

Original Research Article

ASSESSING SOCIOECONOMIC DISPARITIES AND HEALTH OUTCOMES AMONG CANCER PATIENTS IN A NIGERIAN TEACHING HOSPITAL

ABSTRACT

Background: Cancer affects all population groups in the Nigeria, but due to social, environmental, and economic disadvantages, certain groups bear a different burden of cancer. Disparities in health among populations account for preventable morbidity and mortality. Research in this area is focused on identifying health disparities and outcomes contributing to overall wellbeing. Different groups may experience cancer disparities and these groups can be defined by age, gender, education, ethnicity, income, race, origin, and other characteristics. Health disparities can affect cancer outcomes, from diagnosis to treatment. This study evaluates the health disparities and outcomes of cancer patients in a Nigerian Teaching Hospital.

Methods: This is a descriptive cross-sectional study using a structured questionnaire among patients visiting the oncology unit in the hospital. The questionnaire was interviewer-administered. Descriptive statistics was used to present respondents' sociodemographic characteristics. Pearson correlation test was used to determine relationship between the determinant of cancer disparity (social demographics) and the outcomes (from patient perspective).

Results: A total of 150 patients participated in the study. More female respondents (70%) than male respondents (45%), mostly within the age range of 62 and above (56.7%) participated in this study. The disparities examined include: age, gender, marital status, educational level, occupatina, montly income, religion and health insurance. There was a correlation between the different disparities and health outcomes. All disparities except gender were statistically significant ($P = 0.05$ & 0.01). Age, marital status, occupation status, religion and health insurance associated postively, while educational level and monthly income associated negatively. Gender had no associaton at all. Overall, patients (50%) were a little satisfied with the overall health outcomes.

Keyword: Cancer, Disparities, Quality of Life, Health Outcomes.

1.0 INTRODUCTION

Efficient cancer care is an important step for any nation to lower cancer incidence, mortality, and increase survival rate through extensive evidence-based research for prevention, early diagnosis, and treatment. Some of the factors challenging cancer care status include poor government funding, data, health system, inadequate cancer centers, available drugs, awareness, poverty, lack of medical oncologists and other medical specialists, and lack of management/accountability at all levels.

Disparities in health among populations account for substantial preventable morbidity and mortality, both nationally and internationally. Research in this area has focused mostly on identifying health differences and factors contributing to disparities, with expectations of discovering interventions that will reduce them (Halder et al., 2023).

Cancer disparities can be seen when outcomes are not improving overall, the improvements are not seen in some groups relative to other groups (Thomas, 2020). Population groups that may experience cancer disparities include groups defined by age, disability, education, ethnicity, gender identity, geographic location, income, race, national origin, sexual orientation, and other characteristics (Zengel et al., 2012; Minas et al., 2021). Research also shows that social stress, ancestral, comorbidities, and immunobiological factors, and the microbiome, may contribute to health disparities in cancer survival and risk (Minas et al., 2021). Global disparities in cancer incidence and mortality rates are evident for most cancer sites and indicate socioeconomic inequalities and significant differences in risk factor exposure (Bray, F. et.al., 2018). Underserved populations continue to experience cancer burden which is explained by health care disparities, cultural barriers, lifestyle factors, and disparate exposures to carcinogens and pathogen (Minas et al., 2021).

Rates of cancers including breast, colorectal, and prostate vary greatly between low-income and high-income countries, geographic areas, and race/ethnic groups (Minas et al., 2021).

Lung cancer is the leading cause of cancer death worldwide but is prominently under-represented in sub-Saharan Africa because of a low smoking prevalence (Minas et al., 2021). Prostate cancer is the most common cancer among men worldwide but shows large geographical differences in occurrence, with low incidence rates in East Asia and high rates in Western countries (Minas et al., 2021); and the leading cause of cancer death among men in sub-Saharan Africa and the Caribbean (Ragin,C. et.al., 2017). Cervical cancer is a major cause of cancer deaths among women in sub-Saharan Africa and South-East Asia because of human papillomavirus infections and

delayed disease detection (Minas et al., 2021). Sex and gender are also modifiers of health and contribute to disparities in disease development and outcome (Mauvais-Jarvis, F. et.al., 2020).

Health disparities and inequities affect cancer outcomes, from diagnosis and treatment. Overall, Black men and women have the highest mortality rate and shortest survival rate across all racial groups by most cancers (Ogunkorode et al., 2017).

