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A Review of 5-Year (2017-2021) Survival Rate of Cervical Cancer Patients at the Komfo Anokye Teaching Hospital, Kumasi, Ghana

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Abstract: It has been estimated that 6.67 million women over the age of fifteen (15) years were at risk of developing cervical cancer in Ghana. It is further estimated that 87% of cervical cancer deaths occur in less developed regions. The aim of the study was to determine the survival rate of cervical cancer patients at the Komfo Anokye Teaching Hospital, Kumasi, Ghana. The study used a retrospective quantitative research design with data from eighty (80) cervical cancer patients who underwent radiotherapy between 2017-2021. The response rate of 0.85 was achieved with a final working sample of 68. A descriptive statistic was used to determine the frequencies and percentages of age, ethnicity and any other factors that contributed to the survival of the cervical cancer patients. Cox regression, log rank test and Kaplan Meier were used for the survival analysis. The 5-year survival of patients was 34.2% with 31.7% chance of surviving in the premenopausal age than the menopausal stages (sig.0.017). The peak age of diagnosis was between 40 and 80 years, with modal age group between 71 and 80 years with the mean age of 63.32±15.733 years. The youngest age at diagnosis was 27 years and the oldest was 104 years. Nearly 22.1% were premenopausal whilst 77.9% were post-menopausal**.** There were significant differences in survival rates between patients from different age groups when tested using the log rank test. Women below 50 years had a lower 5-year survival rate compared to those above 50 years**.** The overall 5-year survival rate among patients with cervical cancer over the studied period was relatively poor compared to developed nations. The survival of cervical cancer patients is indirectly dependent on the stage, size and histopathology of the cancer. Other factors include the availability of effective prevention and treatment, and socio-demographic factors such as age, ethnicity, and socioeconomic parameters

Keywords: Cervical cancer, patients, Anokye teaching hospital, Ghana

1. INTRODUCTION

There were 528,000 570,000 cases and 266,000 311,000 deaths of cervical cancer in 2015 globally. (Cervical Cancer Action, 2020, Torre et al., 2015).) In 2016, cervical cancer ranked as the fourth most-common cancer worldwide and the second in incidence and mortality behind breast cancer in developing countries (Cancer Research, UK, 2020, Hongladaromp, et. al., 2014; Chabra, 2016, Opoku et al. 2016). The incidence of cervical cancer is decreasing in the developed countries but is still increasing in developing countries (Chabra, 2016, Opoku et al. 2016,

Cheah and Looi, 1999).). Cervical cancer is the second common cancer for women between the ages of 15 to 44 (Bailey et al., 2016) accounting for about 740 deaths per day (Small et al., 2017). This statistic is predicted to only rise, with an estimated 443,000 annual deaths by 2030, a 67% increase (Cervical Cancer Action, 2020, Torre et al., 2015).

Conservative estimates in Ghana indicate that every year 2,800 women are diagnosed with cervical cancer and 1,700 die from the disease (Opoku et al. 2016). Cervical cancer is the second leading cause of cancer in women in Ghana after breast cancer Opoku et al., 2016; Hill, et al, 2016; Thomas et al., 2017). In Ghana, a study conducted at the National Center for Radiotherapy and Nuclear Medicine, Korle Bu Teaching Hospital, Accra, in 2012 showed that out of a total of 100 cervical cancer patients that were sampled, 76 responded, forty-one percent (41%) five- year survival rate was noted (Opoku et al, 2016). It was further noted that patients who received radical radiotherapy recorded 86.7% 5-year survival rate (Opoku et al, 2016).

Tracking of progress of cervical cancer patient's survival rate at the Komfo-Anokye Teaching Hospital, the second largest hospital in Ghana has been a challenge as some patients default in post treatment clinical reviews appointments. The study, therefore, assessed the survival rates of the patients after undergoing treatment at the hospital.

