

Impacts of Cancer Diagnoses and Treatments on the Psychological Health of Patients

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ABSTRACT

The effects that come with cancer diagnoses and treatments are many and impact various aspects of an individual's life. A rarely talked about impact of the cancer journey is the psychological impact of cancer on patients. Individuals experience isolation, changes in social interaction, impact on their health, and financial status. Deterioration in the psychological health of cancer patients can lead to devastating effects on the overall health of the individual because when an individual's psychological health declines, multiple other body systems are impacted too. This takes a drastic toll on patients because they already have to fight intensive cancer treatment, and a deteriorating psychological state can cause a lot of harm in their journey towards being cancer-free. Additionally, cancer patients experience much stigma from others lacking knowledge about what cancer patients go through. This can lead to cancer patients experiencing various psychological health issues which can then cause overall health-based consequences. Examining multiple credible studies regarding the psychological health of cancer patients, this paper aims to examine the role of psychological health throughout the journey of cancer diagnosis and treatment. Ultimately, there is an extensive impact on the psychological health of patients due to cancer treatment and diagnosis as a result of the stigma and environment experienced during the cancer journey. The most efficient method to help patients avoid significant psychological health deterioration is to create programs in their treatment plan to monitor their psychological health, mentally prepare them for the treatment ahead, and provide healthy coping strategies.

Introduction

Cancer comes in numerous types and forms while making a lifelong psychological impact on the patients. The impacts of cancer are everlasting, and a prominent one not spoken about enough is its impact on the psychological health of patients. However, the psychological issues that survivors and patients have to deal with during and after their cancer journey are tremendous. Therefore, a lingering doubt about why cancer patients and survivors experience the everlasting psychological torment they do still exists. They experience endless chemotherapy treatments, practice isolation, and usually experience a lack of energy. According to Karam from ONS Voice (the Oncology Nursing Society's online news center), cancer patients experience a variety of social impacts in treatment including alopecia as well as rendered friendships (Karam, 2021). This can have a major psychological impact on patients. They endure great amounts of stress during and after their cancer treatments. This stress can have immense effects on the immune system and impact its functionality. As well as that, it is the norm for patients to long for the normalcy of their life and desire for everything to just go back to normal. Whether it is the helplessness they feel or the painful flashbacks they encounter later on in life, the psychological impact of cancer is everlasting.

Cancer diagnoses and treatments indeed result in psychological conditions. According to an article from the *Psychooncology* journal, a study relating to this cause was performed in the city of Wuhan, China. In this study, researchers discovered that 74.5% of individuals with cancer endured anxiety and 67.5% endured depression (Chen et al., 2020). As depicted, there is a strong correlation between cancer and psychological

conditions. Another study took place in China regarding the same topic. From a study of 6, 213 participants, it was found that 17.7% of the cancer patients endured anxiety, 9.3% endured PTSD, and 23.4% endured depression (Wang et al., 2020). Another similar study performed in Ghana (Iddrisu et al., 2020) analyzed the effects of breast cancer on the lives of Ghanaian women (Iddrisu et al., 2020). Ghanaian women felt numerous psychological effects of cancer mainly due to the physical impacts of breast cancer. For example, hair loss, mastectomies, and isolation were major contributors to the deterioration of their psychological health (Iddrisu et al., 2020). Thus, it is universal for a majority of cancer patients to experience psychological conditions as such.

According to a study conducted by Karam (2021), breast cancer patients who experience loneliness are more at risk for mortality (23.5%) in comparison with patients who are surrounded by people (13.7%) As such, the impact of the cancer treatment environment, specifically, the state of being around others, influences cancer patients' state of mind. When there is a major lack of people to surround the patient thereof, the patient's psychological state deteriorates and can lead to fatal outcomes such as mortality.

In the United States of America, a student at the University of California, Berkeley conducted a study involving survivors of cancer. According to their research paper in the *Frontiers in Health Services* journal, it was concluded that 5.9% of cancer survivors experienced psychological conditions of a vast range. In addition to that, Abdelhadi conveys the correlation between treatment satisfaction, financial status, and the psychological aftermath, proposing a root cause as to why countless cancer patients/ survivors experience psychological issues (Abdelhadi, 2023).

