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Delay Determinants in Seeking Cervical Cancer Treatment and Economic Burden among Patients at Selected Facilities in Imo State

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Abstract

Background: Cervical cancer is an important public health problem worldwide. In Nigeria women seeking cancer treatment see cost of uptake as a challenge. The objective of this study is to determine the determinants of delay in seeking cervical cancer treatment and economic burden among patients at selected facilities in Imo state.

Methods: A hospital based descriptive cross sectional study was employed and a probability based multi-stage simple random sampling procedure was employed for the study in recruiting a total of 302 patients who participated in the study. A pretested structured questionnaire was used and statistical package for social sciences version 23.0 was used in the analysis of the study.

Results: 32.6% (98) of the respondents were between 56-60 years of age and 19.5% (59) earned between ₦31,000-₦60,000. 57.1% of the women accepted to uptake cervical cancer treatment and 62.8% of the respondents confirmed they can afford to uptake cervical cancer treatment options. The study revealed that 26.7% of the women were able to afford supportive palliative care as a form of cervical cancer treatment. There was a statistically significant relationship between age (χ^2 =12, df=4, p= 0.0035), occupation (χ^2 = 0.321, df=5, p=0.00275), income level (χ^2 = 8.57, df=3, p=0.0092), education level (χ^2 = 17, df=2, p=0.0327) and uptake of cervical cancer treatment. Also, financial constraints (p=0.0031), attitude of health providers (p=0.0074), distance to facility (p=0.0015) and lack of information (p= 0.0038) showed significant association with the

economic cost towards seeking cervical cancer treatment.

Conclusion: Several demographic and economic factors contribute to the determinants of delay in seeking cervical cancer treatment and economic burden among patients at selected facilities in Imo state. Awareness campaigns must provide accurate information so that women can make informed choices.

Keywords: Cervical Cancer; Delay Determinants; Economic Burden; Patients; Imo State

Abbreviation: SPSS: Statistical Package for the Social Sciences.

Introduction

Cervical cancer is an important public health problem worldwide, especially in developing countries, where it is the second most common cancer among women [1]. Studies have shown that developed countries with broad-coverage Papanicolaou-test screening programs have experienced a decline in cervical cancer incidence and mortality over the past decades [2-4]. However, in developing countries, cervical cancer incidence and mortality rates are still considered high, and survival is poor [5]. Such rates could be attributed to late organization of screening programs, low access to the health care system, low education level of the population at risk, and delays in diagnosis and treatment of this neoplasia [5,6].

Cervical cancer treatment is usually either chemoradiation or radical hysterectomy/trachelectomy with lymph node dissection in early stages and chemoradiation in advanced stages [7-9]. Depending on the patient's health status, such as age, co-morbidity, and disease presentation, the treatment may be adjusted accordingly Siegel D, et al. [10]. Delays in diagnosis and treatment initiation and/or conclusion are experienced by patients with cervical cancer regardless of the country and/or institution they are being treated. Long waiting times for surgery or radiation are usually associated with poor access to services, poor quality of health care, and request for a second opinion or time-consuming pathologist reviews that might affect treatment [11-14]. Delays can also be due to patient factors, such as socio demographic factors, comorbidities, social influences, and previous experiences [7,9].

According to international standards for early cancer diagnosis and treatment, the time intervals that should be measured include appraisal (interval from bodily changes and patient appraisal and self-management); help-seeking (time to decide to consult a hospital cancer physician/practitioner and arrange an appointment); diagnostic (interval between first consultation with a health care practitioner and diagnosis); and pretreatment (time interval from diagnosis to start of treatment) [1,15]. Regarding cervical cancer, time intervals from diagnosis to treatment initiation and completion are also important to guarantee treatment efficacy and improve survival. Evidence supports that a waiting time of more than 60 days from cancer diagnosis to treatment initiation could lead to poorer survival compared with women who start treatment within 60 days after diagnosis [1,8,15-19]. The National Breast and Cervical Cancer Early Detection and Treatment Program indicator of timely follow-up (National Comprehensive Cancer Network) postulated that severe therapeutic care delay was defined as a delay of 60 days or more from final cervical cancer diagnosis to the initiation of treatment [9,20-22]. Also, a delay of cancer therapeutic care greater than 3 months could harm prognosis, increase morbidity, reduce survival, and jeopardize survivorship. However, some studies did not find statistical significance on delays to treatment and survival rates among women with cervical cancer [23-25]. Such controversy could be due to delay-to-treatment definitions, study population base (hospital based v population based), sample size, stage at diagnosis, treatment protocols, and time interval from treatment initiation to conclusion.

