



## PERSONALITY AND PSYCHOLOGICAL WELL-BEING AMONG CANCER CAREGIVERS AT THE UGANDA CANCER INSTITUTE AND MBARARA REGIONAL REFERRAL HOSPITAL

Rachel Kansiiime<sup>1,2,\*</sup>, Milton Mutto<sup>4</sup>, Godfrey Zari Rukundo<sup>2</sup>,

Nixon Niyonzima<sup>1</sup>, Jackson Orem<sup>1</sup> and Simon Kizito<sup>3</sup>

<sup>1</sup>Uganda Cancer Institute (UCI), Kampala Uganda

<sup>2</sup>Mbarara University of Science and Technology, Department of Psychiatry, Mbarara Uganda

<sup>3</sup>Makerere University, School of Psychology, College of humanities Kampala Uganda

<sup>4</sup>Pincer Training and Research Institute, Kampala Uganda

\*Corresponding E-mail: [kansiiimerachel@yahoo.com](mailto:kansiiimerachel@yahoo.com); Tel: +256789412139

### Cite this article:

Rachel K., Milton M., Godfrey Z.R., Nixon N., Jackson O., Simon K. (2022), Personality and Psychological Well-Being among Cancer Caregivers at the Uganda Cancer Institute and Mbarara Regional Referral Hospital. African Journal of Social Sciences and Humanities Research 5(3), 62-75. DOI: 10.52589/AJSSHR-M10AKZTO.

### Manuscript History

Received: 10 June 2022

Accepted: 17 July 2022

Published: 30 July 2022

### Copyright © 2022 The Author(s).

This is an Open Access article distributed under the terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0), which permits anyone to share, use, reproduce and redistribute in any medium, provided the original author and source are credited.

**ABSTRACT:** *To assess the relationship between personality and psychological wellbeing among caregivers of patients with cancer in central and southwestern Uganda. **Methods:** A cross-sectional survey was conducted among adult caregivers of patients with cancer at the Uganda Cancer Institute in Kampala and at Mbarara Regional Referral Hospital in southwestern Uganda. The participants were consecutively recruited until a sample of 436 was reached. Personality was assessed using the NEO-Five Factor Inventory (NEO-FFI) after structural validation using exploratory factor analysis. On the other hand, psychological wellbeing was assessed using the General Health Questionnaire (GHQ-28). Data was analyzed using STATA version 14. The composite indices were summarized using measures of central tendency and spread. The relationship between the different subscales and the effect of personality on psychological wellbeing was assessed using multiple linear regression modelling. **Results:** After controlling for all the covariates, the personality domains of extroversion (P 0.0001, f statistic 4.26), neuroticism (P 0.0001, f statistic 4.31), openness (P 0.0000, f statistic 4.36) and introversion (P 0.0000, f statistic 4.31) influence psychological wellbeing of caregivers of patients with cancer. **Conclusion:** An individual's personality is very crucial in cancer caregiving because it affects his/her psychological wellbeing. Therefore, it is important that the caregivers' personality disposition is considered at the beginning and during the caregiving journey.*

**KEYWORDS:** Personality, caregiver, patient with cancer, psychological well-being, Uganda



## INTRODUCTION

Psychological wellbeing is a major issue in cancer care globally. Cancer hugely affects the psychological wellbeing of caregivers that provide cancer care to patients[1]. Caregivers of cancer patients have stressful and burdensome roles[2, 3], that aggravate their life quality[4], deteriorate their psychological wellbeing[5], and contribute to their mortality[6]; When this is not addressed, it affects the quality of care given to the patients with cancer [7]. These roles include monitoring symptoms, obtaining and sharing information, dealing with unpleasant side effects, decision making as well as offering emotional and instrumental support [8-10]. These roles consume considerable amount of time and energy[2, 11]. Deterioration of psychological wellbeing manifests as anxiety, emotional distress, depression, emotional anguish, and challenges in coping with their caregiving responsibilities[1, 12].

Personality influences a person's reaction to stressful circumstances[13] but the role of personality in enhancing treatment outcomes in cancer care is not well understood. Previous studies have indicated that caregivers with less mature personality traits such as neuroticism have an elevated likelihood of having poor caregiving outcomes [14-16] [17, 18]. On the other hand, caregivers with high levels of extroversion and conscientiousness, agreeability, and openness experience less stress, caregiver burden and depression [19-21] [22]. Previous studies on personality and psychological wellbeing have reported that unlike extroversion and openness, neuroticism is associated with a high risk of stress [23]. Conversely, agreeableness, extroversion and openness to experience [24], negatively predict the psychological answer to stress. However, all these studies leave a knowledge gap on the relationship between personality and psychological wellbeing among caregivers of patients with cancer which the present study hopes to address.