Given the confirmed correlation between psychological conditions and a history of cancer, it is with immediate urgency that the root cause of this correlation is found. If identified, necessary precautions can be taken against the identified root cause which prevents the emergence of psychological conditions in cancer patients and survivors in the first place. Cancer patients and survivors already experience a major deterioration in their physical health during their cancer treatment, and the elimination of the psychological impact of their treatment can make their cancer treatment a little less painful.

Methodology

The primary goal of this research was to determine the impact on cancer diagnosis/ treatment on the psychological health of patients. The type of research conducted in this study is a secondary literature review based on multiple primary studies and informational research articles. The qualitative method of analysis was used in this research paper to analyze the presence and extent to which cancer diagnoses have an impact on the psychological health of patients. To carry out this method of analysis and data collection, numerous primary studies were analyzed to collect data regarding the psychological health or psychological disorder diagnosis of cancer patients. Then, there were conclusions made regarding the presence of a correlation between cancer treatment and diagnoses on patients' psychological health. The role of a patient's psychological health in the causes (when the psychological health of a patient is not great before diagnosis and treatment) and effects (when the psychological health of a patient is not great due to diagnosis and treatment) of cancer were also explored in detail through researching primary research articles and understood with the support of the two guiding professors in this research. Further, research was conducted to identify the overall impact of the cancer journey on patients' psychological health, the reasons behind the resultant psychological conditions from the cancer journey, and possible strategies to alleviate the psychological health of patients. No physical tools or materials were used in the research besides online resources. Research biases were mitigated by analyzing various sources and research articles from all over the world and utilizing articles from varied journals for the research objectives to ensure various perspectives.

Prominent Causes of Cancer

Various factors can put an individual more at risk for cancer. Cancer is a multifactorial condition, meaning that it can take place due to genetic and environmental factors causing internal changes. Therefore, genetic factors are a major cause of cancer. While these causes may be predominantly internal bodily changes relating to their biology, nervous system, or other organ systems, many other socio-economic factors contribute to the development of cancer, or rather, to the extent to which it develops for a specific patient.

