

Socio-Demographic Correlates of Fatigue, Depression and Quality Of Life Among Post-Chemotherapy Patients in Eastern Visayas, Philippines

Pearl Irish V. De Paz*

PhD, Biliran Province State University, Naval, Biliran Philippines.

*Corresponding Author Email: pearlirish.depaz@bipsu.edu.ph

Abstract

This study examined socio-demographic and treatment-related correlates of fatigue, depression, and quality of life among post-chemotherapy patients in Eastern Visayas, Philippines. A descriptive-correlational design and purposive sampling were used. One hundred two adults who had completed at least three outpatient chemotherapy sessions answered a socio-demographic questionnaire, the Brief Fatigue Inventory, Beck Depression Inventory, and Quality of Life Questionnaire for Cancer Patients Treated with Anticancer Drugs. Frequencies, percentages, Pearson correlation, point-biserial correlation, and chi-square tests were applied at $\alpha = .05$. Moderate fatigue affected 49.02% of participants and severe fatigue affected 40.20%; 57.84% had mild depression, while 97.05% reported good quality of life. Fatigue was associated with occupation before chemotherapy, cancer stage, and treatment duration. Depression was associated with age, education, occupation before chemotherapy, cancer stage, and chemotherapy type. Quality of life was associated with age, sex, occupation before chemotherapy, and cancer stage. Fatigue was associated with quality of life ($r = .417$, $p < .001$), and depression showed a strong inverse association with quality of life ($r = -.573$, $p < .001$). Findings support systematic symptom screening and individualized, family-supported follow-up care after chemotherapy, particularly for patients with advanced disease or socioeconomic vulnerability.

Keywords: *Cancer-Related Fatigue; Chemotherapy; Depression; Eastern Visayas; Quality of Life; Socio-Demographic Factors.*

INTRODUCTION

Cancer and its treatment create persistent physical, psychological, and social burdens. Chemotherapy remains central to cancer management, but its adverse effects may continue beyond the treatment encounter and interfere with patients' recovery, functioning, and participation in family and community life. Among the most consequential symptoms are cancer-related fatigue and depression, both of which may diminish perceived quality of life even when treatment is clinically successful.

Cancer-related fatigue differs from ordinary tiredness because it is disproportionate to recent activity and is not fully relieved by rest. It can affect energy, cognition, mood, mobility, work, relationships, and enjoyment of life (Ahlberg et al., 2003; Mendoza et al., 1999). Depressive symptoms may coexist with treatment burden, uncertainty, disrupted roles, financial strain, and physical deterioration. Their recognition is therefore important in oncology nursing, where symptom assessment and supportive care extend beyond the administration of antineoplastic drugs. Quality of life is a multidimensional appraisal of physical condition, daily functioning, psychological status, and social participation. Socio-demographic circumstances

may shape this appraisal by influencing access to care, coping resources, family support, employment, and financial security. Cancer stage, route of chemotherapy, and cumulative treatment exposure may also affect symptom severity and functioning. However, evidence describing these relationships among Filipino patients outside major metropolitan centers remains limited. This study addressed that gap by examining post-chemotherapy patients receiving outpatient care in Eastern Visayas. It aimed to: (1) describe participants' socio-demographic and cancer-treatment characteristics; (2) determine their levels of fatigue, depression, and quality of life; (3) test associations between socio-demographic and treatment characteristics and the three outcomes; and (4) examine relationships among fatigue, depression, and quality of life.

METHODS

Study design and setting

A cross-sectional descriptive-correlational design was used. The study was conducted at Ormoc Sugar Planters Association-Farmers Medical Center in Ormoc City, Leyte, a tertiary hospital that provided outpatient chemotherapy services to patients from Leyte, Samar, and Biliran. Data were collected from patients treated from December 2018 through March 2019.

Participants and sampling

Purposive sampling was used to recruit 102 consenting patients. Eligible participants were natural-born Filipino citizens, residents of Eastern Visayas, aged 18 years or older, and had completed at least three outpatient chemotherapy sessions. They were required to perform activities of daily living independently and understand English. Patients in their first or second chemotherapy session and those who declined participation were excluded.

Measures

A researcher-developed form captured age, sex, civil status, religious affiliation, living arrangement, educational attainment, financial assistance, occupation before and after chemotherapy, cancer type and stage, chemotherapy route, and number of completed sessions.