Nigerian public health care is universal and covers approximately 70% of cervical cancer treatment in the country [15,26]. The Nigerian government issued a law determining that every patient with cancer should start the treatment within 60 days from the date that diagnosis is histological confirmed, aiming to guarantee the same treatment access to every user of the public health system [26]. Another law was issued establishing that the counting of the time to treatment initiation should begin with the date that the diagnosis was registered on the medical report. However, there are few studies in Nigeria evaluating the delays in cervical cancer treatment on the basis of international criteria [16-18].

Globally, reports have showed that cervical cancer is both the fourth-most common cause of cancer and deaths from cancer in women [1,5,9,23,25]. In 2012, 570,000 cases of cervical cancer were estimated to have occurred, with over 300,000 deaths [1,11-13]. It is the second-most common cause of female-specific cancer after breast cancer,

accounting for around 8% of both total cancer cases and total cancer deaths in women. About 80% of cervical cancers occur in developing countries. It is the most frequently detected cancer during pregnancy, with an occurrence of 1.5 to 12 for every 100,000 pregnancies. Several studies depict that cervical cancer treatment is faced with a lot of challenges in up taking them by patients [6,9,10,26,27]. Economic Cost of treatment options remain a problem among several groups particularly women of reproductive age diagnosed of Cancer [9]. The implications of delay in seeking cervical cancer treatment continues to spiral several situations springing from engaging in early detection screening services that can ultimately reduce cervical cancer deaths [28].

Nigeria is a country faced with poverty as a burden and an estimate from a study revealed that women seeking cancer treatment related cost of uptake as a challenge [26,29,30]. The mortality from cervical cancer varies in different regions of Imo state. The mortality due to cervical cancer is high among women of child bearing age mainly because of absence of a functioning screening process and advanced stage of the disease at diagnosis. Although several organizations and interventions have worked towards providing these treatment services to patients, in spite of this, there is still delay in seeking health care among women with cervical cancer and the factors responsible for this are not well known. Therefore, this research will provide insight into the various determinants associated with the delay in seeking cervical cancer treatment particularly among women in Owerri where there happens to be paucity of studies. It is through that the researcher aims to investigate the determinants of delay in seeking cervical cancer treatment and economic burden among patients at selected facilities in Imo state.

Methods

Study Design and Setting

A Hospital based descriptive cross sectional study was employed in this research on the determinants of delay in seeking cervical cancer treatment and economic burden among patients at selected facilities in Imo state.

The study included the patients at selected facilities in Imo state present during the time of the study, patients at selected facilities in Imo state who would give in their consent for the study and any caregiver who volunteers to provide vital information during the data collection of the study.

The study excluded patients at selected facilities who have derailing mental health conditions and patients who refuse to give in their consent for the study.

Sampling Size

The sample size for this study was determined using Leslie Kish (1965) formula. A previous study by Ferlay JE, et al. [28] demonstrated 24.6% prevalence of Cervical Cancer among Patients in a Facility and it will be used in calculating the sample size of this study.

$$n = \frac{Z^2(pq)}{d^2}$$

Where
n =Desired sample size
z=critical value at 95% confidence level of uncertainty (1.96)
d=margin of error between the sample and the population= 5%
p=estimated prevalence of Cervical Cancer =24.6% Ferlay JE, et al. [28], p= 0.246
q=complimentary probability of p = (1-p)……., (i.e. 1-p) = 1-0246 =0.754

$$n = \frac{(1.96)^2 \times 0.246 \times 0.754}{(0.05)^2}$$

3.8416×0.1854
0.0025
0.71255
0.0025
=285.022 ……., =285
Adjusting for a 15% rate of non-response and invalid response (i.e 85% expected response rate =0.85).
n= n/expected response rate

$$nrr = \frac{n}{1-nrr}$$

$$n = \frac{285}{1-0.15}$$

=285
=0.85
=335.294118……., = 335
Therefore the sample size for the study n, = 335.

Sampling Technique

The multi-stage simple random sampling procedure was employed for the study.

- **Stage 1:** Selection of LGAs

Simple random sampling was used to select Two (2) LGAs from the 27 LGAs in the state. This was done via balloting to give every LGA in the State an equal chance of being selected.

- **Stage 2:** Stratification of Facilities

Stratified random sampling was used to divide the facilities into 3 strata. These Strata were tertiary health facility,

secondary health facility and primary health facility for the study. This was done to ensure that patients at various levels of healthcare facilities were represented in the sample population.

