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Understanding female students' risk perceptions of developing breast cancer at Great Zimbabwe University

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This article focuses on breast cancer as the second most prevalent cancer in Zimbabwe. However, despite several local studies on breast cancer and its risk factors, the incidence rate of the disease in the country is increasing. This article sought to establish the level of awareness of the risk factors of breast cancer among female students. The study was carried out at Great Zimbabwe University, an institution of higher learning in Masvingo province, Zimbabwe. A mixed methods approach was employed involving a focus group discussion comprising eight key informants and online individual questionnaires with open and closed questions used to capture attitudes of female students towards breast cancer. Risk factors were categorised into age, family history, reproductive factors, oestrogen, and lifestyle. There were also some cultural beliefs like bewitchment and myths about black brassieres causing breast cancer. Thus, there is need for educative campaigns to disseminate breast cancer information, especially promoting regular screening and awareness of predisposing factors. Additionally, more regular and in-depth studies on breast cancer in Zimbabwe are imperative as our results show a higher prevalence rate than current official statistics. The research provides relevant information for pastoral caretakers handling trauma in the discipline of practical theology.

Contribution: This article represents an intersection between practical theology and basic health care. Insights resulted from this study provide a baseline upon which to develop ways to reduce prevalence of breast cancer. The research can also be utilised by specialists in pastoral care and women theologies.

Keywords: breast cancer; health reform; risk factors; pastoral care; women theologies.

Introduction

Breast cancer refers to erratic growth and proliferation of cells that originate in the breast tissue, most commonly from the inner lining of milk ducts or the lobules that supply the ducts with milk. It is a worldwide disease of concern (Feng et al. 2018). The disease is approximately 100 times more common in women than men (Sharma et al. 2010). Globally, breast cancer accounts for over 25% of cancer cases among women every year (Stewart & Wild 2014). In Zimbabwe, it affects about 11.5% – 11.7% women (The Global Cancer Observatory 2021), making it the second most prevalent cancer in the country (Elmore et al. 2021). The incidence of breast cancer has been increasing in Zimbabwe and Africa at a rate of at least 3% – 4% annually (Arnold et al. 2022). Regular screening and early-stage breast cancer detection can increase survival rates. However, when breast cancer transfers to distant organs such as the bone, liver, lung and brain, it often becomes incurable (Sharma et al. 2010). Therefore, knowledge of the risk factors and preventative measures of breast cancer may reduce its incidence rate and fatalities.

