# Quality of Life of Thyroid Cancer Patients with Radioactive Iodine Ablation and its Predictors: A Hospital Based Survey

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## ABSTRACT

**Background**: Despite high survival rates, treatment and disease-related factors can significantly impact the quality of life (QoL) in thyroid cancer patients, underscoring the importance of identifying key predictors for targeted supportive care. This study aimed to assess QoL and its predictors in thyroid cancer patients following thyroidectomy and radioactive iodine (RAI) ablation.

**Methods**: A cross-sectional analytical study was conducted between August 2022 and July 2025 among purposively selected 218 thyroid cancer patients post-thyroidectomy followed by radioactive iodine therapy at a specialized hospital, Dhaka. Data were collected through face-to-face interviews using a validated, pretested, semi-structured questionnaire and checklist. Written informed consent was obtained, and all ethical principles were strictly followed.

**Results**: The study revealed a female predominance (64.2%), with a mean age of $44.14 \pm 15.41$ years, and nearly half of participants being under 40. Most had SSC-level education (37.6%), were married (72.9%), and belonged to lower-income groups (74.3%), with a significant portion being housewives (34.9%). The study highlights the average QoL was $89\pm13$. Significant predictors of QoL included age, education, marital status, and income. Older age and being married were linked to lower odds of good QoL (OR=0.100, $p<0.05$), while higher education (OR=1507.114) and income (OR=0.027) were associated with higher QoL scores ($p<0.05$). Age, education, and income significantly influence different domains of QoL after RAI ablation.

**Conclusion**: Thyroid cancer patients report better quality of life across various domains after radioactive iodine therapy.The findings highlight that addressing age-related challenges and improving education and social support can significantly enhance quality of life in thyroid cancer patients after RAI therapy. These insights can inform strategies to policymakers, healthcare providers, and researchers in improving quality of life for diverse patient groups, with future research on RAI's long-term impact and personalized survivor care.

**Keywords:** Quality of life, Thyroid cancer, Radioactive iodine ablation

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## INTRODUCTION

Thyroid cancer is the most common endocrine malignancy, accounting for approximately 92% of all endocrine cancers but less than 1% of all malignant tumors globally. Its incidence has risen markedly across most countries over recent decades.[1] It currently ranks ninth among all cancers and continues to show an upward trend in incidence.[2] Although mortality rates have steadily declined, the global incidence of thyroid cancer has increased in both sexes, largely due to more widespread use of diagnostic imaging.[3] In 2024, an estimated 44,020 new cases and 2,170 deaths are projected.[4] Projections show that if current trends continue, thyroid cancer could reach about 1.1 million new cases and 91,000 deaths annually by 2050 — a rise of roughly 34% and 90%, respectively.[5] In 2022, around 239,362 early-onset thyroid cancer cases occurred worldwide, making it the second most common cancer among people under 40. This rising trend in younger cohorts underscores the need for long-term survivorship and QoL.[6] Notably, thyroid cancer incidence is increasing more rapidly among younger individuals and males in Asia, reflecting a significant demographic shift and evolving risk factor patterns.[7] The overall five-year survival rate across all stages is 98.4%.[8] Women are diagnosed with thyroid cancer approximately three times more often than men.[4] In Bangladesh, thyroid disorders are highly prevalent, affecting an estimated 20% of the population, although the exact burden remains inadequately defined.[9]

Cancer care has traditionally prioritized patient survival; however, advances in treatment have made quality of life assessment essential for understanding treatment effects and informing healthcare policies, clinical decisions, and resource allocation[10] The World Health Organization defines QoL as an individual's perception of their position in life within the context of cultural values, personal goals, expectations, and concerns.[11] Although thyroid cancer has excellent survival rates, its diagnosis and treatment can substantially affect patients' QoL in both the short and long term.[12] Therefore, alongside clinical outcomes, long-term treatment-related impacts onQoL should also be evaluated.[13] QoL among thyroid cancer patients may be influenced by disease-related anxiety, hypothyroidism, and treatment-associated side effects.

Effective surgical management is vital for optimal clinical outcomes, with total thyroidectomy remaining the standard surgical approach.[14] Following thyroidectomy, patients typically experience significant hypothyroidism due to thyroid hormone withdrawal, which is necessary for enhancing the effectiveness of subsequent radioactive iodine (RAI) therapy.[15] RAI ablation is effective in eliminating residual cancer cells, reducing postoperative recurrence, and promoting remission.[16] As hypothyroid symptoms resolve in the months after treatment, patients often experience improvements in QoL.[17] Most thyroid cancer patients have an excellent prognosis, with remission rates approaching 90% following thyroidectomy and RAI.[18]

Quality of life is a key patient-centered outcome that reflects physical, psychological, and social well-being. Understanding the predictors of QoL after thyroidectomy and RAI ablation is essential for identifying patients at risk of reduced well-being and for guiding supportive care strategies. However, limited data are available on factors influencing QoL in thyroid cancer patients treated in specialized hospital settings in Bangladesh.

