstrable tumour is classified according to the size of the tumour
- T0 No demonstrable tumour in the breast
- T1 Tumour of 2 cm or less in its greatest dimension
T1a With no fixation to underlying pectoral fascia and/or muscle
T1b With fixation to underlying to underlying pectoral fascia and/or muscle
- T3 Tumour more than 5 cm in its greatest dimension
T3a With no fixation to underlying pectoral fascia and/or muscle
T3b With fixation to underlying pectoral fascia and/or muscle
Note: Dimpling of the skin, nipple retraction or any other change except those in T4b may occur in T1, T2 or T3 without affecting the classification
- T4 Tumour of any size with direct extension to the chest wall or skin
Note: Chest wall includes ribs, intercostal muscles and serratus anterior muscle but not pectoral muscle
T4a With fixation to chest wall
T4b With oedema, infiltration or ulceration of skin of breast (including peau d'orange) or satellite skin nodules confined to the same breast
T4c Both of above.
- N0 No palpable homolateral axillary nodes
- N1 Movable homolateral axillary nodes
N1a Nodes not considered to contain growth
N1b Nodes considered to contain growth
- N2 Homolateral axillary nodes fixed to one another or to the other structures
- N3 Homolateral supraclavicular or infraclavicular nodes or oedema of of the arm
Note: Oedema of the arm may be caused by lymphatic obstruction; lymphnodes may not be palpable
- M0 No evidence of distant metastases
- M1 Distant metastases present including skin involvement beyond the breast area