

## **Socio-demographic Factors Associated with Depression Among Patients with Advanced Cancer in Nairobi Hospice, Kenya**

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### **Abstract**

Cancer is a disease that entails uncontrolled growth and spread of some of the cells in the body, which comes with psychological distress and mental health disorders such as depression. Patients with advanced cancer experience higher rates of depression compared to those at earlier stages. Despite the interventions employed, so far, in reducing depression among patients with advanced cancer, the problem of depression remains a serious concern. As a result, this study set out to assess the demographic factors associated with depression, among patients with advanced cancer, in Nairobi Hospice, Kenya. This study was informed by the relational frame theory. The study used descriptive research design, where a sample size of 60 patients with advanced cancer were selected. The patients were sampled through a purposive sampling method. Beck's Depression Inventory-II was used to classify depression levels of patients. In addition, a socio-demographic questionnaire was administered. The research results revealed that the age of participants (p value 0.036), type of cancer (p value 0.030) and education level of participants (p value 0.028) were significantly associated with depression. This study will contribute to policies that relate to palliative care and support programs for cancer patients in general, and patients with advanced cancer in particular.

*Key words:* depression, advanced cancer, demographic factors, hospice

### **Introduction and Background**

Depression can be defined as a severe psychiatric condition which leads to disability, as seen in the world today (Mitchell et al., 2021). According to Naseri and Taleghani (2018), depression can also be viewed as a condition which comes with personal and health concerns and is quite common among patients with advanced cancer and cancer patients in general. Depression has also been seen to affect the quality of life and the functioning of those who suffer from it, which calls for urgent intervention in terms of treatment (Naseri & Taleghani, 2018).

Depression generally attracts the need for treatment, which could be through antidepressants, psychotherapy or neurostimulation. However, treatment resistant depression arises in situations where patients with major depressive disorder (MDD) fail to respond to any of the conventional treatment approaches (McIntyre et al., 2023). Furthermore, Zięba et al. (2023) advocated for a better understanding of the genetic underpinning of depression in its management, because genetic factors have the capacity to influence drug metabolism, as well as increase resistance to drugs. In cancer settings, according to Yang et al. (2019), studies have shown that depression comes with low participation in treatment on the part of the patients. According to Gu et al. (2020), studies have shown that those with health conditions that are life-threatening present more with depression. Furthermore, depression is a condition which comes with some level of sadness as well as tiredness and loss of interests and appetite, which affects the mood of the individual (Doktorchik et al., 2019). This mood disorder which is associated with depressive symptoms has also been discovered to be common among patients with advanced cancer, as well as all those who suffer from chronic diseases (Gold et al., 2020).

The earliest connotation of depression was as melancholy, a term which represented some form of insanity and spiritual problems (Paykel, 2022). The Greek physician Hippocrates is considered the first physician to describe melancholy or depression as a clinical condition. Hippocrates claimed that there were four humors in the human body, namely the black bile, blood, phlegm and yellow bile, and that depression was a state which resulted from the activity of the black bile (Pereira, 2018). As a result of the activities of the black bile, the melancholic person suffered from symptoms of fear, sadness, and delusions (Holst, 2021). Furthermore, one of the initial medications for depression was known as Tofranil, which was followed by a number of other medications grouped as tricyclic antidepressants (Schimelpfening, 2019). The DSM-5, according to Sbolli et al. (2020), is one of the primary tools used as a means of diagnosing depression which can also be found in the DSM-5-TR (Rice et al., 2022).

According to Bailey et al. (2019), depression ranks among the most prevalent mental and emotional disorders in America which goes undetected and undiagnosed, as well as untreated. These authors reported that African Americans were less likely to report psychological symptoms. In South Africa, it was believed that the major causes of depression were poverty and HIV, which resulted in diminished quality of life (Kuo et al., 2019). The World health organization reported that 3.8% of people suffered from depression globally, with 5% prevalence among adults, and 5.7% among adults older than 60 years (World Health

Organization, 2023). This report also states that an approximate figure of 280 million people suffer from depression worldwide, where it was discovered that it was 50% more predominant in the female population than in men. Furthermore, a systematic review revealed that the prevalence of depression among cancer patients under palliative care was 27% (Garcia et al., 2023).