- **Stage 3:** Selection of Facilities

One (1) facility was selected from each of the various strata in each LGAs using simple random sampling i.e. a list of the Total number of Facilities were obtained from the Ministry of Health, Imo State. Then, one (1) tertiary Facility was selected, one (1) secondary Healthcare was selected, and one (1) primary Healthcare was selected from each LGA. This made it a total of Six (6) selected facilities.

- **Stage 4:** Selection of respondents

In each of the selected facilities, respondents were recruited via a convenience sampling technique. Convenience sampling technique is a non-probability sampling technique whereby the researcher recruits respondents present at the study area. This was done proportionately to ensure that every facility is represented evenly. Cervical Cancer patients at the selected facilities were assessed conveniently.

Data Collection

The instrument for data collection was a semi-structured questionnaire to ascertain information on the determinants of delay in seeking cervical cancer treatment and economic burden among patients at selected facilities in Imo state the questionnaire would consist of Five (5) sections as follows:

- **Section A:** Information on the socio demographic characteristics of Cervical cancer patients at selected facilities in Imo state.
- **Section B:** Consisted of questions on the level of knowledge towards cervical cancer treatment options among patients at selected facilities in Imo state.
- **Section C:** Consisted questions on the level of uptake of cervical cancer treatment among patients at selected facilities in Imo state.
- **Section D:** Consisted of questions on the determinants of delay in seeking cervical cancer treatment among patients at selected facilities in Imo state.
- **Section E:** Consisted of questions on the economic cost towards seeking cervical cancer treatment among patients at selected facilities in Imo state.

Reliability of the instrument was determined using test-to-retest method. Copies of the questionnaire will be given to some respondents at Selected Facilities outside the Area of the Study. This Location was similar characteristics with the selected facilities that was used for this study. Chronbach alpha test was used to test the reliability of the questionnaire and coefficient of 0.82 was obtained.

Data was obtained with the aid of two (2) field assistants who were trained to aid the researcher in the data collection process.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) version 21.0 was used in the analysis of the data. Results were expressed in percentages, frequencies, tables and charts (Descriptive Statistics).

Ethical Consideration

A letter of introduction and ethical clearance was obtained from the Department of Public Health Federal University of Technology Owerri Ethical clearance committee before the research was conducted. The purpose of the research was explained to each respondent and verbal informed consent obtained from them before inclusion into the study. Also, anonymity of the respondents was assured and ensured. The confidentiality of the information they gave was also maintained.

Results

Socio Demographic Characteristics of Patients at Selected Facilities

Illustrated in table 1 below, 32.6% (98) of the respondents were between 56-60 years of age, 30.6% (92) of the respondents between 61-65 years, 26.3% (80) of the middle aged adults were aged 45-50 and 10.5% (32) of the respondents were aged 56-60 years. 100% (302) of the respondents were female. Concerning ethnicity, A large number of the respondents 73.9% (223) belonged to the Igbo ethnic group, 16.7% (50) belonged to ethnic groups not listed but chose 'others', 2.1% (6) were Hausa/Fulani, and 7.3% (22) were Yoruba. 41.0% (124) of the respondents were married, 30.4% (92) were separated, 15.6% (47) were single and 13.0% (39) of the respondents were widowed. Regarding the number of children, 32.0% (97) had 1-3 children, 30.6% (92) had more than 6 children, 18.9% (57) had no children and 18.5% (56) had 4-6 children. On occupation of the respondents, 37.3% (113) were Artisans e.g Carpenter, Hairdresser, Tailor, Driver, 32.9% (99) were Professionals e.g. Doctor, Nurse, Lawyer, Accountant, 14.7% (44) chose Civil servant e.g Teacher, 9.0% (27) were self employed, 4.2 % (13) were unemployed, and 1.9% (6) chose occupations not listed but label 'others'.

24.3% (73) of the respondents reported they earned figures listed as 'others', 19.5% (59) earned between 31,000-60,000, 17.7% (53) earned a monthly salary between 11,000-30,000, 15.8% (48) earned a salary above 100,000, 1.6% (5) earned 1-1000 and just 0.7% (2) earned between 61,000-100,000 monthly. Concerning level of education,

36.7% (111) had secondary level of education, 19.8% (60) primary education, 16.9% (51) had education levels listed as 'others', 14.9% (45) attained tertiary level of education and 11.7% (35) had no formal education.

