

# Palliative Care Needs of Patients With Advanced Heart Failure at a Cardiac Care Unit in Mtrh, Kenya: A Census Study

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## Research Article

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# Abstract

## Background

A growing problem in Sub-Saharan Africa is Heart Failure. In its advanced stages, heart failure causes significant morbidity and is a frequent cause of mortality. As the illness progresses, a lack of physical health may overshadow psychological, social, and existential distress.

## Objective

To assess the Palliative Care needs of patients with Advanced Heart Failure at the Cardiac Care Unit (CCU) in Moi Teaching Referral Hospital (MTRH).

## Methods

A Census study design was carried out at CCU in MTRH for patients with Advanced Heart Failure. Structured questionnaires and the use of the Africa Palliative Care Association Palliative Care Outcome Scale (APCA POS) tool were used to collect data. The study population involved patients 18 years of age and older who were hospitalized at the Cardiac Care Unit in MTRH with Advanced Heart Failure. SPSS software version 23.0 was employed to analyze the data in this study to determine any relationships between variables based on data obtained from questionnaires. Bivariate analysis with Pearson's chi-square test was used to compare the proportions. A P value of  $< 0.05$  was considered statistically significant at the 95% Confidence Interval. The significant variables were then subjected to Multi-variate logistic regression for further analysis of the association of satisfaction with the care they received. The participant's autonomy and anonymity were maintained, and any information shared by them was confidential.

## Findings:

A convenience sample of 20 patients completed the questionnaire, with a response rate of 100%. Their mean age was 54.5 years, ranging from 40 to 80 years. More than half of them were male (60%). Nearly all of the participants have co-morbidities; Hypertension was the most common (35%), and they were casual workers with an income of Ksh 10,000–20,000 monthly living more than 20 kilometers away from a health care facility (MTRH), with a diagnosis of advanced heart failure NYHA Class III (65%). They had been hospitalized  $2.75 \pm 1.21$  times over the past 12 months. Information, help, and advice significantly predicted patients' satisfaction,  $F(2, 18) = 128.466$ ,  $p < 0.001$ , which indicates that information, help, and advice can play a significant role in shaping patients' satisfaction ( $\beta = -0.252$ ,  $p < .001$ ). These results clearly show the positive effect of the information, help, and advice given to the patient and caregivers. Moreover, the  $R^2 = .877$  indicates that the model explains 87.7% of the variance in patients' satisfaction.

# Conclusion

This study suggests that patients would benefit from holistic care, such as a palliative approach that is aimed at providing multidimensional symptom management. A palliative approach to services should be provided alongside heart failure management. Because of this, patients with heart failure and those who are caring for them require all-encompassing palliative care interventions that address more than just physical symptoms to assist them throughout the entire process.

## Recommendation:

To address the demands that are still not being satisfied by the conventional approaches to heart failure care, future research efforts must concentrate on creating and testing interventions with heart failure patients and their caregivers in a range of care delivery settings.

## Background Information

Palliative care (PC) is an approach that enhances the quality of life for patients and their families facing problems associated with life-threatening illnesses by preventing and relieving suffering through the accurate assessment, early detection, and treatment of pain as well as other issues such as physical, psychosocial, and spiritual problems (WHO, 2006). Palliative care is traditionally viewed as being the intense care of a patient who is close to death. Patients with end-stage organ failure who may live for many years now are included in the scope of palliative treatment (Sanderson & Tieman, 2010).

According to a report by Kenya Hospices Palliative Care Association (KEHPCA, 2021), Kenya already has an overburdened health infrastructure, palliative care services have not been scaled up enough, 30% of people experience income loss, 5% need counseling support, and 7% need other forms of support (White et al., 2004). According to the 2018 Kenya Health Facilities Assessment, only 3% of health facilities in Kenya provide palliative care services, making them scarcely accessible. In addition, the study revealed that only 5% of hospitals that provide palliative services had a mean availability of tracer goods for palliative care, such as morphine. Furthermore, just 7% of the establishments that claimed to provide palliative care services had all the tracer items (1). Currently, people who require palliative care can obtain these services through hospices, public institutions, faith-based facilities, and community-based organizations. According to the Kenya Palliative Care Policy, (2021–2030 (2021)), there are approximately 137,700 patients who require palliative care in Kenya. However, given that each patient may have two additional family members or volunteers who need support, the total population in need is probably closer to 413,000.