Cancer affects all population groups in the Nigeria, but due to social, environmental, and economic disadvantages, certain groups bear a disproportionate burden of cancer compared with other groups (Ragin et al., 2017). Tackling cancer disparities will require advances and changes (Kish et al., 2014).

2. METHODOLOGY

2.1 Study Design

This study was a descriptive cross-sectional design done to evaluate different health disparities and outcomes.

2.2 Study Setting

The study was conducted at the Oncology unit of the University of Nigeria Teaching Hospital, Enugu State.

2.3 Study Population

The study participants was drawn from patients with Cancers and other tumor diseases in the Oncology unit of the Hospital.

2.4 Sample Size Calculation

The sample size was calculated using the Slovincs' formular

$$n = N / (1 + N * e^2) \text{ where}$$

n= sample size, N= target population, e = margin of error = 0.05

The value of N (1667) which is the average target population of Cancer inpatients and outpatients in a month that was obtained from the UCH data base.

Substituting Target population of 1667

$$n = 1667 / (1 + 1667 (0.05^2))$$

= approximately 150 patients as the sample size.

2.5 Eligibility Criteria

The inclusion criteria for participants in this study included all: (1) adult patients with Cancers and benign tumor diseases aged 18 and above, (2) patients with or without co-morbidities, (3) patients who can read and write in English language or seek

translation of native language by their relatives, and (4) patients who agreed to participate.

2.6 Study Instrument

A pretested, reliable and validated instrument designed for the purpose of eliciting respondents' perception towards cancer care received and the disparities in the care delivery was adopted (Thomas et al., 2020). The instrument consists of 18 items and 9 distinct domains. The domains or subscales include; (1) Socio-demographic characteristics, (2) Type of cancer, (3) Type of treatment received (4) Delay in treatment, (5) : Reasons for delay (6) Quality of Care (7) Health outcomes of patients (8) Symptoms experienced during treatment (9) Overall Health Outcome. The first six domains are multiple choice question and the last three domains is a likert scale question. A proforma was used to capture respondents' sociodemographic characteristics. The sociodemographic characteristics include gender, age, marital status, educational status, occupational status, monthly income, and health insurance. Furthermore, in order to validate the internal consistency and reliability of the questionnaire, Cronbach's alpha of the questions for service quality was assessed with responses collected from 20 respondents.

2.7 Data Collection

The questionnaire was distributed to eligible patients during their stay in the hospital and also follow-up visits. The respondents were expected to complete and return the questionnaire. Clarification was provided to respondents where necessary through the research assistants. Data collection lasted between 1st September to 15th September 2024.

2.8 Data Analysis

The data collected was coded and entered into Microsoft Excel 2010. The data was cleaned and checked for appropriateness. Descriptive statistics (frequency and percentage) was used to present respondents' sociodemographic characteristics. Pearson correlation test was used to determine relationship between the determinant of cancer disparity (social demographics) and the health outcomes (from patient perspective). All analyses was performed using IBM Statistical Product and Service Solution (SPSS) for Windows, version 21.0 (IBM Corp, version 21.0 and Armonk, NY, USA).

3.RESULTS

A total of 150 patients participated in the study. The most recorded age range was within 62 and above (56.7%) while the least was 40-50 years (10%). 105 (70%) were females while 45(10%) were males. Most of the respondents 80(53.3%) were married. The highest educational level obtained by the patients was tertiary education (60.0%, 90) while the least was primary education (25, 16.7%). 55 patients (36.7%) were employed, 45 (30%) were self employed and 50 patients (33.3%) were unemployed. 20% (30) had the highest monthly income while 23.3% (35) had the least. 60% (90) of the patients were Christians while 36.7% (55) were Moslems and 3.3% (5) were traditionalist. 40.0% (60) had health insurance while 60% (90) did not. Most respondents had breast cancer 33.3% (50), while pancreatic cancer had the least 6.7% (10). Most patients (50%) were treated with radiation while surgery was the least form of treatment, as seen in table 3.

In table 4, 50% (75) have experienced delays in treatment while 50% (75) have not experienced. Out of the 50% who experienced delay: 3.3% (5) was due to over crowding, 26.7% (40) was due to money, 6.7% (10) was due to money and time, 3.3% (5) was due to unavailability of treatment items and 6.7% (10) were due to unavailability of treatment sources, as shown in table 5. Most patients (43.3%) received good quality of care in the hospital.

