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Quality of Life and Symptom Burden Following Depression Screening and Treatment among Patients Living with Cancer at Kamuzu Central Hospital in Malawi: A Comparison of Two Treatment Models

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Abstract

Background: Cancer is commonly associated with depression and depressive symptoms. Depressive disorders often worsen over the course of cancer treatment, persist after cancer therapy, recur with the recurrence of cancer and impact on function and medical outcomes. We aimed at assessing whether depression management could happen at the cancer center without referral to the mental health clinic.

Methods and materials: We conducted a quasi-experimental study for screening and treatment of depressive symptoms among patients living with cancer, who were attending oncology services at Kamuzu Central Hospital between May, 2021 and August, 2022. The intervention arm had screen and treat for depressive symptoms as an integrated approach to cancer care within the study site while the comparison arm had screen and refer patients diagnosed with depressive symptoms to usual mental health clinic. Patients were followed-up for six months and health related quality of life was measured using Euroqol-5 dimession-3 levels tool during each visit. Depressive symptoms were evaluated using the Patient Health Questionnaire-9.

Results: There were 214 participants in the study; 112 in the comparison and 102 in the intervention group. The majority (65%) were females and at least 36% of the participants were in the middle age group (26-45 years); 29% of the participants had unknown HIV status. Participants of high socio-economic status were twice more likely to report poor quality of life than those with lower socio-economic status 1.99 (95% CI: 1-12-3.53, p<0.02). Employed participants were less likely to report poor quality of life 0.62 (95% CI: 0.42-0.90, p<0.01). Poor quality of life was steadily declining with each successive clinic visit, 0.07 (95% CI: 0.05-0.10, p< 0.001) and there were similar patterns of improvement in quality of life between study arms, 1.06 (95% CI:0.73-1.54, p<0.77).

Conclusion: Depression screening and treatment could be integrated within the cancer care for improved quality of life in Malawi. While persons accessing care within hospital can benefit from HIV testing and referral for treatment if found HIV positive, Malawian cancer patients at Kamuzu Central Hospital might not have benefitted from these services as a handful of participants in our study had not been tested.

Keywords: Quality of life; Cancer; Depression

List of abbreviation

aOR: Adjusted Odds Ratio.
DSM-V: Diagnostic and Statistical Manual for Mental Disorders, 5th Edition.
EQ-5D-3L: Euro Quality of Life Group's 5-Domain Questionnaires 3 Levels.
HIV: Human Immunodeficiency Virus.
HRQOL: Health-Related Quality of Life.
KCH: Kamuzu Central Hospital.
LMICs: Low-and -Middle -Income Countries.
NCC: National Cancer Center.
PHQ-9: Patient Health Questionnaire-9.
QOL: Quality of Life.
ROC: Receiver Operating Characteristics Curve.
SCID: Statistical Clinical Diagnostic Interview.
UNAIDS: United Nations Program on HIV and AIDS.

Introduction

Cancer is often associated with depression and depressive symptoms [1]. In settings with active screening, depressive disorders were among the most prevalent and debilitating mental health disorders among patients living with cancer [2-5]. A 2021 systematic review from Low-and-Middle-Income-Countries (LMICs) reported a pooled prevalence of 21% for major depression among patients living with cancer [6]. At least 58% of patients living with cancer had reported depressive symptoms elsewhere [7]. Mejareh et al, reported an annual increase of 0.6% in depressive disorders among patients living with cancer worldwide [8]. Psychological distress including adjustment of problems, anxiety and depression occur at several points along the cancer trajectory and might be exacerbated by physical pain, treatment effects, family difficulties and financial concerns [7]. Depression comorbidities in patients living with cancer were often associated with poor health-related quality of life (HRQOL) [9]. Additionally, depressiveness even without manifest diagnosis of depression might have adverse effects on prognosis and quality of life in patients living with cancer [1]. Thus the importance of detecting and treating depressive symptoms among patients living with cancer aim not only in the relief of psychological distress and its impact on quality of life but also in reducing consequent health service and societal costs [7].