Heart failure (HF) is a chronic condition with a median life expectancy of 2.1 years after diagnosis (2). Heart failure patients frequently endure a gradual reduction in physical function and an increase in symptom severity (3). Although heart disease-related mortality has not increased much since 1990 in developed nations, they have increased by 66% in low- and middle-income nations (4). Congestive heart

failure (CHF) is one of the chronic conditions with the greatest mortality and rehospitalization rates, which reduces life expectancy (5). Patients frequently need palliative care (PC) to alleviate suffering and enhance quality of life due to the peculiarities of their diseases. Advanced CHF patients frequently experience a variety of physical and psychological problems (5). According to the clinical perspective, CHF is less of an occurrence of abrupt death and more of a steady loss in heart function with distinct periods of acute deterioration (6) (5). It affects 2-5% of persons between the ages of 65 and 75 and more than 10% of those who are 80 years and older (5). Despite the poor prognosis, the patient frequently undergoes vigorous treatment (6).

Heart failure (HF) causes a significant clinical, societal, and economic cost regardless of the underlying etiology. Although some population statistics suggested that the epidemiologic burden of HF may have significantly decreased between 2000 and 2010 (7). This trend could not be confirmed in other continental or nationwide surveys, which showed that both the incidence and prevalence of HF might be rising, possibly due in part to a constantly expanding proportion of the population aged 70 years or older (8). In a world presently beset by an unparalleled economic crisis, an accurate assessment of epidemiologic trends is essential for maximizing the allocation of healthcare resources (9).

With the introduction of new medications, monitoring technologies, and device therapies, the area of heart failure has entered a new age after a protracted period of rather stagnant treatment options (10). Heart failure (HF) is still a fatal, progressive disease with severe symptoms that throws many demands on patients, caregivers, and healthcare systems, despite advancements in cardiac therapy (10). Heart failure is becoming more of a problem in Sub-Saharan Africa. Unfortunately, there is little data to support and expand services due to the paucity of research on patients' needs and experiences with care. Early on in the course of the illness and throughout all stages of heart failure can benefit from palliative care, which is frequently used in conjunction with other life-extending treatments (10).

However, there are several reasons why the integration of palliative care into the management of heart failure hasn't worked out as well as it could have: uncertainty about the course of the disease, a lack of recognition for patient-provider communication, silos of care, ignorance, the combination of co-morbidity and frailty, complex trade-offs associated with life-saving devices, and a dearth of research. (10) In this study, the palliative care needs of patients with advanced heart failure at the CCU in MTRH were assessed.

## Methods

This chapter presented a description and inferential statistics as the sources of data, sample selection, data quality, and the analytical tool used in this study to yield the necessary conclusions of palliative care needs of patients with advanced heart failure at the CCU in MTRH. A Census study in which quantitative methods were used to collect relevant data due to the low number of monthly-admitted patients, approximately 20 – 40 patients per month. The study was conducted over 2-month period. The research process involved primary data collection using structured questions (Social- demographic) and the Africa

Palliative Care Association Palliative Care Outcome Scale (APCA POS) tool. SPSS software Version 23.0 data analysis was employed in this study to determine any relationships between variables from data obtained from questionnaires. The results of the analysis are displayed as frequencies, percentages, tables, and graphs.

The study was conducted at Moi Teaching and Referral Hospital, Uasin Gishu County Kenya. Cardiac Care Unit (CCU) has a maximum bed capacity of 14 beds: (Step up; patients on monitors, accommodating ten beds, step down; side room for stable patients and those awaiting discharge accommodating four beds). Most cardiac patients admitted have Rheumatic Heart Disease (RHD), with monthly admission of approximately 20 to 40 patients (MTRH Health Information Statistics 2022).