Characteristics	Frequency (n=302)	Percentage (%)
Age		
45-50	80	26.3
51-55	98	32.6
56-60	32	10.5
61-65	92	30.6
Total	**302**	**100**
Gender		
Male	0	0
Female	302	100
Total	**302**	**100**
Ethnicity		
Igbo	223	73.9
Hausa/Fulani	6	2.1
Yoruba	22	7.3
Others	50	16.7
Total	**302**	**100**
Marital Status		
Married	124	41
Single	47	15.6
Separated	92	30.4
Widowed	39	13
Total	**302**	**100**
Number of Children (Parity)		
None	57	18.9
3-Jan	97	32
6-Apr	56	18.5
>6	92	30.6
Total	**302**	**100**
Occupation		
Artisan e.g Carpenter, Hairdresser, Tailor, Driver	113	37.3
Civil servant e.g Teacher	44	14.7
Self-employed e.g Trader, Photographer	27	9
Unemployed	13	4.2
Professionals e.g. Doctor, Nurse, Lawyer, Accountant	99	32.9
Others	6	1.9
Total	**302**	**100**
Education Level		

No formal education	35	11.7
Primary Education	60	19.8
Secondary Education	111	36.7
Tertiary Education	45	14.9
Others	51	16.9
Total	**302**	**100**
What is your Level of Income		
1-1000	5	1.6
2000-10,000	61	20.3
11,000-30,000	53	17.7
31,000-60,000	59	19.5
61,000-100,000	2	0.7
>100,000	48	15.8
Others	73	24.3
Total	**302**	**100**

Table 1: Socio Demographic Characteristics of Patients at Selected Facilities.

Level of Knowledge Towards Cervical Cancer Treatment Options Among Patients at Selected Facilities

Demonstrated in table 2 below, majority of the respondents 80.6% (243) had heard about cervical cancer treatment, while 19.4% (59) denied. For example 20.6% (50) listed sources such as 'school', 17.7% (43) said "health practitioners", 17.5% (42) reported parents/family, 13.2% (32) said Tv/Radio Programs, 11.8% (29) said "social media", 11.4% (28) listed sources not mentioned but label "others", while 7.9% (19) replied "Newspaper/magazines". 78.4% (237) of the respondents affirmed cervical cancer treatment involves strategies and options in removing abnormal tissues (tumor) from the Cervix, while 21.6% (65) declined. When asked if the economic burden of cervical treatment describes problems a cancer patient has as related to cost of Health care, a majority of the respondents also said "Yes", while 17.2% (52) were the 'No' responses. Concerning if early-stage cervical cancer is typically treated with surgery, 40.9% (123) of the respondents accepted, while 59.1% (179) thought otherwise. 61.8% (187) of the respondents thought family History of cervical cancer is a risk for cervical cancer treatment strategies, while 38.2% (115) did not think so. When asked if supportive palliative care is safest in treating cervical cancer among other, the 'Yes" answers made up to 55.1% (166), however 44.9% (136) said "No".

The respondents were asked if they thought that for a very small cervical cancer, it might be possible to remove the cancer entirely with a cone biopsy, 52.8% (159) affirmed, while 47.2% (143) did not agree with this statement.

Variables	Frequency (n=302)	Percentage (%)
Have you heard about cervical cancer Treatment?		
Yes	243	80.6
No	59	19.4
Total	**302**	**100**
What is your source of information?		
School	50	20.6
Parents/Family	42	17.5
Social Media	29	11.8
TV/Radio programs	32	13.2
Health Practitioners	43	17.7

Newspaper/Magazines	19	7.9
Others	28	11.4
Total	**243**	**100**
Cervical cancer treatment involves strategies and options in removing abnormal tissues (tumor) from the Cervix		
Yes	237	78.4
No	65	21.6
Total	**302**	**100**
The economic burden of cervical treatment describes problems a cancer patient has as related to cost of Health care		
Yes	250	82.8
No	52	17.2
Total	**302**	100
Early-stage cervical cancer is typically treated with surgery		
Yes	123	40.9
No	179	59.1
Total	**302**	**100**
Family History of cervical cancer is a risk for cervical cancer treatment strategies		
Yes	187	61.8
No	115	38.2
Total	302	100
Supportive palliative care is safest in treating cervical cancer among other		
Yes	166	55.1
No	136	44.9
Total	**302**	**100**
For a very small cervical cancer, it might be possible to remove the cancer entirely with a cone biopsy		
Yes	159	52.8
No	143	47.2
Total	**302**	**100**

Table 2: Level of Knowledge towards Cervical Cancer Treatment Options among Patients at Selected Facilities.