Fatigue was measured using the nine-item Brief Fatigue Inventory (BFI), which rates fatigue severity and interference from 0 to 10. Scores of 1-3 were classified as mild, 4-6 as moderate, and 7-10 as severe. The BFI has demonstrated strong internal consistency and construct validity in cancer populations (Mendoza et al., 1999). Depression was assessed using the 21-item Beck Depression Inventory (BDI). Total scores range from 0 to 63; the study classified scores of 0-13 as minimal, 14-19 as mild, 20-28 as moderate, and 29-63 as severe (Beck et al., 1996). Quality of life was measured using the 22-item Quality of Life Questionnaire for Cancer Patients Treated with Anticancer Drugs (QOL-ACD). Its domains cover daily activity, physical condition, psychological condition, and social attitude, with a final face-scale item. Mean scores from 1 to 5 were interpreted from worst to best quality of life (Kurihara et al., 1999). Permission to use the instruments was sought from their respective authors.

Data Collection and Ethics

Hospital permission and university ethics clearance were obtained before data collection. The study was explained to eligible patients, who provided written informed consent and were informed of their right to withdraw. Questionnaires were completed at the hospital or taken home and retrieved after one week. Responses were coded to protect identity, stored securely,

and scheduled for destruction after the retention period. Participants with indications of major depression were to be referred for further evaluation; no participant met the study's severe-depression threshold.

Statistical Analysis

Frequencies and percentages summarized categorical variables. Pearson product-moment correlation was used for pairs of interval-level variables, point-biserial correlation when one variable was dichotomous and the other continuous, and chi-square tests for categorical associations. Statistical significance was set at $p \leq .05$. Coefficients and p-values are reported as recorded in the dissertation dataset.

RESULTS

Participant characteristics

The 102 participants had a mean age of 51.81 years (range 31-82). Most were women (88.24%), married (81.37%), Roman Catholic (86.30%), and lived in extended households (56.86%). Family or relatives were the principal source of treatment financing for 75.50%. More than half had worked in the private sector before chemotherapy (55.90%), whereas 76.50% reported no occupation after treatment.

Table 1: Selected Socio-Demographic Characteristics (N = 102)

Characteristic	n (%)
Age, years	Mean 51.81; range 31-82
50-59 years	33 (32.40)
Female	90 (88.24)
Married	83 (81.37)
Roman Catholic	88 (86.30)
Extended household	58 (56.86)
High-school graduate	45 (44.11)
Financial support from family/relatives	77 (75.50)
Private-sector occupation before chemotherapy	57 (55.90)
No occupation after chemotherapy	78 (76.50)

Note: Percentages are based on N = 102.

Breast cancer was the most common diagnosis (65.70%), and 61.76% of participants had stage II disease. Combination intravenous and oral chemotherapy was used by 52.90%. Most participants had completed either three to four sessions (42.20%) or five to six sessions (41.20%).

Table 2: Cancer Diagnosis and Treatment Characteristics (N = 102)

Characteristic	n (%)
Breast cancer	67 (65.70)
Colon cancer	7 (6.90)
Ovarian cancer	9 (8.80)
Other cancer types	19 (18.60)
Stage II	63 (61.76)
Stage III	28 (27.45)
Stage IV	11 (10.78)
Intravenous chemotherapy	46 (45.10)
Oral chemotherapy	2 (2.00)
Combined intravenous and oral chemotherapy	54 (52.90)
3-4 sessions	43 (42.20)

5-6 sessions	42 (41.20)
7 or more sessions	17 (16.70)

Note: Other cancer types included rectal, bone, lung, and prostate cancers.

Fatigue, Depression, and Quality of Life

Nearly nine in ten participants reported moderate or severe fatigue. Depression scores fell within the minimal or mild categories, with no moderate or severe cases. Almost all participants were classified as having good quality of life.

Table 3: Distribution of fatigue, depression, and quality-of-life categories (N = 102)

Outcome	Category	n (%)
Fatigue	Mild	11 (10.78)
Fatigue	Moderate	50 (49.02)
Fatigue	Severe	41 (40.20)
Depression	Minimal	43 (42.16)
Depression	Mild	59 (57.84)
Quality of life	Normal	3 (2.94)
Quality of life	Good	99 (97.05)

Note: Categories follow the scoring rules applied in the dissertation.

Correlates of study outcomes

Fatigue was significantly associated with occupation before chemotherapy, cancer stage, and chemotherapy duration. Depression was associated with age, education, occupation before chemotherapy, cancer stage, and chemotherapy type. Quality of life was associated with age, sex, occupation before chemotherapy, and cancer stage. Variables not listed as significant in Table 4 did not reach the .05 threshold.