A study that was conducted in Kenya revealed that most cases of depression had an underlining past experience of trauma (Mugambi & Gitonga, 2015). According to Assche et al. (2020), trauma experienced in childhood contributed a lot to depression in the victims because some of these traumatic experiences were not treated. In a study conducted to investigate the level to which depression was associated with levels of stress as well as social support, it was discovered that a large number of Kenyans exhibited a strong relationship between depression and perceived stress as well as lack of social support (Shah et al., 2021). Furthermore, as at 2017, WHO ranked Kenya as fifth among countries living with elevated depression levels, with an approximate figure of 2 million people living with depression (Memiah et al., 2022). In all, depression has been seen as a psychological concern that has plagued humanity for long. The causes of the psychological distress have also been attributed to different reasons over the course of history. One of the causes of depression has been seen as prolonged pain, especially in illnesses. One of such illnesses has been identified as cancer, especially advanced cancer.

Cancer can be seen as a form of disease which is categorized by the unusual multiplication of DNA (deoxyribonucleic acid) (Weru et al., 2020). It can further be described as a disease caused by uncontrolled cellular multiplication (Truskowski et al., 2023). This uncontrolled proliferation is facilitated by mutated genes which have the potential to cause cancer (Liu et al., 2022). These mutated genes are known as oncogenes, which are referred to as proto-genes before they are mutated (Bhadra & Kaur, 2021). This modification of oncogenes is what leads to cancer cells (Kontomabolis et al., 2020). The causes of cancer can be viewed from many dimensions. The first thing is the incidence, followed by a distribution of geographic conditions as well as behavior of definite types of cancer, which are related to a lot of factors which includes age, sex, genetic conditions, race, as well as the exposure one has to environmental factors (Chu & Sartorelli, 2018). It can also be said that cancer has been discovered all over the world in various forms, and researchers have made it a point of duty to identify different types and stages of cancer, and have made it known that several multiplication of genes brings

about cancer (Hassanpour & Dehghani, 2017). The study of this varied and uncommon form of multiplication of genes is known as oncology (Mandal, 2019).

Elkhaloufi et al. (2022) carried out a cross-sectional study to explore the association that exists between bio-socio-economic factors of depression in Moroccan cancer patients with a sample of 862 participants. The outcome of the study showed that being a younger person, a female, suffering from breast cancer or lung cancer, suffering from metastatic cancer, as well as being involved in smoking increased possible chances of depression. The study also showed that those who had jobs, social security, and those with adequate family support had lower risk of depression. Further, the results of the study showed that younger women who had cancer were more prone to depression. Being employed with social security, as well as having a good marital relationship could contribute to a reduction in the chances of having depression.

The stage of cancer has been found to be a strong demographic factor in determining the severity of depression among those who suffer from cancer. This claim was assessed with the help of a research carried out by Saina et al. (2021) in Kenya to determine the characteristics related to depression in those who experience cancer of the breast at a Referral hospital located at Moi Teaching Hospital (MTRH). The study indicated that patients with late-stage breast cancer, as well as those undergoing chemotherapy, had 61% increased odds of having depression more than those who were at an early stage of cancer.

From the records of WHO, as at 2022, there was an estimation of 20 million cancer cases, which preceded an estimated 5 years statistics of 53.5 million diagnosed cancer cases (World Health Organization, 2024). This global report further revealed that one in every randomly chosen five people developed cancer in their lifetime, and that lung cancer was the highest globally occurring cancer, followed by breast cancer. Furthermore, lung cancer has been discovered to be the leading cause of cancer deaths, and smoking has been identified as 85% to 90% cause of lung cancer (Alduais et al., 2023). In Africa, breast cancer was found to be the highest occurring cancer, followed by cancer of the cervix, while the leading cancer in men was prostate cancer (Bray et al., 2022).

In Kenya, the annual occurrence of cancer cases increased from 37,000 to a total of 47,887 between 2012 and 2018, and the number of fresh cases of cancer is estimated to rise in the next 20 years by more than 120% (Jani et al., 2024). This report also revealed that the most common cancer found in Kenya was breast cancer, followed by cervical, prostate, esophageal, then colorectal cancer. The most burdensome symptoms of cancer include tiredness, body aches,

appetite loss, and other related symptoms (Economos et al., 2020). Furthermore, those who experience advanced cancer go through more severe symptoms as well as psychological distress like depression and other psychological conditions associated with cancer that is at the advanced stage (Economos et al., 2020). Depression that is associated with advanced cancer was what this research set out to address through identifying the demographic Characteristics of patients diagnosed with depression among patients with advanced cancer.