This study aimed at determining the role of personality on the psychological wellbeing of caregivers of patients with cancer in Ugandan referral care.

## MATERIALS AND METHODS

The objective of this study was to examine the relationship between personality and psychological wellbeing among caregivers of patients with cancer in Uganda.

### Participants

This study was conducted among 436 adult caregivers of patients with cancer at the Uganda Cancer Institute in Kampala and Mbarara Regional Referral Hospital between June 2019 and July 2021. A caregiver in this study was any person, who had not received any formal training to give care. The caregivers had to have spent at least a week giving care to a patient with cancer, in or out of hospital and had been directly responsible for the patient's performance of activities of daily living and the other psycho-social needs. Participants were recruited regardless of their patient's cancer type, stage of disease, duration of disease, gender, ethnicity, education status, religion, social- economic status and position in the social structure.



## Procedure

Institutional review board approval was sought first from Mbarara University of science and technology review committee after which administrative clearance was granted by the Uganda cancer institute review committee before the study commenced. Non probability sampling specifically purposive sampling was used to select the respondents. Informal cancer caregivers who were attending to patients with cancer accessing care at the Uganda cancer institute and Mbarara regional referral hospital whether in hospital or at home, and consented to the study were recruited. Participants were recruited regardless of their patient's diagnosis, stage of disease duration of illness, gender, ethnicity, education status, religion, social- economic status and position in the social structure. Participants were assured of confidentiality where by data collected was kept under lock and was not accessed by anyone who was not part of the study. Interviews were conducted in a private place that was not easily accessed by anyone to avoid interruption during the interviews. The number of caregivers per patient was determined by the set inclusion and exclusion criteria and accessibility at the time of the study.

This was a cross sectional study that used quantitative methods. Non-probability sampling specifically purposive sampling was used. The sample size of 436 was used after calculating using the Lish and Kishlie formular basing on a related study[25]. Only those who provided informed consent were recruited.

## Instruments

This study used the NEO-Five factor inventory (NEO-FFI) and the general health questionnaire 28(GHQ-28) to assess personality and psychological wellbeing respectively. These instruments are described below;

### NEO-Five factor inventory (NEO-FFI)

Personality was assessed using the NEO-Five Factor Inventory (NEO-FFI)[26]. The NEO-FFI contains 60 statements (12 questions per domain) representing the following five personality domains: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Each of these five domains has six facets: Neuroticism (N: anxiety, angry hostility, depression, self-consciousness, impulsiveness, and vulnerability), Extraversion (E: warmth, gregariousness, assertiveness, activity, excitement-seeking, and positive emotions), Openness to experience (O: fantasy, aesthetics, feelings, actions, ideas, and values), Agreeableness (A: trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness), and Conscientiousness (C: competence, order, dutifulness, achievement striving, self-discipline, and deliberation). The participants responded to each item on a 5-point scale anchored with strongly disagree (0) and strongly agree (4). The responses to the 12 items for each domain are added together to provide a total score for that personality domain. Higher scores represent more characteristics of that domain.

### General Health Questionnaire (GHQ-28)

The General health questionnaire (GHQ), was developed in 1972 to quantify the risk of developing psychiatric disorders[27]. It is a self-administered screening questionnaire which was developed to assist medical doctors in identifying patients who are likely to have a psychiatric illness[28]. The text exists in several forms; GHQ- 60 (60 items), GHQ-30 (30 items), GHQ-28(28 items), and GHQ-12 (12 items)[29] . The GHQ targets two areas that is,



the inability to carry out normal functions or the appearance of distress, and to assess wellbeing in a person[30]. The GHQ can be used in most populations from adolescents upwards but not children. The researcher used the GHQ with 28 items (also called the “scaled” version) because it has been widely used and shorter[28]. This “scaled version” of the GHQ has been developed on the basis of the results of principal components analysis of the GHQ-60[28]. The GHQ-28 has four possible responses on a four likert scale with each item ranging from “not at all” which was scored “Zero” to “much worse than usual “ which was scored as “three”[31]. A high score implies a high likeness of developing psychiatric illness while a low score implies the reverse. The GHQ has four subscales, each containing seven items, which are as follows; somatic symptoms (items 1-7), anxiety/insomnia ( items 8-14),social dysfunction (items 15-21), and severe depression (items 22-28).

