

Original Research Article

Prevalence of Late Stage Diagnosis of Cervical Cancer and Comorbidities in Women Aged 65 Years and Above In Harare, Zimbabwe

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ABSTRACT

The elderly are currently the fastest growing population worldwide. Illnesses arising with advancing age, like hypertension and diabetes mellitus are complicating cervical cancer diagnosis in elderly women. The study utilised a descriptive, correlational design to examine the relationship between prevalence of late stage diagnosis of cervical cancer and number of comorbidities in women aged 65 years and above in Zimbabwe. Betty Neuman's Systems Model was the guiding framework for the study. Convenience sampling was used to recruit and interview 68 participants from Parirenyatwa Hospital and Spilhouse Clinic at Harare Hospital. Permission to carry out the study was granted by the respective review boards. All participants gave informed consent. Data was collected through face to face interviews following a structured questionnaire. Data was analysed using the Statistical Package for Social Sciences (SPSS) version 16. Fifty-four (79.4%) participants had comorbidities. The average number of comorbidities suffered by elderly women before late stage cervical cancer diagnosis was 2.03 with a mean comorbidity score of 9.03 out of 38 using a modified Charleson Comorbidity Index. Majority participants (58.1%) presented late with cervical cancer at stages 111 and 1V respectively. Prevalence of late stage diagnosis was 0.661. There was a positive relationship between prevalence of late stage diagnosis of cervical cancer and number of comorbidities ($r = .431, p < 0.01$). Regression analysis (R^2) was 0.186 ($b=.289$) implying that late stage diagnosis explains 18.6% of the variance observed in comorbidities. Screening for cervical cancer in elderly women is important to promote early detection and treatment.

Key words: cervical cancer, late stage diagnosis, comorbidities, elderly, prevalence, screening.

INTRODUCTION

Cervical cancer is the number one cancer among women in Zimbabwe, with an estimated 1 855 cases diagnosed and 1 286 deaths recorded annually due to the. [1,2] The highest incidence rates are in Eastern, Western and Southern Africa as well as South-Central Asia and South America. [3] Records from the national cancer registry have the prevalence of cervical cancer in Zimbabwe at 33.5% with 15.6% of that being in elderly women aged 65 years and

above. Cervical cancer is highly preventable with proper screening and early treatment. [4] Statistics from the Global Cancer Network (GLOBOCAN), indicate that there were 506 million people aged 65 years and older in 2008, a number expected to increase to 1.3 billion by 2040 worldwide including the developing countries. [7] The elderly are the fastest growing population today. In the majority of countries, women constitute 55% of the elderly population with 65% of them aged 80 years and above.

[5] This increased population ageing is due to such reasons as declining fertility rates, increased life expectancy, improved nutrition, lifestyle and healthcare in general. The average elderly woman in Zimbabwe is living with at least 1 or 2 chronic illnesses and has frequent contact with the health care provider, yet there is reduced screening of cervical cancer in these women leading to late diagnosis of cervical cancer. [5]

However, with the adoption of cancer causing lifestyles like smoking and fast foods, the effects of which are evident in the elderly, more elderly people are now living with malignant conditions and will eventually deteriorate into end of life stages requiring palliative care. This strains an already exhausted health care system especially in poor resource countries. [3] Cancer incidence increases exponentially with advancing age. [6] According to GLOBOCAN, there were about 12.7 million cancer cases and 7.6 million cancer deaths worldwide in 2008, and approximately 56% of the cases and 64% deaths occurring in developing countries. [7]

Despite increasingly widespread use of Papanicolaou (Pap) smears, almost half of all women with invasive cervical cancer are diagnosed at a late stage. [8] Detection is usually late after presentation of uncontrolled or abnormal bleeding and pain in the 3rd and 4th stage when the cancer has already spread to nearby tissue surrounding the cervix. [9] Reasons for late diagnosis are lack of awareness, low risk self-perception, inadequate financial resources, general myths surrounding promiscuity and belief that cancer is caused by witchcraft. [10]