## Methodology

This research aimed at assessing the demographic characteristics associated with depression among patients diagnosed with advanced cancer. The research was guided by the positivist epistemology philosophical underpinning. This is a philosophical approach to discovery of knowledge through objective means, which further adopts the quantitative approach in research (Handema et al., 2023). The study employed quantitative research design where it used descriptive research design. Participants were assessed for severity of depression. The study was conducted at Nairobi Hospice (NH). NH is a charitable organization that was established to support families and patients who are experiencing conditions that can be referred to as life threatening, like cancer, as well as HIV and AIDS and other ailments (NH, 2022). Furthermore, as a health institution, it also engages in holistic palliative care, oncology services, education and research, institutional development, as well as resource mobilization. This site was selected because it was the only site that fitted the characteristics the researcher sought out for the study.

The target population for this study were patients diagnosed with advanced cancer, with different categories of cancer as at the time of the study, as well as those who were receiving care at NH. Patients diagnosed with advanced cancer, from all categories of cancer available as at the period of the study were recruited to participate in the study. The number of patients with advanced cancer who took part in this study are shown in Table 1.

*Table 1: Number of Patients with Advanced Cancer at Nairobi Hospice from January to April 2023*

| Month              | January | February | March | April | Total | Average |
|--------------------|---------|----------|-------|-------|-------|---------|
| Number of patients | 72      | 58       | 73    | 65    | 268   | 67      |

Table 1 shows that the average number of patients seen at NH from January to April 2023 was 67. The hospital records showed that the incidence rate of depression among patients with advanced cancer at NH was 80%. With a target population of 67 patients with advanced cancer

in NH, the population of those with depression was estimated at 80% of 67, which gave 53.6. Thus, the target population (N) of those with depression at NH was approximated at 54.

The sample size of this research was calculated using Yamane Taro’s formula. This formula was developed in 1967 (Imiete et al., 2022). To arrive at the sample size for this research, Yamane sample size determination formula with the confidence level at 95%, and the margin of error at 5% was adopted as used in a study by Nyamai (2021). With a target population of 54, and applying this number to the Yamane formula, the sample size for the intervention became 48. Attrition of 25%, which is 12, was added to the sample size, which brought the total sample size to 60.

Purposive sampling was used to select patients with advanced cancer as well as having a diagnosis of depression. This was done by identifying the advanced cancer cases from the records of the hospice. Participants identified through purposive sampling were not given any particular day or time to come for their clinic but were asked to come on any day and time within the two weeks chosen for the recruitment of participants. This meant they could come any day from Monday to Friday, from 8am to 5pm. This simply meant that there was no guarantee of who was to come at what time or day. It was also important to note that this arrangement made it easy for the 60 participants to be identified. To achieve this, the researcher and one of the oncology nurses occupied two different offices, one in each office. The participants were attended to in the two offices.

## Results

This study sought to establish the demographic characteristics associated with depression among patients with advanced cancer in Nairobi Hospice, Kenya as presented in Table 2 below.

*Table 2: Socio-demographic Characteristics Associated with Depression among Patients with Advanced Cancer*

|                | Unadjusted |          |       |         | Adjusted |          |        |         |
|----------------|------------|----------|-------|---------|----------|----------|--------|---------|
|                | OR         | (95% CI) |       | p-value | OR       | (95% CI) |        | p-value |
| Age (in years) | .97        | .915     | 1.029 | 0.312   | .93      | .867     | .995   | 0.036   |
| Income         |            |          |       |         |          |          |        |         |
| Full-time      | <i>ref</i> |          |       |         |          |          |        |         |
| Part-time      | 13         | .985     | 170   | 0.051   | 5.01     | .257     | 97.637 | 0.288   |
| Self- employed | 4.3        | .620     | 29.89 | 0.140   | 2.02     | .215     | 18.990 | 0.539   |