Depressive symptoms often worsen over the course of cancer treatment, persisting long after cancer therapy, recur with the recurrence of cancer and significantly impact on function and medical outcomes [10]. Unfortunately, most healthcare workers and patients perceive depression as an expected reaction to cancer; thus, depression could be easily underdiagnosed and undertreated in oncology practice [11]. Yet, whenever depressive disorders are correctly diagnosed and effective treatment provided, better prognosis is possible [12]. Antidepressants and psychosocial treatment options not only improve depressive symptoms in patients with cancer but also positively impact on response to chemotherapy, treatment adherence and quality of life [13].

Use of psychotherapy and pharmacotherapy as treatment options for depressive symptoms had shown to be effective in patients living with cancer. A meta-analysis of psychotherapeutic and psychopharmacological studies found consistent positive effects on patient outcomes among those with depressive symptoms [1]. In our study, fluoxetine was used for treating major depression based on the recommendation from Malawi Standard Treatment Guidelines (MSTG) [14]. Again, Friendship Bench (FB) was used as a form of psychotherapy [14]. Friendship bench was a brief psychological intervention delivered by trained personnel through individual problem-solving therapy [14-17]. Evidence from other clinical trials had shown that fluoxetine was well tolerated and significantly improved patient outcomes among people living with cancer when compared to the placebo group [9, 18].

Data on the pattern of quality of life among patients living with cancer in Malawi was almost non-existent. As such, our study was aimed at assessing whether depression screening could happen at the cancer center without referral to the mental health clinic. Understanding such approach could inform policies on health service delivery for improved quality of life outcomes in cancer [19, 20]. We hypothesized that integrated depression screening and treatment could yield similar results with referral to mental health clinic in improving quality of life during follow-up clinical visits among study participants.

Methods

Study design and setting

We conducted a quasi-experimental study for screening and treatment of depressive symptoms at National Cancer Center (NCC), Kamuzu Central Hospital (KCH) in Malawi. The study had two arms. The intervention group involved screening and treatment for depressive symptoms at NCC using an integrated approach. The comparison group followed standard practice whereby patients with suspected (after screening) of depression were referred to a mental health clinic at the KCH (outside the NCC). The NCC was the main public referral for oncology services in the central and northern regions of Malawi. By the time we conducted the study, the facility was only offering chemotherapy and palliative care services while radiotherapy services were not available. The facility had annual registration of at least 960 new cases of various cancer diagnoses. Initial clinic visits were scheduled for Mondays. From Tuesdays up to Thursdays were for chemotherapy treatment while Fridays were for patients' follow-ups. At the time of the study, the center had two radiation oncologists, one medical oncologist, four non-specialist medical officers and forty-eight nurses from the public service.

Study period

This study was conducted between May, 2021 and August, 2022. Patients were followed-up for six months. The study involved two oncology nurses who had no prior skills in mental health service provision to screen for depressive symptoms following a five-day induction on depression screening and management skills.

Measurement tools

Patients were screened as they reported to the cancer center. The participants meeting the criteria for depressive symptoms were enrolled into the study upon consenting. Participants were allocated to study arms without randomization. At each clinic visit, participants were administered Patient Health Questionnaire-9 (PHQ-9) and a Euro Quality of Life Group's 5-Domain Questionnaires 3 Levels (EQ-5D-3L) measurement tools. The principal investigator and the mental health instructor visited the cancer clinic at least once every two weeks during the data collection period. The participants on follow-up had mental health master cards (special patients forms

where depression treatment was documented) which formed part of personal files for continuation of care to patients. Based on patient's self-reported measures and the data collector's clinical assessment during PHQ-9 administration, decision support tools were available to continue or modify treatment, schedule follow-up, or refer a patient to a specialist or for counselling.

Patient Health Questionnaire-9 (PHQ-9)

The study used the PHQ-9 for screening depressive symptoms [21]. The PHQ-9 was previously validated in Malawi and additionally, it was successfully implemented in the general non-communicable diseases (NCDs) clinics in Malawi [16]. The tool rated each of the nine questions as contained in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-V) [22] and had scores ranging from 0 to 3 to generate total score of range between 0 and 27 [22, 23]. The tool was 100% concordant with DSM-5 diagnostic criteria and included diagnostic algorithm [24]. The cut-off score of ≥ 9 in PHQ-9 in this study was used to identify the probable major depressive disorder when compared with the Statistical Clinical Diagnostic Interview of the DSM (SCID) as the reference (gold standard) based on validation findings in Malawi [16]. The validation results had shown that the cut-off of ≥ 9 had a sensitivity of 85% and the specificity of 82% with an area under the ROC (receiver operating characteristic curve) area under curve (AUC) value of 0.91 (95% CI, 0.88 to 0.94) [16]. We classified study participants according to depressive symptom severity using reference ranges from the PHQ-9 score into: minimal or no depressive symptoms (0 - 4), mild depressive symptoms (5 - 9), moderate depressive symptoms (10 - 19), and severe depressive symptoms (PHQ-9 score 20 - 27) [16, 25].