### **Validity and reliability of the study instruments**

#### **NEO-FFI**

The NEO-FFI has adequate reliability and validity[26]. The NEO-FFI domain scores show good concurrent validity with the NEO-PI-R, correlating .92, .90, 0.91, 0.77, and 0.87 the N, E, O, A, C respectively[26]. The NEO-FFI scales show correlations of .75 to .89 and Internal consistency values range from .74 to .89[26] .

In this study, the NEO-FFI was subjected to structural validation using exploratory factor analysis and to define its structural integrity and its internal consistency reliability was further tested using Cronbach alpha test and was found to be highly reliable (0.952).

#### **GHQ-28;**

The reported Cronbach alpha coefficient for the GHQ-28 ranges from 0.82 to 0.86[32, 33]. The instrument is considered reliable and has been translated into 36 different languages[32]. The GHQ has been used in African studies, specifically in Botswana where after use, it was concluded that the GHQ-28 is a valid screening and research instrument for psychological distress in the Botswana population[34]. A wide research study carried out by the World health organization using the GHQ-28 in over 10 countries, some of which were developing countries, a conclusion was made that the scale works as well in the developing world with only minor losses resulting from translation into other languages[34]. Results showed the overall reliability for the GHQ to be 0.95 while severe depression, social dys-functionality, anxiety/Insomnia, and somatic symptoms subscales recorded reliability ranging from between .84 and .96 respectively. In this study, the GHQ-28 was subjected to structural validation using exploratory factor analysis to define its structural validity which showed that it had two subscales. It's internal consistency was further tested using the Cronbach alpha test and the Cronbach alphas for subscale 1 was found to be 0.8674 while that of subscale 2 was found to be 0.8547 an indication that the scale was highly reliable.

### **STATISTICAL ANALYSIS PLAN**

STATA version 14 was used to analyse the data. The NEO-FFI and GHQ-28 were subjected to integrity structural testing using factor analysis. The structures were confirmed using confirmatory scree plots. The rotated factor loadings of the variables on the two scales were



used to determine the subscales they belonged to. The internal consistency of the items in each subscale was tested using Cronbach alpha co-efficient and a threshold of 75 % was used as a cut off for acceptance. Subscale distinctiveness was assessed using pairwise correlation test and a score of less than 30% was used to indicate very low correlation as guided by [35-37]. Composite indices were developed in each of the subscales and were used to do subsequent analyses. The composite indices were adjusted to begin from zero as the minimum and worst case scenario then the maximum as the best case scenario. The composite indices were summarized using measures of central tendency and spread and the relationships between the subscales and outcome of interest which was the effect personality has on psychological wellbeing was assessed using multiple linear regression modeling and group differences between the means were compared using ANOVA

## RESULTS

### Participant characteristics.

Table 1 below summarises the participant characteristics where; there were significant age differences between the male and female care givers (X for males =37.3, SD at 12.2; mean for female = 33.5, SD= 34.7;  $t= 3.181$  & P- value= 0.002). Results show that cancer care giving is mainly done by younger females and older males.

The average age of the patients represented by the care givers in the study was 34 SD=23.3). Age average age of the male patients was significantly higher (X 38.0, SD=24.1) compared to that of the female patients (X= 32.0, SD=22.7). These age differences between the male and female patients was significant ( $t= 2.506$ , p-value=0.013). The older males were more likely to have cancer as compared to the females.

There were significant differences in the occupation of the caregivers (test statistic of 19.1, P=0.014) which implies that the occupation of the caregivers influences the caregiving experience.

There were significant differences between the mean and SD of the male and female peasants/farmers who formed the majority 59(42.1) and 113(38.8) with the males most influenced and the females least influenced, followed by the business people with the females most influenced 80(27.5) and males least influenced 32(22.9).

The religious affiliation of the caregivers was found to have a test statistic of 16.417 and a P value=0.006 which implies that there were gender differences in the caregivers' religious affiliations and these were significant between the male and female caregivers. There was a significant difference between the means and standard deviation of the male and female caregivers of the Anglican faith 62(44.30 and 87(29.9). This indicates that males of the Anglican faith were more influenced than the females whereas the reverse was true for the roman catholic faith with males with a mean and standard deviation of 49(35.0) and females with mean and standard deviation 98(33.7).

