



Factors Influencing Uptake of Oncology Specialized Health Care Services in Uasin Gishu County, Kenya

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Authors' contributions

This research work was carried out in collaboration among all authors. Author LCS designed the study, performed statistical analysis, wrote the protocol, wrote the first draft of the manuscript, edited and made all the corrections. Authors EMM and MO supervised all the processes involved in preparing the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

In Kenya, absence or poor access for oncology services has escalated the total national mortality rate in Kenya. Despite numerous studies on the increased prevalence and incidence of cancers, there is insufficient empirical literature explaining the factors influencing the increased absence or poor of access to oncology tertiary healthcare services in Uasin Gishu County, a research gap filled by this study. This study determined factors influencing access to oncology specialized healthcare services among patients in Uasin Gishu. Using descriptive research design, the study employed a census survey on population of 142 screened oncology patients in the 18 level 3 and 4 facilities in Uasin Gishu County. Data was collected using structured questionnaires. Data was analysed using descriptive statistics and then inferential analysis with results presented in form of tables and figures. The data was analysed with assistance of Statistical Package for Social Sciences (SPSS) software version 22.0. The study reveals that at 0.05 (5%) level of significance, there exists a significant relationship between each of; affordability of oncology services, location of oncology services, acceptability of oncology services, and availability of oncology specialized healthcare services and uptake of oncology specialized healthcare services in Uasin Gishu County. The study

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recommends that since health is a devolved function, the county government of Uasin Gishu should seek to provide affordable oncology services through establishment of a strategy for low income oncology patients and stakeholder participations.

Keywords: Acceptability of oncology services; affordability of oncology services; availability of oncology specialized healthcare services; location of oncology services; oncology services; tertiary healthcare services; uptake of oncology specialized healthcare services.

1. INTRODUCTION

1.1 Background of the Study

According to available statistics poor access to oncology services is contributing to 75% fatalities in low income countries, 72% in countries of low-middle income, 64% in countries of high middle income, and 46% in countries of high income (Farmer, 2010). In the year 2009, oncology accounted for 7.9 million deaths; approximately 13% of all deaths worldwide [1,2]. On realization that poor access to oncology health services escalates incidence of curable cancers, most countries in the world have focused on improving access to oncology health services purposely to ensure decline in cancer incidences and mortality [3].

Despite implementation of various initiatives and strategies for improving uptake of oncology services, access to these services in the African continent is significantly lower than in developed countries [4]. This leads to unavoidable death caused by curable cancers as witnessed in the year 2002, where estimated than 500,000 annual deaths occurred from cancers in Africa [2]. In Kenya, the prime challenge in access to oncology services is the availability of oncologist specialists, which makes it difficult for a great majority of the population to access oncology treatment services [5]. Consequently, oncology patients are subjected to late screening and improper attention on cancer which might result to unavoidable fatalities [6].

In Uasin Gishu County access of healthcare services is attributed to; referral of patients from regional health facilities in regards to affordability; location of the facility, acceptability; and adequacy of resources. These dimensions correspond to abilities of patients; ability to perceive; ability to seek; ability to reach; ability to pay; ability to engage [7]. Thus, poor access of oncology specialized service may be attributable to lack of resources, poor access to location of the facility, failure by the patient to accept the utilization of the service, and inadequate facilities [6].

1.2 Statement of the Problem

Although the government of Kenya has established specialized healthcare system and implemented initiative as well as strategies for addressing incidences and mortality cases caused by diseases, such as cancer menace, absence or poor access for oncology services in a specialized referral healthcare facilities has persisted [1]. This is subjecting most oncology patients to prolonged pain and suffering, which in itself may result into death. In fact, poor access to oncology services has escalated the total national mortality rate in Kenya, where 27,000 Kenyans are dying from cancers annually [1]. Despite a wide array of literature on the increased prevalence and incidence of cancers, there is limited empirical research explaining the factors influencing access to oncology services by cancer patients in Kenya. Lack of sufficient is leading to little focus on issues related to oncology service access for those who already have the cancer. To enable appropriate intervention, there is need to highlight issues of access to oncology services by cancer patients. In this regard, this study was done in Uasin Gishu County is to describe the factors that influence access to oncology specialized services in Uasin Gishu County locking the existing gap.

1.3 Purposes of the Study

The purpose of this study was to establish the factors influencing access to oncology specialized healthcare services in Uasin Gishu County, Kenya.

1.4 Objectives of the Study

The study was guided by following specific objectives:

- i. To determine the influence of affordability of oncology services on access to specialized healthcare services in Uasin Gishu County.

- ii. To establish the influence of location of oncology services on access to specialized healthcare services in Uasin Gishu County.
- iii. To determine the effects of acceptability of oncology services on access to specialized healthcare services in Uasin Gishu County.
- iv. To determine the effects of availability of oncology on services access to specialized healthcare services in Uasin Gishu County.