Cancer cells generally develop from normal cells because of modification and/or mutation of deoxyribonucleic acid (DNA) and/or ribonucleic acid (RNA), which can occur spontaneously or can be induced by other factors. Breast cancer has five important risk factors (Feng et al. 2018), namely age, family history, reproductive factors, oestrogen and life style, for example consumption of alcohol by women (Figure 1) (Sun et al. 2017). Specific examples are the use of contraceptives (Iversen et al. 2017), obesity (Momenimovahed & Salehiniya 2019), and intemperate consumption of dairy products (Gil et al. 2022; Perez-cornago 2020). Dairy milk consumption increases cholesterol levels, and the female reproductive hormone oestrogen, leading to a rise in the blood insulin-like growth factor I (IGF-I) (Campbell & Campbell 2006). Intemperate use of dairy milk after weaning has been demonstrated to lower the age of menarche in girls, signifying early maturity, hence also increasing the age of menopause to give a cumulative period of about 10 years above the normal, in sexually active women (Campbell & Campbell 2006). Consequently, women and girls of child-bearing age
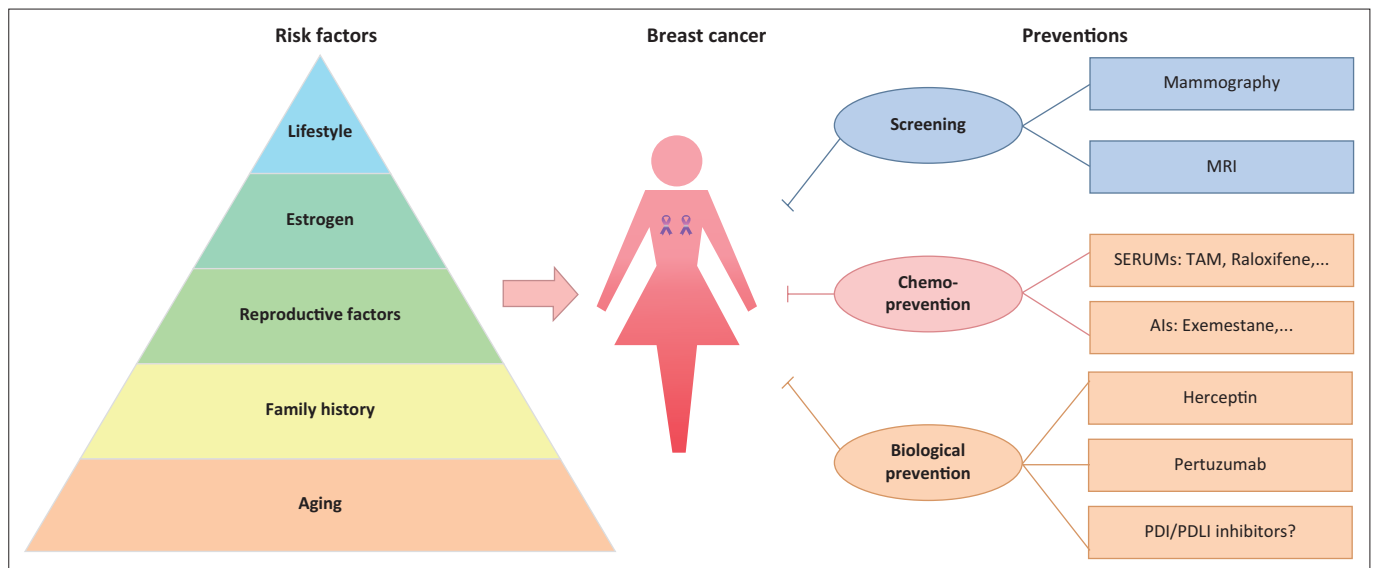
MRI, Magnetic Resonance Imaging; SERM, Selective estrogen receptor modulators; TAM, Tamoxifen; AIs, Aromatase inhibitors; PD1, Programmed cell death 1; PDL1, Programmed cell death receptor ligand 1.

Source: Sun, Y., Zhao, Z., Yang, Z., Xu, F., Lu, H., Zhu, Z. et. al., 2017, 'Risk factors and preventions of breast cancer', *International Journal of Biological Sciences* 13(11), 1387–1397. https://doi.org/10.7150/ijbs.21635

FIGURE 1: A schematic of the risk factors of breast cancer in women.

get more exposed to oestrogen, which is a risk factor for breast cancer (Campbell & Campbell 2006). Perceptions of women on the risk factors of breast cancer are therefore critical in formulating effective strategies towards health-seeking behaviour and minimising mortalities because of breast cancer.

Although several researchers have studied breast cancer and its risk factors, the incidence rate of the disease in Zimbabwe, and globally, keeps increasing (Nkala 2014; Sun et al. 2017). In its national cancer prevention and control strategy, Zimbabwe recognises diet and consumption of alcohol as risk factors for breast cancer, consequently influencing the need to raise the prices of alcohol to discourage members of the public, particularly women from alcohol consumption (Ministry of Health Zimbabwe 2014). Additionally, there is a general lack of racial and ethnic diversity in breast cancer clinical trials, with both black people and Hispanics underrepresented (Yedjou et al. 2019). The incidence, pathological features, and clinical outcomes in breast cancer have also been shown to differ by geographical distribution and across racial and ethnic populations (Hirko et al. 2022). Thus, preventive measures and treatment outcomes are also influenced by race, or geographical location.