There were gender differences among the caregivers regarding the stage of cancer that the patient being taken care of was at (test statistic of 10.495 and a P value = 0.033). This implies that the stage of disease influences the caregiving differently when for males and for females.





This significant difference was most pronounced in the means and standard deviation between males and females of those that did not know at which stage their patient was at 53(37.9) and 150(51.5) and least pronounced among those whose patients were terminal 11(7.9) and 24(8.2). This indicates that caregivers who did not know the stage of disease at which their patients were at were most influenced as compared to those who knew that their patients were terminally ill.

There were gender differences regarding the relationship of the caregiver to the patient (test statistic was 19.796 P value= 0.019). This implies that there were significant differences between males and females in regards to their relationship to the patient. Results further showed that the categories of caregiver relationship most influenced were the female children of the patients with a mean of 130 and SD of 44.7 as compared to the males with a mean of 41 and SD 29.3, then followed by the siblings to the patient with female siblings most influenced with a mean of 47 and standard deviation of 16.2 as compared to the male siblings with a mean of 24 and standard deviation of 17.1 and lastly the spouses with the male spouses mostly influenced with a mean of 21, SD of 15 as compared to the female spouses with a mean of 19 and SD of 6.5.

**Table 1: participant characteristics**

Variable	Male	Female	Overall	Test stat	p-value
Age of care giver (Mean, sd)	37.3 (12.2)	33.5 (11.4)	34.7(11.8)	3.181	0.002
Age of patient (Mean, sd)	38.0 (24.1)	32.0 (22.7)	35.4(23.6)	2.506	0.013
Residence (% , N)			-	.160	.984
Rural	91 (32.5)	189 (67.5)	281(66.4)		
Urban	46 (32.3)	94 (67.6)	140		
Non Response	3 (27.2)	8 (72.7)	11(2.5)		
Nationality (frequency, %, N)			-	11.660	.112
Ugandan	132 (32.5)	274 (67.5)	409(94.2)		
Others	8 (0.0)	17 (100)	25(0.9)		
Occupation (% , N)			-	19.114	.014
Farmer	59 (34.3)	113 (65.7)	173(39.9)		
Business	32 (28.6)	80 (71.4)	113(26.0)		
Others	49 (0.0)	98 (100)	1(0.23)		
Distance to nearest health unit (% , N)			-	7.298	.199
Less than 20 Km	12164 (37.2)	228108 (62.7)	349172(40.1)		
More than 20 Km	18 (24)	57 (76)	75(17.6)		
Non-Response	1 (14.2)	6 (85.7)	7(1.62)		



Education level (% N)				-	20.730	.004
Primary level	47 (29.94)	118(70.0)	157(36.94)			
Secondary school level	50 (29.31)	97(70.69)	147(27.29)			
Completion of certificate Course	22 (37.92)	36 (62.07)	58(13.65)			
University Education	11 (40.74)	20 (59.26)	31(6.35)			
Non Response	10	30 (16.7)	40(1.39)			
Disability (% N)				-	1.702	.427
No	136(32.5)	282(67.5)	420(97.7)			
Yes	4.0 (40)	6.0 (60)	10(2.3)			
Non Response	0 (.0)	3.0 (100)	3(0.69)			
Level income (000) (Median, range)	309710.7 (402374.1)	276182.6 (555397.6)	150000(300- 5000000)		.588	0.557
Religion (% N)				-	16.417	.006
Anglican	62 (41.6)	87 (58.4)	152(36.1)			
Roman Catholic	49 (33.3)	98 (66.7)	147(34.9)			
Moslem	5 (11.4)	39 (88.6)	44(10.5)			
Born Again	19 (26)	54 (74)	73(17.3)			
Seventh Day Adventist	1 (20)	4 (80)	5(1.2)			
Non Response	4 (30.7)	9 (69.3)	13(3.01)			
Type of CA (% N)						
Breast Cancer	11 (31.4)	24 (68.6)	35(8.1)			
Co rectal Cancer	6 (40)	9 (60)	16(3.7)			
Prostate Cancer	13 (48.1)	14 (51.8)	27(6.2)			
Cervical Cancer	18 (27.7)	47 (72.3)	65(15.0)			
Leukaemia	28 (35.4)	51 (64.5)	80(18.5)			
Head and Neck Cancer	14 (31.8)	30 (68.2)	45(10.4)			
Childhood Cancer	2 (12.5)	14 (87.5)	16(3.7)			
Not Known	48 (31.6)	102 (68.4)	150()			
Stage of CA (% N)				-	10.495	.033
Early Stage	37 (45.1)	45 (54.9)	82(19.3)			
Late Stage	35 (34.3)	67 (65.7)	104(24.4)			
Terminal Stage	11 (31.4)	24 (68.6)	36(8.5)			
Not Known	57 (26.1)	155(73.9)	213(47.9)			