Comorbidities play an important role in survival of women with cervical cancer. [11] Patients with comorbid conditions have greater odds of late stage diagnosis of cancer. [12] Comorbidity generally increases with advancing age and may be the reason behind age-related differences in cancer diagnosis, treatment and outcome. Cancer stage at diagnosis determines treatment options and has strong influence on length of survival. The 5 year survival for localised

cervical cancer is 90.9%. [13] Regional or distant stage which occurs when the cancer has spread to other parts of the body is presented by 53% of the cases and survival rate is low. [13] In developing countries like Zimbabwe, limited access to effective screening means that the disease is often not identified until it is further advanced and clinical symptoms develop. Treatment prospects are poor in such cases resulting in higher mortality rate from cervical cancer in these countries. [1] A survey done in Zimbabwe indicated that more than 75% of rural elderly women are not considered for cervical cancer screening as they come into clinics or hospitals for any health concern. [5] Screening efforts in Zimbabwe have focused on the 15-49 year age group as it is considered the one at highest risk of contracting cervical cancer from the risky lifestyles undertaken including early onset of sexual activity and douching. [5] This has resulted in side-lining of the older age groups who then present with late stage cervical cancer later whilst they are now burdened with other comorbid illnesses like hypertension, diabetes, cardiac failure or other malignancies like breast cancer as this research sought to find out. A cohort study on 98 people with malignant conditions including colorectal, prostate, breast and lung cancer which revealed that survival rate was considerably reduced in patients with comorbidities scoring 6 or higher on the Charleson comorbidity scale. [14] The purpose of this study, therefore, was to examine the relationship between prevalence of late stage diagnosis of cervical cancer and number of comorbidities in women aged 65 years and above.

METHODOLOGY

A descriptive, correlational design was used with a convenience sample of 68 elderly women aged 65 years and above at Parirenyatwa Group of Hospitals and Spilhouse Clinic in Harare, Zimbabwe. Included were elderly women aged 65 and above who had been diagnosed with cervical cancer which had been staged.

They were Shona or English speaking and had accessible medical records. Excluded were the very ill, the mentally challenged, the institutionalised, those who had participated in the pretest as well as those whose medical records had incomplete information. Convenience sampling was used because of the small numbers of patients attending the study sites and a high death rate. Permission to carry out the study was obtained by the Medical Research Council of Zimbabwe, the Joint University of Zimbabwe and Parirenyatwa Hospital Research Ethics Committee, consultants and ward managers of the respective wards and clinics. All participants gave informed consent. Data was collected using a structured interview and record review from the 1st to the 21st of May 2015. Data collection was done in a private room, code numbers were used instead of patients' names and filled in questionnaires were kept under lock and key by the investigator who had sole access to them.

Data was analysed using the Statistical Package for The Social Sciences (SPSS) version 16. Descriptive statistics were used to describe the demographic characteristics, prevalence of late diagnosis and comorbidities. Inferential statistics (Pearson's correlational coefficient) and regression analysis were used to analyse the relationship between late stage cervical cancer diagnosis and number of comorbidities.

RESULTS

Demographic data

Table 1 summarises demographic data. Thirty-one women (45.6%) were aged between 65-70 years, 17 (25%) aged between 71-75 years, 13 (19.1%) between 76-80 years and 7 (10.3%) were aged above 80 years. The mean age was 72.57 years. On marital status, 6 (8.8%) women were single, 25 (36.8%) married, 9 (13.2%) divorced and 28 (41.2%) were widowed. Of those who were married, 38 (55.9%) married in their teens, 23 (33.8%) between the ages of 20-35 years and 1(1.5%) married beyond 35 years

of age. The mean age at marriage was 18.74. In terms of parity, 9 women (13.2%) were nulliparous, 18 (26.5%) gave birth to 1-3 children, 23 (33.8%) had 4-6 children and 18 (26.5%) had more than 6 children. The mean parity was 4.66.