1.5 Research Questions

The study answered the following questions:

- i. What is the influence of affordability on access to oncology specialized healthcare services in Uasin Gishu County?
- ii. What is the influence of accessibility on access to specialized oncology health care serviced in Uasin Gishu County?
- iii. What are the effects of acceptability on access to oncology specialized healthcare services in Uasin Gishu County?
- iv. What is the influence of availability on access to oncology specialized health services in Uasin Gishu County?

2. METHODOLOGY

This chapter provides a description of the research design and the methodology applied in carrying out the research study and justification for using a particular research design. It also describes the characteristic of the population which was used in the study, detailed description of sampling methods used and procedures, data collection instruments and the procedure of data collection, pre-testing and finally describes the appropriate data analysis method which generated the results.

2.1 Research Design

This study used descriptive cross sectional study aimed at assessing factors affecting access to specialized health care services for all cancer patients.

2.2 Target Population

The total number of cancer patients in Uasin Gishu health facilities is estimated to be 142 in Uasin County seen in 18 level 3 and level 4 facilities in Uasin County. So, the target population was the 140 patients with cancer in Uasin Gishu County who have been screened.

2.2.1 Inclusion criteria

- Patients who visited the facility two or more times
- All patients diagnosed with cancer who would give an informed consent
- Patients with cancer who were attending the oncology clinic at the various level 3 and 4 health facilities in Uasin Gishu County.
- All Under 18 years whose caregivers gave consent on their behalf.

2.2.2 Exclusion criteria

- Patients who were paying their first visit to the facility
- Patient unable to communicate.
- Patients who were too sick and unable to participate where caregivers were unwilling to consent on their behalf.
- Patient who were unwilling/ decline to give an informed consent to participation in the study.
- All patients under 18 years who did not have the consent of their parents and / or guardians.

2.3 Sampling

Considering that the target population was small and manageable, the study purposively obtained information from the entire target population, translating to sample size of 142 respondents. Purposive sampling was used where the entire target population will be targeted to participate in the study as respondents.

2.4 Data Collection

The main source of data was primary sources; patients attending the oncology clinic and unit heads of departments. Data was collected from patients using a structured questionnaire, where tool addressed issues including the access to oncology tertiary healthcare services available in Uasin Gishu and factors associated with the access to oncology tertiary healthcare services in Uasin Gishu. The tool was administered to the respondents and the researcher provided guidance and clarifications on how to answer the questions, where the researcher then assisted the respondents in answering questions to make the exercise faster.

Before administration, the tool was pre-testing amongst 14 patient obtaining services from

Kapsabet Hospital in Nandi County; a neighboring county to Uasin Gishu county. This test was used to ensure the reliability and validity of the research tool; where content validity was used to measure validity, and internal consistency test, based on Cronbach alpha was used to test for reliability.

The present study tested the research instrument, questionnaire, for reliability using the internal consistency technique based on the Cronbach Alpha method. The results obtained from the pilot testing of questionnaire showed high consistency (Cronbach Alpha (α) = 0.941; N = 5).

2.5 Data Analysis

The collected data was analysed using quantitative approach to produce descriptive statistics for helping establish patterns, trends and relationships, and to make it easier for the researcher to understand and interpret implications of the study [8]. The study data collected using a structured questionnaire was analyzed based on the objectives to produce descriptive statistics that was used to describe the properties of the study variables and how the independent variables (IVs) related to the dependent variable (DV).

The data used to assess the dependent variable; uptake of oncology tertiary healthcare services in Uasin Gishu County, was collected on a questionnaire constructed using a 5 point Likert Scale (1-5); strongly Disagree = 1: disagree= 2: neutral = 3: agree =4: strongly agree = 5, the obtained the mean (M) and standard deviation (SD) for each indicator of the DV as well as the overall DV. Since these Means contained fraction, they were moderated based on the statistics; strongly Disagree = 1 to 1.8: disagree= above 1.8 to 2.6: neutral = above 2.6 to 3.4: agree = above 3.4 to 4.2: strongly agree = above 4.2 to 5.

The data used to assess the IVs; affordability of oncology services, location of oncology services, acceptability of oncology services, and availability of oncology tertiary healthcare services, was also collected using a 5-point Likert Scale. Since the variable data was collected using the scale; "1 = Not at all; above; 2 = Low; 3 = Moderate 4 = High; and 5 = Very High", the study moderated the using the statistics Not at all = 1 to 1.8: Low = above 1.8 to 2.6: Moderate = above 2.6 to 3.4: High = above 3.4 to 4.2: Very High = above 4.2 to 5.