Relationship (%) N)			-	19.796	.019
Sibling to the patient	24 (33.8)	47 (66.2)	71(16.4)		
Spouse to the patient	21 (52.5)	19 (47.5)	42(9.7)		
Child of the patient	41 (23.9)	130 (76.0)	171(39.5)		
Others	12	17	29(0.46)		
Non Response	42 (35)	78 (65)	120(27.84)		
Duration of care giving (%) N)			-	3.183	.364
Less than 6 months	66 (42.2)	114 (57.8)	181(10.54)		
6+ Months	73 (29.9)	171 (70.1)	244(57.6)		

Table 2 below shows that after controlling for all the covariates (Patient's age, sex of care giver, education of caregiver, respondent's age, respondent's education level, respondent's education, respondent's country of origin, respondent's religion, stage of cancer) the personality domains of extroversion (P 0.0001, f statistic 4.26), neuroticism (P 0.0001, f statistic 4.31), openness (P 0.0000, f statistic 4.36), introversion (P 0.0000, f statistic 4.31) do influence psychological wellbeing of caregivers to patients with cancer.

**Table 2; Relationship between personality type and psychological wellbeing at multivariate**

Outcome variables	Exposure variables	Covariates adjusted for	F-statistic	P-value	R <sup>2</sup>	Adjusted R <sup>2</sup>	Root MSE
Psychological wellbeing	Personality type	Patient's age, sex of care giver, education of caregiver, respondent's age, respondent's education level, respondent's education, respondent's country of origin, respondent's religion, stage of cancer, score on burnout scale, score on satisfaction scale	4.26	0.0001	0.7282	0.5574	0.27986
	• Extroversion		4.31	0.0001	0.7359	0.5650	0.25309
	• Neuroticism		4.36	0.0000	0.6949	0.5354	0.27766
	• Openness		4.31	0.0000	0.6829	0.5244	0.28502
	• Introversion						





## DISCUSSION

This study aimed at examining the role of personality on the psychological wellbeing of caregivers of patients with cancer in central and southwestern Uganda. According to the study results, there was a significant relationship between the personality domains of extroversion, neuroticism, openness, introversion and psychological wellbeing of caregivers. This finding is similar to what has been reported by previous studies. For instance, a study by Kim et al [38] on the influence of caregiver personality on the burden of family caregivers of terminally ill patients with cancer revealed that caregiver extroversion was protective against caregiver burden and that neuroticism was positively correlated with caregiver burden. The results of the present study also agree with the findings of [25] which found that extraversion was positively associated with optimism and hence perceived better health, whereas neuroticism was associated with pessimism and hence poorer perceived health. In another related study by Kim et al [21] on levels of depressive symptoms in spouses of patients with lung cancer, it was found that neuroticism was directly associated with greater depressive symptoms and greater caregiving burden. Similarly, studies conducted by [23, 39] found that an individual's personality affects the psychological wellbeing of a caregiver while giving care to a patient with cancer. This can be ascribed to variations in a set of established individual characteristics, also known as personality [40-42]. Personality characteristics are pivotal in influencing a person's reaction to strenuous circumstances [43]. There are five factor models of personality characteristics that are broadly established components of personality, and they include; agreeableness, neuroticism, extroversion, openness, and conscientiousness [13]. Remarkably, amidst limited literature on personality attributes and caregivers' of cancer patients, self-esteem and cancer caregiving coping approach were found to be linked [13, 44], neuroticism was found to passively influence caregiving [45]. However, several studies that have investigated the association between personality attributes of caregivers and psychological health, found diverse outcomes that are attributed to differences in samples [46-49].

### Clinical implications of the findings

The findings of this study show that personality influences the psychological wellbeing of caregivers of patients with cancer, therefore highlighting the need to assess the personality of the caregivers at the beginning of the caregiving relationship to be able to predict the outcomes of the caregiving and advise on who is likely to be psychologically distressed. This will go all the way in designing supportive and information-giving programs towards enhancing the individualized family members' programs to meet the psychological, emotional, and health needs of patients with cancer.