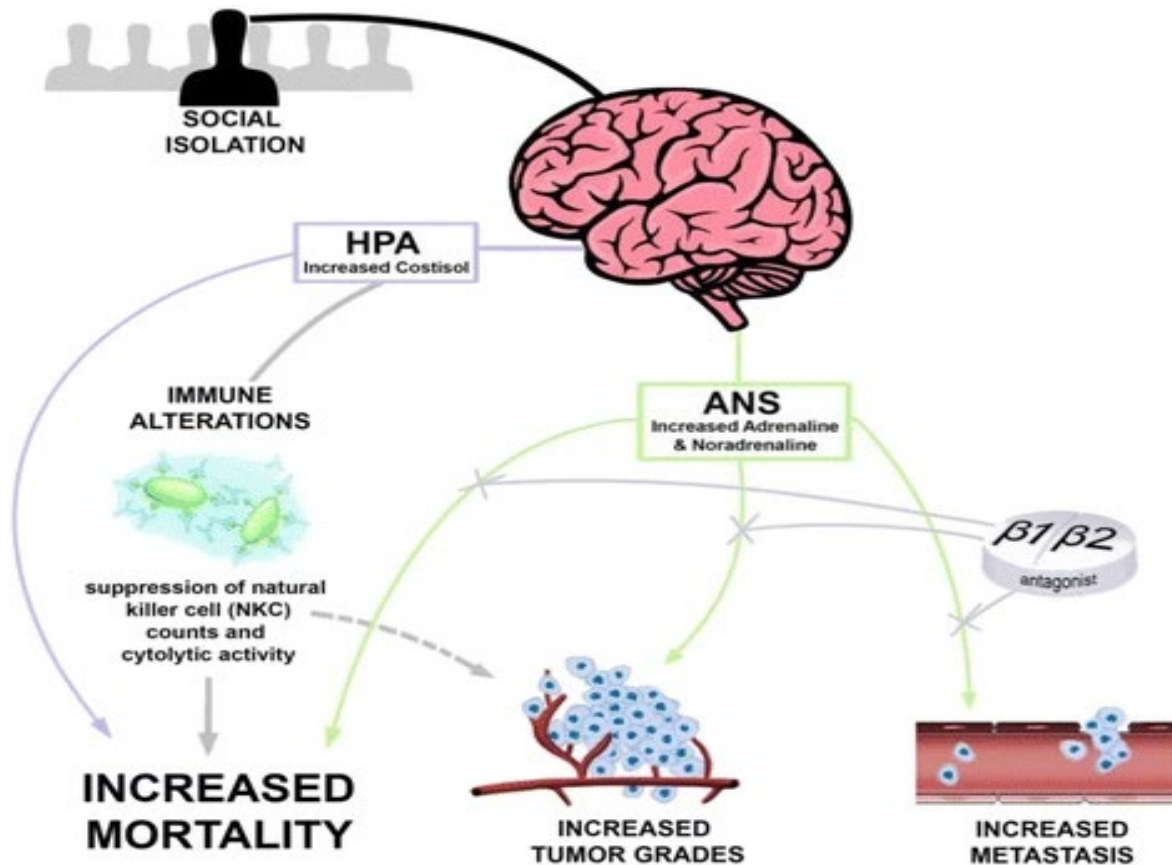


Figure 1. HPA Axis Effects. Source: Hinzey et al., 2016

Description: Social isolation leads to direct effects on the brain. The HPA Axis releases more Cortisol hormone, which suppresses both NKCs and cytolytic activity. Since they both are part of the immune system that helps fight off pathogens, suppression of these both can cause an increased risk of death and tumor growth. On the other hand, when the ANS releases more Adrenaline and Noradrenaline from the adrenal gland, Beta1/Beta2 acts as an antagonist, replacing the ligand that starts the reaction originally. This can lead to higher risks of death, tumor growth, and metastasis.

In terms of causes, numerous genetic factors in an individual's biology can cause cancer to be more prevalent in certain individuals. One example of these changes is a biological change known as a BRCA mutation. According to an article from the Centers for Disease Control and Prevention, the BRCA mutation takes place in either the BRCA1 or the BRCA2 genes, which are genes that every female has (Centers for Disease Control and Prevention, 2023). This mutation is not very common, but having a parent with this mutation puts one at a 50% risk of inheriting that mutation. The main effect of this mutation- although not always the case- is two types of cancer, either breast cancer or ovarian cancer. Genetically, if the women in a patient's family have

been affected by one of these types of cancer, they are more likely to experience the same. This biological cause of cancer puts one in 500 women at risk for breast or ovarian cancer (Centers for Disease Control and Prevention, 2023).

In addition, another major contributor to cancer is extreme stress in everyday life such as mental health issues. According to an article in the *Frontiers in Oncology* journal, some parts of the brain are directly linked to the endocrine system, and the hypothalamus and pituitary glands are some prominent such parts. These arts in addition to the adrenal gland form the HPA axis, or the neuroendocrine system. Another relevant system is the sympathetic nervous system (SNS), a part of the peripheral nervous system in the body. Both the neuroendocrine system and SNS, when under stress, lead to the production of Corticosteroids as well as Catecholamines. These two hormones contribute greatly to the growth of malignant cells in the human body, thus, promoting the development of cancer (Dai et al., 2020).

In the present day, when individuals are diagnosed with cancer, there are countless stereotypes, much stigma, and taboo surrounding cancer and cancer patients. This is another major contributor to the development of cancer. Whether others realize it or not, the impact that this stigma presents on patients' and survivors' mental health is too significant to be ignored. In conformity with an article from the *Asia-Pacific Journal of Oncology Nursing*, QOL (an indicator of the quality of life) has seemed to decrease for a vast majority of cancer patients or survivors due to the way they are stigmatized and stereotyped in public situations (Yılmaz et al., 2019). According to an article from *Front Public Health* journal, the QOL can serve as an indicator for the overall well-being of an individual, which is impacted by psychological health factors, so the measure of one's QOL can help identify overall changes in psychological health in this case.