Euro Quality of Life Group's 5-Domain Questionnaires 3 Levels (EQ-5D-3L)

Quality of life was measured using the EQ-5D-3L tool which had been previously validated in Malawi [26]. It was a widely used tool for estimating quality of life in critical care research because of its flexibility and user friendliness [27]. The instrument had two sections and the first part had 5 dimensions, namely: mobility; self-care; usual activities; pain/discomfort; and anxiety/depression. Each dimension has 3 levels: no problems, some problems, and extreme problems, with scores of 1, 2, and 3 representing each level, respectively. The respondents were asked to choose one level for each of the 5 dimensions that best described their own health state on the day of the interview [26]. The second section had a visual analogue scale (VAS), which was used for patients to self-rate their health state on a scale of 0 to 100, with 0 and 100 as the worst and best imaginable health state, respectively [26, 28].

Sample size and sampling strategy

The sample size was estimated using proportion of two independent samples to achieve 80% power, at the 5% significance level and based on assumption that a difference of 20% in proportions between arms in achieving remission of depressive symptoms would be statistically significant. We used purposive (non-probability) sampling for screening and allocating participants to study arms. There were 214 participants in the study; 112 in the comparison group and 102 in the intervention group.

Inclusion criteria: All adult patients aged above 18 years and had histologically confirmed cancer were included in the study.

Exclusion criteria: All patients who did not give consent and critically ill patients at the time of interview.

Exposure variables: Independent variables included the following: sociodemographic characteristics, cancer type, cancer stage, cancer treatment modality, and intention to treat cancer.

Outcome variables: The outcome variable was quality of life being measured as a binary outcome. For the purposes of interpretation of quality-of-life, scores were dichotomized into two levels namely: 'no problems' (level 1) and 'any problems' (levels 2 and 3) and logistic regression was used for analysis.

Data management

We used Stata statistical software version 14 for data cleaning and analysis. Socioeconomic status was generated as a single explanatory variable using factor analysis of five different variables namely: type of residence, house ownership, energy source; water source and type of toilet (flush toilet) because they were all indicators of socioeconomic profile and had ordinal entries. In factor analysis, first level explained largest proportion of total variance and assets that were more unequally distributed across the sample had higher weights. Those weights were used for each asset to generate factor scores. The higher the score indicated the higher the wealth status and from highest (1st quintile) to lowest (5th quintile). Therefore, the new variable SES was categorized into five categories namely: highest, higher, high, middle and low. Age was collected as a continuous variable but in the study was re-coded into a categorical age group variable: 18-25, 26-45,46-64 and above 45. Area of residence was renamed to urban and rural. Cancer diagnosis was replaced to the following categories: 1) Kaposi's sarcoma, 2) cervical cancer, 3) oesophageal cancer, 4) breast cancer and 5) others based on small numbers of cases and these included the following: non-Hodgkin's lymphoma, leukemia, penile cancer, prostate cancer, ovarian, renal cancer, lung cancer and (primary) bone cancer.