Then inferential analysis was carried out to establish the relationship between the Independent Variables (IVs) and the Dependent Variable (DV). This is where the study first carried out correlation analysis to assess the degree/strength of relationship that existed between the determinants (IVs) and the DV and multiple regression analysis was used to estimate a model.

3. RESULTS AND DISCUSSION

The study was able to obtain data from 120 (84.51%) out of the sampled population of 142(100%). A response rate of 84.51% according to [9] was very good since it was above 69%. [9] classify any response rate above 69% as high enough to produce accurate and credible results from the data analysis. Based on this assertion, the present study then concludes that the response rate was; high and would produce good, accurate and credible results.

3.1 Respondents' Socio-Demographic Information

The sample population was 142 respondents (who were oncology patients in 18 level 3 and level 4 facilities in Uasin Gishu County. However, the study was able to obtain data from 120 (84.51%) out of the sampled population of 142(100%). A response rate of 84.51% according to [9] was very good since it was above 69%. [9] classify any response rate above 69% as high enough to produce accurate and credible results from the data analysis. Based on this assertion, the present study then concludes that the response rate was; high and would produce good, accurate and credible results.

These results show that a majority of 80(66.67%) of the respondents showed that they had been suffering from cancer related illness for less than a year while 40(33.33%) showed that they had been suffering from cancer related illness for between one (1) and five (5) years. A majority of 80(66.67%) of the respondents showed that they had been attending oncology clinics for less than a year while 40(33.33%) showed that they had been attending oncology clinics for between one (1) and five (5) years.

3.2 Descriptive Analysis

3.2.1 Uptake of oncology tertiary healthcare services in Uasin Gishu county

The study analyzed the dependent variable uptake of oncology tertiary healthcare services,

seeking to establish the status of access to specialized healthcare services in Uasin Gishu County. These results are captured in Table 1.

These results indicate that the uptake of oncology tertiary healthcare services in Uasin Gishu was moderate, which agrees to the findings in the study by Ndikom and Ofi (2012), which found that there are low levels of access to oncology services especially in developing countries. These findings further confirm the findings in a local study by [6] which concludes that there is poor access of oncology specialized service in Kenya. The study found that the patients in Uasin Gishu County were not always given adequate oncology services for every visit. According to the study results, it was found that the patients were not also always effectively attended to and were not always treated for cancer as scheduled. These findings are a confirmation of the findings by [10] which found that most developing countries have very limited cancer diagnostic, treatment and palliative care services which hinder to access to oncology services. Sometimes there was timely diagnosis of cancer despite long waiting time and other times their diagnosis of cancer was not done on time. However, oncology patient needs to receive adequate oncology tertiary healthcare services at the right time to curb this problem. Further, the study by [11] show that that many cancer cases are not detected early due to lack of adequate access to it.

The results show that it was possible to detect cancer in a timely manner with available equipment in the specialised centre and the staff available always provided treatment scheduled on time. These findings agree to [12] that oncology patient should receive adequate oncology tertiary healthcare services at the right time to curb this problem. Based on these findings, then access to specialized oncology healthcare services in Uasin Gishu County is central in the performance of health care systems.

3.2.2 Influence of affordability of oncology services on access to healthcare services

The study determined the influence of affordability of oncology services on access to specialized healthcare services in Uasin Gishu County by analyzing the affordability of oncology services and the results captured in Table 2.

The findings in the present study were that affordability of oncology services highly influenced the uptake of oncology tertiary healthcare services in Uasin Gishu, which reveals the findings in the study by [13] which found that low socio-economic statuses have a greater risk of having cancers. The costs incurred was found to be problem to poor patients due to economic losses. [14] found that the barrier to accessing oncology specialized healthcare services was the requirement for patients have to pay and yet could not afford it.

The study established that the patients Uasin Gishu county were not able to effectively pay the high cost of diagnostics tests and required medicines, which resulted into their low uptake of oncology tertiary healthcare services. These findings are similar to those in the study by [6] that direct cost of diagnostic tests, hospital and physician fees, and the drug therapy was not affordable to the oncology patient. The study acknowledged that other costs included the days lost from work (loss of productivity, and mortality (lost productivity due to premature death), These costs are incurred by patients as well as their care givers and families and are a great hindrance to access to oncology healthcare. Other cost that may lead to low access to healthcare is pain, which is one of the most feared consequences of cancer experienced by patients [15]. In this study it was found that the intangible costs including pain and lifestyle changes hindered hospital appointments and this very highly led to the low uptake of oncology tertiary healthcare services in Uasin Gishu. These costs can also extend beyond the patient to relatives who experience grief, bitterness, or depression.

Consequently, the poor are at a greater risk of being diagnosed and treated for cancer The results show that the actual cost of cancer services including doctors' fees highly hindered them from receiving services while the study by [14] found that the barrier to getting treatment was that patients have to pay and yet could not afford it.