The stigma surrounding cancer is attributed to various psychological health conditions such as depression. However, this stigma does affect different age groups differently because it has a much larger impact on the elderly. Cancer stigma can involve stereotyping the abilities and appearance of cancer survivors and patients, creating "taboos" regarding interaction with patients and survivors, etc. To continue, the QOL of patients is influenced by the impact of cancer on other lifestyle aspects such as employment and close relationships as well. Another factor regarding cancer patients that is widely stigmatized is physical appearance. Cancer patients, during treatment and after, tend to experience hair loss, mastectomy, weight fluctuations, etc. Furthermore, psychological health conditions as well as this stigma and the QOL seem to have a noteworthy correlation when examined. The correlation represents that as psychological health conditions and stigma increase, the QOL decreases, and vice versa (Yılmaz et al., 2019). As presented, cancer stigma can significantly add to the already detrimental psychological effects of cancer by negatively impacting the QOL.

The immune system also plays a vast role in the development of cancer and the extent to which cancerous cells develop in an individual. According to an article from the *Genes & Development* journal, this is because cancerous growth suppresses effector immune response while inducing the wound-healing component of the immune system, which in turn prompts tumor growth. The immune system leads directly to the development of immune inflammatory cells which causes the tumor to progressively worsen. This is caused by cancerous growth suppressing effector immune response while inducing the wound-healing component of the immune system, which in turn prompts tumor growth. Cancerous tumors start with unrestricted proliferation of cells. A progressive tumor includes cancer cells, fibroblasts, immune cells, and extracellular matrix proteins (which allow for intercellular communication). Then, the immune system comes into play where chronic inflammation caused by the inflammatory immune cells is one of the major contributors to tumorigenesis, or the development of the tumor. Although there may be numerous causes for this inflammation, factors such as lifestyle habits, infections, and autoimmune changes are prominent causes. The infiltrating cells of the immune system specifically, macrophages (TAM or tumor-associated macrophages), contribute to tumor expansion by inhibiting the immune response as well as promoting tumor growth and metastasis (Gonzalez et al., 2018).

In summary, there are various bodily causes in an individual's body that lead to the development of cancer. Some vivid examples of these causes are genetic causes, stress, and undesirable impacts on the immune system.

Prominent Effects of Cancer

As previously presented, there are various aspects to the causes of cancer diagnoses. As such, examining the various aspects of the impacts of cancer diagnoses and treatment can explain why there are such detrimental psychological effects.