Uptake of Cervical Cancer Treatment among Patients at Selected Facilities

From table 3 below, 57.1% (173) accepted to uptake cervical cancer treatment, while 42.9% (129) said "No". When asked "Have any physician advised you to treat for cervical cancer before?", 55.7% (168) replied "Yes", 28.1% (85) gave answers such as 'I can 't remember' and 16.2% (49) said "No". 49.9% (151) of the respondents affirmed they had treated cervical cancer at an earlier date prior to this survey, 40.4% (122) could not remember, and 9.7% (29) replied "No". 33.8% (51) of the respondents who said "Yes" reported duration to be between 6months to a year, 29.7% (45) said 2-3 months, 18.4% (28) said "less than a month", 11.3% (17) said 4-6months, and 6.8% (10) reported longer than a year. When respondents were asked how often they took the recommended therapy, 30.2% (91) said "less than a month", 27.0% (81) said 2-3 months, 23.7% (72) said 6 months to a year, 11.4% (34) reported yearly, and 7.7% (23) said 4-6 months. It was reported that the reasons for treatment included responses such as 'Just decided to go for the treatment to save my life' 24.6% (74), 21.7% (65) 'Cancer cases in the family', 21.3% (64) listed reasons such as 'others', 21.2% (64) said "For more long life", and 11.3% (34) insisted they were presented with symptoms. 16.0% (48) of the respondents affirmed they have had to deal with abnormal treatment outcome, while 84.0% (254) said "No".

Variable	Frequency (n=302)	Percentage (%)
Would you uptake cervical cancer treatment if offered a chance?		
Yes	173	57.1
No	129	42.9
Total	**302**	**100**
Have any physician advised you to treat for cervical cancer before?		
Yes	168	55.7
No	49	16.2
Can't remember	85	28.1
Total	**70**	**100**
Have you treated for cervical cancer before?		
Yes	151	49.9
No	29	9.7
Can't remember	122	40.4
Total	**302**	**100**
If YES when was that?		
Less than a month	28	18.4
2-3 months	45	29.7
4-6 months	17	11.3
6 months to a year	51	33.8
longer than a year	10	6.8
Total	**151**	**100**
How often do you take the recommended therapy?		
Less than a month	91	30.2
2-3 months	81	27
4-6 months	23	7.7
6 months to a year	72	23.7
Yearly	34	11.4
Total	**302**	**100**
What was your reason for the treatment?		
Presented with symptoms	34	11.3
Cancer cases in the family	65	21.7
For more long life	64	21.2
Just decided to go for the treatment to save my life	74	24.6
Others	64	21.3
Total	**302**	**100**
Have you ever had abnormal treatment outcome?		
Yes	48	16
No	254	84
Total	**302**	**100**

Table 3: Uptake of Cervical Cancer Treatment among Patients at Selected Facilities.

Determinants of Delay in Seeking Cervical Cancer Treatment among Patients at Selected Facilities

Table 4 showed that upon question 'which of the following is determinants why you delay in seeking cervical cancer treatment ?', 19.5% (59) said "Lack of information", 18.9% (57) reported distance to facility, 18.4% (56) opined financial constraints, 18.0% (54) explained determinant 'Ethnic factors', 13.6% (41) said "Religious factors", 6.4% (19) told 'cultural acceptance', 2.9% (9) reported 'Husbands acceptance', and 2.3% (7) said 'attitude of health providers'.

Variable	Frequency (n=302)	Percentage (%)
Which of the following is determinants why you delay in seeking cervical cancer treatment?		
Financial Constraints	56	18.4
Husbands Acceptance	9	2.9
Attitude of Health Providers	7	2.3
Distance to facility	57	18.9
Cultural acceptance	19	6.4
Lack of Information	59	19.5
Religious Factors	41	13.6
Ethnic factors	54	18

Table 4: Determinants of Delay in Seeking Cervical Cancer Treatment among Patients at Selected Facilities.

Economic Cost towards Seeking Cervical Cancer Treatment among Patients at Selected Facilities

Table 5 below showed the Economic Cost towards Seeking Cervical Cancer treatment among Patients. When asked if they can afford to uptake cervical cancer treatment options, 62.8% (190) affirmed while 37.2% (112) declined. Concerning the cost of treatment of cervical treatment according to patients respective healthcare providers, 42.4% (128) did not state any costs in the options but chose 'others', 24.4% (74) chose costs between 31,000-60,000, 21.9% (67) said "between 61,000-100,000" and 11.3% (34) explained costs above 100,000. When patients were asked which of the cervical treatment options were affordable to them, 26.7% (81) said "Supportive Palliative Care", 23.0% (70) reported "Chemotherapy", 20.5% (62) said "Immunotherapy", 16.6% (50) replied "Targeted Therapy", 8.5% (26) said "Surgery" and just 4.6% (14) of the respondents reported cervical treatment options affordable to them as 'Radiation'.