2. MATERIALS AND METHODS

A quantitative retrospective cohort design was used for this study, which was carried out the Komfo Anokye Teaching Hospital (KATH), Kumasi, Ghana. KATH was chosen for study because it is the largest referral hospital for middle belt of the country. The geographical location of the 1200-bed capacity of KATH, the road network of the country and commercial nature of Kumasi makes the hospital accessible to all patients in the mid-portion of the country (Ghana Statistical Service, 2021).

The inclusion criteria were patients who presented with cervical cancer and successfully completed treatment at the hospital with demographic data and patients with regular follow-up data as well as those with survival data and finally patients who died from cervical cancer. Ethical approval for the study was sought from the Ethical and Protocol Review Committee of College of Health Sciences, University of Ghana. Written permission for the data collection was also obtained from the Head of the Oncology Unit, KATH. Participants were informed of the confidentiality of the information provided.

Data collection and analyses

Data were retrieved from the folders of eight-eight (88) patients who received treatment for cervical cancer from January to April 2021. Patients' demographics information, diagnosis, date of diagnosis, start date of treatment, end date of the treatment, dose received, treatment modality, tumor grade, tumor stage and contact details were obtained. The statuses of the patients were also obtained through mobile phone communication either with the patient or the next of kin provided as appropriate. The data were entered into Microsoft Excel and coded into SPSS software. Survival analysis was done for the age, ethnicity and menopausal age group using the SPSS software. Kaplan Meier analysis was conducted to identify the overall survival rates and median survival time of the patients. Differences in survival among different ethnic and age groups were compared using Log-rank test. The determination of associated factors to cervical cancer was done using Multiple Cox Regression analysis. Two-tailed t-test with p-value of less than 0.05 was considered as statistically significant.

3. RESULTS

Demographic data

During the data collection, it was noted that eighty-eight (88) patients reported to KATH with cervical cancer from January to April 2021. Out of these, twenty (20) representing 22.7% were lost to follow ups and, therefore, could not ascertain whether they were still alive or dead This, therefore, put the actual study participants at six-eight (68) of which fifteen were below 50 years of age whilst fifty-three (53) were above 50 years (Fig. 1). The peak age of diagnosis was between 40 and 80 years, with modal age group between 71 and 80 years with the mean age of 63.32±15.733 years. The youngest age at diagnosis was 27 years and the oldest was 104 years. Nearly 22.1% were premenopausal whilst 77.9% were post-menopausal (Fig. 1).