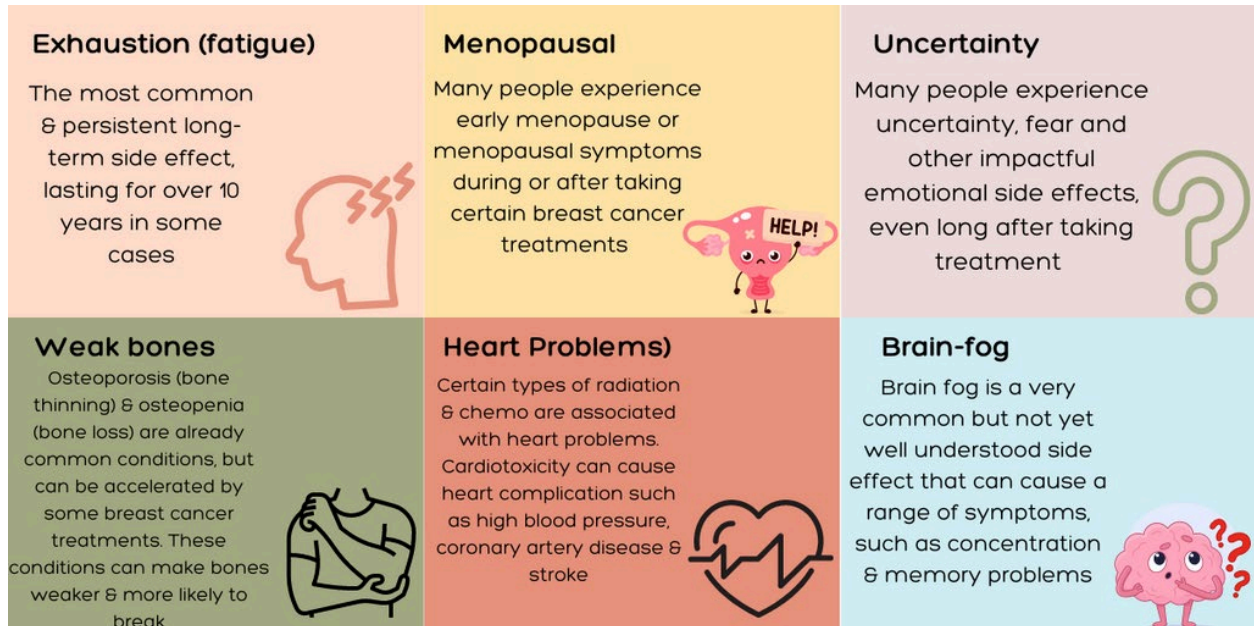


Figure 2. Long-Term Effects of Cancer, Source: AnaOno, (n.d.)

Description: Cancer treatment can have various side effects, but there are various long-term effects too. Some of these are exhaustion that comes with simpler tasks, menopause in earlier life stages, unbalanced emotions, weaker bones, cardiovascular health issues, and brain fog.

An article from the *Support Care Cancer* journal expresses that there is a tremendous dent made by cancer treatment on cancer patients' financial stance (Alzehr et al., 2022). expresses that there is a tremendous dent made by cancer treatment on cancer patients' financial stance. Cancer treatments can indirectly and directly impact a patient and their family's financial status because they can cause changes in employment status, extra payments for hired caregivers, or additional out-of-pocket payments for treatment. In addition, according to an article from the National Institute of Health's National Cancer Institute Cancer Trends Progress Report, there are significant costs for treatment regardless of which stage of life the patient is at. Not taking insurance into account, the yearly average expenditure of patients at the beginning of their diagnosis was \$109,727 for treatment, decreasing as the stages progressed. On the other hand, for the same stage of treatment, it costs \$4, 372 on average per year for prescribed oral medicines (National Cancer Institute, 2023).

In terms of the impacts of cancer diagnosis and treatments on patients' social lives, an article from the *Support Care Cancer* journal affirms that patients' relationships and social presence/ interaction are disturbed as a result of cancer treatment and diagnosis. Individuals tend to experience tense relationships with those close to them due to the sacrifice of other aspects of life from both the patient and their loved ones. This results in

decreased social participation from both the patients and those close to them. In addition, receiving cancer treatment can cause isolation from regular hobbies they used to pursue. As well as that, a study presented in this research paper presents that cancer in the later stages leads to patients' lives having social conflicts in the following areas: interacting with others, identifying with their pre-diagnosis self, and their relationships (Rojj et al., 2019).

In addition to social difficulties, patients experience countless challenges with their physical health during their cancer journey as declared by an article in the *North Carolina Medical Journal*. This aspect of effects, however, pertains increasingly to the survivors of cancer; survivors usually have to combat difficulties with having enough energy to perform even daily tasks like they were able to before diagnosis. To add on, patients may experience nausea and have a badly impacted sleep schedule. To continue, some more effects of cancer on patients can be fertility and challenges related to cognition (Naughton et al., 2014).

In summary, there are biological and socioeconomic impacts of cancer and cancer treatment on a patient that are hard to recover from. The financial burden caused by cancer treatment is not easy for patients to bear. First off, cancer treatment can lead to unemployment and a severe financial burden which then causes stress on both the patient and their family. In addition, cancer treatment and diagnosis can result in social isolation, stereotypes, and stigma all of which can put the patient in a negative environment and take a toll on their psychological well-being. Finally, the effect of chemotherapy on cancer patients takes an immense toll on their physical health and capabilities. This can result in physical limitations that can have consequences such as limitations from physical activity or even unemployment. All of these factors lead to a negative impact on the psychological health of cancer patients.

Different Types of Cancer Treatments

After being diagnosed with cancer, healthcare professionals take into account various factors before assigning a treatment plan and type to the patient as stated in an article from the Centers for Disease Control and Prevention. The patient's current health condition is taken into account as well as factors such as their age. The type of cancer and stage are also crucial to determining the type of treatment needed as well (Centers for Disease Control and Prevention, 2023).