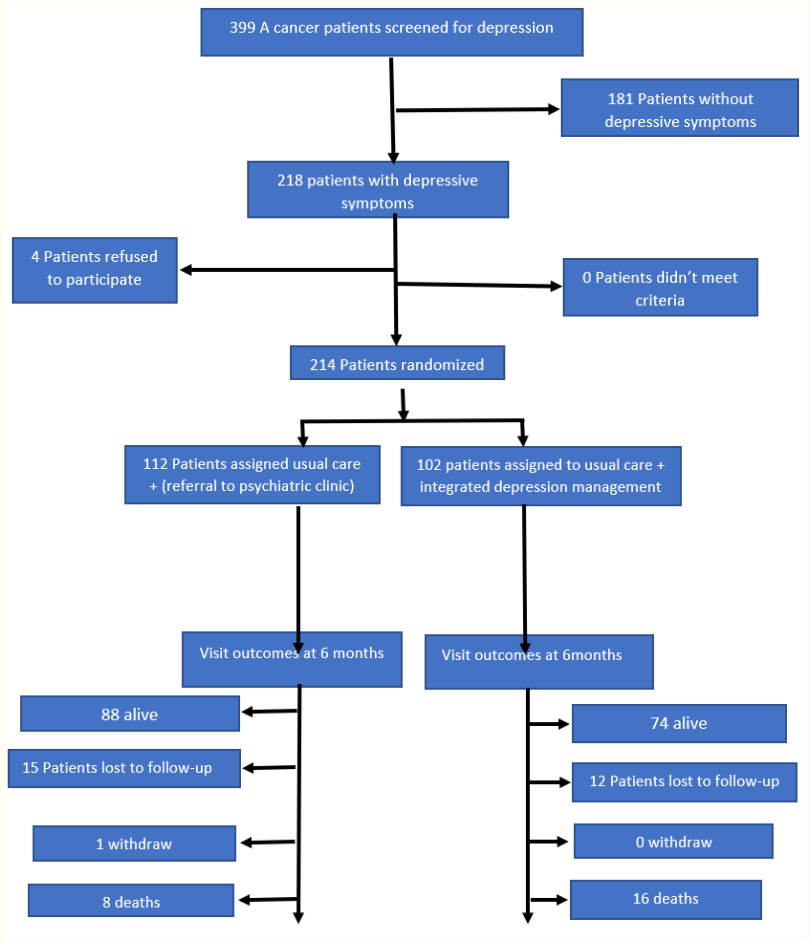

Figure 1: Schematic diagram of the visit outcomes at 6 months.

The sociodemographic characteristics were organized and presented as absolute numbers and percentages between arms for table one. The quality-of-life scores were analyzed and presented into histograms to show all the three levels per each of the five dimensions. Chi-square test was used to assess the association between quality of life and explanatory variables. An unadjusted logistic regression model was used to identify explanatory variables associated with quality of life. All significant explanatory variables ($p<0.05$) in the adjusted model were all fitted into multivariate logistic regression model using forward selection to determine factors independently associated with quality of life at $p<0.05$. The model was tested for sensitivity by the forward selection procedure with robust standard errors.

Sociodemographic characteristics

There were 138 female participants (65%) and 82 (38%) of the participants were in the middle age group (26-45 years). At least 131 (61%) of the participants were married. A higher proportion (71%) of the participants were from rural areas. There were 152 participants with known HIV status: 109 (51%) were HIV positive while 43 (20%) were negative. The study had 62 (29%) participants with unknown HIV-status. The commonest malignancy was cervical 71 (33%). About half of the participants were being treated with curative intent. The majority (67%) were on chemotherapy while 15% had underwent surgical treatment. None had received radiotherapy. Few patients were also using traditional remedies (10%) and spiritual intervention (28%) as shown in the table 1.

Characteristics	***Comparison arm***	***Experiment arm***	***Total***	***P value†***
	N (%)	***N (%)***	***N (%)***	
Total	112 (100)	102 (100)	214 (100)	
Sex				
Female	72 (64.2)	66 (64.71)	138 (64.49)	
Male	40 (35.71)	36 (35.29)	76 (35.51)	1.00
Age				
18-25	7 (6.25)	7 (6.86)	14 (6.54)	
26-45	40 (35.71)	42 (41.18)	82 (38.32)	
46-64	43 (38.39)	41 (40.20)	84 (39.25)	
≥65	22 (19.64)	12 (11.76)	34 (15.89)	0.462
HIV status				
Non-reactive	25 (22.3)	18 (17.65)	43 (20.09)	
Reactive	49 (43.75)	60 (58.82)	109 (50.93)	
Unknown	38 (33.93)	24 (23.53)	62 (28.97)	0.09
Marital status				
Single	5 (4.46)	13 (12.75)	18 (8.41)	0.119
Married	70 (62.5)	61 (59.8)	131 (61.21)	
Divorced	19 (16.96)	11 (10.78)	30 (14.02)	
Widowed	18 (16.07)	17 (16.67)	35 (16.36)	0.119
Employment				
No employment	67 (59.28)	54 (52.94)	121 (56.54)	
Employed	45 (40.18)	48 (47.06)	93 (43.46)	0.336
Socio-economic status				
Highest	23 (20.54)	26 (25.49)	49 (22.9)	
Higher	22 (19.64)	17 (16.67)	39 (18.22)	