|                               |            |      |       |       |      |       |        |       |
|-------------------------------|------------|------|-------|-------|------|-------|--------|-------|
| Pension                       | 4.6        | .669 | 30.97 | 0.121 | 1.76 | .199  | 15.644 | 0.612 |
| Type of cancer                |            |      |       |       |      |       |        |       |
| Breast                        | <i>ref</i> |      |       |       |      |       |        |       |
| Cervical                      | 2.7        | .729 | 10.13 | 0.137 | 5.33 | 1.092 | 26.007 | 0.039 |
| Other                         | 2.4        | .741 | 7.61  | 0.146 | 4.92 | 1.168 | 20.699 | 0.030 |
| Marital status                |            |      |       |       |      |       |        |       |
| Single                        | <i>ref</i> |      |       |       |      |       |        |       |
| Married                       | .5         | .159 | 1.797 | 0.311 | .38  | .099  | 1.500  | 0.169 |
| Separated                     | .6         | .124 | 2.857 | 0.516 | .19  | .0265 | 1.432  | 0.108 |
| Widow                         | 1.7        | .348 | 7.824 | 0.528 | 1.58 | .281  | 8.857  | 0.605 |
| Education level<br>(in years) | .8         | .698 | 1.018 | 0.075 | .77  | .613  | .972   | 0.028 |
| Sex                           |            |      |       |       |      |       |        |       |
| Female                        | <i>ref</i> |      |       |       |      |       |        |       |
| Male                          | .56        | .117 | 2.688 | 0.470 | -    | -     | -      | -     |
| Religion                      |            |      |       |       |      |       |        |       |
| Catholic                      | <i>ref</i> |      |       |       |      |       |        |       |
| Protestant                    | .862       | .265 | 2.805 | .805  | -    | -     | -      | -     |
| Muslim                        | 1.5        | .164 | 13.54 | .723  | -    | -     | -      | -     |
| SDA                           | 1.5        | .109 | 20.31 | .765  | -    | -     | -      | -     |
| Other                         | 1.5        | .207 | 10.73 | .692  | -    | -     | -      | -     |
| Duration of<br>cancer         |            |      |       |       |      |       |        |       |
| >1 month & <6<br>months       | <i>ref</i> |      |       |       |      |       |        |       |
| >6 months &<br><1year         | .35        | .022 | 5.474 | 0.453 | .24  | .010  | 5.888  | 0.385 |
| > 1 year                      | .73        | .061 | 8.792 | 0.805 | .53  | .0266 | 10.458 | 0.675 |

To assess the socio-demographic factors associated with depression, a three-level variable - *depression* (coded 1, 2, 3) was used as the outcome variable. Since the outcome variable was ordered, the study used the ordered logistic regression to calculate the odds ratio. The main assumption underlying the ordered logistic regression was the proportional odds assumption.

The study therefore tested for this assumption, and failed to reject the null hypothesis (p value 0.828) as there was no difference in the coefficients between models.

Table 2 shows the univariate and multivariate results. Due to the high correlation with age, gender, and religion, they were omitted in the adjusted model. The adjusted regression showed that age, type of cancer and education level were statistically significantly associated with depression. This implied that for every additional year a participant aged, the odds of a person having higher depression levels was .93. In addition, the odds of a person with cervical and other types of cancer having increasing levels of depression were 2.7 and 2.4 respectively compared to someone in the general population. Furthermore, for every additional year of schooling, the odds of a person having worsening levels of depression was 0.77.

## **Discussion**

This study recruited participants diagnosed with 16 different types of advanced cancer. Among the 60 participants, breast cancer (21) and cervical cancer (15) were the most frequent, with the remaining types ranging from 1 to 3 cases each. By examining depression across various cancers, this research adds to the growing body of evidence suggesting that depression is a common experience for patients with advanced cancer, regardless of specific cancer type. Traditionally, many studies have focused on depression in specific cancers. However, recent calls for broader investigation, as highlighted by Yang et al. (2017) emphasize the importance of studying diverse cancer cohorts. Similarly, Riedl and Schuessler (2022) findings in Austria found that depression was a common psychological distress across all cancers.

In this study, the mean age of participants was 49.65 years. This result aligns with a cross-sectional study conducted by Kareem et al. (2017) in Erbil, Iraq, which investigated depression severity among cancer patients. Their sample (n=100) had a mean age of 49.54 years, with similar representation of males and females. Notably, 79% of their participants experienced moderate depression while 21% had severe depression highlighting the prevalence of depression in this population.

Age has also been found to be a major demographic factor associated with depression in cancer patients. In this research, adjusted regression showed a statistical significance for age. This implied that for every additional year a participant aged, the odds of a person having higher depression was .93. However, this finding contradicts the results of a study by Saracino et al.