As per an article from the Centers for Disease Control and Prevention, there are a multitude of cancer treatments used in the medical field, but some commonly used treatments are chemotherapy, surgery, hormone therapy, radiation therapy, and stem cell/ bone marrow transplant. Chemotherapy is widely known as a common treatment and is utilized to kill microscopic cancer cells or cancerous growth by inserting medicine into the patients. Another treatment is surgery, in which cancerous tissue is surgically cut out to prevent further cancerous growth in the body. This would be common in macroscopic cancerous growth. In addition, hormone therapy prevents cancerous growth by preventing the release of hormones that assist in the development and replication of cancerous cells. Radiation therapy utilizes another method to kill cancerous growth, it utilizes extensive radiation. On the other hand, stem cell/ bone marrow transplants involve patients getting stem cells/ bone marrow from a matched donor to replenish their lack of stem cells/ bone marrow. This lack of stem cells/ bone marrow most likely occurs as a result of radiation or chemotherapy for cancer types relating to immune system "centers" in the body such as the bloodstream (Centers for Disease Control and Prevention, 2023).

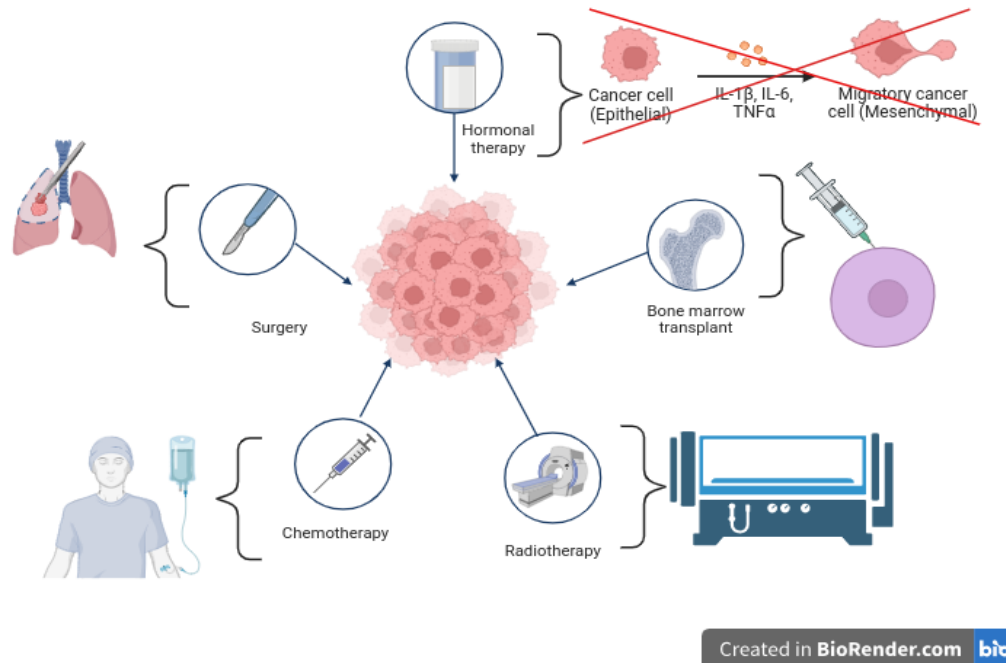


Figure 3. Different Types of Cancer Treatments. Source: Sahasra C. Dronavalli (created with BioRender.com)

Description: The various types of cancer treatments are depicted in the image. Visual representations of chemotherapy, surgery, hormone therapy, radiation therapy, and stem cell/ bone marrow transplant are shown. Chemotherapy targets killing microscopic cancerous growth in the cancer patient. Surgery targets the removal of macroscopic cancerous growth in the cancer patient. Hormone therapy targets blocking hormones that promote cancerous growth. Radiation therapy targets killing cancerous growth through rays/ radiation. Finally, as a result of certain treatments or cancers, there can be a lack of stem cells/ bone marrow, so transplants assist in replenishing stem cells/ bone marrow.

Overall Psychological Health of Cancer Patients

Cancer patients go through a variety of negative experiences and changes as a result of cancer treatment. As discussed prior, this can cause various psychological effects and even psychological health issues, which are later diagnosed. On the authority of an article from the *Epidemiology and Psychiatric Sciences* Journal, some very common psychological conditions cancer patients are diagnosed with are depression, anxiety, trauma, stress, somatization, and neurocognitive-related disorders. Depressive disorders or depression in general is a condition recognized to be a diagnosis that a great deal of cancer patients receive (Breitbart and Caruso, 2020).