This study sought to understand perceptions of a population of female students at Great Zimbabwe University (GZU) on the risk factors of breast cancer. Specifically, the study assessed the students' level of understanding of the causes, signs and symptoms, and attitudes towards breast cancer. This preliminary study is hypothesised to provide a foundation upon which further studies can be based. Information of breast cancer risk factors obtained from the study is expected to influence behavioural change towards the disease. This will contribute to achievement of the United Nations (UN) Sustainable Development Goal 3 (SDG3) (UNDP 2023) through enabling improvement of women`s health.
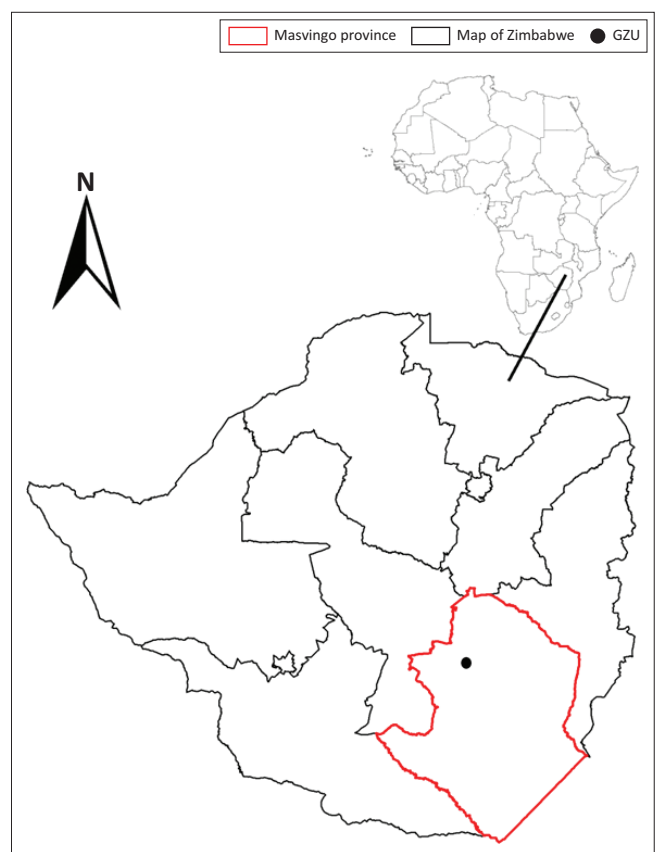

FIGURE 2: Location of Great Zimbabwe University.

Materials and methods
Study site

The study was conducted at GZU (Figure 2), an institution of higher education in Masvingo province of Zimbabwe. The university is comprised of eight schools namely Gary Magadzire School of Agriculture, Herbert Chitepo School of

Law, Simon Muzenda School of Arts, Julius Nyerere School of Social Sciences, Robert Mugabe School of Education, Simon Mazorodze School of Medicine and Health Sciences, School of Natural Sciences, and Munhumutapa School of Commerce. These schools offer several undergraduate and postgraduate degrees, through conventional learning for full time students, and block release for part time students.

Data collection

A mixed methods approach was used for data collection. An individual questionnaire with open and closed questions was administered to all female students at GZU online to capture their socio-demography, attitudes and practices towards breast cancer. A compound email supplied by the Information Technology Department of GZU was used to send the online survey through Google Docs. Furthermore, a focus group discussion (FGD) comprised of eight key informants (two peer educators from a non-profit making organisation – Students and Youth Working on Reproductive Health Team, a nurse from the Ministry of Health and Child Care [MoHCC], a Counsellor, one Administrator in the field of human immunodeficiency virus [HIV] and acquired immune deficiency syndrome [AIDS], and four students) was conducted for in-depth comprehension of themes arising from the questionnaires. The students were chosen because of their influence as peer educators to their fellow students within the University.