High	25 (22.32)	16 (15.69)	41 (19.16)	
Middle	28 (25.00)	15 (14.71)	43 (20.09)	
Low	14 (12.5)	28 (27.45)	42 (19.63)	0.027*
Education				
None	30 (26.79)	27 (26.47)	57 (26.64)	
Primary	54 (48.21)	40 (39.22)	94 (43.93)	
Secondary	25 (22.32)	28 (27.45)	53 (24.77)	
Tertiary	3 (2.68)	7 (6.86)	10 (4.67)	0.323
Others	45 (40.18)	36 (35.29)	81 (37.85)	0.323
Area of residence				
Urban	29 (25)	34 (33.33)	63 (29.44)	
Rural	83 (74.11)	68 (66.67)	151 (70.56)	0.293
Cancer				
Kaposi's sarcoma	17 (15.18)	16 (15.69)	33 (15.42)	
Cervical	35 (39.25)	36 (35.29)	71 (33.18)	
Esophageal	5 (4.46)	4 (3.92)	9 (4.21)	
Breast	10 (8.93)	10 (9.8)	20 (9.21)	
Others	45 (40.18)	36 (35.29)	81 (37.85)	0.956
Intention of treatment				
Curative	38 (33.93)	33 (32.35)	71 (33.18)	0.54
Palliative	36 (32.14)	40 (39.22)	76 (35.51)	0.54
Chemotherapy				
No chemotherapy	42 (37.5)	29 (28.43)	71 (33.18)	0.191
Chemotherapy	70 (62.5)	73 (71.57)	143 (66.82)	0.191
Surgery				
No surgery	92 (82.14)	90 (88.24)	182 (85.05)	0.252
Surgery	20 (17.86)	12 (11.76)	32 (14.95)	0.252
Radiotherapy				
No radiotherapy	112 (100)	102 (100)	214 (100)	
Hormonal treatment				
No hormonal Rx	101 (90.18)	98 (96.08)	199 (92.99)	0.112
Hormonal Rx	11 (9.82)	4 (3.92)	15 (7.01)	0.112
Traditional remedies				
No traditional	104 (92.86)	89 (87.25)	193 (90.19)	0.25
Traditional	8 (7.14)	13 (12.75)	21 (9.81)	0.25
Spiritual				
No spiritual	88 (78.57)	64 (62.75)	152 (71.03)	0.015*
Spiritual	24 (21.43)	38 (37.25)	62 (28)	0.015

* Denotes statistical significance at p-value <0.05 (p-values from Pearson's Chi-square correlation) and confidence interval of 95%.

† Denote the p-values comparing two study arms.

Table 1: Sociodemographic characteristics of the study participants.

Pattern of quality of life between the study arms

At baseline, 33 (31%) of the participants were pain free while 67 (63%) had mild pain and only 7 (7%) had extreme pain in the comparison group. In the intervention arm, at least 29 (30%) had no pain, 58 (59%) had some pain and 11 (11%) had extreme pain. On follow-up at 6 months, 69 (81%) were pain free, 16 (19%) had mild pain while none had extreme pain in the comparison group. Similarly, 47 (72%) were pain free, 17 (26%) had mild pain and 1 (2%) had extreme pain in the intervention group as demonstrated in figure 2e.

During baseline, 68 (64%) had no difficulties in mobility, mild mobile problems were reported in 39 (37%) and none for extreme mobile problems in the comparison group. While 59 (60%) reported to have no mobility problems, 39 (40%) had mild problems and none had extreme difficulties in mobility in the intervention group. On follow-up, 76 (89%) had no problems, 9 (11%) had mild problems and none had extreme problems in the comparison group. While 61 (94%) had no difficulties in mobility, 4 (6%) had problems and none had extreme problems in the intervention group as shown in figure 2a.