## Results

### Respondents' Characteristics

A convenience sample of 20 patients completed the questionnaire, with a response rate of 100%. Their demographic and clinical characteristics are shown in Table 1. Their mean age was 54.5 years, ranging from 40–80 years. More than half of them were male (60%). The majority of them received primary education or above and were living with family or caregivers were family members. Nearly all participants had co-morbidities. Hypertension was the more frequent 35% and were casual workers with an income of Ksh 10,000 – 20,000 monthly living more than 20 kilometers away from a health care facility (MTRH). With a diagnosis of advanced heart failure, NYHA Class III (65%), who were hospitalized for  $2.7 \pm 1.21$  times over the past 12 months with 65% dissatisfaction with the care and 35% satisfied with the care they received.

**Table 1 Respondents' characteristics (n = 20)**

VARIABLES	FREQUENCY	PERCENTAGE
<b>Gender</b>		
Male	12	60
Female	8	40
<b>Age</b>		
40-50 years	7	35
50-60 years	7	35
Above 60 years	6	30
<b>Marital Status</b>		
Single	2	10
Married	15	75
Divorced	3	15
<b>Relationship with the caregivers</b>		
Wife	5	25
Husband	3	15
Child	3	15
Sibling	6	30
<b>Occupation</b>		
Casual worker	10	50
Self-employed	3	15
Government of Kenya	3	15
Non-Government Organization (NGO)	1	5
Retired	3	15
<b>Income (monthly)</b>		
5K– 10K	2	10
10K – 20K	10	50
30K– 40K	4	20
50 K– 60K	2	10
Above 60K	2	10

<b>Level of formal education</b>		
No Formal Education	2	10
Primary level	8	40
Secondary level	2	10
Diploma level	4	20
Degree level	4	20
<b>Distance to a healthcare facility</b>		
More than 20Km	20	100
<b>NYHA Class</b>		
Class III	11	55
Class IV	9	45
<b>Number of admission within the last 12 months</b>		
2	8	30
1	6	40
3	5	25
5	1	5
<b>No children/regular household members</b>		
1	2	10
2	4	20
3	3	15
5	6	30
8	2	10
10	1	5
12	2	10
<b>Any other Comorbidity</b>		
Hypertension	7	35
Others	6	30
None	2	15
COPD	3	10

Renal Insufficiency	1	5
Diabetes Mellitus	1	5
<b>Are you satisfied with the care you have received?</b>		
Yes	7	35
No	13	65

## Patient Satisfaction Score

**The Problem:** To investigate if help, advice, and information given to patients and families/caregivers have a significant impact on patient satisfaction with care.

**Hypothesis: H<sub>1</sub> /H<sub>2</sub>:** There is a significant impact of help and advice and information given on patients' satisfaction

The hypothesis test if the information given carries a significant impact on patient's satisfaction with care. The dependent variable "Are you satisfied with the care you have received?" was regressed on predicting the variable "How much information have you and your family been given?" to test hypothesis H<sub>1</sub>. Information significantly predicted patients' satisfaction,  $F(2, 18) = 128.466$ ,  $p < 0.001$ , which indicates that the information can play a significant role in shaping patients' satisfaction ( $\beta = -0.252$ ,  $p < .001$ ). These results direct the positive effect of the information. Moreover, the  $R^2 = .877$  depicts that the model explains 87.7% of the variance in patients' satisfaction. Table 2 shows the summary of the findings.

**Table 2: Patient's Satisfaction score**

Hypothesis	Regression Weights	$\beta$ Coefficient	$R^2$	F	t-value	p-value	Hypotheses supported
H1	Information Satisfaction	-0.252	0.877	128.466	39.589	.000	Yes

The hypothesis test is if help and advice are given to carry a significant impact on patient satisfaction with care. The dependent variable "Are you satisfied with the care you have received?" was regressed on predicting variable "Have you had enough help and advice for your family to plan for the future?" to test hypothesis H<sub>2</sub>. Help and advice significantly predicted patients' satisfaction,  $F(2, 18) = 128.466$ ,  $p < 0.001$ , which indicates that help and advice can play a significant role in shaping patients' satisfaction ( $\beta = -0.252$ ,  $p < .001$ ). These results direct the positive effect of help and advice. Moreover, the  $R^2 = .877$



depicts that the model explains 87.7% of the variance in patients’ satisfaction. Table 3 shows the summary of the findings.