Table 1 Demographic data (1): (n=68)

Variable	Frequency	Percentage (%)
Age in years		
65-70	31	45.6
71-74	17	25.0
75-80	13	19.1
80<	7	10.3
Marital Status		
Single	6	8.8
Married	25	36.8
Divorced	9	13.2
Widowed	28	41.2
Age when married		
12-19	38	55.9
20-35	23	33.8
35<	1	1.5
Parity		
0	9	13.2
1-3	18	26.5
4-6	23	33.8
6<	18	26.5

Table 2 Demographic data (2): n = 68

Variable	Frequency	Percentage
Residential area		
Rural	45	66.2
Urban	23	33.8
Who participant stays with		
Alone	2	2.9
Nuclear family	29	42.6
Extended family	31	45.6
Friends or workers	6	8.8
Occupation		
Never worked	17	25.0
Retired	18	26.5
Professionally employed	9	13.2
Informal employment	1	1.5
Farmer	23	33.8
Level of education		
None	4	5.9
Below primary schooling	10	14.7
Primary	22	32.4
Secondary	19	27.9
Tertiary	13	19.1
Religion		
None	3	4.4
Traditional	9	13.2
Christianity	55	80.9
Both	1	1.5
Nearest health care facility		
< 2 km	10	14.7
2 – 10 km	46	67.7
>10 km	12	17.6
Usual health care provider		
Home based care	3	4.4
Clinic	31	45.6
Hospital	22	32.4
Private practitioner	11	16.2
None	1	1.5

Table 2 is a continuation of demographic data. Forty-five (66.2%) lived in the rural areas whilst 23 (33.8%) were urban dwellers, 31 (45.6%) lived in an extended family while 23 (33.8%) were farmers. Twenty-two (32.4%) were educated up to primary level and 55 (80.9%) were Christians and 1 (1.5%) admitted to both traditional and Christian beliefs and practices. Forty-six (67.6%), lived between 2-10 km from the nearest health care facility while 31 (45.6%) usually received health care from a clinic

Table 3 summarises results on diagnosis and awareness in the participants. Eighteen women (26.5%) had been diagnosed within a year, 26 (38.2%) between 1-3 years and 24 (35.3%) greater than 2 years. The mean duration since diagnosis was 1.09 years. Seven (10.3%) were diagnosed in Stage 1, 16 (23.5%) in Stage II, 26 (38.2%) in Stage III and 19 (27.9%) in Stage IV. Sixty-three women (92.6%) were currently on treatment or had received treatment and 5 (7.4%) had no treatment. For those on treatment, the duration at the time when this study was conducted was as follows: Four (5.9%) of those on treatment had been on treatment for weeks, 19 (27.9%) for months, 22 (32.4%) for years while 18 (26.5%) had finished treatment. The mean duration of treatment was 2.01 years. Eight (11.8%) were on chemotherapy, 16 (23.5%) on radiotherapy, 7 (10.3%) on cryotherapy, 3 (4.4%) on traditional herbs, 6 (8.8%) had surgery and 23 (33.8%) had combined therapy. For those on combined therapy, 13 (56.5%) were chemotherapy and radiotherapy, 5 (21.7%) chemotherapy then surgery, 4 (17.4%) radiotherapy then surgery and 1 (4.4%) was on chemotherapy and traditional herbs from a registered herbalist.

Table 4 presents awareness of cervical cancer screening. Twenty-nine (42.6%) participants were aware of cervical cancer screening whilst 39 (57.4%) were not aware. Of those aware, 9 (13.2%) had been screened before cervical cancer diagnosis.

Fifty (73.5%) had information on cervical cancer from health care providers.

Table 3 Diagnosis of cervical cancer (N= 68)

Variable	Frequency	Percentage
Duration of diagnosis		
< a year	18	26.5
1-3 years	26	38.2
>3 years	24	35.3
Stage at diagnosis		
1	7	10.3
2	16	23.5
3	26	38.2
4	19	28.0
Treatment		
Yes	63	92.6
No	5	7.4
Duration of treatment		
Weeks	4	5.9
Months	19	27.9
Years	22	32.4
Finished treatment	18	26.5
Not treated	5	7.4
Type of treatment		
Chemotherapy	8	11.8
Radiotherapy	16	23.5
Cryotherapy	7	10.3
Traditional herbs	3	4.4
Surgery	6	8.8
Combined treatment	23	33.8
Not treated	5	7.4

Table 4 Awareness (n=68)

Variable	Frequency	Percentage
Screening awareness before diagnosis		
Yes	29	42.6
No	39	57.4
Actual screening before diagnosis		
Yes	9	13.2
No	59	86.8
Screening frequency before diagnosis		
>Annually	8	11.8
Annually	1	1.5
Stat (at diagnosis)	59	86.8
Source of information about screening		
Direct	50	73.5
Indirect	3	4.4
Both	15	22.1