Further proving the commonality of depression in cancer patients, there was a study conducted by Vucic et al. from the *Iranian Journal of Public Health* in Central Serbia. In this study, it was concluded that 27.2%, 22%, and 18% of participants in the study were diagnosed with mild, moderate, and major depression respectively. Another psychological symptom observed in these participants was that they were assigned anxiety scores, after answering the PHQ-9 (a Patient Health Questionnaire) and the Beck Anxiety Scale, ranging from 26 to 63, which are very high scores. These scores indicate that these patients have extreme anxiety. In addition, depression diagnosis rates increased in patients at later stages in their cancer treatment (Vucic et al., 2017).

As discussed, psychological health conditions are increasingly common in cancer patients, and often, diagnoses increase with the stage of treatment. Although depression is a very common psychological diagnosis for cancer patients, there are multitude of other prevalent conditions such as anxiety that cancer patients endure.

Strategies to Alleviate Stress

While cancer patients have to endure physical treatment such as chemotherapy or radiotherapy, treatments for their psychological health are also very necessary to combat the psychological challenges they face during their cancer journey. However, the amount of cancer patients that can attain these treatments is very low at about 5% only according to a blog from Cancer.Net, an online resource developed by the American Society of Clinical Oncology (Peterson, 2020).

One common example of a solution to help with the betterment of patients' psychological health is therapy. As stated in an article in the National Health Institute's National Cancer Institute, a predominantly universal psychological impact of cancer treatment and diagnosis is the mental stress and tension that comes with the possibility of cancer returning. Psychotherapy is a type of treatment that can help with this issue because it branches out into numerous specialized therapies that can help patients based on their individuality. For example, there is psychotherapy that targets lowering stress levels through mental well-being. In addition, there are types of psychotherapy that help patients achieve better psychological health through physical activity. To accommodate cancer patients or survivors who are not able to commit to in-person therapy sessions, online therapy sessions are in the works of being developed (National Cancer Institute, 2020).

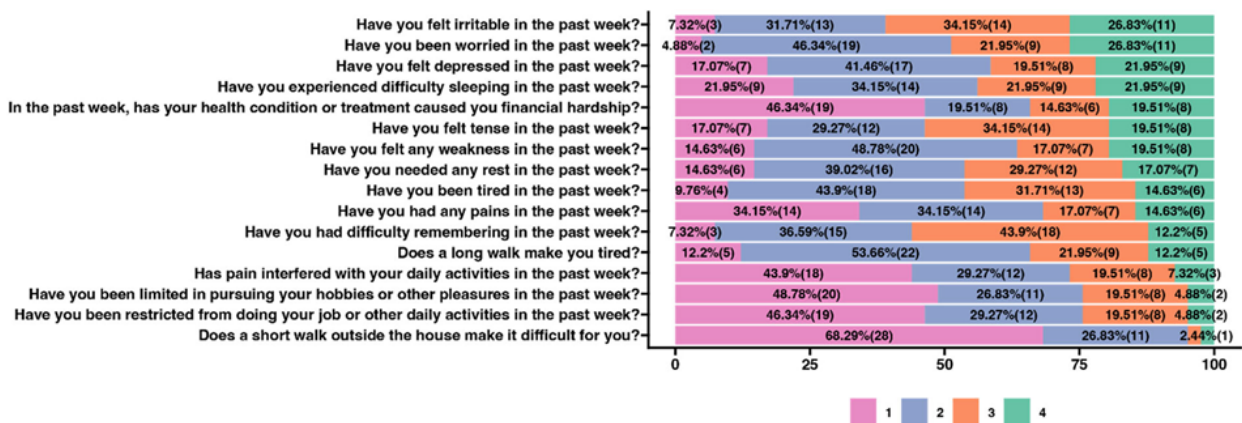


Figure 4. Survey of Participants Before a Yoga Class. Source: Zok, et al., 2023

Description: The figure above shows the responses of participants in a yoga class before they started to participate in the class to questions about their overall well-being. The color starting at one represents an answer of never, and the color ending at 4 represents an answer of very frequently.