**Table 3: Patients Satisfaction Score**

Hypothesis	Regression Weights	$\beta$ Coefficient	R <sup>2</sup>	F	t-value	p-value	Hypotheses supported
H <sub>2</sub>	Help and advice Satisfaction	-0.252	0.877	128.466	-11.334	.000	Yes

## Poorly Controlled Psychosocial-Spiritual distress

Beyond depression and anxiety, the psychosocial-spiritual background of HF seemed understudied (11). The HF experience is characterized by a great deal of uncertainty, existential distress, and adaptation to altered social and occupational roles. Patients who are contemplating cutting-edge treatments like heart transplantation and ventricular assist devices (VAD) experience additional worries as they prepare for or learn to adjust to a new way of life after receiving them. In addition to restrictions on their roles, patients also encounter a wide range of social support and the availability of informal caregivers (such as friends, spouses, and children) (12). Patients with HF who are in poor health report worse spiritual well-being than those with metastatic lung and pancreatic cancer (13).

Table 4 below finding in corresponding to research done by Cagle *et al*/in 2017, Hooker *et al*/ 2015, and Bekelman *et al*/ 2009, which supports that psychological-spiritual distress was not addressed. The majority, 65% of the respondent were overwhelmingly worried about their illness, 25% most of the time, and 10% were sometimes worried.

**Table 4: Worried about their illness**

Have you been feeling worried about your illness in the last 3 days?		
Variables	Frequency	Percentage
Overwhelming worry	13	65
Most of the time	5	25
Sometimes	2	10

In addition, 35% were not able to share their feeling with their families/caregivers or friends, 30% occasionally share their feelings, 20% sometimes shared, 10% most of the time shared how they felt and

5% shared a bit of their feelings. Whereas 45% of the participant sometime felt their life is worthwhile, 30% not at all, 15% occasionally, 5% most of the time worthwhile and another 5% felt it was worthwhile. Subsequently, 50% of them were not at peace at all, 40% sometimes, and 10% a bit. Table 5 summarizes the results.

**Table 5: Poorly Controlled Psychological-Spiritual Distress**

Variables	No, not at all	A bit	Occasionally	Sometimes	Most of the time	Yes, all the time	Total
Over the past 3 days, have you been able to share how you are feeling with your family or friends?	35%	5%	30%	20%	10%	0%	100%
Over the past 3 days, have you felt that life was worthwhile?	30%	0%	15%	45%	5%	5%	100%
Over the past 3 days, have you felt at peace?	50%	10%	0%	40%	0%	0%	100%

## Palliative Needs of Caregivers of Patients with Heart Failure

**Table 6: Model Coefficients**

Model Coefficients						
Predictor	$\beta$ Coefficient	R <sup>2</sup>	F	t-value	p-value	Hypotheses supported
(Constant)	.			4.02	0.001	
Information given	1.11	0.922	62.851	-12.248	0.00	Yes
How confident does the family feel cared for?	0.287	0.922	62.851	2.623	0.018	Yes
worried about the client	0.022	0.922	62.851	0.246	0.809	No

a. Dependent Variable: Are you satisfied with the care you have received

Multiple regression analysis was used to determine if the information is given, how confident the family feels cared for, and families/caregivers worry about the client influence patients' satisfaction of care. The results show that information is given, how confident the family feels caring for and families/caregivers worry about the client accounts for 92.2% of the variance in patients' satisfaction with care. Moreover, the results also show that "Has the family been feeling worried about the client over the last 3 days?" do not impact patients' satisfaction of care ( $\beta=0.022, p = n.s$ ), while "How much information have you and your family been given?"  $F(3, 17) = 62.851, \beta = 1.11, p < 0.001$  and "How confident does the family feel caring for?"  $F(3, 17) = 62.851, \beta = 0.287, p < 0.05$  is positively associated with patient satisfaction with care. Table 6 shows the summary of the findings.