Comorbidities

Tables 5 and 6 present comorbidities. Fifty-four women (79.4%) had comorbidities. Ten (14.7%) had 1 other chronic illness, 16 (23.5%) had 2, 19 (27.9%) had 3, 6 (8.8%) had 4 and 3 (4.4%) had 5. The mean number of comorbidities was 2.03. The modified Charleson Comorbidity index showed that 40 (74.1%) participants suffered from comorbidities before the cervical cancer diagnosis, 29 (53.7%) had them after the cervical cancer

diagnosis and 13 (24.1%) had comorbidities before and after the cervical cancer diagnosis. The scoring range was 0-38 sliding scale with 0 being no comorbidities and 38 being the largest number of chronic illnesses. Fourteen (26%) scored from 0-5 and 17 (31.5%) scored from 6-10 on comorbidities before the cervical cancer diagnosis. The mean score before cervical cancer diagnosis was 5.16 out of 38 and 3.87 after diagnosis. After the cervical cancer diagnosis 9 (16.7%) scored between

0-5, 10 (18.5%) between 6-10 and 7 (13%) from 11-15.

Table 5 Comorbidities

Variable	Frequency	Percentage
Comorbidity		
Yes	54	79.4
No	14	20.6
Number of comorbidities		
0	14	20.6
1	10	14.7
2	16	23.5
3	19	27.9
4	6	8.8
5	3	4.4

Table 6 Comorbidities before and after cancer diagnosis (n=68)

Variable	Frequency	Percentage	Frequency	Percentage
Comorbidity	Before cervical cancer diagnosis		After cervical cancer diagnosis	
Hypertension	21	30.9	4	5.9
Diabetes mellitus	15	22.1	5	7.4
HIV/AIDS	5	7.4	2	2.9
Deep vein thrombosis	5	7.4	0	0
Ulcers	4	5.9	2	2.9
Schizophrenia	4	5.9	5	7.4
Breast cancer	3	4.4	2	2.9
Sleeping disorders	3	4.4	2	2.9
Arthritis	3	4.4	6	8.8
Heart failure	2	2.9	8	11.8
Renal failure	2	2.9	0	0
Vesicular-vaginal fistula	2	2.9	2	2.9
Backache	2	2.9	4	5.9
Liver disease	1	1.5	0	0
Dementia	1	1.5	0	0
Cataracts	1	1.5	0	0
Chronic pulmonary disease	1	1.5	0	0
Schizophrenia	1	1.5	7	10.3
Osteoporosis	0	0	1	1.5
Solid cancer (lungs, stomach)	0	0	1	1.5
Summary score of comorbidities				
Low (0-10)	31	45.6	19	27.9
Moderate (11-20)	7	10.3	9	13.2
High (>20)	3	4.4	1	1.5

Relationship between prevalence of late stage cervical cancer diagnosis and number of comorbidities

Table 7 presents the Pearson correlation analysis. Pearson's correlation coefficient (r) was 0.431 (r=.431, p=0.01) showing a positive significant correlation.

Table 7 Pearson's correlation matrix of late stage diagnosis of cervical cancer and number of comorbidities (n = 68):

	Y
	1.000
X	.431**
*p < 0.05	**p < 0.01
	*** p < 0.001

Key: Y= Late stage diagnosis of cervical cancer
X= Number of comorbidities before cervical cancer diagnosis

Table 8 shows the regression analysis. R² is 0.186. The significant F-test (F = 15.062, p = 0.01) indicates a linear relationship and that R² is significant. The T-test for the Unstandardized regression coefficient (b = 0.289) and is significant at 0.01.