During patient's drug administration, most patients were fatigued (50% ,75), experienced pain (40% , 60) and shortness of breath (26.7%, 40). They were moderately anxious (46.7%, 70), depressed (33.3%, 50) restless (33.3%, 50) and tensed (40%, 60). They (36.7%, 55) had moderate trouble with their daily life activities, avoided social media (55, 36.7%) and felt isolated (40%, 60), as seen in table 7.

In table 8, Most of the patients (36.7%, 55) experienced a little nausea and vomiting, had moderate trouble sleeping (36.7%, 55), appetite loss(36.7%, 55), did not have constipation (40%, 60) and had a little diarrhea (50%, 75).

In table 9, 50% (75) of the patients rated their overall health a little fair and 33.3% (50) experienced financial difficulties due to the illness or treatment.

Table 10 shows the correlation coefficient of the socio-demographics that determines whether or not there is an association. A P-value of 0.05 and 0.01 is considered significant. It is evident from the table that there is association between all predictors (p-value = 0.01; p-value = 0.05) except gender. Some associations are positive while some are negative.

Table 1: Sociodemographics of Patients

SOCIO-DEMOGRAPHICS		Frequency	Percentage
AGE	40-50	15	10.0
	51-61	50	33.3
	62 and above	85	56.7
GENDER	Male	45	30.0
	Female	105	70.0
MARITAL STATUS	Single/Never Married	25	16.7
	Married	80	53.3
	Divorced	10	6.7
	Widowed	25	16.7
	Separated	10	6.7
EDUCATIONAL LEVEL	Primary	25	16.7
	Secondary	30	20.0
	Tertiary	90	60.0
	None	5	3.3
OCCUPATIONAL STATUS	Employed	55	36.7
	Self-employed	45	30.0
	Unemployed	50	33.3
MONTHLY INCOME	<50,000	35	23.3
	50,000-99,000	40	26.7
	100,000-199,000	5	3.3
	200,000-299,000	40	26.7
	>300,000	30	20.0
RELIGION	Christianity	90	60.0
	Islam	55	36.7
	Traditionalist	5	3.3
HEALTH INSURANCE	Insured	60	40.0
	Not Insured	90	60.0

Table 2: Type of cancer

TYPE OF CANCER	Frequency	Percentage
Breast Cancer	50	33.3
Cervical Cancer	40	26.7
Colon cancer	15	10.0
Pancreatic cancer	10	6.7
Prostate cancer	35	23.3

Table 3: Type of treatment received

WHAT TREATMENT HAVE YOU RECEIVED		F	(%)
Chemotherapy		45	30.0
Others	About to undergo surgery	5	3.3
	Booked for radiation therapy	5	3.3
Radiation		75	50.0
Surgery		20	13.3

Table 4: Delay in treatment

HAVE YOU EXPERIENCED ANY DELAYS IN TREATMENT	F	(%)
Yes	75	50.0
No	75	50.0

Table 5: Reasons for delay

Reasons for Delay	F	(%)
Over-crowding	5	3.3
Money	40	26.7
Money and time	10	6.7
Unavailability of treatment items	5	3.3
Unavailability of treatment source	10	6.7

Table 6: Quality of Care

HOW WOULD YOU RATE THE QUALITY OF CARE RECEIVED?	F	(%)
Excellent	15	10.0
Fair	55	36.7
Good	65	43.3

Poor	15	10.0
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Table 7: Health outcomes of patients

Physical Well-Being	Not at all F (%)	A little F (%)	Moderately F (%)	Quite a bit F (%)	Very Much F (%)
Have you experienced fatigue(tiredness) in the past week	10(6.7)	75(50.0)	50(33.3)	15(10.0)	0(0.0)
Have you had pain in the past week?	15(10.0)	60(40.0)	35(23.3)	40(26.7)	0(0.0)
Have you had shortness of breath in the past week?	85(56.7)	40(26.7)	25(16.7)	0(0.0)	0(0.0)
Emotional Well-Being					
Have you felt anxious(worried) in the past week	10(6.7)	45(30.0)	70(46.7)	20(13.3)	5(3.3)
Have you felt depressed (sad) in the past week?	10(6.7)	40(26.7)	50(33.3)	30(20.0)	20(13.3)
Have you felt restless in the past week?	5(3.3)	50(33.3)	50(33.3)	40(26.7)	5(3.3)
Have you felt tense in the past week?	5(3.3)	60(40.0)	60(40.0)	15(10.0)	10(6.7)
Daily Life					
Have you had trouble with work or daily activities in the past week?	30(20.0)	45(30.0)	55(36.7)	15(10.0)	5(3.3)
Have you avoided social interaction in the past week?	30(20.0)	45(30.0)	55(36.7)	15(10.0)	5(3.3)