## Discussion

## Introduction

A convenience sample of 20 patients completed the questionnaire, with a response rate of 100%. Their demographic and clinical characteristics were recorded. Their mean age was 54.5 years, ranging from 40–80 years. More than half of them were male (60%). The majority of them received primary education or above and were living with family or caregivers were family members. Nearly all of the participants have co-morbidities, Hypertension was the most frequent 35% and were casual workers with an income of Ksh 10,000–20,000 monthly living more than 20 kilometers away from a health care facility (MTRH), with a diagnosis of advanced heart failure NYHA Class III (65%). Who hospitalized  $2.75 \pm 1.21$  times over the past 12 months with 65% dissatisfaction with the care and 35% satisfied with the care they received.

This study aimed to understand the Palliative care needs of patients with Advanced Heart Failure at the Cardiac Care Unit in Moi Teaching Referral Hospital. The results of this study support earlier studies' findings that patients with advanced HF have several severe symptoms (14) (15), but they also showed that other factors affect patients' quality of life in addition to their physical symptoms. Regression analysis was used to demonstrate a significant correlation. The item on patients' satisfaction seems to summarize the other four items that were all from the subscale of Physical, Social, Existential, and Psychological well-being. It appears that Social, Existential, and Psychological well-being is overarching as one of the patients' needs with advanced HF. Hence, symptom management is considered fundamental care to promote patient comfort, but in addition to symptom control, social, spiritual, and psychological care is equally important in palliative care for patients with advanced HF.

## Patient Satisfaction

One of the illnesses leading to extreme health-related distress that could benefit from PC therapies is HF. To improve the quality of life for patients with HF, many cardiology and PC societies advise including PC in their care (16) (17). Several of them expressly state that this integration should occur regardless of the disease's stage, which is in line with patients and their loved ones' preferences for PC made available as soon as possible after the onset of their disease (18). Notwithstanding this information, patients with HF

still only have limited access to PC, given despite recommendations extremely late in the course of the disease and for a little length of time, typically in the days before death.

The hypothesis test in this study shows that if the information is given, help and advice carry a significant impact on patient satisfaction with care. The dependent variable "Are you satisfied with the care you have received?" was regressed on predicting variables "How much information have you and your family been given?" and "Have you had enough help and advice for your family to plan for the future?" to test the hypothesis. Information  $F(2, 18) = 128.466$ ,  $p < 0.00$ , help and advice  $F(2, 18) = 128.466$ ,  $p < 0.001$ , significantly predicted patients' satisfaction, which indicates that the information, help, and advice can play a significant role in shaping patients' satisfaction ( $\beta = -0.252$ ,  $p < .001$ ). These results direct the positive effect of the information, help, and advice. Moreover, the  $R^2 = .877$  depicts that the model explains 87.7% of the variance in patients' satisfaction.

Healthcare workers can reduce many of the pressures associated with the life-threatening diagnosis of heart failure by anticipating and attending to patients' needs. With an emphasis on anticipating and meeting patient needs, this study emphasizes numerous kinds of requirements that address a comprehensive approach to palliative care. A more conventional palliative care paradigm that just tackles physical symptoms and only aims to provide comfort care will continue to leave many of the demands identified by the study participants unsatisfied. For instance, helping a patient deal with their illness-related anxiety and depression early in the disease process may help them manage the inevitable stress of psychological disorders that frequently comes along with the experience of heart failure. Patients are more equipped to make decisions that are in their family's best interests when kept informed and educated about treatment alternatives in terms they can understand. In addition to avoiding having to make these choices under the pressure of an exacerbation, encouraging and facilitating discussion of delicate subjects like advance directives and end-of-life care during periods of medical stability may assist patients in considering their preferences.

Patients with heart failure, therefore, require comprehensive palliative care interventions that address more than just physical symptoms to support them throughout the entire experience.

## Poorly Controlled Psychological-Spiritual distress

With advanced HF, commonly undervalue or even ignore the psychosocial burden and spiritual comorbidities. Given the relatively long projected survival in our sample and the potential effects of such interventions on cardiac outcomes, it may be tough to differentiate between the varied indications for PC and other person-centered modalities of care (such as psycho-cardiological treatment, psychosocial treatment, or collaborative care) (19).