Variable	Frequency (n=302)	Percentage (%)
Do you afford to uptake cervical cancer treatment options?		
Yes	190	62.8
No	112	37.2
Total		
What is the cost of treatment of cervical treatment to you according to your healthcare provider?		
1-1000	0	0
2000-10,000	0	0
11,000-30,000	0	0
31,000-60,000	74	24.4
61,000-100,000	67	21.9
>100,000	34	11.3
Others	128	42.4

Total		
Which of thecervical treatment options are affordable to you		
Radiation	14	4.6
Surgery	26	8.5
Chemotherapy	70	23
Immunotherapy	62	20.5
Supportive Palliative Care	81	26.7
Targeted Therapy	50	16.6

Table 5: Economic Cost towards Seeking Cervical Cancer Treatment Among Patients At Selected Facilities.

Relationship between the Socio Demographic Factors and Uptake of Cervical Cancer Treatment among Patients at Selected Facilities

Table 6 below shows the results for the test of a statistically significant relationship between Socio-demographic characteristics of patients and uptake of cervical cancer treatment at selected facilities. There was a statistically significant relationship between Age of patients and uptake of cervical cancer treatment at selected facilities, ($\chi2$ =12, df=4, p= 0.0035). We therefore reject the null hypothesis of no significant relationship between age of patients and uptake of cervical cancer treatment among patients in the study population. Given the relationship between marital status of patients and uptake of cervical cancer treatment among patients in the study population, ($\chi2$ = 2.0, df=3, p=0.20923), there was no significant association. therefore we fail to reject the null hypothesis of no significant association between marital status of patients and uptake of cervical cancer treatment among patients in the study population. On the hypothesis between Number of Children (Parity) and uptake of cervical cancer treatment among patients in primal population, There was no statistically significant relationship between Number of Children (Parity) and uptake of cervical cancer treatment among patients in the study population, ($\chi2$ = 3.332, df=3, p=0.1686). We therefore fail to reject the null hypothesis of no significant relationship between Number of Children (Parity) and uptake of cervical cancer treatment among patients in key population. Considering the hypothesis between Occupation of patients and uptake of cervical cancer treatment among relevant population, there a statistically significant relationship between them, ($\chi2$ = 0.321, df=5, p=0.00275), therefore we reject the null hypothesis of no significant relationship between Occupation of patients and uptake of cervical cancer treatment among relevant population. Given the relationship between Level of Income of patients and uptake of cervical cancer treatment in the study population, ($\chi2$ = 8.57, df=3, p=0.0092), therefore we reject the null hypothesis of no significant association between level of income of patients and uptake of cervical cancer treatment in the study population. Finally, on the hypothesis between Level of Education and uptake of cervical cancer treatment among relevant population, There was a statistically significant relationship between Level of Education and uptake of cervical cancer treatment in the study population, ($\chi2$ = 17, df=2, p=0.0327). We therefore reject the null hypothesis of no significant relationship between level of education of patients and uptake of cervical cancer treatment among relevant population.

Socio Demographics	Uptake of CCT		X2	P-value	Decision
	Yes (%)	No (%)			
Age	256(84.8)	46(15.2)	12	0.0035	S
Marital Status	162(53.7)	140(46.3)	2	0.20923	NS
Number of Children (Parity)	153(50.7)	149(49.3)	3.332	0.1686	NS
Occupation	191(63.1)	111(36.9)	0.321	0.00275	S
Level of Income	289(95.8)	13(94.2)	8.57	0.0092	S
Level of Education	212(70.1)	90(29.9)	17	0.0327	S

Table 6: Relationship between the Socio Demographic Factors and Uptake Of Cervical Cancer Treatment among patients at selected facilities.