On self-care, 83 (78%) had no problems, 21 (20%) had mild problems and 3 (3%) had severe difficulties for self-care in the comparison group. In the intervention group, 85 (87%) had no problems, 10 (10%) had mild problems and 3 (3%) had extreme problems. At six months of follow-up, 80 (94%) had no problems, 5 (6%) had mild problems and none had extreme difficulties in self-care in the comparison group while 62 (95%) had no problems, 3 (3%) had mild problems and none had extreme problems in the intervention group as presented in figure 2b.

Usual activity was not a problem to 46 (43%) of the participants, 49 (46%) had some problems and 12 (11%) in the control group at baseline. While 52 (53%) had no problems, 34 (35%) had mild problems and 12 (12%) had extreme problems in the intervention group. On follow-up, 52 (61%) had no problems in conducting usual activity, 33 (39%) had mild problems and none had extreme problems in the comparison group, while 43 (66%) had no problems, 20 (31%) had some problems and 2 (3%) had extreme problems in the intervention group as indicated in figure 2c.

On anxiety, 28 (28%) were not anxious, 68 (67%) were mildly anxious and 3(3%) were extremely anxious about the situation in the comparison group at baseline. While 37 (47%) were not anxious, 36 (46%) were mildly anxious and 5 (6%) were extremely anxious at baseline in the intervention group. On follow-up, 74 (87%) were anxiety free and 11 (13%) were mildly anxious in the comparison group. There were 58 (89%) participants were anxiety free, 7 (11%) had mild anxiety and none were extremely anxious in the intervention group as depicted in figure 2e.

On subjective scale (visual analogue scale), there was significant improvement on best imaginable health status from baseline; 29% in the comparison group and 28% in the intervention group had best imaginable health scenario. On six months of follow-up, 68% in comparison and 72% in the intervention group had best imaginable health status. This was supported by decline in the worst imaginable health status from baseline. At least 22% had worst imaginable health status in the comparison and 34% in the intervention group. On follow-up, 5% had worst scenario in the comparison group compared to the 27% in the intervention group.