The finding from this study corresponding to research done by Albus *et al*, 2019 supports that psychological-spiritual distress was not addressed. As per the study, 65% of the respondent were overwhelmingly worried about their illness, 25% most of the time, and 10% sometimes worried. In

addition, 35% were not able to share their feeling with their families/caregivers or friends, 30% occasionally share their feelings, 20% sometimes shared, 10% most of the time shared how they felt and 5% shared a bit of their feelings. Whereas 45% of the participant sometime felt their life is worthwhile, 30% not at all, 15% occasionally, 5% most of the time worthwhile and another 5% felt it was worthwhile. Subsequently, 50% of them were not at peace at all, 40% sometimes, and 10% a bit.

A significant number of HF patients meet the requirements for "specialized PC," according to the study. The highest need for additional supportive care may exist among the various HF cohorts. PC services offered care by using a comprehensive and tailored strategy to treat spiritual distress in advanced patients, which may help effectively minimize the psycho-spiritual demands using the interdisciplinary approach, including input from pastoral workers and social workers.

## Palliative Needs of Caregivers of Patients with Heart Failure

As the patient's condition starts to deteriorate gradually from heart failure, family caregivers play a bigger and bigger role. While partners in providing care for people with heart failure, caregivers continue to be a significant source of support, few studies have explained the caregiver's experience, particularly as the illness progresses. Along with dealing with the physical signs of heart failure, partners also have to deal with the stress brought on by uncertainty about the future, a sense of loss of control over their lives, and grief at the loss of the patient's health condition (20).

The following information needs identified heart failure symptoms and management, disease progression, insufficient information, obstacles to ineffective information, and suggestions for improvement. The families/caregivers surveyed for this study reported limited knowledge about heart failure symptoms and management. Multiple regression analysis was used to determine if the information is given, how confident the family feels cared for, and families/caregivers worry about the client influence patients' satisfaction of care. The results show that information is given, how confident the family feels caring for and families/caregivers worry about the client accounts for 92.2% of the variance in patients' satisfaction with care. Moreover, the results also show that "Has the family been feeling worried about the client over the last 3 days?" do not influence patients' satisfaction with care ( $\beta = 0.022, p = n.s$ ). While "How much information have you and your family been given?"  $F(3, 17) = 62.851, \beta = 1.11, p < 0.001$  and "How confident does the family feel caring for?"  $F(3, 17) = 62.851, \beta = 0.287, p < 0.05$  is positively associated with patient satisfaction of care.

A substantial gap in meeting the palliative care needs of patients with heart failure is suggested by the fact that none of the patients or their caregivers had discussed expectations about how the disease would proceed or desires for the end of life with their healthcare professionals. This study acknowledged that it prioritized the technological components of the illness while ignoring the psychosocial requirements of the patients and their families.

Families of patients with heart failure are especially sensitive to the idea that caregivers are also care recipients and require palliative care measures. The demonstration made shows that improving heart failure self-care involves both the patient and the caregivers in communication and care decisions. In reality, caregivers report having a favorable experience providing care when the patient paid them attention, provided information, and appreciated their strength and value. The same lack of support and being kept at a distance by the patient were associated with unpleasant experiences in providing heart failure care (21).

Research indicating caregivers' concerns, significance in the provision of care, and impact on patient outcomes when not taken into account by health care providers, other family members, and friends is highlighted by the finding in these studies. Yet, research has demonstrated that family caregivers are a significant factor in patient outcomes.

## Conclusions

Heart failure is still an insidious illness with a variable course. The experiences of different patients will not be identical. Nonetheless, these data show that, regardless of whether the patient is experiencing a period of medical stability or exacerbation, there are consistent categories of requirements that emerge throughout the heart failure trajectory. Because of this, patients with heart failure and those who are caring for them require all-encompassing palliative care interventions that address more than just physical symptoms to assist them throughout the entire process. To address the demands that are still not being satisfied by the conventional approaches to heart failure care, future research efforts must concentrate on creating and testing interventions with heart failure patients and their caregivers in a range of care delivery settings.