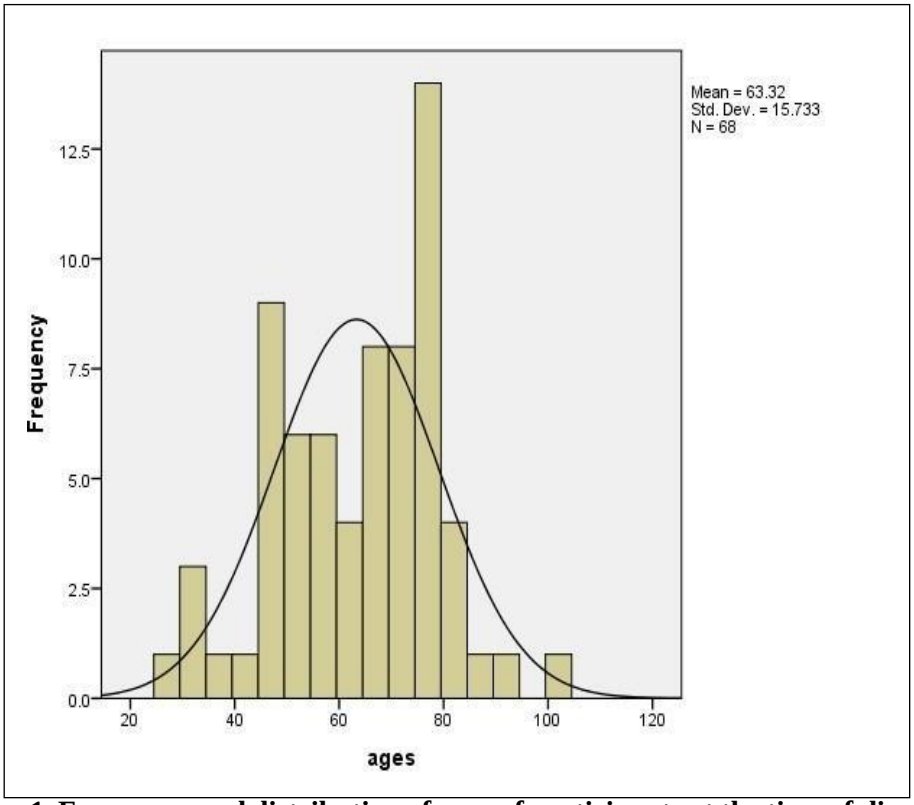

Figure 1. Frequency and distribution of ages of participants at the time of diagnosis

Survival status

Out of the 68 participants, 22 (32.4%) were still alive at the time of study whilst 46 (67.6%) were dead. The 1-year, 3-years and 5-years survival rates by age at diagnosis and ethnicity are presented in Table 1. The median survival time was 65.8 months. The overall observed survival rates at 1, 3 and 5 years were 76.5%, 51.5% and 32.4%, respectively. There were significant differences in survival rates between patients from different age groups when tested using the log rank test. Women below 50 years had a lower 5-year survival rate compared to those above 50 years (14.7*vs*17.7%), as shown in Table 2. Similarly, women below 50 years had higher mean survival months compared to those above 50 years (45.8*vs*31.8 months). However, there were no significant differences of the 5-year survival rate among the different ethnic groups as presented in Figure 2 below

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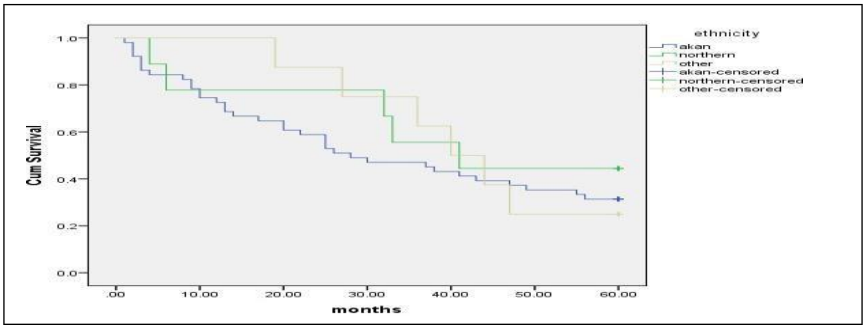

Figure.2 Kaplan Meier Survival Estimates by Ethnicity among Cervical Cancer Patients

Table 1: The survival rate of cervical cancer patients by some factors

			Survival Rate (%) N (=68)		Chi square	Significance
Factors		1-year	3-year	5-year		
Age at Diagnosis	≥50 years	57.4	35.3	17.7		
	<50 years	19.1	16.2	14.7		
Overall		76.5	51.5	32.4	0.998	0.318
Ethnicity	Akan	54.4	35.3	23.5		
	Northern	10.3	7.4	5.9		
	Other tribes	11.8	8.8	2.9		
Overall		76.5	51.5	32.4		

There was no significant difference between the survival rates of the age groups with survival years.

Table 2 Mean and median survival time for variables at 95% CI

Variable		**Mean**	**Median**	**Chi square**	**Significance**
Age	<50 years	45.8			
	≥50 years	31.774	30		
Overall		34.868	36	6.878	0.009
Ethnicity	Akan	32.980	28		
	Northern	39.556	41		
	Other tribes	41.625	40		
Overall		34.868	36	0.697	0.706

There was significant difference between the overall mean and median survival time of the age groups
But there was no significant difference between the mean and median survival time by the ethnicity groups

Table 3. The hazard ratio and association factors of age and ethnicity of cervical cancer at KATH with its significance values at 95% confidence interval

Variable	Age	Regression Coefficient(B)	Hazard Ratio (HR)	95% Confidence Interval (CI)	P value
Years	<50 years ≥50 years (ref)	-1.149	0.317	0,124, 0.814	0.017
Ethnicity	Akan	0.092	1.096	0.460, 2.613	0.835
	Northern	0.057	0.925	0.286, 3.113	0.925
	Others (Ref)				0.940

There was significant association in the Hazard ratio between the reference age group (menopausal age) and the pre-menopausal age but there was no significant association of hazard ratio among the ethnic groups.