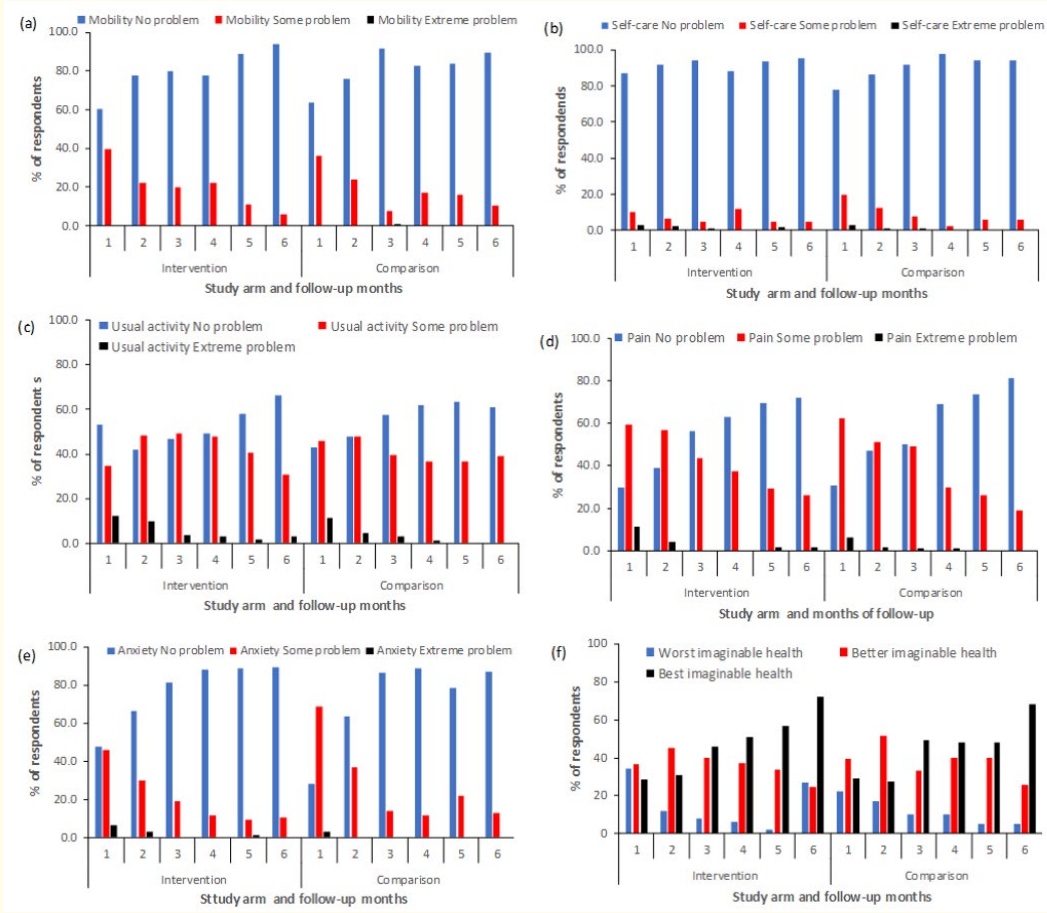

Figure 2: QOL measured using EQ-5D-3Lin five domains: a) mobility, b) self-care, c) usual activity, d) Pain, e) anxiety. The Visual Analogue scale measured the subjective component of patient self-evaluation of their quality of life in percentages.

Table 2: Quality of life regression analysis

There was no difference in quality of life between sexes and across all age groups. People of high economic status were twice more likely to report poor quality of life (aOR 1.99, p<0.02). Employed participants were less likely to report poor quality of life (aOR 0.62, p<0.001). There was no difference in the quality of life between treatment arms. Poor quality of life was steadily declining in both arms with each successive clinic visit, 0.07 (95% CI: 0.05-0.10, p< 0.001) and there was no difference between arms, 1.06 (95% CI:0.73-1.54, p<0.77).

Patient characteristics	*Crude*		*Adjusted Odds Ratio (aOR)*	
	OR (95%CI)	*P-value*	*OR (95%CI)*	*P-value†*
Gender				
Female	1.00		1.00	
Male	1.07 (0.78-1.46)	0.68	1.17 (0.79-1.72)	0.44
Age (in years)				
0-25	1.00		1.00	
26-45	0.64 (0.34-1.20)	0.16	0.68 (0.31-1.49)	0.34
46-64	0.72 (0.38-1.35)	0.31	0.73 (0.33-1.57)	0.42
65+	0.56 (0.28-1.13)	0.11	0.52 (0.22-1.23)	0.14
Residence				
Urban	1.00		1.00	
Rural	1.46 (1.06-2.01)	0.02	1.09 (0.72-1.95)	0.50
Sex				
Highest	1.00		1.00	
Higher	1.16 (0.74-1.81)	0.52	1.21 (0.68-2.16)	0.52
High	1.69 (1.09-2.64)	0.02	1.99 (1.12-3.53)	0.02*
Middle	0.81 (0.53-1.25)	0.35	0.76 (0.41-1.40)	0.38
Low	0.71 (0.45-1.09)	0.12	0.72 (0.37-1.40)	0.34
Employment				
Not employed	1.00			
Employed	0.71 (0.53-0.96)	0.03	0.62 (0.42-0.90)	0.01*
Month				
1	1.00		1.00	
2	14.03 (8.98-21.94)	<0.001	0.29 (0.20-0.43)	<0.001*
3	17.57 (11.11-27.76)	<0.001	0.14 (0.09-0.20)	<0.001*
4	16.59 (10.53-26.14)	<0.001	0.10 (0.06-0.15)	<0.001*
6	22.97 (15.31-34.47)	<0.001	0.07 (0.05-0.10)	<0.001*
Arm				
Comparison	1.00		1.00	
Experimental	0.98 (0.72-1.31)	0.87	1.06 (0.73-1.54)	0.77

* Denotes statistical significance at p-value <0.05 (p-values from Pearson's Chi-square correlation) and confidence interval of 95%. † Denote the p-values comparing two study arms.

Table 2: Factors associated with poor quality of life among study participants.