Table 8 Regression analysis (n = 68)

Variable	B	SEB	BETA
X	2.251	0.184	0.431
Constant	12.211	0.075	
R ²	0.186		
		F = 15.062**	0
*p < 0.05	**p < 0.01	*** p < 0.001	

Key: X= Independent variable

DISCUSSION

Demographics

The modal age group range was 65-70 years with the mean age of 72 years. Women older than this could have been lost to follow up due to death or failure to honour review dates. Cervical cancer affects more older women than younger women. The prevalence of cervical cancer in women in Zimbabwe was 33.4% in 2009 with 15.6% being in elderly women aged 65 years and above. A study done by Ferrante et al in 2013 indicated that older patients in Florida had a 10.9% more likelihood of being diagnosed in the 3rd or 4th stage of cervical cancer than their younger counterparts. This could be due to lack of screening. In India, a study done to assess screening behaviours showed that elderly women in rural India were the least regularly screened and presented with late clinical symptoms of cervical cancer. [15] Late stage presentation means that the focus of health resources is expended fruitlessly. The current early cervical cancer screening drive in Zimbabwe has been focused on the 15-49 year age group. [16]

In this study, 42.6% of the participants were from a nuclear family and 45.6% from an extended family. It would be expected that participants from extended families benefit from social support to seek health treatment. However it has been reported that the elderly population in Zimbabwe especially in the rural setting are already living with debilitating illness such as chronic backache and the burden of taking care of orphaned grandchildren and sick children due to the AIDS pandemic. [14] These women present with late stage diagnosis of cervical cancer and reduced survival rate due to comorbidities. [15] Younger women are more open to screening than older women thus the need for family support in terms of health seeking. [15] The fact that majority of women came from the rural areas where the usual health care provider was on average 2-10 km away from home coupled with the aging process and the burden of extended family could

have further contributed to late presentation and diagnosis. This might explain failure by 42.6% participants to go for screening despite their awareness of cervical cancer screening. However, only 13.2% of those aware were screened before the cervical cancer diagnosis.

Parity and early sexual debut were identified as risk factors for cervical cancer in the study. Thirty-eight (55.9%) participants married between 12 and 19 years. This means that they had early sexual debut which is a risk factor for cervical cancer. Forty-one (60.3%) had 4 or more children. Increased parity also increases the chances of developing cervical cancer. [1] In women, during puberty and pregnancy, the transformation zone of the ectocervix is enlarged and exposure to HPV at these vulnerable times facilitates infection. [1,17] This may explain the association between squamous cell cervical cancer and early sexual activity, young age at first birth and a history of multiple pregnancies.

Majority 70.1% of respondents had at least attained primary level education. Knowledge as observed in this study did not translate into practice as 87% of those aware of cervical cancer screening were not screened. There is need to disseminate information as well as offer a flexible cervical cancer screening package to elderly women. Above 65 years of age to promote regular screening. It will be beneficial to explore factors that influence uptake of cervical cancer screening in the elderly women.

The health care provider is pivotal in providing health education for early cervical cancer screening and other health related issues. More than 90% participants had regular contact with health care workers and 73.5% of participants received screening information from a health worker even though only a few them were screened. This could be due to lack of referral. A survey done at the Visualisation and Acetic Testing screening clinic at Parirenyatwa and Chinhoyi showed that 14 out of 23 health care providers did not refer elderly patients

for cervical cancer screening with 1 of the reasons being that they were perceived to be less sexually active thereby at no risk of developing cervical cancer and that referral would be a waste of resources. This was part of a study to assess knowledge levels about the cervical cancer screening package given to health care workers. [18] Health care providers at VIAC centres verbalised that they hardly refer elderly patients for cervical cancer screening as they perceive it to be a waste of resources. Lack of referral has also been reported in the developed world. According to studies done in America, physicians seldom refer elderly women for cervical cancer screening using the assumption that it would not improve quality of life at that age. There is need for routine referral in the elderly for cervical cancer screening as early diagnosis and treatment improves the prognosis of cervical cancer. In this study the mean number of comorbidities according to the modified Charlson comorbidity index decreased from 9.03 before diagnosis to 3.87 after diagnosis.