Ethical considerations

The research was deemed to be non-invasive even though it involved human participants and was approved by the Pro Vice Chancellor of Academic Affairs, Research and Innovation, the Registrar and the Director of Research and Innovation. Written consent to conduct the surveys was obtained from GZU, in accordance with the university's Research Ethics Policy. Participants were informed that: (1) the research was only for academic purposes, hence their participation was absolutely voluntary, with no penalty for non-participation; (2) their privacy would be protected; (3) all data would be anonymised; and (4) it would take approximately 20 min to complete the questionnaire. Students filled out the online form without identifying themselves, except for the Schools to which they belonged, their age, and religion. For the FGD, participant responses were only identified with codes.

Data analysis

Microsoft Excel was used for qualitative and quantitative analysis of data collected. Responses from the FGD were presented as themes. Risk factors were categorised into age, family history, reproductive factors, oestrogen, and life style. The results were also presented graphically.

Results
Socio-demography

A total of 67 female students participated in the survey. Of these, 92.5% were conventional students, while 7.5% were on block release. Majority (91%) of the students were on full time study and unemployed, while 7.5% were employed, part time students, and 1.5% were part time and unemployed. The rest of the results for the ages of the respondents are shown in Table 1.

General knowledge of cancers that affect humans

Generally, all respondents (n = 67) indicated that they were aware that breast cancer affects humans, mainly women. Other common cancers cited included cervical cancer (95.5%), cancer of the bladder (62.7%), and prostate cancer (89.6%) (Figure 3). The sources of information about these cancers were breast awareness campaigns and commemoration days conducted by the universities in conjunction with organisations such as SAYWHAT? programmes on the Internet, television, radio and social media articles. It was also observed that some of the respondents had personal experiences of breast cancer when someone close to them had either contracted it or died from it. Peer educators at university also played a pivotal role in raising awareness about breast cancer.

Knowledge of the signs and symptoms of breast cancer

The respondents displayed knowledge of a range of signs and symptoms of breast cancer, with most of them giving

TABLE 1: Characteristics of the sample.

| Characteristics	n	%
Ages (years)		
< 20	9	13.4
20–25	46	68.7
26–30	4	6.0
31–35	4	6.0
> 41	6	9.0
Marital status		
Single	56	83.6
Married	9	13.4
Divorced	4	6.0
Religious affiliation		
Roman Catholic	16	23.9
Seventh Day Adventist	10	14.9
Anglican	3	4.5
Pentecostal	21	31.3
Other	19	28.4
Level of study		
First year	14	20.9
Second year	16	23.9
Third year	15	22.4
Fourth year	23	34.3
Postgraduate	1	1.5
School representation		
Gary Magadzire School of Agriculture	6	9.0
School of Natural Sciences	4	6.0
Hebert Chitepo School of Law	6	9.0
Robert Mugabe School of Education	3	4.5
Simon Muzenda School of Arts	13	19.4
Simon Mazorodze School of Medicine and Health Science	0	0.0
Julius Nyerere School of Social Work	22	32.8
Munhumutapa School of Commerce	15	22.4
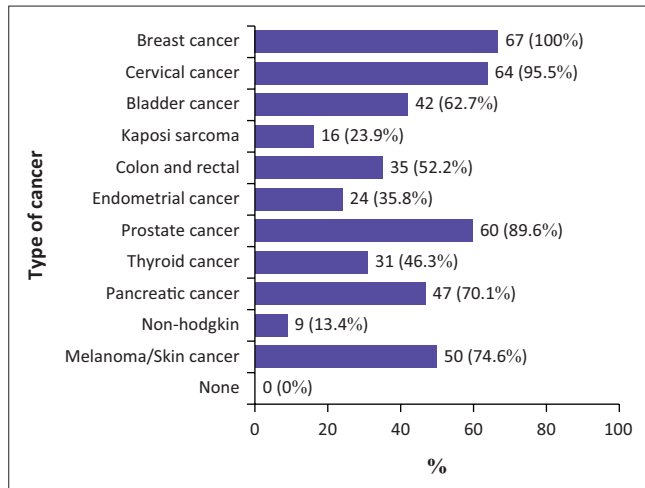
FIGURE 3: Knowledge of cancers that affect humans among respondents.