Have you felt isolated in the past week?	50(33.3)	60(40.0)	20(13.3)	20(13.3)	0(0.0)
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Table 8 : Symptoms experienced during treatment

Symptoms	Not at all F (%)	A little F (%)	Moderately F (%)	Quite a bit F (%)	Very Much F (%)
Have you experienced nausea and vomiting in the past week?	50(33.3)	55(36.7)	30(20.0)	15(10.0)	0(0.0)
Have you had trouble sleeping in the past week?	30(20.0)	35(23.3)	55(36.7)	20(13.3)	10(6.7)
Have you experienced appetite loss in the past week?	10(6.7)	55(36.7)	55(36.7)	20(13.3)	10(6.7)
Have you had constipation in the past week?	60(40.0)	45(30.0)	35(23.3)	5(3.3)	5(3.3)
Have you had diarrhea in the past week?	50(33.3)	75(50.0)	25(16.7)	0(0.0)	0(0.0)

Table 9: Overall Health Outcome

Overall	Not at all F (%)	A little F (%)	Moderately F (%)	Quite a bit F (%)	Very Much F (%)
How would you rate your overall health in the past week?	5(3.3)	75(50.0)	55(36.7)	15(10)	0(0.0)
Have you experienced financial difficulties due to your illness or treatment?	15(10.0)	50(33.3)	45(30.0)	20(13.3)	20(13.3)

Table 10: Pearson correlation coefficient (r) to determine relationship between the determinant of disparity (social demographics) and the health outcome (from patient perspective)

Socio-Demographics	How Would You Rate The Quality Of Care Received?		Physical Well-Being		Emotional Well-Being		Daily Life		Symptoms		Overall	
	R	p-v	R	p-v	r	p-v	r	p-v	R	p-v	r	p-v
Age	-0.047	0.572	0.213**	0.009	0.149	0.068	0.321**	0.000	0.321**	0.000	-0.129	0.115
Gender	-0.029	0.723	-	0.15	-	0.65	0.043	0.603	0.043	0.603	0.122	0.138

			0.11 7	5	0.03 6	9						
Marital Status	-0.054	0.508	0.13 2	0.10 7	0.02 9	0.72 4	0.365 **	0.000	0.451**	0.000	-0.070	0.393
Educational Level	0.697**	0.000	- 0.57 0**	0.00 0	- 0.30 5**	0.00 0	- 0.501 **	0.000	-0.276**	0.001	-0.078	0.344
Occupational Status	-0.571**	0.000	0.01 1	0.89 7	0.21 9**	0.00 7	0.133	0.105	0.368**	0.000	0.230* *	0.005
Monthly Income	0.669**	0.000	- 0.34 4**	0.00 0	- 0.36 6**	0.00 0	- 0.243 **	0.003	-0.178*	0.029	-0.115	0.160
Religion	-0.590**	0.000	0.27 1**	0.00 1	0.20 9*	0.01 0	0.222 **	0.006	0.047	0.570	0.188* *	0.021
Health Insurance	-0.355**	0.000	0.21 8*	0.00 7	0.06 8	0.40 8	0.320 **	0.000	0.320**	0.000	0.152	0.064
Stages Of Cancer	-0.519**	0.000	0.50 .59* *	0.00 0	0.34 1**	0.00 0	0.529 **	0.000	0.442**	0.000	- 0.286* *	0.000

**Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed).

Explanation:

High Degree: Values between ± 0.50 and ± 1 suggest a strong correlation.

Moderate Degree: Values between ± 0.30 and ± 0.49 indicate a moderate correlation.

Low Degree: Values below ± 0.29 are considered a weak correlation.

No Correlation: A value of zero implies no relationship.

Negative, or inverse correlation (-), between two variables, indicates that one variable increase while the other decreases, and vice versa.

A positive correlation (+) signifies that if variable A goes up, then B will also go up, whereas if the value of the correlation is negative, then if A increases, B decreases.