### Policy implications of the findings

The findings of this study have varying implications for the health sector in Uganda, especially in relation to the provision of mental health services. The first implication to the health sector in Uganda will be to adopt a holistic approach in the treatment of patients with cancer and their family caregivers. This is essential as findings of the present study suggest that informal caregivers of personality types of extroversion, neuroticism, openness, and introversion are at an increased risk of developing psychological distress and those who score highest on introversion are more influenced. Therefore, support services should be extended to them, also greater partnership is desired between family caregivers and mental health personnel in provision of care to these patients. In upholding the Bio-Psychosocial



model of health care, mental health professionals should be involved in the treatment of patients with cancer at the different Cancer treatment centres to help alleviate the psychological burden that these caregivers face. Additionally, it is important that training programs be organized for informal caregivers to reinforce their hardiness and coping skills so as to enhance their service delivery.

The empirical data obtained from this study can be used as a reference point for organizing follow up plans for family members providing care for patients with cancer or those preparing to take on the caregiving role.

### **Limitations of the study**

It is important to note the predictive limitations of cross-sectional studies: “the primary limitation of the cross-sectional study design is that because the exposure and outcome are simultaneously assessed, there is generally no evidence of a temporal relationship between exposure and outcome. Without longitudinal data, it is not possible to establish a true cause and effect relationship.

This study used purposive sampling, a non- probability sampling technique which means that not every caregiver to a patient with cancer had an equal chance of being included in the sample. This in some way sets a bar for selection and thus, reduces the number of people in the sample which can lead to sampling bias. This bias is associated with the sample's lack of representation of the target population.

The majority of respondents were peasants, from rural Uganda and of low education status. There is a possibility that the views expressed by them were not representative of cancer caregivers in general since their views could have been influenced by conditions that are specific to the exposure they have had, their life style and living conditions.

### **Strengths of the study**

Regardless of the above stated limitations, this research still makes a contribution to the cancer caregiving literature and the relationship personality has on the psychological wellbeing on caregivers of patients with cancer. This study highlighted the reliability and validity of utilised questionnaires in a sample of caregivers of patients with cancer in Uganda. Overall, the researcher is of the opinion that this study makes a significant contribution to how the Ugandan health care system can address the needs of informal caregivers and ensure that caregivers to patients with cancer experience a healthy caregiving experience.

## **CONCLUSION**

The objective of this study was to identify the role personality plays on the psychological wellbeing of caregivers of patients with cancer in Uganda. Based on the analysis done, results have identified the socio-demographic features of caregivers of patients with cancer and have determined the role personality plays on the psychological wellbeing of caregivers of patients with cancer in Uganda. The NEO-FFI was used to assess personality and the general health questionnaire 28(GHQ-28) was used to assess psychological wellbeing. A conclusion therefore is made that Personality influences the psychological wellbeing of caregivers of patients with



cancer. Future research into the different personality types and which kind of psychological distress they are more prone to could be useful in determining further how personality influences psychological wellbeing. This could go all the way in improving the caregiving experiences of caregivers of patients with cancer.

## RECOMMENDATIONS

This study therefore recommends assessment of personality of caregivers preferably before they undertake the caregiving journey and expert psychological advice on how the caregiving experience can be navigated without compromising their own psychological well – being.

## Declarations

## Ethical Considerations

Approval to conduct the study were obtained from the Research and Ethics Committee of Mbarara University of Science and Technology (MUST), reference MUREC 1/7. Administrative clearance from the Uganda Cancer Institute Institutional Research Board was sought before the study began. Participants were treated with respect in regards to individual autonomy, dignity, freedom of choice and human rights. They gave voluntary informed consent and were informed of their right not to participate, and that they could withdraw from the research at any point without compromising their patient's treatment in any way. They were each given a copy of the consent form to take home for further reading about the research and were informed that the research findings would be availed on request.

## Conflict of Interest

Authors declare no conflicts of interest.

