**Original Research Article**

# EVALUATING DISPARITIES AND HEALTH OUTCOMES AMONG CANCER PATIENTS


## 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 semi-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. There was a correlation between the different disparities and health outcomes. Some associations were negative while some positive at P=0.05 & 0.01. Overall, patients were a little satisfied (50.0%) 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. METHODS

### 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 Slovins'formular

n = N/ (1 + N (e) 2) where

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

The value of N (655) 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 655

n =655/ (1 + 655(0.05)2)

= approximately 248 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-demorgraphic 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 questionnairet 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).

**2.9 Ethical Considerations**

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.. Oral consent was obtained from all eligible patients prior to initiation of the study.

Participants was assured that all responses provided will be handled in strict confidentiality during and after the study.

**3.RESULTS**

A total of 150 patients participated in the study. As seen in table 1; 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. A total of 25 (16.7%) were single, 80(53.3%) were married, 10(6.7%) were divorced, 25(16.7%) were widowed and 10(6.7%) were separated. 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.

In table 2, 33.3% (50) had breast cancer, 26.7% (40) had cervical cancer, 10.0% (15) had colon cancer, 6.7% (10) had pancreatic cancer while 23.3% (35) had prostrate cancer.

In table 3, 30% (45) have had chemotherapy, 50% (75) had radiation, 13.3% (20) had surgery, while 6.6% were about to undergo surgery or book for radiation therapy.

In table 4, 50% (75) have experienced delays in treatment while 50% (75) have not experienced.

In table 5, 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.

In table 6, 10% (15) had excellent quality of care, 36.7% (55) had fair care, 43.3% (65) had good care and 10.0% (15) had poor care.

In table 7, 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).

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 |

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) |

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 | -0.117 | 0.155 | -0.036 | 0.659 | 0.043 | 0.603 | 0.043 | 0.603 | 0.122 | 0.138 |
| Marital Status | -0.054 | 0.508 | 0.132 | 0.107 | 0.029 | 0.724 | 0.365** | 0.000 | 0.451** | 0.000 | -0.070 | 0.393 |
| Educational Level | 0.697** | 0.000 | -0.570** | 0.000 | -0.305** | 0.000 | -0.501** | 0.000 | -0.276** | 0.001 | -0.078 | 0.344 |
| Occupation | -0.571** | 0.000 | 0.01 | 0.89 | 0.21 | 0.00 | 0.133 | 0.105 | 0.368** | 0.000 | 0.230* | 0.005 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| al Status | | | 1 | 7 | 9** | 7 | | | | | * | |
| Monthly Income | 0.669** | 0.000 | -0.344** | 0.000 | -0.366** | 0.000 | -0.243** | 0.003 | -0.178* | 0.029 | -0.115 | 0.160 |
| Religion | -0.590** | 0.000 | 0.271** | 0.001 | 0.209* | 0.010 | 0.222** | 0.006 | 0.047 | 0.570 | 0.188* | 0.021 |
| Health Insurance | -0.355** | 0.000 | 0.218* | 0.007 | 0.068 | 0.408 | 0.320** | 0.000 | 0.320** | 0.000 | 0.152 | 0.064 |
| Stages Of Cancer | -0.519** | 0.000 | 0.50.59** | 0.000 | 0.341** | 0.000 | 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).

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. 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. 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 K˛edra and Wi´sniewski, 2018. A study by NayakMGet 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. Trouble sleeping are also confirmed by the studies by Kaczmarek-Borowska B., 2014, Zieli ´nska-Wi˛eczkowska B., 2010 and Nowicki A., 2005, Al Maqbali et al., 2022. A study by NayakMGet 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, the Pearson correlation on the factors that influence disparities and the outcome in order to ascertain the degree and type of relationship between the effect of disparities such as age, income, gender, insurance etc on the health outcome of cancer patients. 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 does not align with Papadopoulou et al but aligns with Belhaj et al. 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 etal., 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. All predictors except overall health are statistically significant. Symptoms are significant at $p = 0.05$ while the others are significant at $p = 0.01$.

Many 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 which could be positively associated with emotional well-being (Yonker et al., 2012; Archana and Updesh, 2014) and physical wellbing (Almaraz et al., 2022). This study also showed that religion is significant to 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.

## 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. 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 leading to better health outcome of patients.

## 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.

## 8. Consent and ethical approval

Oral consent was obtained from all eligible patients prior to initiation of the study. Study participants were informed that participation in the study was voluntary and was at liberty to withdraw from the study any time time without any consequences. Participants was assured that all responses provided will be handled in strict confidentiality during and after the study. 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.

**Availability of data**

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

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