Table 4: Significant Socio-Demographic and Treatment Correlates

Outcome	Correlate	Statistic	p
Fatigue	Occupation before chemotherapy	rpb = .225	.023
Fatigue	Cancer stage	rpb = .284	.004
Fatigue	Chemotherapy duration	chi-square(2) = 7.582	.023
Depression	Age	r = .258	.009
Depression	Education	chi-square(1) = 8.139	.004
Depression	Occupation before chemotherapy	rpb = .250	.011
Depression	Cancer stage	rpb = .324	.001
Depression	Chemotherapy type	chi-square(1) = 8.448	.004
Quality of life	Age	r = -.282	.004
Quality of life	Sex	rpb = .241	.015
Quality of life	Occupation before chemotherapy	rpb = -.195	.050
Quality of life	Cancer stage	rpb = -.308	.002

Note: rpb = point-biserial correlation. The p = .050 result was classified as significant in the source analysis.

Relationships Among Fatigue, Depression, and Quality Of Life

Fatigue and depression were not significantly related ($r = -.040$, $p = .692$). Fatigue was significantly associated with quality of life ($r = .417$, $p < .001$), while depression had a strong inverse association with quality of life ($r = -.573$, $p < .001$). The positive fatigue-quality-of-life coefficient is retained from the source analysis; its interpretation depends on the direction used to code the fatigue score and should be verified against the analysis file before submission.

Table 5: Relationships among primary study outcomes

Variable pair	r	p	Interpretation
Fatigue and depression	-.040	.692	Not significant
Fatigue and quality of life	.417	< .001	Significant
Depression and quality of life	-.573	< .001	Significant

Note: Values reported as $p = .000$ in the dissertation are presented as $p < .001$.

DISCUSSION

The findings show a substantial post-chemotherapy symptom burden despite generally favorable quality-of-life ratings. Almost 90% of participants experienced moderate or severe fatigue, supporting the recognition of fatigue as a prevalent and functionally important consequence of cancer treatment. Byar et al. (2006) similarly observed moderately intense fatigue during adjuvant breast-cancer chemotherapy, with fatigue decreasing after treatment. A systematic review and meta-analysis by Ma et al. (2020) further identified cancer-related fatigue as a common problem across cancer populations and linked its occurrence to clinical and treatment-related factors. This level of fatigue warrants routine assessment because patients may normalize persistent exhaustion or may not report it unless specifically asked.

More than half of participants had mild depressive symptoms, although none fell into the moderate or severe categories under the study's scoring scheme. This pattern is consistent with evidence that depressive symptoms remain common during and after chemotherapy. Wen et al. (2019), in a systematic review of patients undergoing chemotherapy, found that depression was associated with demographic, clinical, and psychosocial risk factors. Levkovich et al. (2015) also documented both cancer-related fatigue and depressive symptoms among breast-cancer patients one to six months after chemotherapy and showed that the two symptoms had distinguishable psychological correlates. Mild symptoms remain clinically relevant because they may affect motivation, adherence, sleep, appetite, coping, and social engagement.

The coexistence of symptom burden and good reported quality of life may reflect adaptation, family support, religious coping, and the predominance of earlier-stage disease. Most participants lived with family members and relied on relatives for treatment financing. Within Roy's Adaptation Model, patients can maintain an overall sense of well-being while responding to physiologic and psychosocial stressors. Quality-of-life ratings therefore should complement, not replace, targeted symptom screening. Cancer stage emerged as a consistent correlate of fatigue, depression, and quality of life. This agrees with Matthys et al. (2021), who found that patients with stage IV breast cancer reported greater fatigue and depression and poorer cognitive outcomes than comparison groups. Cheng et al. (2022) likewise identified cancer stage and cancer treatment among the predictors of anxiety and depression in colorectal cancer. More advanced disease may increase symptom burden through disease progression, treatment intensity, uncertainty, and functional limitations. The present associations of treatment duration with fatigue and chemotherapy type with depression support assessment at multiple points in the treatment pathway. Age, education, sex, and pre-treatment occupation were associated with one or more outcomes. Comparable socioeconomic gradients have been reported elsewhere. Chang et al. (2014) found that education, income, employment, and marital status were related to body image or quality of life among women with breast cancer. Schmidt et al. (2019) found that depressive symptoms, lower education, and persistent fatigue were associated with impaired return to work, while survivors who had not returned to work reported worse quality of life and greater financial problems. These findings suggest that employment

is both a marker of resources and an outcome affected by treatment; therefore, associations should not be interpreted as simple causal effects.