Furthermore, an article in the National Institute of Health's National Cancer Institute called *Cancer Support Groups* conveys that support groups for cancer survivors or patients help them tremendously in terms of their psychological health and physical health. Support groups can accommodate individuals in person or online, and can impact a survivor or patient in ways that healthcare professionals cannot. Support groups provide a space for individuals to share familiar and similar experiences as well as converse about their problems with other survivors/patients (National Cancer Institute, 2023). This can help patients better their psychological health which can simultaneously help them better their physical health by being able to shift their focus from their mental wellbeing to their physical wellbeing.

Another strategy of equal importance is continuous checkups for cancer patients after their treatment because this can help reassure patients of their health status, although it can cause the patients to be anxious about results. As presented in an article in the National Institute of Health National Cancer Institute called *Follow-Up Medical Care*, patients' healthcare providers provide for cancer survivors to follow a survivorship care plan after treatment. This plan can be personalized based on the patient's experience through treatment, health status after treatment, and their specific diagnosis. However, regular checkups every few months or at least annually are helpful to inform the doctor of any long-lasting side effects of the treatment, and blood tests to confirm that there is no new cancerous cell formation (National Cancer Institute, 2023).

Patients must take care of their psychological health during and after treatment because it will help with their recovery, and cancer treatment/ diagnosis can lead to vast amounts of stress on a patient's psychological health.

Conclusion

In conclusion, cancer diagnoses and treatment have a vast scope of influencing the psychological health of patients and survivors. In addition to the draining physical treatment that patients have to experience, numerous external and internal factors of the patients cause deterioration in their psychological health too. This is an immense issue and can decrease the chances of recovery for cancer patients.

Although most changes in the body cause cancer and the changes in the body that occur as a result of cancer are inevitable, it is possible to block some of these causes and effects by reducing the main factor that leads to some of these causes and effects, stress. Stress can lead to the amplification of the risks for cancer, aid in the development of cancer, and inhibit the recovery process. In addition, the stigma surrounding cancer can vastly influence patients' psychological health too. To help with the betterment of cancer patients' psychological health, the factors that contribute to its deterioration need to be controlled. As such, the stress that the patient undergoes as well as the stigma surrounding cancer need to decrease or be eliminated as a whole. Additionally, participating in therapy, and support groups, and attending regular checkups to stay on track with their survivorship plan can also allow patients to "heal" their psychological health step by step.

Ultimately, change from cancer patients themselves and those around them in the factors they can control during and after their cancer journey is required to aid their psychological health. The most effective method that can help with the betterment of the psychological well-being of cancer patients is helping them psychologically prepare for their treatment and the changes expected to come with it before their treatment. Developing programs similar to this kind can help cancer patients and their families make necessary adjustments to their lifestyles and necessities before their treatment as well as be informed on the cancer treatment journey.

Limitations

This research mainly aims to establish the presence and qualitative extent of the impact of cancer diagnosis and treatment on a patient's psychological health. As a secondary literature review, numerous primary articles examined a common and prominent connection between the two factors. Further, the research also details the role of psychological health deterioration in the causes and effects of cancer when the psychological health of a patient is not well before diagnosis and treatment and due to diagnosis and treatment, respectively. Finally, as a result of the correlation being established and the extent of it being significant, the strategies through which this deterioration in psychological health could be alleviated were explored and conveyed. Therefore, this research focused on expressing strategies to help improve the psychological health of cancer patients such as physical activity because certain aspects of the cancer journey, such as side effects that cause a change in a

patient's physical appearance and play a role in the deterioration of their psychological health, cannot necessarily be avoided. As well as that, in current healthcare, measures are taken to assist the patient in having a cancer journey that is successful and not very impactful on too many aspects of their life. However, inevitably, some aspects of a cancer patient's life will always be affected by the cancer journey due to the treatment process, side effects, and stigma that can come with the cancer journey. Ultimately, this research focuses majorly on the qualitative extent and impact of the cancer journey on patients but also details the role of psychological health in the causes/ effects of cancer (the role of psychological health conditions acquired before and after cancer diagnosis on the causes and effects, respectively) as well as mitigation strategies to improve the psychological health of patients during and after the cancer journey.

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