3.2.3 Effect of location of oncology services on access to healthcare services

The study assessed the second objective; to establish the influence of location of oncology services on access to specialized healthcare services in Uasin Gishu County through analysis

of effect of location of oncology services. The results are shown in Table 3.

The results show that location of oncology services highly affected the uptake of oncology tertiary healthcare services in Uasin Gishu County. Those patients who were long distances away from the healthcare facilities found it hard to access to specialized healthcare services in Uasin Gishu County. Thus, long distance between their residence and health center to hindered them from their appointment schedules moderately affecting uptake of oncology tertiary healthcare services in Uasin Gishu County. The findings in this study confirm the assertion by [16] who postulate that the most frequently cited barrier to cancer treatment in resource-poor settings is the absence of specialists and specialty centers. According to [16], all or most of the oncology specialists in Kenya are located in Nairobi, making it almost impossible for the largest number of the population to access their service. Since Uasin Gishu county is far from Nairobi, then it means that advance specialised service are also far away from the the patients of the County, lowering the uptake of oncology tertiary healthcare services in that county. This study found that there was lack of transportation means and cost which made it difficult to access services very highly affecting the uptake of oncology tertiary healthcare services in Uasin Gishu County. This is confirmed in the study by [17], which found that accessing the radiotherapy facility at the few specialised centre introduces the issue of distance and cost at the national referral hospital.

The results in the present study show that specialized healthcare services lacked specialists at the specialty centers hindering their treatment schedules and this moderately affect the uptake of oncology tertiary healthcare services in Uasin Gishu County. The study by [18] established that one of the barriers to accessing health services faced by people living in urban and regional communities was physical accessibility, affordability, appropriateness and cultural acceptability. In the present study, some patients were found to have had been diagnosed late which hindered further interventions required and moderately affecting the uptake of oncology tertiary healthcare services in Uasin Gishu County. This might be one of the reasons for the known poorer survival from cancer in Uasin Gishu County. [18] study recommends that physical accessibility in non-standard settings

and providing some services through home visitation to improve physical access.

3.2.4 Effects of acceptability of oncology services on access to healthcare services

The study assessed the third objective; to determine the effects of acceptability of oncology services on access to specialized healthcare services in Uasin Gishu County by analyzing the acceptability of oncology services. The results are shown in Table 4.

The present study found the acceptability of oncology services had a moderate effect on uptake of oncology tertiary healthcare services in Uasin Gishu County which agrees to the study by. The study by [19] established that dissatisfaction with quality of care and transportation difficulties was major hindrance access to healthcare services. Poor quality of the health service and not having trust in the health service provider was associated with poor health service utilization, which for both the urban population and the poor caused dissatisfaction with the quality of care. In the present study, it was established that some of the patients took long to be informed and diagnosed with cancer, which moderately affected the uptake of oncology tertiary healthcare services and sometimes the oncology staff were too few to manage all patients waiting for services, moderately affecting uptake of oncology tertiary healthcare services. These findings are confirmation to the words of [20] the healthcare service provider are experiencing a global health worker shortage of staggering proportions, in which case Uasin Gishu is no exception. The results in the present study show that sometimes the patients experienced inadequate screening services in their visits which moderately affected their uptake of oncology tertiary healthcare services in Uasin Gishu County. These findings are similar to the by [21], which established that the health care providers are prone to give inadequate patient education, which may contribute to inadequate screening services, untimely reporting of screening outcomes, and diminished quality of care According to the resulting this study, there were no long long waiting time at the health center, factor that encouraged uptake of oncology tertiary healthcare services in Uasin Gishu County.

The results in this study show that patients experienced failures in providing adequate

patient education, which moderately affected their uptake of oncology tertiary healthcare services in Uasin Gishu County. One of the barriers to access to oncology is lack of awareness, which emanates from poor education and has consequence on healthcare access [22]. The study established that many rural patients seek important hospital services at health care institutions outside their community. They further suggested that in extreme situations, bypass may result in reductions in the number of health care professionals and range of medical services offered, or even hospital closure.

3.2.5 Effects of availability of oncology tertiary healthcare services

The study sought to establish the effect of availability of oncology tertiary healthcare services on services access to specialized healthcare services in Uasin Gishu County by assessing objective three; to determine the effects of availability of oncology on services access to specialized healthcare services in Uasin Gishu County and the results recorded in Table 5.

The present study found that availability of oncology tertiary healthcare services highly affected the uptake of oncology tertiary healthcare services in Uasin Gishu County. That the specialized healthcare services in Uasin Gishu County were not readily accessible and this highly contributed to the low uptake of oncology tertiary healthcare services. These findings agree to the findings in the study by [23] that availability of the health service contributes to disparity in healthcare utilization According to the results in the present study, Gishu County.