FIGURE 4: The outlets through which students had knowledge of breast cancer and its risk factors.

more than one answer. These included lumps, pain, pimples, itchiness, blood and other discharges from the nipples, nipple inversion, wounds and changes in size and shape. Of these, lumps in the breast were the most common answer. Also cited were loss of hair and appetite, depression, general body weakness, dizziness, bruises on the face, and chest pain. Results also showed that students became aware of breast cancer through education at school followed by awareness campaigns such as the October Breast Cancer Awareness Month. Figure 4 gives the number of times each of the knowledge outlet was mentioned.

In response to the question 'Has anyone in your family been diagnosed with breast cancer', 31.3% of the students answered YES, while 46.3% said NO, and 22.4% said they did not know.

Breast cancer risk factors

Risk factors of breast cancer were categorised into age, family history, reproductive factors, oestrogen, and lifestyle (Figure 5). However, some of the responses were incorrectly presented as risk factors. Examples included wearing of black brassieres, sleeping with brassieres, wearing of wet or dirty brassieres or brassieres with metal support, and putting money in brassieres. These were mentioned with almost equal frequency with lifestyle as a risk factor for breast cancer. Caring for a family member affected by breast cancer as well as early menarche and pregnancy were also cited as risk factors. Other respondents stated that they had no knowledge of any risk factors of the disease.

Of the respondents, 76.1% accurately gave at least one risk factor, while others either answered wrongly or said they had no knowledge. For instance, many respondents noted that breast cancer was a genetic disease most likely to occur in individuals already having a family history of the disease. Other risk factors reported included use of chemicals, excessive exposure to radiation, hormonal imbalance, obesity, drinking alcohol, smoking, use of contraceptives, menopausal hormone therapy, age, unsafe sex, use of
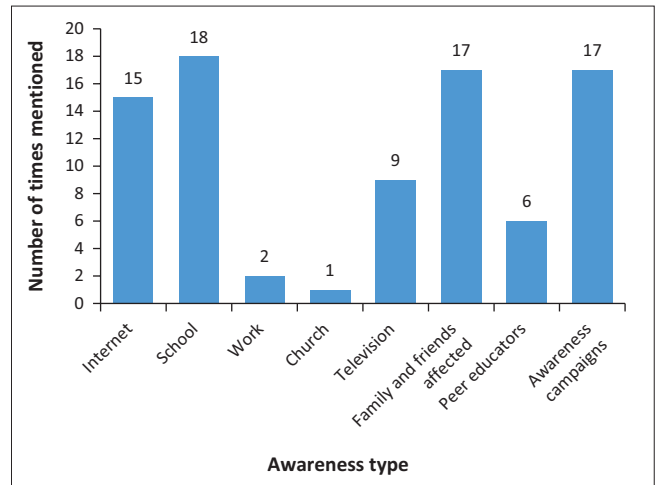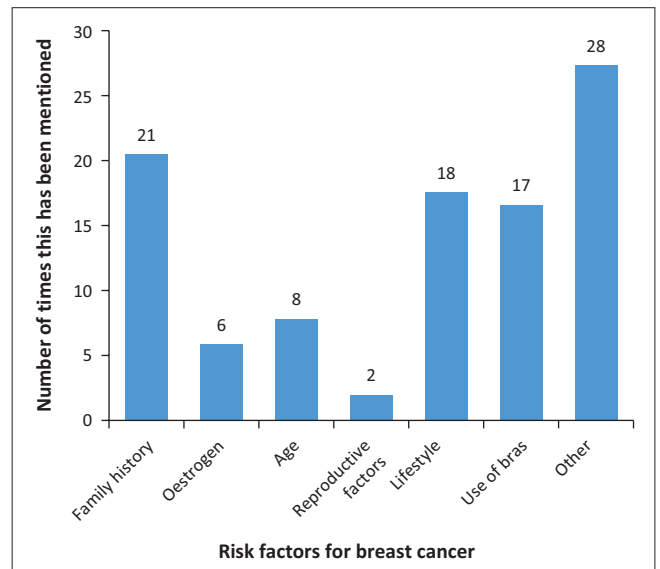