## Abbreviations

**AIDS** – Acquired Immune Deficiency Syndrome

**APCA POS**- Africa Palliative Care Association Palliative Care Outcome Scale

**CCU**- Cardiac Care Unit

**CHF**- Congestive Heart Failure

**HF**- Heart Failure

**IREC**- Institutional Research Ethics Committee

**KEHPCA**- Kenya Hospice and Palliative Care Association

**MTRH**- Moi Teaching and Referral Hospital

**PC-** Palliative Care

**SSA-**Sub Sahara Africa

**WHO-** World Health Organization

## Declarations

**Ethical approval and consent to participate** “Ethical approval was granted by the Moi Teaching and Referral Hospital– Moi University ethics and research committee (reference number IREC/236/2022). Informed consent was obtained from all the participants and/or their LAR. The study was conducted in accordance to relevant guidelines and regulations.”

**Consent for publication** "Not applicable"

**Availability of data and materials:** The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

**Competing interests:** the authors declare that they have no competing interests

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**Authors’ contributions:** Mr. David Lubanga Wamukobole provided professional writing services or material, analyzed and interpreted the patient data, and Dr. Hussein Elias and Mr. Mainard Shikanga read and approved the final manuscript.

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Figures

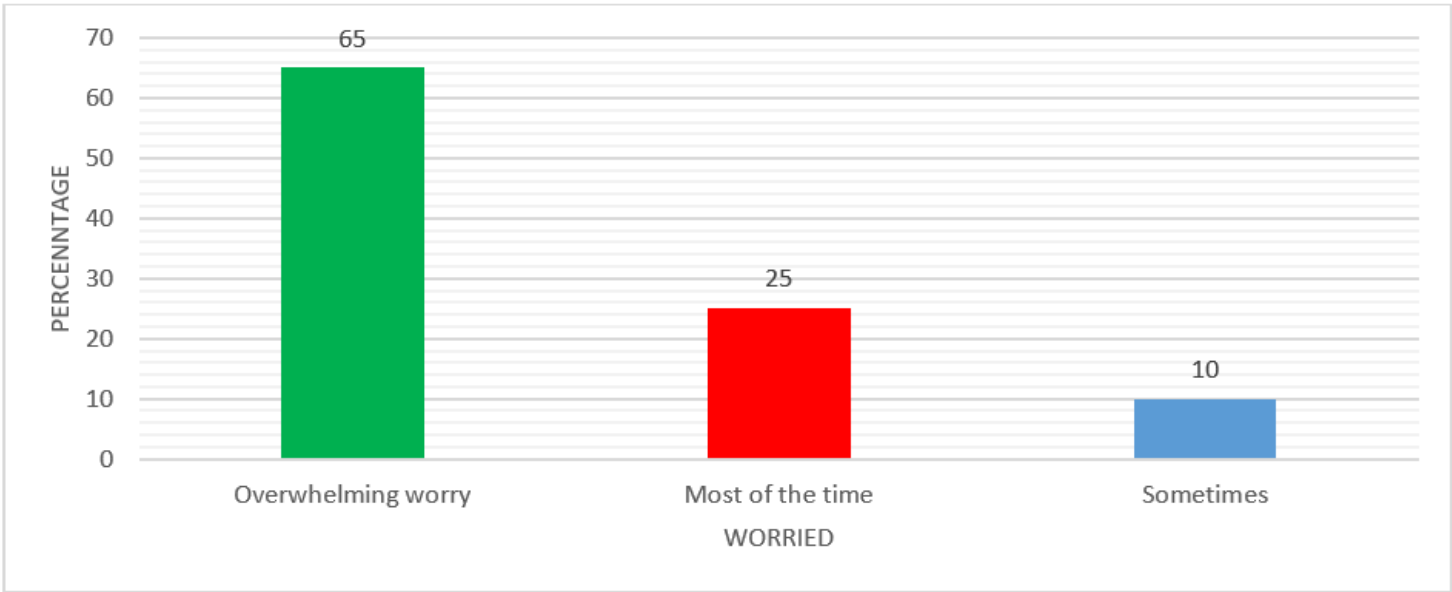


Figure 1

Worried about their illness