(2020) which was conducted in the United States. The research investigated depression severity in a diverse sample of cancer patients, including all stages with a focus on advanced stages. Interestingly, their study found that older patients exhibited lower depression severity. This indicated that the seriousness of depressive conditions in patients facing cancer was more in those seen as younger, especially in an advanced cancer dominated population.

The finding, in this study, that depression in advanced cancer patients increased as patients advanced in age, was supported by a meta analysis conducted in Austria on factors associated with depression among cancer patients (Riedl & Schüßler, 2022). In this systematic literature review, it was discovered that 17 of the reviewed studies reported a statistical significance between age and depression. The result of the study showed that younger patients presented more with depression than older patients (seven studies), two studies showed that middle aged patients reported more depressive symptoms, while eight studies reported that older patients presented more with depressive symptoms than younger patients. These statistics showed that older patients presented more with depression than younger patients.

Subsequently, the fact that this research did not show a statistical significance between levels of income and depression among patients with advanced cancer also disagreed with a study conducted to assess the effect of financial toxicity on the quality of life among patients with advanced cancer in America (Arastu et al., 2020). The cross-sectional study by Arastu and colleagues focused on the baseline data collected from 31 community oncology practices across America. The study evaluated 536 patients with advanced cancer. Among those patients, 60.2 % were female and 14.3 % were blacks. The result of the study revealed that financial toxicity was significantly associated with depression.

## **Conclusion**

The mean age of participants in this study was 49.65 years with 90% of the sample below the age of 60. With the retirement age in Kenya being 60 years, this implied that most of the sample were in the working-age group and were economically productive. This calls for urgent attention from stakeholders in charge of health policies to find ways to arrest this situation. This study recommends that health facilities be put in place to detect cancer cells early enough and administer required treatments. This will prevent the workforce being compromised by cancer, as well as create awareness for early detection, thereby preventing the growth of cancer to the advanced stage.

## References

- Alduais, Y., Zhang, H., Fan, F., Chen, J., & Chen, B. (2023). Non-small cell lung cancer (NSCLC): A review of risk factors, diagnosis, and treatment. *Medicine*, *102*(8), e32899. <https://doi.org/10.1097/MD.00000000000032899>
- Arastu, A., Patel, A., Mohile, S. G., Ciminelli, J., Kaushik, R., Wells, M., Culakova, E., Lei, L., Xu, H., Dougherty, D. W., Mohamed, M. R., Hill, E., Duberstein, P., Flannery, M. A., Kamen, C. S., Pandya, C., Berenberg, J. L., Arne Grossman, V. G., Liu, Y., & Loh, K. P. (2020). Assessment of Financial Toxicity Among Older Adults With Advanced Cancer. *JAMA Network Open*, *3*(12), e2025810. <https://doi.org/10.1001/jamanetworkopen.2020.25810>
- Bailey, R., Mokonogho, J., & Kumar, A. (2019). Racial and ethnic differences in depression: current perspectives. *Neuropsychiatric Disease and Treatment*, *Volume 15*, 603–609. <https://doi.org/10.2147/NDT.S128584>
- Bray, F., Parkin, D. M., Gnanon, F., Tshisimogo, G., Peko, J.-F., Adoubi, I., Assefa, M., Bojang, L., Awuah, B., Koulibaly, M., Buziba, N., Korir, A., Dzamalala, C., Kamate, B., Manraj, S., Ferro, J., Lorenzoni, C., Hansen, R., Nouhou, H., ... Chingonzoh, T. (2022). Cancer in sub-Saharan Africa in 2020: a review of current estimates of the national burden, data gaps, and future needs. *The Lancet Oncology*, *23*(6), 719–728. [https://doi.org/10.1016/S1470-2045\(22\)00270-4](https://doi.org/10.1016/S1470-2045(22)00270-4)
- Chu, E., & Sartorelli, A. C. (2018). Cancer chemotherapy. In *Lange's Basic and Clinical Pharmacology* (pp. 948–976).
- Doktorchik, C., Patten, S., Eastwood, C., Peng, M., Chen, G., Beck, C. A., Jetté, N., Williamson, T., & Quan, H. (2019). Validation of a case definition for depression in administrative data against primary chart data as a reference standard. *BMC Psychiatry*, *19*(1), 9. <https://doi.org/10.1186/s12888-018-1990-6>
- Economos, G., Lovell, N., Johnston, A., & Higginson, I. J. (2020). What is the evidence for mirtazapine in treating cancer-related symptomatology? A systematic review. *Supportive Care in Cancer*, *28*(4), 1597–1606. <https://doi.org/10.1007/s00520-019-05229-7>
- Elkhaloufi, F., Boutayeb, S., Lamrani Alaoui, Y., Saadan, F., Nmari, A., & Errihani, H. (2022). Prevalence and Factors Contributing to Depression and Anxiety among Cancer Patients. *Annals of Cancer Research and Therapy*, *30*(2), 74–79. <https://doi.org/10.4993/acrt.30.74>
- Godspower Imiete, Olarenwaju Lawal, & Meelu Bari Barinua Tsaro Kpang. (2022). Locational pattern of health risk behaviors in oil servicing companies in the Niger Delta Region. *World Journal of Advanced Research and Reviews*, *14*(1), 063–074. <https://doi.org/10.30574/wjarr.2022.14.1.0262>
- Gold, S. M., Köhler-Forsberg, O., Moss-Morris, R., Mehnert, A., Miranda, J. J., Bullinger, M., Steptoe, A., Whooley, M. A., & Otte, C. (2020). Comorbid depression in medical diseases. *Nature Reviews Disease Primers*, *6*(1), 69. <https://doi.org/10.1038/s41572-020-0200-2>
- Gontijo Garcia, G. S., Meira, K. C., de Souza, A. H., & Guimarães, N. S. (2023). Anxiety and