The study found that the patients were not able to meet their entire hospital schedule due to inconvenient location of specialised services and this highly affected the uptake of oncology tertiary healthcare services. Healthcare reports have shown that Cancer treatment infrastructure in Kenya is inadequate and some cancer management options are not readily available [24, 25]. The patients did not receive recommend specialist oncology services at the hospital highly affecting the uptake of oncology tertiary healthcare services in Uasin Gishu County. The study found that the low density of oncology specialised healthcare services to serve all the patients visiting the hospital moderately affected the uptake of oncology tertiary healthcare services in Uasin Gishu County while the inadequacy of skilled oncology personnel in the

unit which highly affected their uptake of oncology tertiary healthcare services in Uasin Gishu County. [18] established that the ratio between the availability of staff and and the size of the target population gives the measurement of availability coverage. That is, the number of oncology tertiary healthcare services facilities and personnel for the availability of technology.

This study found that lack sufficient technology (drugs, equipment) very highly affected the uptake of oncology tertiary healthcare services in Uasin Gishu County which agrees to that by [26] which found that lack of drugs and poor services is among the factors acting as barriers to health care delivery. This means that uptake of oncology tertiary healthcare services in Uasin Gishu County is influenced by technology since the ratio between the availability of drugs and the size of the target population gives the measurement of availability coverage and that the availability of technology (drugs, equipment) are able to sustain effective long-term treating relationships and links with other providers. Therefore, the resources available for delivering an intervention and their sufficiency effectively affect the uptake of oncology tertiary healthcare services in Uasin Gishu County.

3.3 Inferential Analysis

The correlation was done using the Pearson's product moment correlation as results captured on Table 6.

The results of correlation analysis show that, using at 5% level of significance, each of the IV; affordability of oncology services ($r = 0.858$, p -value = $-.000$), location of oncology services ($r = 0.198$, p -value = 0.019), acceptability of oncology services ($r = 0.389$, p -value = 0.000) and availability of oncology tertiary healthcare services ($r = 0.265$, p -value = 0.002) was significantly related to uptake of oncology tertiary healthcare services in Uasin Gishu County because the probability value (p -value) for each was less than 0.05 . The results show that the relationship between affordability of oncology services ($r = 0.858$) and uptake of oncology tertiary healthcare services in Uasin Gishu County was high since the correlation coefficient (r) was greater than 0.6 . The relationship between acceptability of oncology services ($r = 0.389$) and uptake of oncology tertiary healthcare services in Uasin Gishu County was moderate since the correlation coefficient (r) was between 0.3 and 0.6 . However, the relationship

between each of; availability of oncology tertiary healthcare services ($r = 0.265$), and location of oncology services ($r = 0.198$) and uptake of oncology tertiary healthcare services in Uasin Gishu County was very low since the correlation coefficient (r) was less than 0.3 and greater than 0.1.

All IVs were then regressed against the DV to estimate the study model and the results captured in Table 7.

Using the model equation, the study carried out an Analysis of Variance (ANOVA) to test for goodness of fit of the study model.

Table 1. Analysis by Uptake of oncology tertiary healthcare services

Uptake of oncology tertiary healthcare services	M	SD
I am always given adequate services for every visit	3.05	1.04
I am always encouraged to visit the cancer health center because I receive adequate attention	2.98	1.40
I am always effectively attended to and treated for cancer as scheduled	3.23	1.12
There is timely diagnosis of cancer despite long waiting time	2.98	1.49
It is possible to detect cancer in a timely manner with available equipment in the specialised centre	3.41	1.09
Staff available always provided treatment scheduled on time	3.53	1.40
Average uptake of oncology tertiary healthcare services	3.20	1.26

Source: SOY, L. C. Factors influencing uptake of oncology specialized health care services in Uasin Gishu County, Kenya, Kenya, 2018

Table 2. Analysis by Affordability of oncology services

Affordability of oncology services	M	SD
My low income status has hindered me from going to hospital	3.95	1.28
I am not able to pay the high cost of diagnostics tests and medicines required	3.27	1.21
The undeclared indirect costs such as loss of work productivity hinders my hospital visits	3.97	0.85
The intangible costs including pain and lifestyle changes hinder my hospital appointments	4.34	0.64
The actual cost of cancer services including doctors' fees hinder me from receiving services	3.50	1.18
Average affordability of oncology services	3.88	0.99

Source: SOY, L. C. Factors influencing uptake of oncology specialized health care services in Uasin Gishu County, Kenya, Kenya, 2018

Table 3. Analysis by of location of oncology services

Effect of location of oncology services	M	SD
Long distance between my residence and health center to hinders me from my appointment schedules	3.34	1.31
Lack of Transportation means and cost make it difficult to access services	4.56	0.80
Lack of specialists at the specialty centers hinder my treatment schedules	2.78	1.36
Late diagnosis hinder further interventions required	3.20	1.39
Average effect of location of oncology services	3.47	1.22