4. DISCUSSION

The aim of this study was to estimate the survival rate of women with cervical cancer at the Komfo Anokye Hospital, Kumasi, Ghana. Literature search showed that a complete survival rate of cervical cancer for Ghana was not readily available due to the absence of national cancer registry. The survival of cervical cancer patients is indirectly dependent on the stage, size and histopathology of the cancer. Other factors include the availability of effective prevention and treatment, and socio-demographic factors such as age, ethnicity, and socioeconomic parameters (Ghazali et al., 2010, Opoku et al., 2016). The staging for cervical cancer as determined by the International Federation of Gynaecology and Obstetrics (FIGO) staging system groups the cancer into stages according to tumour size (Randall & Ghebre, 2016). The FIGO staging system has been the standard method in measuring survival rates of patients. It illustrates that the higher the cancer stage, the lower the survival rate (Ghazali et al., 2010, American Cancer Society, 2020, Randall & Ghebre, 2016). For the histopathology factor, Chen et al., (2012) reported that they observed differences in survival rate of cervical cancer patients with different histopathology types (squamous cell carcinoma and adenocarcinoma). They noted that patients with squamous cell carcinomas tend to have higher survival rates compared with those with adenocarcinomas (66% and 63% respectively).

The study found that the overall 5-year survival rate was 32.4% which is considered low compared to other countries, especially among developing countries in Asia. It was indicated that Asian countries such as Hong Kong, Singapore and South Korea have overall survival rate higher than 65% (National Cancer Institute, 2013). Again, compared with developed countries such as France which had the overall survival rate of cervical cancer of 70% as reported by Brun et al., (2003) and United States, Australia, and Japan with 5- year survival rates of 73.3%, 73.6, and 71.5% respectively (Romus et al., 2013).

Our findings are consistent with the findings of a similar study at the Korle Be Teaching Hospital, Accra Ghana which reported an overall survival rate of 41.3% among cervical cancer patients (Opoku et al., 2016). The low percentage of overall survival rates in both studies could be due lack of knowledge and low awareness, lack of access to timely and efficient health care and its associated late presentation at the hospitals for treatment, among others (Opoku et al., Hill et al., 2016).

The study noted that the 5-year survival of pre-menopausal participants was 14.7% whilst that of menopausal was 17.7%. There was no significant difference between the survival rates of the pre-menopausal and menopausal participants (14.7vs17.7). However, this finding is in contrast with the study done by Muhamad (2015) among cervical cancer patients in Malaysia where the 5-year survival of the pre-menopausal participants was better than the menopausal participants. The large sample size of that study might account for the differences in the two situations.

There was no significant association between the various factors and the hazard ratios of the different ethnic groups but there was a significant association

between the hazard ratios of the age groups.

5. CONCLUSION

The overall 5-year survival rate among patients with cervical cancer at the study site was relatively poor compared to developed nations (American Cancer Society, 2020).An important factor that may account for the low survival rates among women with cervical cancer in the site might be due the poorly developed health system leading to late diagnosis and improper treatment of patients with advanced cancer. Additionally, the lack of a population-based cancer registry may result in insufficient surveillance and a failure in monitoring any control programme. False beliefs and low levels of knowledge and awareness in populations are other possible reasons for low survival rates (Ghazali et al., 2010, Opoku et al., 2016). These contribute to late presentation for treatment with advanced stage of the cancer (Opoku et al., 2016). This situation was also observed among Ghanaians patients with breast cancer (Thomas, et al., 2017).

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7. CONFLICTS OF INTEREST

The authors declare no conflicts of interest regarding the publication of this paper.

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