Depression showed the strongest relationship with quality of life. This is consistent with Baek and Yi (2015), who reported that depression was the strongest predictor of quality of life among colorectal-cancer patients receiving chemotherapy after accounting for physical symptoms, anxiety, treatment location, and occupational status. Hsu et al. (2014) likewise found that fatigue affected quality of life directly and indirectly through functional status and depressive symptoms. Levkovich et al. (2015), however, demonstrated that fatigue and depression can have different psychosocial associations after chemotherapy, which may help explain the nonsignificant fatigue-depression correlation in the present study. The fatigue-quality-of-life association was statistically significant, although its reported positive direction requires confirmation of score coding.

For nursing practice, the results support a structured home-based follow-up approach that includes fatigue and mood screening, education on energy conservation and activity pacing, nutritional and sleep guidance, family participation, financial-resource navigation, and clear referral pathways. Patients with advanced cancer, prolonged treatment, lower educational attainment, or employment disruption may require more intensive support.

Limitations

This study was conducted at one outpatient facility using purposive sampling, limiting generalizability. Its cross-sectional design cannot establish temporal or causal relationships. Self-report responses may be affected by recall, social desirability, and respondent interpretation. Eligibility required independent activities of daily living and English comprehension, which may have excluded patients with greater symptom burden. The sample was predominantly female and diagnosed with breast cancer. The analysis included several bivariate tests without reported adjustment for multiple comparisons or multivariable control of confounding. Finally, the direction and coding of the reported fatigue-quality-of-life coefficient should be checked against the original statistical output before journal submission.

CONCLUSION

Post-chemotherapy patients in Eastern Visayas experienced considerable fatigue and mild depressive symptoms even though most rated their quality of life as good. Cancer stage was consistently associated with all three outcomes, while selected socio-demographic and treatment factors also showed significant relationships. Depression had a strong inverse relationship with quality of life, and fatigue was significantly related to quality of life. Oncology services should combine symptom surveillance with individualized, family-supported, and socioeconomically responsive follow-up care. Future multicenter studies should use probability sampling, longitudinal measurement, and multivariable models to clarify independent predictors and changes across the chemotherapy trajectory.

DECLARATIONS

Ethics approval and consent to participate: Ethics clearance was obtained from the Silliman University Research Ethics Committee, and written informed consent was obtained from all participants. The approval reference number was not stated in the source dissertation and should be inserted before submission.

Consent for publication: Not applicable; no individually identifiable information is reported.

Funding: No external funding was reported in the source dissertation.

Conflict of interest: The author declares no conflict of interest.

Data availability: De-identified data may be available from the corresponding author on reasonable request, subject to ethics and institutional requirements.

Acknowledgments: The author acknowledges the participating patients, the staff of OSPA-Farmers Medical Center, and the Silliman University College of Nursing.

References

- 1) Ahlberg, K., Ekman, T., Gaston-Johansson, F., & Mock, V. (2003). Assessment and management of cancer-related fatigue in adults. *The Lancet*, 362(9384), 640-650. [https://doi.org/10.1016/S0140-6736\(03\)14186-4](https://doi.org/10.1016/S0140-6736(03)14186-4)
- 2) Baek, Y., & Yi, M. (2015). Factors influencing quality of life during chemotherapy for colorectal cancer patients in South Korea. *Journal of Korean Academy of Nursing*, 45(4), 604-612. <https://doi.org/10.4040/jkan.2015.45.4.604>
- 3) Beck, A. T., Steer, R. A., & Brown, G. K. (1996). Beck Depression Inventory-II manual. Psychological Corporation.
- 4) Brenes, G. A. (2007). Anxiety, depression, and quality of life in primary care patients. *Primary Care Companion to the Journal of Clinical Psychiatry*, 9(6), 437-443.
- 5) Brown, L. F., & Kroenke, K. (2009). Cancer-related fatigue and its associations with depression and anxiety: A systematic review. *Psychosomatics*, 50(5), 440-447.
- 6) Byar, K. L., Berger, A. M., Bakken, S. L., & Cetak, M. A. (2006). Impact of adjuvant breast cancer chemotherapy on fatigue, other symptoms, and quality of life. *Oncology Nursing Forum*, 33(1), E18-E26. <https://doi.org/10.1188/06.ONF.E18-E26>
- 7) Chang, O., Choi, E. K., Kim, I. R., Nam, S. J., Lee, J. E., Lee, S. K., Im, Y. H., Park, Y. H., Yang, J. H., & Cho, J. (2014). Association between socioeconomic status and altered appearance distress, body image, and quality of life among breast cancer patients. *Asian Pacific Journal of Cancer Prevention*, 15(20), 8607-8612. <https://doi.org/10.7314/APJCP.2014.15.20.8607>
- 8) Cheng, V., Oveisi, N., McTaggart-Cowan, H., Loree, J. M., Murphy, R. A., & De Vera, M. A. (2022). Colorectal cancer and onset of anxiety and depression: A systematic review and meta-analysis. *Current Oncology*, 29(11), 8751-8766. <https://doi.org/10.3390/curroncol29110689>
- 9) Hofman, M., Ryan, J. L., Figueroa-Moseley, C. D., Jean-Pierre, P., & Morrow, G. R. (2007). Cancer-related fatigue: The scale of the problem. *The Oncologist*, 12(Suppl. 1), 4-10.
- 10) Hsu, M. C., & Tu, C. H. (2014). Improving quality-of-life outcomes for patients with cancer through mediating effects of depressive symptoms and functional status: A three-path mediation model. *Journal of Clinical Nursing*, 23(17-18), 2461-2472. <https://doi.org/10.1111/jocn.12399>

