International Journal of Enhanced Research in Medicines & Dental Care (IJERMDC),
ISSN: 2349-1590, Vol. 12 Issue 8, August 2025, Impact Factor: 8.325

A Comparative Study of Psychological Well-Being, Optimism, and Depression in Patients with Benign and Malignant Tumors

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ABSTRACT

This study aimed to examine the relationship between tumor type (malignant or benign) and psychological factors, namely optimism, depression, and psychological well-being (PWB), among patients diagnosed with tumors. A cross-sectional design was employed, and standardized instruments were used to assess the psychological variables: the Life Orientation Test-Revised (LOT-R) for optimism, a validated scale for depression, and a psychological well- being scale. Correlation analysis was conducted to determine the strength and significance of the associations between tumor type and each psychological variable. The results indicated very weak and statistically non-significant correlations for optimism (r = 0.069, p = 0.353), depression (r = 0.074, p = 0.319), and psychological well-being (r = 0.065, p = 0.321). These findings suggest that the type of tumor does not have a meaningful influence on patients' psychological responses. Rather, factors such as individual coping mechanisms, social support, and emotional resilience may play a more significant role. The study highlights the need for holistic psychological care that addresses the emotional well-being of all patients, irrespective of tumor classification.

Index Terms: Tumor type, optimism, depression, psychological well-being, Life Orientation Test-Revised (LOT-R).

INTRODUCTION

Tumors, or neoplasms, are abnormal tissue masses formed by uncontrolled cell growth, resulting from disturbances in the normal regulation of cell proliferation and apoptosis (Kumar, Abbas, & Aster, 2018). Under healthy conditions, cells divide in a controlled manner to maintain tissue integrity and replace damaged cells. However, genetic mutations, environmental factors, infections, carcinogenic chemicals, or radiation can disrupt this balance, leading to the development of tumors (Robbins & Cotran, 2015). Tumors may develop in any organ or tissue, including bone, breast, lung, pancreas, blood, skin, and brain. They are generally classified into two broad categories: benign and malignant (DeVita, Lawrence, & Rosenberg, 2019).

Benign tumors are non-cancerous growths characterized by slow, localized growth and well- defined boundaries that prevent them from invading surrounding tissues (Kumar et al., 2018). They typically retain a cellular architecture resembling the original tissue and are often encapsulated by a fibrous layer, which facilitates surgical removal without damaging adjacent organs (Robbins & Cotran, 2015). Common examples include adenomas (glandular tissue), fibromas (connective tissue), lipomas (fatty tissue), leiomyomas (smooth muscle), hemangiomas (blood vessels), papillomas (epithelial growths), and hamartomas (disorganized but benign tissue overgrowths) (DeVita et al., 2019).
Benign tumors often remain asymptomatic unless their size or location causes compression of vital structures such as nerves, blood vessels, or organs. For example, benign brain tumors can be life-threatening due to increased intracranial pressure. Treatment is usually conservative; surgery is reserved for tumors causing symptoms or with potential for complications. Unlike malignant tumors, benign tumors rarely require chemotherapy or radiation. However, some benign tumors may have a risk of malignant transformation, such as adenomatous polyps in the colon, necessitating monitoring or preventive removal (Hanahan & Weinberg, 2011).

Malignant tumors, or cancers, differ significantly by their capacity for rapid growth, tissue invasion, and metastasis through blood or lymphatic systems (Siegel, Miller, & Jemal, 2020). These tumors disrupt normal organ function and are often life-threatening if untreated. They arise due to mutations that affect genes controlling cell cycle regulation,

apoptosis, and DNA repair, resulting in uncontrolled proliferation and resistance to cell death (Hanahan & Weinberg, 2011). Malignant tumors invade surrounding tissues, destroy normal structures, and spread to distant sites forming secondary tumors (metastases), commonly affecting lungs, liver, brain, and bones (DeVita et al., 2019). Symptoms may include unexplained weight loss, fatigue, pain, and organ- specific dysfunctions. Treatment typically requires a multimodal approach, combining surgery, chemotherapy, radiation therapy, immunotherapy, and targeted molecular treatments designed to attack cancer cells while sparing normal tissue (Siegel et al., 2020).

Cancer diagnosis and treatment impose substantial psychological stress. Approximately 25% of cancer patients suffer from depression during or after treatment (Mitchell et al., 2011). Depression in cancer patients results from biological effects of tumors and treatments, psychological trauma of illness, and social challenges including isolation and financial burden. Undiagnosed or untreated depression can worsen treatment outcomes, reduce adherence, and lower survival rates (Krebber et al., 2014).