- depression disorders in oncological patients under palliative care at a hospital service: a cross-sectional study. *BMC Palliative Care*, 22(1), 116. <https://doi.org/10.1186/s12904-023-01233-1>
- Gu, D., Morgan, R. O., Li, R., Weber, E. S., & Shen, C. (2020). Association between depression and healthcare expenditures among elderly cancer patients. *BMC Psychiatry*, 20(1), 131. <https://doi.org/10.1186/s12888-020-02527-x>
- Handema, M., Lungu, J., Chabala, M., & Shikaputo, C. (2023). Conceptualising the Philosophical Underpinning of the Study: A Practical Perspective. *Open Journal of Philosophy*, 13(02), 257–268. <https://doi.org/10.4236/ojpp.2023.132017>
- Hassanpour, S. H., & Dehghani, M. (2017). Review of cancer from perspective of molecular. *Journal of Cancer Research and Practice*, 4(4), 127–129. <https://doi.org/10.1016/j.jcrpr.2017.07.001>
- Holst, J. (2021). When the bile turns black: on the origins of melancholy. *History of European Ideas*, 47(6), 839–849. <https://doi.org/10.1080/01916599.2020.1857026>
- Jani Pankaj G, Craig Hope, Are Chandrakanth, G. R. (2024). *Cancer on the Global Stage: Incidence and Cancer-Related Mortality in Kenya WORLD HEALTH ORGANIZATION REGION: AFRICA*. The ASCO Post. <https://ascopost.com/issues/february-25-2021/cancer-on-the-global-stage-incidence-and-cancer-related-mortality-in-kenya/> (Accessed 26 March 2024)
- Kareem, M., Omer, Y., & Omer, B. (2017). Assessment of depression severity among cancer patients in Nanakaly Hospital, Erbil City. *Zanco Journal of Medical Sciences*, 21(3), 1922–1929. <https://doi.org/10.15218/zjms.2017.052>
- Kaushik Bhadra, D., & Kaur, R. (2021). Role of Tumour Suppressers and Oncoprotein in Cancer Biology: A Review Paper. *International Journal of Pharmaceutical Research and Applications*, 6(2), 486–488. [www.ijprajournal.com](http://www.ijprajournal.com)
- Kavak Budak, F., Özdemir, A., Gültekin, A., Ayhan, M. O., & Kavak, M. (2021). The Effect of Religious Belief on Depression and Hopelessness in Advanced Cancer Patients. *Journal of Religion and Health*, 60(4), 2745–2755. <https://doi.org/10.1007/s10943-020-01120-6>
- Kontomabolis, E. N., Koutras, A., Syllaios, A., Schizas, D., Mastoraki, A., Garmpis, N., Diakosawas, M., Angelou, K., Tsatsaris, G., Pagkalos, A., Ntounis, T., & Fasoulakis, Z. (2020). Role of Oncogenes and Tumor-suppressor Genes in Carcinogenesis: A Review. *Anticancer Research*, 40(11), 6009–6015. <https://doi.org/10.21873/anticanres.14622>
- Kuo, C., LoVette, A., Stein, D. J., Cluver, L. D., Brown, L. K., Atujuna, M., Gladstone, T. R. G., Martin, J., & Beardslee, W. (2019). Building resilient families: Developing family interventions for preventing adolescent depression and HIV in low resource settings. *Transcultural Psychiatry*, 56(1), 187–212. <https://doi.org/10.1177/1363461518799510>
- Lin, C., Cheng, A. S. K., Nejati, B., Imani, V., Ulander, M., Browall, M., Griffiths, M. D., Broström, A., & Pakpour, A. H. (2020). A thorough psychometric comparison between