Source: SOY, L. C. Factors influencing uptake of oncology specialized health care services in Uasin Gishu County, Kenya, Kenya, 2018

Table 4. Analysis by acceptability of oncology services

Acceptability of oncology services	M	SD
I experienced in all my visits inadequate screening services	3.15	1.35
It took long to be informed and diagnosed with cancer	2.73	1.54
The oncology staff are too few to manage all patients waiting for services	3.03	1.39
I experience long long waiting time at the health center	2.51	1.25
I experienced failures in providing adequate patient education	2.83	1.14
Lack of drugs, neglect and poor treatment		
Average acceptability of oncology services	2.85	1.33

Source: SOY, L. C. Factors influencing uptake of oncology specialized health care services in Uasin Gishu County, Kenya, Kenya, 2018

Table 5. Analysis by availability of oncology tertiary healthcare services

Availability of oncology tertiary healthcare services	M	SD
There is lack of adequate capacity to administer the necessary help in the facility	3.91	1.34
I did not meet all my hospital schedule to inconvenient location of specialised services	4.15	1.12
I did not receive recommend specialist oncology services at the hospital	3.95	1.11
Low density of oncology specialised healthcare services to serve all the patients visiting the hospital	3.12	1.10
There are inadequate skilled oncology personnel in the unit	3.54	1.23
The is lack sufficient technology (drugs, equipment)	4.50	0.70
Average availability of oncology tertiary healthcare services	3.86	1.10

Source: SOY, L. C. Factors influencing uptake of oncology specialized health care services in Uasin Gishu County, Kenya, Kenya, 2018

Table 6. Correlation Analysis

Correlations		Uptake of oncology specialized	Affordability of oncology services	Location of oncology services	Acceptability of oncology services	Availability of oncology specialized healthcare services
Uptake of oncology specialized healthcare services	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	120				
Affordability of oncology services	Pearson Correlation	.858**	1			
	Sig. (2-tailed)	.000				
	N	120	120			
Location of oncology services	Pearson Correlation	.198*	.235**	1		
	Sig. (2-tailed)	.019	.005			
	N	120	120	120		
Acceptability of oncology services	Pearson Correlation	.389**	.243**	.743**	1	
	Sig. (2-tailed)	.000	.004	.000		
	N	120	120	120	120	
Availability of oncology specialized healthcare services	Pearson Correlation	.265**	.431**	.773**	.491**	1
	Sig. (2-tailed)	.002	.000	.000	.000	
	N	120	120	120	120	120

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

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

Source: Research Data (2018)

The study tested the model goodness of fit based on the study model using the Beta coefficients; $\beta_1 - \beta_4$ by checking whether, at 5% level of significance, all the coefficients of; affordability of oncology services, location of oncology services, acceptability of oncology services, and availability of oncology tertiary healthcare services were all zero (that is $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$) or they were not. The coefficients are all zero

when the p-value > 0.05 and in this case the model is not fit for use since it lacks goodness of fit. However, when the p-value < = 0.05 then model is considered as being fit for use since it has goodness of fit.

Results in Table 7, (F-statistics =153.492, P-value=.000), indicates that ANOVA p-value = .000 which was less than 0.05, then the study is

confident that at 5% significance level of significance (i.e. $\alpha = 0.05$), at least one of the predictors; c affordability of oncology services, location of oncology services, acceptability of oncology services, and availability of oncology tertiary healthcare services is useful in predicting the uptake of oncology tertiary healthcare services in Uasin Gishu County. Therefore, the model is useful in explaining to uptake of oncology tertiary healthcare services in Uasin Gishu County.

The study made various interpretations, seeking to establish the significance of the independent variables in determining the dependent variable. Based on these results on affordability of oncology services, $T = 22.287$ and $p\text{-value} = .000$ and since $p\text{-value}$ does not exceed 0.05 then at the $\alpha = 0.05$ level of significance, there exists enough evidence to conclude that the affordability of oncology services is not zero and, hence, that affordability of oncology services is useful as a predictor of uptake of oncology tertiary healthcare services in Uasin Gishu County.

As acceptability of oncology services the results show that $T = 7.250$ and $p\text{-value} = .000$ then that at the $\alpha = 0.05$ level of significance, there exists enough evidence to conclude that the acceptability of oncology services is not zero and, hence, that acceptability of oncology services is useful as a predictor of uptake of oncology tertiary healthcare services in Uasin Gishu County since $p\text{-value} < 0.05$.

The availability of oncology tertiary healthcare services results shows that $T = -6.048$ and $p\text{-value} = .000$. Since $p\text{-value} < 0.05$ at $\alpha = 0.05$ level of significance, there exists enough evidence to conclude that the availability of oncology tertiary healthcare services is not zero and, hence, that availability of oncology tertiary healthcare services is useful as a predictor of

uptake of oncology tertiary healthcare services in Uasin Gishu County.