FIGURE 5: The level of understanding of the risk factors of breast cancer by students.

diethylstilbestrol (DES) and unhealthy diets. Of the 67 respondents, 22.3% reported that they drank alcohol, while 71.6% did not, and 10.4% would rather not answer. Regarding use of contraceptives, 19.4% of the respondents used methods such as intrauterine device (IUD), family planning pills, depo, condoms and Jadelle. However, 76.1% reported that they were not sexually active, and 4.5% were not comfortable to answer the question. While 28 respondents indicated that they did not know what risk factors are, hence could not give any, five (5) thought death and another five (5) indicated that losing a breast was a risk factor for breast cancer.

Disease screening, and prevention of breast cancer

Respondents were asked if they had gone for screening of any disease in the last 10 years. Only 29.9% had done so, for HIV and AIDS, breast cancer, urinary tract infections, fibroids, diabetes, coronavirus disease 2019 (COVID-19),

among others, while 70.1% had not. However, all respondents (*n* = 67) appreciated the importance of breast cancer screening mainly for early detection and treatment. Of the 67 respondents, 32.8% had family members who had been diagnosed with breast cancer, while 49.3% had not had, and 17.9% were not sure. The methods of prevention of breast cancer highlighted included regular screening, educative awareness campaigns, healthy diets, non-consumption of alcohol, minimising smoking, wearing clothing that cover the chest area, limiting birth control methods to natural methods, proper drying after bathing, maintaining healthy weight, and wearing clean brassieres.

Perceptions about breast cancer

Of the total respondents, 73.1% reported that breast cancer can be cured while 23.9% and 3.0% did not think so, or were not sure respectively. Most respondents also highlighted that anyone can be affected by the disease since it has various predisposing factors. A miniscule 3.0% and 1.5% of the respondents were of the opinion that the young and the obese respectively are more likely to contract breast cancer, with arguments for the obese being related to dietary issues.

Methods to cure breast cancer

A number of methods were highlighted for curing breast cancer. They included chemotherapy, mastectomy, traditional medicines, stem cell therapy (Miracell STC 30), and hormonal therapy. Some proposed dietary reform and hygiene. However, some students (*n* = 4) reported that they did not know any such method, while others stated that there was no cure for breast cancer (*n* = 4). Some respondents expressed apprehension and fear at the prospect of contracting breast cancer:

'You become anxious … because cancer is frightening, it's a frightening disease.' (Respondent 1)

'… that idea that cancer is cancer is not treatable … eish [*laughs nervously*].' (Respondent 2)

Some of the student peer respondents also showed some knowledge of the progression of breast cancer and how it is possible to manage the disease so that it does not cause mortality. In terms of awareness programmes, the respondents related to how COVID-19 had disrupted a lot of activities

'COVID-19 was a real demon (laughs); because so many activities were affected negatively; people are staying in their homes and places of work and yet they should be rising to the occasion and start making noises on various issues … I was thinking that we can get testimonies from survivors so that people will know that if you get the breast cancer there is still hope, you can still make it, that will help to give people hope instead of continually scaremongering that 'you will die, you will die.' (Respondent 2)

'… from what these ladies have said, I think getting tested is the right thing; because this is similar to … because there are stages, so if cancer has stages, and if it's an early stage, it doesn't mean that you are going to die; there are other measures that can be used so that your life can be prolonged … so we have to inform people about it.'(Respondent 5)

A number of risk factors were discussed, with some respondents showing unawareness of the risk factors associated with breast cancer especially when issues of dairy consumption and refined foods were flagged as contributing to obesity, which is associated to lifestyles that predispose individuals to breast cancer:

'Are you saying people who are obese are more disposed to breast cancer?' (Respondent 6)

A continued discussion on these risk factors elicited strong debate with respondents offering their perspectives on wellness, attitude and practices which help in reducing the risk of contracting breast cancer:

'I think fast foods are also dangerous especially for us youth, food such as [*big fast food outlet mentioned*] … yes you can eat but you must know that it's got consequences … for instance with chips [*fries*] they have too much fat.' (Respondent 5)

'Yes, when we say predisposing factor we are not saying everyone who is obese will get BC, but that as all other factors, diet is a contributory factor, because someone who is obese and not exercising has a sedentary life; I am a secretary at GZU; I come with my high heels and spend the whole day seated. I go home and everything is done for me by the housemaid; I have no active life and the fat is building up in me.' (Respondent 1)

'… so I also think that if you can expose yourself to the likes of milk and stuff, sometimes you have to walk when there is a distance coming to school so you can burn some of these things before they get assimilated in the body. When you walk and drink a lot of water this can help you.' (Respondent 5)

'... the other one which I wanted to talk about is hereditary; i.e. if your grandfather or grandmother dies of breast cancer; you are also at high risk of dying from it even if you are fit.' (Respondent 3)

Discussions also centred around breast feeding as a method of reducing the risk of breast cancer. This prompted issues of married women 'breastfeeding' their husband, which were queried by one of the respondents:

'… breast feeding an old man? is that what you are saying?' (Respondent 4)

'The man part of it I don't know; I know breast feeding of a baby [*laughs*] … it can't be the same thing; because when you are breast feeding a child, there is milk coming from the ducts, where the cancer starts when it's in the breast. So it's like the ducts are relieving milk and the child is drinking; so when the child finishes breast feeding and is weaned over two years really the breasts are dry and the ducts are safe but with men there is no milk coming out [*laughs*].' (Respondent 1)

'So for the women without children, how do they get help since they can't breastfeed?' (Respondent 5)

'There are lot of things to do. The prevention part … it's all about lifestyle, diet, exercise, reducing weight, then screening. You can do breast examination by inspection, by palpitation, and all others methods which have nothing to do with breast feeding.' (Respondent 1)

Discussion

Generally, results show that female university students know the signs and symptoms of breast cancer. This is

expected as all students had cited breast cancer as one of the cancers that affect humans. It could also be because of the fact that breast cancer affects females more than males, and respondents in this study were all females. Information on breast cancer, including its signs and symptoms is critical in the management of the disease. It has already been reported that the lack of awareness leads to delays in patients presenting for diagnosis (Foroozani et al. 2020). This increases the probability of the disease reaching the metastatic stage.

Our findings indicate that the biggest risk factor of breast cancer is family history followed by lifestyle. Congruent to this, use of contraceptive pills has been shown to contribute exogenous androgenic hormones into the female frame (Kanadys et al. 2021), and alcohol consumption has been implicated in the pathogenesis of breast cancers (Sun et al. 2017). In our study, there were reports of consumption of both alcohol and milk, raising concern with respect to the increasing global prevalence of breast cancer. Intemperate consumption of milk and dairy products (Gil et al. 2022) lowers the age of menarche, thereby delaying the onset of menopause. This increases the amount of time women produce the cell-proliferating hormone oestrogen. Nasrollahzadeh et al. (2020) also attributed low incidence of breast cancer among women to their low economic and social status, suggesting breast cancer is a disease of affluence. This is echoed by concerns of the possibility of obesity as a predisposing factor to breast cancer raised in the present study, which could have been influenced by obesity misconceptions in African society that mostly associate the condition with affluence. However, contrary to these observations, Chipfuwa, Manwere & Kuchenga (2014) reported that 97% of women in Zimbabwe could not accurately determine the risk factors of breast cancer. Such differences between studies could be because of the diversity of disciplines of study of respondents in the present study which included the social sciences, agriculture, arts, law, natural sciences, education, and commerce. Coupled with differences in religious affiliation of the respondents, it is thus not surprising that some respondents explained breast cancer in scientific terms, while others attributed it to myth. Thus, the level of awareness of breast cancer and its risk factors among female students should be improved as a determinant of the attitude which in turn affects health seeking practices among the vulnerable groups of women.