Association between Determinants of Delay in Seeking Cervical Cancer Treatment and the Economic Cost towards Seeking Cervical Cancer Treatment among Patients at Selected Facilities

Based on the Relationship between determinants of delay in seeking cervical cancer treatment and the economic cost towards seeking cervical cancer treatment among patients at selected facilities, the table below shows that financial constraints is significantly associated with the economic cost towards seeking cervical cancer treatment(p=0.0031). Furthermore, husbands acceptance is not significantly associated with the economic cost towards seeking cervical cancer treatment (p=0.1150). Also, cultural acceptance doesn't show significant association with the economic cost towards seeking cervical cancer treatment (p=0.6003), Identical as religious factors and Ethnic factors, (p= 0.9420, 0.1065) respectively. Attitude of health providers is significantly associated with the economic cost towards seeking cervical cancer treatment (p=0.0074). Moving further, the table reveals that Distance to facility is significantly associated with the economic cost towards seeking cervical cancer treatment (p=0.0015). Lastly, lack of information shows significant association with the economic cost towards seeking cervical cancer treatment(P = 0.0038) (Table 7).

Determinants	X^2	D.F	p-value	Decision
Financial Constraints	10.41	7	0.0031	S
Husbands Acceptance	13.34	3	0.115	NS
Attitude of Health Providers	23.01	4	0.0074	S
Distance to facility	76.12	2	0.0015	S
Cultural acceptance	41.65	5	0.6003	NS
Lack of Information	13.28	9	0.0038	S
Religious Factors	11.13	1	0.942	NS
Ethnic factors	31.98	6	0.1065	NS

Table 7: Association between Determinants of Delay in Seeking Cervical Cancer Treatment and the Economic Cost towards Seeking Cervical Cancer Treatment among Patients at Selected Facilities.

Discussion

Based on the findings of this study on the socio demographic characteristics of the respondents, it revealed that 30.6%of the patients were in the age range of 56-60 years. This finding goes in consistent with a statement in a publication by Yue X, et al. [31] that patients in a cervical cancer survey conducted among women in Onitsha, had a mean age of 58 years. Further findings of the study showed that the respondent's majority of the respondents were Christians and of Igbo origin. This could be due to the fact that the study was conducted in the southeastern part of Nigeria predominated by people of Igbo and Christian origin. In the study it was posited based on the level of knowledge towards cervical cancer treatment options among patients at selected facilities, responses received were 80.6% being positive and 19.4% negative. This corroborates with previous findings on the knowledge of cervical cancer treatment. In the study, 78.4% of the patients affirmed cervical cancer treatment involves strategies and options in removing abnormal tissues (tumor) from the Cervix. This demonstrates good knowledge of cervical cancer among respondents. Concerning if early-stage cervical cancer is typically treated with surgery, 59.1% of the patients had 'No' responses against a study by Miliaras D, et al. [2] on treatment of cervical cancer. Additionally, 61.8% of the respondents correctly affirmed family history of cervical cancer is a risk for cervical cancer treatment strategies in contrast with a study by Nnoduet O, et al. [32] conducted in Uganda. From the study, it was to remove the cancer entirely with a cone biopsy. A publication by Nwozor CM, et al. [16] revealed otherwise.

Considering information from the uptake of cervical cancer treatment among patients at selected facilities, 57.1% accepted to uptake cervical cancer treatment. This goes in line with a study by Tarney C, et al. [27] on the willingness of patients to undergo cervical cancer treatments. However, from the study, 49.9% of the patients posited that they had treated cervical cancer at an earlier date preceding this survey, and 33.8% had treated for duration between 6 months and a year. This also expresses good knowledge of cervical cancer treatments among the respondents. The finding of the study further revealed that 24.6% of the patients took cervical cancer treatments 'Just to save' their lives. This goes in consistence with a study by Sylvia C, et al, [33] on the uptake of cervical cancer treatments. This could be due to fear of the terminal effects of uncontrolled cancer. Another study by Soneji S, et al. [34] corroborates this finding that

25% of women who underwent cervical cancer treatments did it because they wanted to 'stay alive longer'.

When the patients were asked of determinants that delayed them in seeking cervical cancer treatment, 19.5% reported Lack of information. This could be as a result of little or no awareness campaigns or sensitization from relevant bodies on cervical cancer and its treatment. A publication by Vaccarella S, et al. [35] is line with this finding.

Further investigation showed that 18.9% reported distance to facility, 18.4% opined financial constraints, 18.0%, and 2.3% said 'attitude of health providers'. Numerous studies have listed similar determinants of delay in taking cervical cancer treatments [5,15,13,36-38].

Based on the study, it was revealed that 62.8% of the respondents confirmed theycan afford to uptake cervical cancer treatment options. This corroborates with a previous study by Waller J, et al. [20] on inexpensive cervical cancer treatment options and goes against the statistical finding by Shah R, et al. [39] in a study. The study revealed that 26.7% of the respondents were said to be able to afford supportive palliative care as a form of cervical cancer treatment. A study by Tapera O, et al. [40] corresponds to this finding. This could be due to the low cost of this treatment procedure.