## REFERENCES

1. Van Ryn, M., et al., *Objective burden, resources, and other stressors among informal cancer caregivers: a hidden quality issue?* Psycho-oncology, 2011. **20**(1): p. 44-52.
2. Biegel, D., E. Sales, and R. Schulz, *Family caregiving in chronic illness: Heart disease, cancer, stroke, Alzheimer's disease, and chronic mental illness*. 1991, Newbury Park, CA: Sage.
3. Haley, W.E., et al., *Stress, appraisal, coping, and social support as predictors of adaptational outcome among dementia caregivers*. Psychology and aging, 1987. **2**(4): p. 323.
4. Kim, Y. and B.A. Given, *Quality of life of family caregivers of cancer survivors: across the trajectory of the illness*. Cancer, 2008. **112**(S11): p. 2556-2568.
5. Given, B., et al. *Burden and depression among caregivers of patients with cancer at the end-of-life*. in *Oncology nursing forum*. 2004. NIH Public Access.
6. Schulz, R. and S.R. Beach, *Caregiving as a risk factor for mortality: the Caregiver Health Effects Study*. Jama, 1999. **282**(23): p. 2215-2219.
7. Chang, Y.-J., et al., *Burdens, needs and satisfaction of terminal cancer patients and their caregivers*. Asian Pacific Journal of Cancer Prevention, 2013. **14**(1): p. 209-215.



8. James, N., et al., *A study of information seeking by cancer patients and their carers*. *Clinical oncology*, 2007. **19**(5): p. 356-362.
9. Litzelman, K. *Caregiver well-being and the quality of cancer care*. in *Seminars in oncology nursing*. 2019. Elsevier.
10. Speice, J., et al., *Involving family members in cancer care: focus group considerations of patients and oncological providers*. *Psycho-Oncology: Journal of the Psychological, Social and Behavioral Dimensions of Cancer*, 2000. **9**(2): p. 101-112.
11. Kent, E.E., et al., *Caring for caregivers and patients: research and clinical priorities for informal cancer caregiving*. *Cancer*, 2016. **122**(13): p. 1987-1995.
12. Ferrell, B., K.H. Dow, and M. Grant, *Measurement of the quality of life in cancer survivors*. *Quality of life Research*, 1995. **4**(6): p. 523-531.
13. John, O.P. and S. Srivastava, *The Big-Five trait taxonomy: History, measurement, and theoretical perspectives*. Vol. 2. 1999: University of California Berkeley.
14. Chappell, N.L. and C. Dujela, *Caregivers—who copes how?* *The International Journal of Aging and Human Development*, 2009. **69**(3): p. 221-244.
15. Covinsky, K.E., et al., *Patient and caregiver characteristics associated with depression in caregivers of patients with dementia*. *Journal of general internal medicine*, 2003. **18**(12): p. 1006-1014.
16. De Vugt, M.E., et al., *Behavioural disturbances in dementia patients and quality of the marital relationship*. *International journal of geriatric psychiatry*, 2003. **18**(2): p. 149-154.
17. Hwang, S.S., et al., *Caregiver unmet needs, burden, and satisfaction in symptomatic advanced cancer patients at a Veterans Affairs (VA) medical center*. *Palliative & supportive care*, 2003. **1**(4): p. 319-329.
18. Litzelman, K., P.A. Green, and K.R. Yabroff, *Cancer and quality of life in spousal dyads: spillover in couples with and without cancer-related health problems*. *Supportive Care in Cancer*, 2016. **24**(2): p. 763-771.
19. Hollis-Sawyer, L.A., *Mother–daughter eldercare and changing relationships: a path-analytic investigation of factors underlying positive, adaptive relationships*. *Journal of Adult Development*, 2003. **10**(1): p. 41-52.
20. Jylhä, P. and E. Isometsä, *The relationship of neuroticism and extraversion to symptoms of anxiety and depression in the general population*. *Depression and anxiety*, 2006. **23**(5): p. 281-289.
21. Kim, Y., et al., *Levels of depressive symptoms in spouses of people with lung cancer: effects of personality, social support, and caregiving burden*. *Psychosomatics*, 2005. **46**(2): p. 123-130.
22. Grov, E.K., et al., *The caregiver reaction assessment: psychometrics, and temporal stability in primary caregivers of Norwegian cancer patients in late palliative phase*. *Psycho-Oncology: Journal of the Psychological, Social and Behavioral Dimensions of Cancer*, 2006. **15**(6): p. 517-527.
23. Schneider, T.R., et al., *The influence of neuroticism, extraversion and openness on stress responses*. *Stress and Health*, 2012. **28**(2): p. 102-110.
24. Chu, X., et al., *Agreeableness, extraversion, stressor and physiological stress response*. *Int'l J. Soc. Sci. Stud.*, 2015. **3**: p. 79.
25. Hoerger, M., et al., *Personality and perceived health in spousal caregivers of patients with lung cancer: the roles of neuroticism and extraversion*. *Journal of aging research*, 2016. **2016**.