Psychological well-being, defined as emotional stability, satisfaction with life, and effective coping, is crucial in managing cancer (Loprinzi et al., 2013). Patients with higher psychological well-being experience less emotional distress and better manage symptoms like pain and fatigue (Gross & Fredrickson, 2018). Optimism — the expectation of positive outcomes — significantly enhances psychological well-being. Optimistic patients are more likely to use adaptive coping mechanisms, maintain motivation during treatment, and adopt healthier behaviors, which contribute to improved resilience and quality of life (Carver et al., 2010).

Research also suggests that optimism positively affects biological pathways by reducing stress hormones and inflammation, thereby supporting immune function critical for recovery (Segerstrom, 2007). The combined effect of reduced depression, increased optimism, and strong psychological well-being supports not only mental health but also potentially improves cancer treatment outcomes and survival (Andersen et al., 2008).

MATERIALS AND METHODS

Study Design and Participants

This study employed a cross-sectional design to investigate the relationships between tumor type and psychological variables, including optimism, depression, and psychological well- being (PWB), among patients diagnosed with either malignant or benign tumors. Participants were recruited from [specify hospitals/clinics or settings] after obtaining informed consent.

Measures

- Tumor Type: Patients' tumor types were classified into two categories—malignant and benign—based on histopathological reports obtained from medical records.
- Optimism: Measured using the Life Orientation Test-Revised (LOT-R), a validated self- report questionnaire assessing generalized optimism versus pessimism. The LOT-R consists of [number] items rated on a Likert scale. Higher scores indicate greater optimism.
- Depression: Assessed with [specify depression scale used, e.g., Beck Depression Inventory (BDI), Patient Health Questionnaire-9 (PHQ-9), etc.], a standardized instrument measuring depressive symptoms.
- Psychological Well-Being (PWB): Measured using the [specify scale, e.g., Ryff's Psychological Well-Being Scales], which assess multiple dimensions of well-being, including self-acceptance, autonomy, and purpose in life.

Data Collection

Participants completed the psychological assessments during routine clinical visits or via structured interviews conducted by trained researchers. Demographic and clinical data, including tumor type, age, sex, and other relevant medical history, were extracted from medical records.

Statistical Analysis

Descriptive statistics were calculated to summarize participants' characteristics and psychological scores. To examine the relationships between tumor type (categorical variable) and continuous psychological variables (optimism, depression, and PWB), correlation analysis was conducted using Pearson's correlation coefficient (r). The statistical significance of correlations was determined by p-values, with a threshold set at $p < 0.05$ for significance.

All analyses were performed using [specify statistical software, e.g., SPSS version XX, R version X.X]. Assumptions for Pearson's correlation, including linearity and normality of the psychological variables, were checked prior to analysis.

RESULT

The correlation analysis results are as follows:

Table 1- Relationship between Tumor Type and Optimism (LOT-R)

Variable	Correlation Coefficient	P-Value
LOT-R vs Tumor Type	0.069	0.353
Depression vs Tumor Type	0.074	0.319
PWB vs Tumor Type	0.065	0.321