4. DISCUSSION

Health-related quality of life is a multifaceted well-being concept and is considered a priority area by oncologists (Smyth, E.N et al., 2016; Jacob, J. et al., 2019). The purposefulness of measuring the quality of life in cancer patients was demonstrated by Montazieri, who stated that the quality of life of patients before starting oncological treatment is an important predictor of survival (Annunziata, M.A et al., 2018; P, ekała, M. and Kozaka, J., 2016; Montazeri, A. et al., 2001). Similarly, Li et al., presented results proving that health-related quality of life is a strong and independent predictor of overall survival (Li, T.-C et al., 2012) **leading to improved health outcomes.**

This study assessed the health disparities and outcomes of cancer patients at the University of Nigeria Teaching Hospital Enugu. Data was collected to measure the disparities and health outcomes from various cancer patients in the oncology unit.

105 (70%) were females while 45(10%) were males, with 80(53.3%) were married. This is similar to Lewandowska A., 2020, Su LJ et al., 2021, Witwaranukool, P et al., 2024, where the females were more than the male counterparts and there were more married people more. Breast cancer was seen to be the prevalent among the patients, this was also shown to be same with Su LJ et al., 2021, Vyas P. et al., 2024 and Niguse Tadele, 2015; **this indicates that more awareness and regular checkups should**

be done for early detection, diagnosis and treatment.Regarding health coverage, 90% of patients were not insured, this is in contrast from a study by Witwaranukool, P et al., 2024; where over half (58.55%) of cancer treatment expenses were covered by universal health coverage. **Policies can be initiated to include more patients in the insurance scheme thereby making medications and healthcare affordable for patients, this can lead to improved quality of life and health outcomes.**

The treatment received by the patients were radiation, chemotherapy and surgery, where radiation was seen to be the frequent type of treatment given. In a study by Vyas P. et al., 2024 and Ayub F et al., 2023, it showed that patients underwent the similar treatment. Majority (43.3%) of the patients experienced good quality of care as also seen in a study by Lewandowska A. et al., 2020.

In our study, most of the patients experienced fatigued, pain, shortness of breath. This was also experienced in a study by Gary T et al., 2007 and Lewandowska A. et al., 2020. It is believed that fatigue is the most reported symptom of cancer, as it affects approximately 80% of cancer patients. This was also confirmed by the studies by

Kapela et al., 2017. Research by Nayak MG et al., 2017 confirmed low physical well-being of the respondents was influenced by pain (72.9%), and fatigue (91.8%) [26]. Anxiety, depression, restlessness and tension was observed in most patients and this is similar to Gary T et al., 2007 and Lewandowska A. et al., 2020 and Kędra and Wiśniewski, 2018. A study by NayakMG et al., 2017 also confirmed that the mental well-being of the respondents influenced feelings of significant depression among participants. In our study, patients also had moderate trouble with their daily life activities, avoided social interactions and felt isolated, which can be seen in a study by Gary T et al., 2007 and Lewandowska A. et al., 2020. A study by NayakMG et al., 2017 showed that most participants did not feel comfortable taking part in social life. The different symptoms experience by patients is also confirmed by Lewandowska A. et al., 2020, where the patients experienced nausea, vomiting, trouble sleeping, appetite loss, and had a little diarrhea. 50% of the patients rated their overall health a little fair which is similar to the study by Lewandowska A. et al., 2020.

From table 10 reveals the Pearson correlation on the **socioeconomic disparities and factors that influence health outcomes**. The correlation coefficient of the different disparities and health outcomes which determines an association at a P-value of 0.05 and 0.01 is considered significant. Associations were positively and negatively correlated. From the table, there is association between all domains except gender.

In an editorial by Lancet oncology, ageism was seen to be a major factor in cancer care inequalities, especially as the bulk of cancer patients are older people. Hence, they are likely to encounter hindrances to care such as technological impedance, medical-related, social barriers. Irrespective of the above factors, it is important to note that ageism is crucial in making clinical decisions such as treatment type, drug dosing etc. ("Equitable Cancer Care at Any Age," 2023). In a descriptive, cross-sectional study conducted on 150 cancer patients in Athens by Papadopoulou et al., 2022, reported that there was no correlation between age and quality of life and emotional wellbeing using Spearman correlation, but it also reported a correlation between age and symptoms, age and time of cancer diagnosis and age. (Papadopoulou et al., 2022). In another study conducted on 220 breast cancer patients in Morocco by Belhaj et al reported that age significantly affected quality of life (Belhaj et al., 2024). This study showed that age significantly affected physical wellbeing (0.213), daily-life (0.321), and symptoms (0.321) which aligns with Belhaj et al. 2024. Even a study conducted by Zhang et al., 2021 found that increasing age was significantly associated

with better quality of life among patients with breast cancer-related lymphedema. This difference might be capable of being explained by population heterogeneities, inconsistent evaluation tools, and sample sizes. Notably, this difference might be attributable to the fluctuations of quality of life with changes of age (Zhang et al., 2021). However, several studies also showed that age had no significant effects on affecting patient's quality of life and emotional wellbeing (Yoon H et al., 2018, Michell AJ et al., 2011, Daly LE et al., 2020).