- 11) Kurihara, M., Shimizu, H., Tsuboi, K., Kobayashi, K., Murakami, M., Eguchi, K., & Shimozuma, K. (1999). Development of quality of life questionnaire in Japan: Quality of Life Assessment of Cancer Patients Receiving Chemotherapy. *Psycho-Oncology*, 8(4), 355-363.
- 12) Levkovich, I., Cohen, M., Pollack, S., Drumea, K., & Fried, G. (2015). Cancer-related fatigue and depression in breast cancer patients postchemotherapy: Different associations with optimism and stress appraisals. *Palliative & Supportive Care*, 13(5), 1141-1151. <https://doi.org/10.1017/S147895151400087X>
- 13) Ma, Y., He, B., Jiang, M., Yang, Y., Wang, C., Huang, C., & Han, L. (2020). Prevalence and risk factors of cancer-related fatigue: A systematic review and meta-analysis. *International Journal of Nursing Studies*, 111, 103707. <https://doi.org/10.1016/j.ijnurstu.2020.103707>
- 14) Matthys, M. B., Dempsey, A. M., Melisko, M. E., Dreher, N., Che, M. L., van't Veer, L. J., Esserman, L. J., & Basu, A. (2021). Incorporation of Patient-Reported Outcomes Measurement Information System to assess quality of life among patients with breast cancer initiating care at an academic center. *Cancer*, 127(13), 2342-2349. <https://doi.org/10.1002/cncr.33496>
- 15) Mendoza, T. R., Wang, X. S., Cleeland, C. S., Morrissey, M., Johnson, B. A., Wendt, J. K., & Huber, S. L. (1999). The rapid assessment of fatigue severity in cancer patients: Use of the Brief Fatigue Inventory. *Cancer*, 85(5), 1186-1196.
- 16) Mendlowicz, M. V., & Stein, M. B. (2000). Quality of life in individuals with anxiety disorders. *American Journal of Psychiatry*, 157(5), 669-682.
- 17) National Comprehensive Cancer Network. (2012). NCCN clinical practice guidelines in oncology: Cancer-related fatigue.
- 18) Roy, C., & Andrews, H. A. (1999). *The Roy Adaptation Model* (2nd ed.). Appleton & Lange.
- 19) Schmidt, M. E., Scherer, S., Wiskemann, J., & Steindorf, K. (2019). Return to work after breast cancer: The role of treatment-related side effects and potential impact on quality of life. *European Journal of Cancer Care*, 28(4), e13051. <https://doi.org/10.1111/ecc.13051>
- 20) Sharma, N., & Purkayastha, A. (2017). Factors affecting quality of life in breast cancer patients: A descriptive and cross-sectional study with review of literature. *Journal of Mid-Life Health*, 8(2), 75-83.
- 21) Wen, S., Xiao, H., & Yang, Y. (2019). The risk factors for depression in cancer patients undergoing chemotherapy: A systematic review. *Supportive Care in Cancer*, 27(1), 57-67. <https://doi.org/10.1007/s00520-018-4466-9>
- 22) World Health Organization. (2018). Cancer: Key facts.
- 23) Zainal, N. Z., Nik-Jaafar, N. R., Baharudin, A., Sabki, Z. A., & Ng, C. G. (2013). Prevalence of depression in breast cancer survivors: A systematic review of observational studies. *Asian Pacific Journal of Cancer Prevention*, 14(4), 2649-2656.