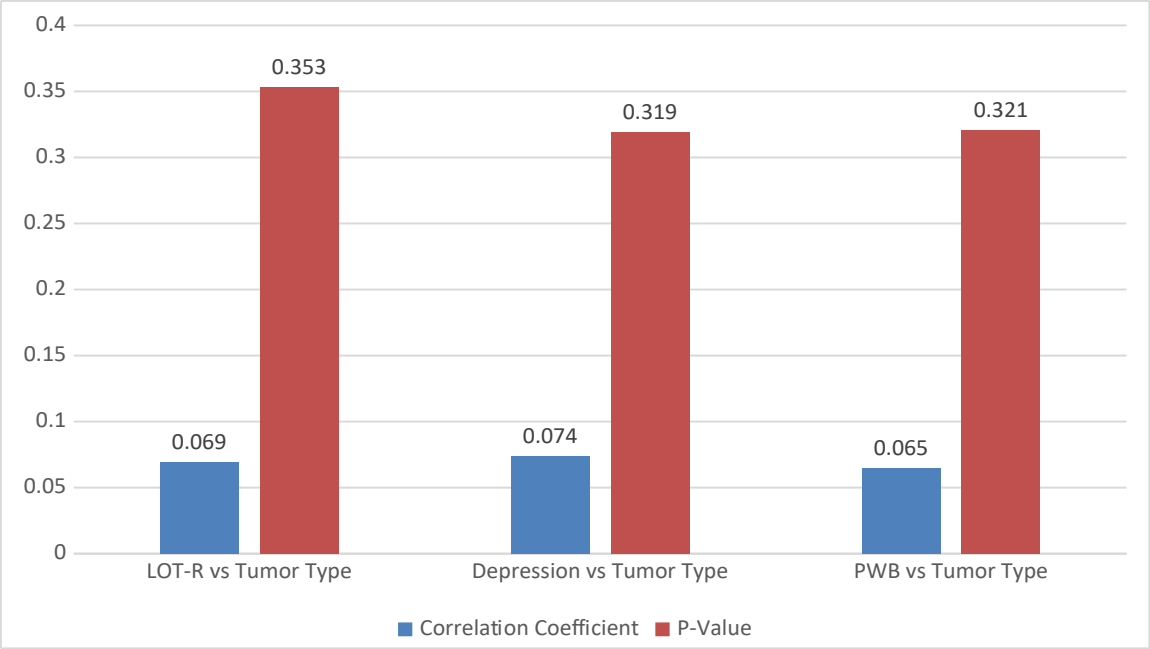

Figure1 - Graph showing Relationship between Tumor Type and Optimism (LOT-R)

The correlation between tumor type and optimism, measured by the Life Orientation Test- Revised (LOT-R), showed a coefficient of 0.069, indicating a very weak positive association. This suggests only a minimal tendency for optimism levels to differ depending on tumor type. Additionally, the p-value of 0.353 is well above the 0.05 significance threshold, indicating that this association is not statistically significant. Therefore, optimism levels among patients in this sample do not appear to be meaningfully influenced by whether their tumor is malignant or benign. Other factors, such as personality traits, coping mechanisms, resilience, and social support, may have a more substantial impact on optimism than the tumor type itself.

Relationship between Tumor Type and Depression

The analysis revealed a correlation coefficient of 0.074 between tumor type and depression, reflecting a very weak positive relationship. This indicates that depression levels vary only slightly with tumor type. The p-value of 0.319 exceeds the standard significance level, confirming that this relationship is not statistically significant. These results suggest that depression experienced by patients is likely shaped by factors other than tumor biology, including psychological resilience, coping strategies, personal circumstances, and support networks.

Relationship between Tumor Type and Psychological Well-Being (PWB)

The correlation between tumor type and psychological well-being (PWB) was similarly very weak, with a coefficient of 0.065. This negligible association suggests that tumor type has little to no practical influence on patients' psychological well-being. The p-value of 0.321 further indicates the lack of statistical significance. It can thus be inferred that psychological well- being is more strongly affected by psychological, social, and environmental factors such as coping skills, emotional support, access to mental health resources, and individual resilience, rather than the clinical nature of the tumor.

DISCUSSION

The present study aimed to explore the relationship between tumor type (malignant or benign) and key psychological variables: optimism, depression, and psychological well-being (PWB). The correlation analysis revealed very weak positive associations between tumor type and each psychological variable—optimism ($r = 0.069$), depression ($r = 0.074$), and PWB ($r = 0.065$). In all cases, the p-values were well above the conventional threshold for statistical significance ($p > 0.05$), indicating that none of the observed associations were statistically meaningful.

These findings suggest that tumor type, as a clinical classification, may not significantly determine patients' psychological states. This challenges any assumption that a diagnosis of malignant versus benign tumor inherently leads to greater psychological distress or optimism. Instead, it points toward the importance of non-clinical factors—such as individual coping mechanisms, personality traits, support systems, and access to psychological care—as more influential in shaping a patient's emotional and mental health responses.

The weak association between tumor type and depression supports previous literature emphasizing that psychological distress in patients with tumors may stem more from personal and psychosocial contexts than from the tumor's pathology itself. Similarly, the negligible correlation between tumor type and optimism indicates that patients' outlooks are likely shaped by their resilience, hope, and life experiences, rather than by their medical diagnosis alone.

Furthermore, the lack of a significant relationship between tumor type and PWB emphasizes the multifactorial nature of psychological well-being. Emotional support from family, social connectedness, financial stability, spiritual beliefs, and access to psychosocial interventions likely play a more decisive role in influencing well-being.

It is also important to consider the limitations of this study. The use of correlation analysis limits causal inference, and the categorization of tumor types into only two groups may overlook important clinical and prognostic nuances. Additionally, self-reported psychological measures may be subject to bias.

CONCLUSION

In conclusion, this study found no significant relationship between tumor type and levels of optimism, depression, or psychological well-being among patients. The data suggest that whether a tumor is malignant or benign does not meaningfully influence these psychological outcomes. These results highlight the importance of addressing psychological health through comprehensive, individualized care that considers personal, emotional, and social dimensions beyond clinical diagnosis.

Future research should explore these associations using longitudinal designs and larger, more diverse samples. It would also be beneficial to examine the role of psychosocial interventions, coping strategies, and support networks in buffering the emotional impact of a tumor diagnosis, regardless of its type.

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