Late stage cervical cancer diagnosis

The duration since diagnosis for 64.7% of respondents was within 3 years and beyond 3 years for 35.3% respondents. Most participants presented with stage III (38.2%) and stage IV (27.9%) which is late presentation. According to the Zimbabwe Ministry of Health, most women present late with cervical cancer, in stage 3 and 4. Prevalence of late stage presentation was 0.661. The Zimbabwe National Cancer registry put the prevalence of cervical cancer presentation at 0.154 in 2009. Prevalence might have been higher in this study due to the smaller study sample drawn from only 2 centres, and non-use of probability sampling. However findings from other studies have revealed that more cancer causing lifestyles are affecting the elderly now and leading to late diagnosis of cancers. [6] Late presentation and diagnosis have also been reported in developed countries. A study done by Ferrante et al in 2009 indicated that older patients in Florida

had a 10.9% more likelihood of being diagnosed in the 3rd or 4th stage of cervical cancer than their younger counterparts. [8]

Of all the participants, 92.6% were on treatment, with 33.8% receiving combined therapy. The most common combination was radiotherapy and chemotherapy which gave rise to development of comorbidities after cervical cancer diagnosis for these elderly women.

Comorbidities

Hypertension, 21 (30.9%) and diabetes mellitus, 15 (22.1%) were the most common comorbidities patients had before they were diagnosed with cervical cancer. Other comorbidities reported were AIDS (7.4%), deep vein thrombosis (7.4%), schizophrenia (5.9%), breast cancer (4.4%) and renal failure (2.9%) among others. After diagnosis, respondents reported renal failure (11.8%), heart failure (8.8%) and liver disease (5.9%) as the most common illnesses. Breast cancer occurred in 6% of respondents both before and after cervical cancer diagnosis. This could have been due to metastasis considering late diagnosis. The organ failure could also be a result of chemotherapy and radiotherapy. Diabetes, respiratory diseases, cancer, cardiovascular problems, arthritis, hypertension, and certain other chronic conditions are more common in older than in younger persons. As a consequence, a new diagnosis of any common chronic health condition is likely to be made in the context of pre-existing health problems.

As the elderly population expands, many diseases that predominantly affect older people are also on the increase. [6] Many conditions that affect the elderly are occurring in combination thereby complicating care of any single condition. Since patients are likely to acquire an increasing number of comorbidities with increasing age, there is need for strategies to prevent, screen or prevent cancer and the need for physicians and caretakers to have expertise in both oncology and geriatrics. A new approach established at the Case Western Reserve University uses a Cancer-

Aging Linked Database (CALD) for patients in the state of Ohio. [6] The CALD accesses and merges information from a series of databases including the Ohio Cancer Incidence Surveillance System (as cancer is a reportable disease in Ohio), the Ohio death certificate file, Census block data and Long term care minimum data set amongst others. Using the CALD, comorbidities such as incontinence, depression and dementia have been identified.

The Pearson's correlation coefficient showed a positive and significant relationship ($r = .431$, $p = 0.01$) between prevalence of late stage presentation of cervical cancer and number of comorbidities. This means that the later the diagnosis for cervical cancer is made, the more the number of comorbidities. Regression analysis showed a strong effect relationship ($R^2 = 0.289$). This implies that late stage presentation explains 28.9% of the variance observed in comorbidities. This could mean reduced accessibility to health care facilities as well as delayed referral system.

There are several factors involved in the elderly who suffer from chronic illnesses. [5] They are bombarded with polypharmacies, fear of the unknown and drug-drug interactions of which they are then reluctant to seek professional health care therefore ending up presenting with late symptoms. Elderly women with cervical cancer are less likely to seek medical care as they are swamped with other responsibilities. [10] A study done in rural Zimbabwe revealed that although health care was within reach for the elderly woman, she was bound to priorities others first especially when living with orphaned grandchildren or with HIV/AIDS. [2]

In Zimbabwe, cervical cancer screening is widespread but hardly offered to the elderly woman with the regular check-up package due to health worker misconception, reluctance for the invasive screening technique and focus on other comorbidities. [15]

The Eve Appeal study done in America in 2010 found out that although most elderly women were aware of cervical cancer screening, few bothered to have it done due to fear of the unknown. [19] There is a need to address fears of the elderly population in particular if there is to be improved uptake of cervical cancer screening and early detection in elderly patients, leading to early treatment.

CONCLUSION

Late presentation with cervical cancer was common among elderly women which resulted in comorbidities. However the number of comorbidities decreased after diagnosis. There is need to foster uptake of cervical cancer screening for early detection and treatment of cervical cancer. Health care workers should be educated on the importance of routine referral and screening for cervical cancer in the elderly as it improves prognosis and quality of life.

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