Based on the results in Table 7, the estimated equation is

$$Y(\text{uptake of oncology tertiary healthcare services in Uasin Gishu County}) = -0.605 + 1.038\text{affordability of oncology services}(X_1) + .256(\text{acceptability of oncology services } (X_3) + 0.217 \text{ availability of oncology } (X_4)) \dots\dots\dots (i)$$

Based on the results, the fitted value of uptake of oncology tertiary healthcare services in Uasin Gishu County on average was -0.605 with a standard error of 0.172 . Thus, when all the independent variables are zero the uptake of oncology tertiary healthcare services in Uasin Gishu County decreases by 0.605 units.

These results indicate any one unit increase in affordability of oncology services causes an increase rate of 1.038 on uptake of oncology tertiary healthcare services in Uasin Gishu County and vice versa.

An increase of one unit in acceptability of oncology services causes a 0.256 increase rate in uptake of oncology tertiary healthcare services in Uasin Gishu County and a decrease of one unit in acceptability of oncology services causes a 0.256 decrease rate in uptake of oncology tertiary healthcare services in Uasin Gishu County.

An increase of one unit availability of oncology tertiary healthcare services causes an increase rate of 0.217 uptake of oncology tertiary healthcare services in Uasin Gishu County while a unit decrease in availability of oncology tertiary healthcare services causes a decrease rate of 0.217 uptake of oncology tertiary healthcare services in Uasin Gishu County.

Table 7. Inferential statistics

Statistics	Beta Values	T-statistics	p-value
(Constant)	-0.605	-3.513	0.001
Affordability of oncology services	1.038	22.287	0.000
Acceptability of oncology services	0.256	7.250	0.000
Availability of oncology specialized healthcare services	0.217	6.048	0.000
R Square	0.819		
N	120		
Df	119		
F-statistics	153.492		
ANOVA (p-value)	0.000		

The results show that coefficient of determination was .8192, an indication that 81.92% of variation in uptake of oncology tertiary healthcare services in Uasin Gishu County is explained by; affordability of oncology services, acceptability of oncology services, and availability of oncology tertiary healthcare services. In a summary, all the three IVs; affordability of oncology services, acceptability of oncology services, and availability of oncology tertiary healthcare services could significantly predict the DV (uptake of oncology tertiary healthcare services in Uasin Gishu County).

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The study established that the uptake of oncology tertiary healthcare services in Uasin Gishu County was moderate. The access to oncology specialized health care services in Uasin Gishu county is indicated by the uptake of oncology tertiary healthcare services in Uasin Gishu characterized by; adequacy of oncology services, patients encouraged to visit the cancer health center, receiving adequate attention, and patients effectively attending specialized health care centers. Other factors of uptake of oncology tertiary healthcare services include; treating for cancer as scheduled, timely diagnosis of cancer despite, managing waiting time, detect cancer in a timely manner, availability of the appropriate equipment in the specialised centre, availability of adequate skilled staff available for providing the correct treatment on scheduled on time.

The study concludes affordability of oncology services has a strong significantly positive influence on the uptake of oncology tertiary healthcare services in Uasin Gishu County. The access access to specialized healthcare services is determined the patients' income level, where some are not able to effectively access the centers for treatment due their their low income status. The poor patients are highly hindered them from going to hospital by the lack of enough money to support to effectively pay the high cost of diagnostics tests and required medicines and actual cost of cancer services including doctors' fees highly hindered them from receiving services. There are undeclared indirect costs such as loss of work productivity as well as hindered, which hindered hospital appointments. These costs highly discourage patients from

accessing the specialized healthcare services centers and lead to low uptake of oncology tertiary healthcare services in Uasin Gishu.

The study concludes that the location of oncology services negative low significant relationship with uptake of oncology tertiary healthcare services in Uasin Gishu County. Closeness to the tertiary healthcare services ensures convenience to access the services from the specialized healthcare. However, patients residing long distances away from the healthcare facilities find it hard to access the specialized healthcare service, hindering them from their appropriately attending to their appointment schedules. Also, lack of adequate and appropriate means of transportation as well as the high cost of transport makes it difficult for them to access services. There is need for adequate specialists at the specialty centers to ensure actualization of the treatment schedules and ensuring that patients are diagnosed appropriately. Sometimes the patients are diagnosed late, hindering further interventions required. There should be sufficient oncology tertiary healthcare service centers or service to accommodate the surrounding population.