26. Costa, P.T. and R.R. McCrae, *Normal personality assessment in clinical practice: The NEO Personality Inventory*. Psychological assessment, 1992. **4**(1): p. 5.
27. Goldberg, D.P. and B. Blackwell, *Psychiatric illness in general practice: a detailed study using a new method of case identification*. Br med J, 1970. **2**(5707): p. 439-443.
28. Heun, R., et al., *Reliability of interview information in a family study in the elderly*. Social psychiatry and psychiatric epidemiology, 1998. **33**(3): p. 140-144.
29. Ekholm, K., et al., *The next of kin experiences of symptoms and distress among patients with colorectal cancer: diagnosis and treatment affecting the life situation*. European journal of oncology nursing, 2013. **17**(2): p. 125-130.
30. Tiwari, G.K., A. Baruah, and H. Anand, *A study on emotional intelligence and mental health among doctors, lawyers and teachers*. 2020.
31. Molina, J., et al., *The factor structure of the General Health Questionnaire (GHQ): a scaled version for general practice in Spain*. European Psychiatry, 2006. **21**(7): p. 478-486.
32. Mohamadi Hasel, K., et al., *Relationships of personality factors to perceived stress, depression, and oral lichen planus severity*. International journal of behavioral medicine, 2013. **20**(2): p. 286-292.
33. Goldberg, D.P., et al., *The validity of two versions of the GHQ in the WHO study of mental illness in general health care*. Psychological medicine, 1997. **27**(1): p. 191-197.
34. Quek, K.F., et al., *Reliability and validity of the General Health Questionnaire (GHQ-12) among urological patients: A Malaysian study*. Psychiatry and Clinical Neurosciences, 2001. **55**(5): p. 509-513.
35. Mutto, M., *The Effectiveness of the "Mato-Oput 5" Curriculum in Changing School Children's Attitudes Towards Conflict and Violence, and in Reducing Pupil Perpetrated Acts of Violence*. 2004, Citeseer.
36. Dahlberg, G., P. Moss, and A.R. Pence, *Beyond quality in early childhood education and care: Postmodern perspectives*. 1999: Psychology Press.
37. Mutto, M., et al., *Structural validity and reliability of the integrated conflict and violence scale*. International journal of injury control and safety promotion, 2010. **17**(3): p. 141-144.
38. Kim, H.-H., et al., *Influence of caregiver personality on the burden of family caregivers of terminally ill cancer patients*. Palliative & supportive care, 2016. **14**(1): p. 5-12.
39. Northouse, L.L., et al. *The impact of caregiving on the psychological well-being of family caregivers and cancer patients*. in *Seminars in oncology nursing*. 2012. Elsevier.
40. Costa Jr, T., *The NEO-PI-R Professional Manual: Revised NEO Five-Factor Inventory.(NEO-FFI)*. Psychological Assessment Resources, 1992.
41. McCrae, R.R. and P.T. Costa, *Personality in adulthood: A five-factor theory perspective*. 2003: Guilford Press.
42. Rockville, M., *Basic behavioral science research for mental health*. Am. Psychol, 1996. **51**: p. 22-8.
43. Groves, M. and P.R. Muskin, *Psychological responses to illness*. The American Psychiatric Publishing Textbook of Psychosomatic Medicine: Psychiatric Care of the Medically Ill, Second edition, American Psychiatric Publishing, Inc, Washington, 2011: p. 45-67.





44. Adejumo, A., *Influence of social support, depression, and self-esteem on burden of care among caregivers of oncology patients*. 2009.
45. Kim, S.-Y., et al., *Standardization and validation of big five inventory-Korean version (BFI-K) in elders*. Korean Journal of Biological Psychiatry, 2010. **17**(1): p. 15-25.
46. Bookwala, J. and R. Schulz, *The role of neuroticism and mastery in spouse caregivers' assessment of and response to a contextual stressor*. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 1998. **53**(3): p. P155-P164.
47. Kim, J.H. and O.S. Kim, *Influencing factors that affect the psychological well-being in family caregivers of stroke patients*. Journal of Korean Academy of Nursing, 2005. **35**(2): p. 399-406.
48. Campbell, P., et al., *Determinants of burden in those who care for someone with dementia*. International Journal of Geriatric Psychiatry: A journal of the psychiatry of late life and allied sciences, 2008. **23**(10): p. 1078-1085.
49. Wrosch, C., et al., *Self-regulation of common age-related challenges: Benefits for older adults' psychological and physical health*. Journal of Behavioral Medicine, 2006. **29**(3): p. 299-306.