Athens Insomnia Scale and Insomnia Severity Index among patients with advanced cancer. *Journal of Sleep Research*, 29(1). <https://doi.org/10.1111/jsr.12891>

Liu, J., Erenpreisa, J., & Sikora, E. (2022). Polyploid giant cancer cells: An emerging new field of cancer biology. *Seminars in Cancer Biology*, 81, 1–4. <https://doi.org/10.1016/j.semcancer.2021.10.006>

Mandal, A. (2019). *Cancer History*. News-Medical. Retrieved on January 30, 2023, from <https://www.news-medical.net/Health/Cancer-History.aspx>.

McIntyre, R. S., Alsuwaidan, M., Baune, B. T., Berk, M., Demyttenaere, K., Goldberg, J. F., Gorwood, P., Ho, R., Kasper, S., Kennedy, S. H., Ly-Uson, J., Mansur, R. B., McAllister-Williams, R. H., Murrugh, J. W., Nemeroff, C. B., Nierenberg, A. A., Rosenblat, J. D., Sanacora, G., Schatzberg, A. F., ... Maj, M. (2023). Treatment-resistant depression: definition, prevalence, detection, management, and investigational interventions. *World Psychiatry*, 22(3), 394–412. <https://doi.org/10.1002/wps.2112>

0

Memiah, P., Wagner, F. A., Kimathi, R., Anyango, N. I., Kiogora, S., Waruinge, S., Kiruthi, F., Mwavua, S., Kithinji, C., Agache, J. O., Mangwana, W., Merci, N. M., Ayuma, L., Muhula, S., Opanga, Y., Nyambura, M., Ikahu, A., & Otiso, L. (2022). Voices from the Youth in Kenya Addressing Mental Health Gaps and Recommendations. *International Journal of Environmental Research and Public Health*, 19(9), 5366. <https://doi.org/10.3390/ijerph19095366>

Mitchell, B. L., Thorp, J. G., Wu, Y., Campos, A. I., Nyholt, D. R., Gordon, S. D., Whiteman, D. C., Olsen, C. M., Hickie, I. B., Martin, N. G., Medland, S. E., Wray, N. R., & Byrne, E. M. (2021). Polygenic Risk Scores Derived From Varying Definitions of Depression and Risk of Depression. *JAMA Psychiatry*, 78(10), 1152. <https://doi.org/10.1001/jamapsychiatry.2021.1988>

Mugambi, P., & Gitonga, C. (2015). Adolescent Awareness of the Psychosocial Risk Factors for Depression in Selected Secondary Schools in Nairobi-Kenya. *Journal of Educational and Social Research*. <https://doi.org/10.5901/jesr.2015.v5n3p191>

Naseri, N., & Taleghani, F. (2018). Social Support and Depression in Iranian Cancer Patients: the Role of Demographic Variables. *Journal of Caring Sciences*, 7(3), 143–147. <https://doi.org/10.15171/jcs.2018.023>

NH. (2022). *Nairobi Hospice*. Newsletter.

Nyamai, D. K. (2021). The Secreted Curriculum and Youth Education to Become the Professionals the World Craves for. *Journal of Curriculum Studies Research*, 3(2), 169–193. <https://doi.org/10.46303/jcsr.2021.10>

Paykel, E. S. (2022). Basic concepts of depression. *Dialogues in Clinical Neuroscience*, 10(3), 279–289. <https://doi.org/10.31887/DCNS.2008.10.3/espaykel>

Pereira, H. C. (2018). The weariness of the hero: depression and the self in a civilization in transition. *Journal of Analytical Psychology*, 63(4), 420–439. <https://doi.org/10.1111/1468-5922.12426>