Marital status was statistically significant with daily life (0.365) and symptoms (0.451), which is similar to the study by Kim, K. & Yoon, H, 2021 that married people had a better quality of life. Gangane N. et al., 2017, also demonstrated that the lack of a partner was negatively related to quality of life, mental health and social relations.

All domains except overall health (0.697) associates negatively with educational level. This is different from Witwaranukool, P et al., 2024; which showed that cancer patients with a higher education level, reported higher scores in all domains. Lower educational level could be ascribed to the fact that awareness pertaining to risk factors is less, hence succumbing to cancer. (Vyas P. et al., 2024). Education was also seen to be significantly associated with quality of life by Ohsumi S et al., 2009, Ashing-Giwa KT et al., 2009 and Park BW et al., 2009)

Our study showed that quality of life associates negatively with occupation while emotional wellbeing, symptoms and overall health are statistically significant and associate positively. This is in contrast from Al-Sharman A et al., 2024, which showed that work status were not significantly associated with the quality of life

Quality of life associates positively with monthly income while the other predictors associate negatively. Studies have shown that income has an impact on the quality of life and all of its aspects (Benedict C et al., 2022, Al-Sharman A et al., 2024). and this is evident in table 10. However, Su LJ et al., 2021, showed that lower family income is the primary factor associated with both poorer mental and physical health among cancer survivors which also affected income level inversely.

On the basis of existing research, it was assumed that spirituality were factors could be positively associated with emotional well-being (Yonker et al., 2012; Archana and Updesh, 2014) and physical wellbeing (Almaraz et al., 2022), which is similar with our study; physical (0.271) and emotional wellbeing (0.209). However, Lim JW and Yi J, 2009, Vallurupalli M et al., 2012, Jafari N et al., 2013 found that spirituality and

religiosity were positively associated with overall health, in contrast to our study (-0.590).

Quality of care and overall health was seen to correlate negatively with stages of cancer while the other domains correlates positively. This is different with the finding of a study by Daldoul A et al.,2018, where no significant association was found between quality of life and stage of cancer, and different cancer treatments. This can be due to the different stages of cancer progression, and where only palliative care comes in.

5. CONCLUSION

The study's findings indicate that patients at the University of Nigeria Teaching Hospital Enugu generally express a little satisfaction (50.0%) with the overall health outcomes. The study reveal that socioeconomic disparities can affect patients health outcomes. All disparities except gender were statistically significant and correlated either postively or negatively. Age, marital status, occupation status, religion and health insurance had postive association, while educational level and monthly income had negative association. This shows that quality of life can affect health outcomes of patients. Revealing information about patients outcomes in a Nigerian Teaching Hospital would contribute to the corpus of already available knowledge. This result would serve as a guide for the hospital management and the government in developing and implementing initiatives that would improve health outcomes leading to a better quality of life.

6. RECOMMENDATION

Although this study is specifically aimed at the University of Nigeria Teaching Hospital Enugu, extending the research to other hospitals will help evaluate the outcomes in those areas for the improvement of quality of life of patients. New policies and guidelines can be introduced to reduce burden on patients, for example, health insurance policy can be improved to cover part of the expenses like the routine checkup and drugs. Sensitization and awareness should be done espeicially in the rural areas on disease education and the importance for routine check up and early diagnosis. Vaccination should be taken seriously espeicially in women due to the high prevalence of cancer among them.

7. Strength and limitation

This study is unique due to the lack of research of this kind in the hospital. The disparities used to evaluate the outcomes were different from what is usually seen in other studies. Again, the questionnaire was interviewer-administered, so respondent bias was greatly minimized. The sample size may not be an accurate representation of the sample population, and one hospital result cannot determine the patient's health outcome in Nigeria.

Ethical Approval and consent:

Ethical approval for the study was sought from and approved by the UNTH Health Research Ethics Committee of the University of Nigeria Teaching Hospital Enugu. Written consent was obtained from all eligible patients prior to initiation of the study. Participants were assured that all responses provided will be handled in strict confidentiality during and after the study.

Availability of data

All data used and analyzed in the course of this study are included in Appendix 1.

Disclaimer (Artificial intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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