Furthermore, findings indicate that all students consider breast cancer screening important. In a similar study, 74% of Zimbabwean women appreciated self-examination for early detection of the breast cancer (Muchirevesi 2016). However, despite acknowledging the need for disease screening in this study, few respondents had gone for screening in the last 10 years. Given that 31.9% of the respondents reported having a family member diagnosed with breast cancer, more females would be expected to go for breast cancer screening. Although

no correlations between observations in this study were made, other scholars have established an association between the level of education and awareness of breast cancer and its risk factors (Elshami et al. 2022). For instance, 75.6% of nursing students in Bangladesh universities reported practising breast self-examination (Ferdowsy 2020). This may be logical given their medical background. However, contradictory to expectations again, medical students at Angolan universities showed a low level of awareness of breast cancer (Sambanje & Mafuvadze 2012). Such contradictions reiterate that generally, on the African continent risk factors to breast cancer are a function of time, geographical location, and age.

Results also indicated that dissemination of information on breast cancer is important. In our study, 25.4% of the respondents knew of breast cancer through infection and death of a relative or friend. We also observed that the traditional TV has become least of the channels through which information is disseminated, while the education systems represented by peer educators and curricular could have become more effective at raising awareness of the disease. It is therefore important to utilise the most effective modes of dissemination for effectiveness in breast cancer programmes.

In Zimbabwe, cancer has a 10.8% incidence and 7.3% mortality rate (WHO 2020). At several stages the country has set up and promulgated a National Health Strategy in which issues of breast cancer, cancers in general and other diseases have been raised (Ministry of Health & Child Care of Zimbabwe 2020). However, because of the current depressed economic situation in the country, patients with the disease present late for diagnosis. There are also prolonged situations of misdiagnosis and an outright lack of resources for treatment leading to morbidity and death (Dandadzi et al. 2022). Zimbabwe has only six linear accelerators available to treat patients suffering from metastatic breast cancer making the burden of these disease difficult to manage (Mushonga et al. 2021). Other studies have revealed the under-utilisation of radiotherapy facilities for purposes of treatment and palliative care (Elmore et al. 2021) in a situation where there are prediction of up to three breast cancer patients per month presenting at any one hospital within the country (Nyoni & Nyoni 2020) and cumulative amounts of 1848 cases (World Health Organization 2020).

Conclusion

Our findings indicate that female students are aware of breast cancer, its signs and symptoms, and that it can be cured. Risk factors cited were categorised into age, family history, reproductive factors, oestrogen and lifestyle. However, despite knowledge of the disease, few females go for regular screening. Additionally, some respondents explained breast cancer scientifically, while others attributed it to myth. This led to variations in methods of curing breast cancer highlighted such as chemotherapy, mastectomy and traditional medicines. Most of the knowledge of the disease

was from awareness campaigns, the Internet, and academic studies. At GZU, the international breast cancer month of October is commemorated. Such programmes are effective ways of disseminating information about the disease. There is need for a nationwide study to establish the current infection rate of the disease, and increase awareness of its signs and symptoms, as well as the importance for regular screening.

Recommendation

While current official statistics on breast cancer show a prevalence of 11.7%, our results suggest a higher figure of between 25.4% and 31.9%. Thus, there is need for further and regular in-depth investigations on the epidemiology of breast cancer in Zimbabwe.

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Competing interests

The authors declare that they have no financial or personal relationship(s) that may have inappropriately influenced them in writing this article.

Authors' contributions

I.N. was the principal investigator, while C.M. and S.N. formulated the methodology, implemented the survey, analysed data, and produced the manuscript.

Funding information

Data availability

Data for this study (that are currently secured by the researchers for any future verification or extension of the study) are available from the corresponding author, I.N., upon reasonable request.

Disclaimer

The views expressed in this submitted article are the authors' own views and do not necessarily represent an official position of Great Zimbabwe University, and the publisher.

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