Discussion

Our study aimed at assessing whether depression management could happen at the cancer center without referral to the mental health clinic. We observed that at least half of the participants were HIV reactive, and this was not surprising considering that the top two common malignancies in Malawi were HIV-associated (Kaposi's sarcoma and cervical cancer) [29, 30]. Interestingly, all patients were already initiated on antiretroviral therapy (ART). This could have been explained by the model of test and treat for HIV and AIDS which the country had adopted since 2020 [31-33]. However, it was observed that 29% of participants had unknown HIV status. Giv-

en the robustness of HIV care program in Malawi where 90-90-90 United Nations Program on HIV and AIDS (UNAIDS) targets were achieved ahead of scheduled time [34]. It was surprising how such a high proportion of participants living with cancer would not have been tested for HIV before commencing on the cancer treatment [34-39]. Lack of policy for mandatory HIV/AIDS testing among cancer patients in Malawi could be contributory. However, HIV positivity did not affect the prevalence of depressive symptoms at baseline, despite that HIV could have influenced mental health development [17, 35, 40]. This could be due to the overwhelming impact of cancer on the development of depressive symptoms as it is considered more deadly [1, 7, 33] than HIV and AIDS now that the infection has become more chronic due to availability of antiretroviral therapy which had improved survival among the infected individuals [32, 38, 39].

The patter of quality of life showed that in all five domains of EQ-5D-3L scores, there was a steady decline in poor quality of life and a surge of improved quality of life in all five domains of QOL: mobility, self-care, usual activity, pain and anxiety and the pattern was similar between arms over time. This could mean that using lay health professionals (oncology nurses) to administer screening and treatment of uncomplicated depression was an effective approach which yielded similar results to those treated by using trained mental health providers and such results were consistent with other studies elsewhere [15, 41-46]. We also observed significant decline in symptomatology of depression in both arms. Apart from objective analysis of patients QOL, the subjective reports from patients had indicated improved QOL using visual analogue scale [43, 47, 48]. The participants were also well tolerated on the fluoxetine in managing depressive symptoms and this was supported by findings in other studies [5, 17]. Due to inadequate mental health providers and psychosocial counselors, the model of task shifting to provide an integrated depression screening and treatment had been used with satisfactory results in other disease programs such as HIV/AIDS and general NCDs clinics in Malawi [35]. This study had demonstrated that the model was equally effective among patients living with cancer.

Employed participants were less likely to report poor quality of life. This was expected considering that such grouping was likely to have stable earnings to support their lives and therefore could be protected from poor quality of life. Those findings were also consistent with results from other studies [49, 50]. None of the participants in the study was treated with radiotherapy because there were no radiotherapy services in the country at the time our study was conducted. The only available treatment modalities were: surgery, chemotherapy and palliative care services at the study site [37]. Our study was limited by short time of follow-up (6 months) in which case it was difficult to ascertain the long-term effects of depression screening and treatment on the survival outcomes. Usually, depression treatment needed to continue over 6 months; therefore, the 6-month follow-up period might be short to demonstrate various outcomes of depression treatment [47, 48].

Conclusion

Depression screening and treatment could be integrated within the cancer care for improved QOL. While persons accessing care within hospital can benefit from HIV testing and referral for treatment if found HIV positive, Malawian cancer patient at KCH might not have benefitted from these services as a handful of participants in our study had not been tested.

Availability of data and materials

All data relevant to the study are included in the article. All the datasets used and analyzed during the current study are available in this manuscript.

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Author Contributions

JCB and ASM were involved in the conceptualization of the study protocol, data collection. JCB, OL, LM, CCZ and SM revised the protocol. JCB, WFN, MK & ASM analyzed the data. JCB made first manuscript draft. MU, LM, RN, WFN and ASM revised the first draft. JCB, MU, LM, OL, CCZ, MK, RN, WFN and ASM edited the manuscript. All authors read and approved the final manuscript.

Consent for publication

Not applicable.

Competing interests

None declared.

Patient and public involvement

Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication

Not required.

Ethical approval

Ethical clearance was obtained from Kamuzu University of Health Sciences Research Ethics Committee (COMREC) bearing approval number COMREC P.07/20/3085, P.05/22/3647 and a trial number PACTR202303734043508. An approval letter giving us permission to conduct the study at the site was obtained from the Hospital Director. We obtained written informed consent from participants and fingerprint impressions were taken from those participants who could not write. Anonymous identifiers were used to replace actual patient names and their identification with the aim of maintaining confidentiality.

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Conflict of interest

The authors had no conflict of interest.

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