The study concludes that the acceptability of oncology services has a moderate significant positive effect on uptake of oncology tertiary healthcare services in Uasin Gishu County. For acceptability of oncology services to positively influence the uptake of oncology tertiary healthcare services, there should be adequate screening services for patients in their visits, patients should be informed and diagnosed with cancer early enough, there should be adequate oncology staff to manage all patients waiting for services. Enough skill staff would appropriate short waiting time at the health center. The specialized health cares should provide patients and other people with adequate education to positively improve uptake of oncology tertiary healthcare services in Uasin Gishu County.

The study concludes that the availability of oncology tertiary healthcare services has positive low significant relationship with uptake of oncology tertiary healthcare services in Uasin Gishu County. The availability of oncology tertiary healthcare services would highly and positively affect the uptake of oncology tertiary healthcare services; making specialized healthcare services readily accessible, specialized healthcare having adequate capacity to administer the necessary help in the facilities, and providing patients with recommended

specialist oncology services at the hospital. The patients should be able to attend their entire hospital schedule when residing at convenient location. This would be made possible by increased density of oncology specialised healthcare services to serve all the patients visiting the hospital and adequate skilled oncology personnel in the unit. The sufficiency of technology (drugs, equipment) very highly affects the uptake of oncology tertiary healthcare services in Uasin Gishu County positively.

The study reveals that at 0.05 (5%) level of significance, there exists a significant relationship between each of; affordability of oncology services, location of oncology services, acceptability of oncology services, and availability of oncology tertiary healthcare services and uptake of oncology tertiary healthcare services in Uasin Gishu County since the p-value for each was less than 0.05. Affordability of oncology services is highly and significantly related to and uptake of oncology tertiary healthcare services in Uasin Gishu County while there is a moderate significant relationship of between acceptability of oncology services and uptake of oncology tertiary healthcare services in Uasin Gishu County. However, the relationship between each of; availability of oncology tertiary healthcare services and location of oncology services and uptake of oncology tertiary healthcare services in Uasin Gishu County is low.

4.2 Recommendations

The made recommendations based on study findings as well as for future research, which are contained in this section.

4.2.1 Recommendations on research findings

The study suggested policy recommendation.

Firstly, the study recommends that since health is devolved function, the county government of Uasin Gishu should seek provide affordable oncology services through establishment of partnership programs such as the Public Private partnership (PPP) and stakeholder participations for improving the quality, affordability, and efficiency of its service delivery. The county government should encourage stakeholder participations. Stakeholder participation strategy would allow for active involvement of the county residents in making decision on how to raise

funds for needy oncology patients, identification of deserving patients and active management of the funding.

Secondly, the study recommends that the county in collaboration with; the national governments, Community Based Organisations (CBOs) and Non-Governmental Organisations (NGOs) establish mobile oncology clinics. Since these clinics will be visiting the areas of residence, they would contribute towards reduction of long distance travelled by the patients accessing specialized healthcare services in Uasin Gishu County. Importantly, the collaborations should have awareness and sensitization wing which would provide education to the county residents sensitize on the need for regular screening. During these sensitizing meeting, the team should as well carry out public oncology screening. This provide for early diagnosed of any identified patients for further interventions at the early stages.

Thirdly the study recommends that the county government of Uasin Gishu should build trust on its residents on the oncology service delivery through provision of frequent and adequate screening services.

Lastly, the study recommends that the county government should improve availability of oncology tertiary healthcare services by ensuring; its effectiveness, it is readily accessible, adequate capacity to administer the necessary help; there is adequate skilled oncology personnel in each center, and sufficient technology (drugs, equipment). using resource management skills.

4.2.2 Recommendations for further study

The study established that 81.92% of variation in Uptake of oncology tertiary healthcare services in Uasin Gishu County is explained by; affordability of oncology services, acceptability of oncology services, and availability of oncology tertiary healthcare services. This means there are other factors contributing to 18.08% of variation in uptake of oncology tertiary healthcare services in Uasin Gishu County. So, other studies should be conducted to establish the other factors contributing to 18.08% of variation in uptake of oncology tertiary healthcare services in Uasin Gishu County.

This study established the development of uptake of oncology tertiary healthcare services in

Uasin Gishu County was influenced by; affordability of oncology services, location of oncology services, acceptability of oncology services, and availability of oncology tertiary healthcare services. However, the study fell short of explain the extent to which location of oncology service affects the uptake of oncology tertiary healthcare services in Uasin Gishu County. So other studies should be conducted to establish the level at which location of oncology service affects the uptake of oncology tertiary healthcare services in Uasin Gishu County.

The study was conducted in Uasin Gishu County one of the 46 county in Kenya. This rendered the generalisation of the study to the entire republic of Kenya difficult. Therefore other studies should be conducted on the factors influencing access to oncology specialized healthcare services in amongst the Kenyan counties.

CONSENT

All patients diagnosed with cancer who would give an informed consent.

All Under 18 years whose caregivers gave consent on their behalf.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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