Findings from this study regarding the association between Socio-demographic characteristics and uptake of cervical cancer treatment among patients at selected facilities revealed that age is significantly associated with uptake of cervical cancer treatment among patients (p= 0.0035). Study shows that there were more patients seeking to uptake cervical cancer treatments relative to increased age. This goes in line with a study by Ansari F, et al. [38] which found age to be associated with uptake of cervical cancer treatment (p=0.00471). Further investigation into the study demonstrated that marital status is not significantly associated with the uptake of cervical cancer treatment (p=0.20923). This goes in line with a report published by Khoo CL, et al. [41] that there was no significant association. This implies that women who wanted to uptake treatments did, irrespective of their marital status. Also, from the study among patients in Imo, it was posited that there was no significant relationship between number of Children (Parity) and uptake of cervical cancer treatment among patients in the study population (p=0.1686). Considering the hypothesis between occupation of patients and uptake of cervical cancer treatment, there a significant association (p=0.00275). This goes in consistence to a previous study by Tao SY, et al. [42]. This informs that patients with good occupations and hence better level of income are more likely to uptake cervical cancer treatments. This study also indicates that patients with higher level of education were significantly involved in cervical cancer treatment uptake than those with low levels of education. Patients without any formal education level barely came in for treatment. This indicates that more enlightened a patient is, the more possible they are to undertake cervical cancer treatments. Hence level of education of patients and uptake of cervical cancer treatment among patients are significantly associated (P = 0.0327). A preceding study by Weschler T [43] confirms this finding.

Findings of this study regarding relationship between determinants of delay in seeking cervical cancer treatment and the economic cost towards seeking cervical cancer treatment among patients at selected facilities, revealed that Financial Constraints is significantly associated with the economic cost towards seeking cervical cancer treatment(p=0.0031). This means that patients who are financially buoyant would easily seek cervical cancer treatment. A study by Khoo CL, et al. [41] corroborates this finding. Furthermore, husbands acceptance is not significantly associated with the economic cost towards seeking cervical cancer treatment (P = 0.1150). This goes in contrast to a publication by Grace XM, et al. [15]. Also, cultural acceptance doesn't show significant association with the economic cost towards seeking cervical cancer treatment (p= 0.6003) as supported by a similar finding according to Nnodu O, et al. [32]. Identical are Religious factors and Ethnic factors, (P = 0.9420, 0.1065) respectively. A number of studies are in consistence with this observation. Attitude of health providers is significantly associated with the economic cost towards seeking cervical cancer treatment (p= 0.0074). This could imply that patients tend to co-operate with health workers who are compassionate and understanding as opposed to stern and edged. Moving further, the Distance to facility is significantly associated with the economic cost towards seeking cervical cancer treatment (p= 0.0015). This goes against a finding by Sardain H, et al. [44]. Additionally, lack of information shows significant association with the economic cost towards seeking cervical cancer treatment (p= 0.0038). A statement in a study conducted by Casey PM, et al. [45] corroborates this finding on economic cost towards seeking cervical cancer treatment.

Conclusion

In this study, it was revealed the factors affecting and significantly associated with the uptake of cervical cancer include Financial Constraints, Attitude of Health Providers, Distance to facility and Lack of Information. Findings from this study establish that even though a number of patients showed considerable knowledge of cervical cancer treatments, several others are deficient of relevant information and therefore is another challenge. This study emphasizes that there is a need for the State health system to address the identified barriers, including awareness campaigns and implementing health policies to ensure

smooth uptake of cervical cancer treatments in Imo. In the future, it would be reasonable to conduct research, which include more regions and districts as well as combining both quantitative and qualitative approaches to provide a more comprehensive information about uptake of cervical cancer screening services in the country. The study recommends the following:

- Firstly, women must be informed about cervical cancer and how to prevent it.
- Awareness campaigns must provide accurate information so that women can make informed choices. These campaigns must emphasize the importance and effectiveness of prevention and treatment if it gets to that. Thus, information is important, but must be combined with prescriptive information about how to take preventive action.
- Third, accessibility to treatment facilities must be improved. Findings from this study reveal that distance of the facility is a crucial determinant of whether women will access cervical cancer treatment services.

Ethics Approval and Consent to Participate

Not Applicable.

Consent to Publish

Not applicable.

Availability of Data and Materials

The Data set from the study are available to the corresponding author upon request.

Competing Interests

Authors have declared that they have no competing interests.

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