- Rice, S., Seidler, Z., Kealy, D., Ogrodniczuk, J., Zajac, I., & Oliffe, J. (2022). Men's Depression, Externalizing, and DSM-5-TR: Primary Signs and Symptoms or Co-occurring Symptoms? *Harvard Review of Psychiatry*, 30(5), 317–322. <https://doi.org/10.1097/HRP.0000000000000346>
- Riedl, D., & Schuessler, G. (2022). Prevalence of Depression and Cancer – A systematic review. *Zeitschrift Für Psychosomatische Medizin Und Psychotherapie*, 68(1), 74–86. <https://doi.org/10.13109/zptm.2021.67.oa11>
- Riedl, D., & Schüßler, G. (2022). Factors associated with and risk factors for depression in cancer patients – A systematic literature review. *Translational Oncology*, 16, 101328. <https://doi.org/10.1016/j.tranon.2021.101328>
- Saina, C., Gakinya, B., & Songole, R. (2021). Factors associated with Depression among Patients with Breast Cancer at Moi Teaching and Referral Hospital, Eldoret, Kenya. *Journal of Anxiety & Depression*, 4(1), 133. <https://doi.org/10.46527/2582-3264.133>
- Saracino, R. M., Cham, H., Rosenfeld, B., & J. Nelson, C. (2020). Latent Profile Analyses of Depressive Symptoms in Younger and Older Oncology Patients. *Assessment*, 27(7), 1383–1398. <https://doi.org/10.1177/1073191118784653>
- Sbolli, M., Fiuzat, M., Cani, D., & O'Connor, C. M. (2020). Depression and heart failure: the lonely comorbidity. *European Journal of Heart Failure*, 22(11), 2007–2017. <https://doi.org/10.1002/ejhf.1865>
- Schimelpfening, N. (2019). *The History of Depression: Accounts, treatments, and beliefs through the ages*. “Very Well Mind”.
- Shah, S. S. N. H., Laving, A., Okech-Helu, V. C., & Kumar, M. (2021). Depression and its associated factors: perceived stress, social support, substance use and related sociodemographic risk factors in medical school residents in Nairobi, Kenya. *BMC Psychiatry*, 21(1), 444. <https://doi.org/10.1186/s12888-021-03439-0>
- Truskowski, K., Amend, S. R., & Pienta, K. J. (2023). Dormant cancer cells: programmed quiescence, senescence, or both? *Cancer and Metastasis Reviews*, 42(1), 37–47. <https://doi.org/10.1007/s10555-022-10073-z>
- Van Assche, L., Van de Ven, L., Vandenbulcke, M., & Luyten, P. (2020). Ghosts from the past? The association between childhood interpersonal trauma, attachment and anxiety and depression in late life. *Aging & Mental Health*, 24(6), 898–905. <https://doi.org/10.1080/13607863.2019.1571017>
- Weru, J., Gatehi, M., & Musibi, A. (2020). Randomized control trial of advanced cancer patients at a private hospital in Kenya and the impact of dignity therapy on quality of life. *BMC Palliative Care*, 19(1), 114. <https://doi.org/10.1186/s12904-020-00614-0>
- World Health Organization. (2023). *Depressive disorder (depression)*. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/depression/> (Accessed 25 March 2024)

- World Health Organization. (2024). *Global Cancer Burden Growing, Amidst Mounting Need For Services*. World Health Organization. <https://www.who.int/news/item/01-02-2024-global-cancer-burden-growing--amidst-mounting-need-for-services/> (Accessed 26 March 2024)
- Yang, G., Zhao, L., & Sheng, L. (2019). Association of Synthetic House-Tree-Person Drawing Test and Depression in Cancer Patients. *BioMed Research International*, 2019, 1–8. <https://doi.org/10.1155/2019/1478634>
- Yang, H., Brand, J. S., Fang, F., Chiesa, F., Johansson, A. L. V., Hall, P., & Czene, K. (2017). Time-dependent risk of depression, anxiety, and stress-related disorders in patients with invasive and in situ breast cancer. *International Journal of Cancer*, 140(4), 841–852. <https://doi.org/10.1002/ijc.30514>
- Zięba, A., Matosiuk, D., & Kaczor, A. A. (2023). The Role of Genetics in the Development and Pharmacotherapy of Depression and Its Impact on Drug Discovery. *International Journal of Molecular Sciences*, 24(3), 2946. <https://doi.org/10.3390/ijms24032946>