Therefore, this study aims to assess the quality of life of thyroid cancer patients undergoing radioactive iodine ablation and identify its predictors following thyroidectomy at a

specialized hospital. The findings will provide clinicians, policymakers, and healthcare planners with valuable insights to strengthen survivorship care and improve long-term care for this patient populationand effective resource allocation.

## MATERIALS AND METHODS

A cross-sectional analytical study was conducted among 218 purposively selected thyroid cancer patients to assess the quality of life of thyroid cancer patients undergoing radioactive iodine ablation and identify its predictors following thyroidectomyat a specialized hospital, Dhaka. Following thyroidectomy, thyroid hormone withdrawal induced a month-long hypothyroid state, raising TSH above 30 mIU/L to optimize radioactive iodine sensitivity for detecting residual cancer.[19] Data were collected via face-to-face interviews using a validated semi-structured questionnaire. QoL was assessed by using the FACT-G scale, a widely used tool to evaluate key aspects of life that are particularly important for cancer patients' well-being..[20] In this study, quality of life

and domain-specific status were classified using median scores and interquartile ranges (IQRs), with higher scores indicating better QoL. Median cut-off values were used to assess improvement across domains, providing a standardized benchmark for evaluating participants' well-being.The FACT-G scaleconsists of 27 items across four domains: physical well-being (7 items, 0–28), social well-being (7 items, 0–28), emotional well-being (6 items, 0–24), and functional well-being (7 items, 0–28), with a total score ranging from 0 to 108; higher scores indicate better quality of life. The FACT-G scale has demonstrated strong reliability, with an overall Cronbach's alpha of 0.89.[21] Data were analyzed using descriptive statistics, the Mann–

Whitney U test, Kruskal–Wallis test in SPSS version 20.0. Statistical significance was defined at a p-value of <0.05. The study protocol was approved by the Institutional Review Board of Bangladesh University of Professionals. Written informed consent was obtained from all participants in accordance with ethical guidelines.

## RESULTS

**TABLE-I:** Distribution of the study patients by socio-demographic

**Characteristics (n=218)**

| Attributes | Number | Percentage |
|---|---|---|
| **Sex** | | |
| Male | 78 | 35.8 |
| Female | 140 | 64.2 |
| **Age(in years)** | | |
| 20-40 | 107 | 49.1 |
| 41-59 | 63 | 28.9 |
| 60-78 | 48 | 22.0 |
| **Level of Education** | | |
| Illiterate | 21 | 9.6 |
| Primary to secondary | 49 | 22.5 |
| SSC | 82 | 37.6 |
| HSC | 66 | 30.3 |
| **Occupation** | | |
| Service | 57 | 26.1 |
| Business | 54 | 24.8 |
| Housewife | 76 | 34.9 |
| Unemployed | 31 | 14.2 |
| **Marital status** | | |
| Married | 159 | 72.9 |
| Unmarried | 27 | 12.4 |
| Widow | 32 | 14.7 |
| **Monthly Income** | | |
| 5000-20000 | 162 | 74.3 |
| 20001-50000 | 56 | 25.7 |

Table I presents the socio-demographic characteristics of the 218 participants. The majorities were female (64.2%), while 35.8%

were male. Nearly half of the participants (49.1%) were aged 20–40 years. Regarding educational attainment, 37.6% had completed secondary schooling (SSC level), and 34.9% were housewives. Most participants were married (72.9%), and 74.3% reported a monthly household income of 5,000–20,000 BDT.

**TABLE-II**: Descriptive Analysis of QoL and domains for Thyroid cancer patients after RAI ablation (n=218)

| QoL and domains | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Physical well being | 218 | 19 | 27 | 24.26 | 2.269 |
| Social well being | 218 | 12 | 27 | 21.38 | 4.498 |
| Emotional well being | 218 | 17 | 24 | 21.06 | 2.613 |
| Functional well being | 218 | 11 | 26 | 22.35 | 4.066 |
| Total QOL after RAI | 218 | 62 | 101 | 89.04 | 13.025 |

The physical well-being scores indicate a relatively high level of health post-RAI treatment, with a mean of 24.26. The range (19-27) shows some variability, while the standard deviation of 2.269 suggests moderate consistency, with most participants reporting similar physical health outcomes.

Social well-being scores range from 12 to 27, with a mean of 21.38, indicating moderate social well-being on average. The higher standard deviation of 4.498 suggests significant variability, with some participants experiencing notably lower social well-being, potentially due to factors like social networks or emotional support

Emotional well-being scores range from 17 to 24, with a mean of 21.06, indicating general emotional stability post-RAI. The standard deviation of 2.613 suggests moderate consistency,

with most participants reporting similar emotional health, though some variation remains.

Functional well-being scores range from 11 to 26, indicating greater variability in participants' perceived daily functioning post-RAI. The mean of 22.35 suggests moderate functional capability, while the standard deviation of 4.066 highlights significant individual variation, possibly due to factors like recovery rates, age, or pre-existing health conditions.

The total QOL score has a mean of 89.04, indicating overall positive quality of life post-RAI. The range (62-101) shows variability, with some participants reporting lower scores. The standard deviation of 13.025 suggests considerable variability in QOL, reflecting differing levels of post-treatment satisfaction.

**TABLE- III:** Predictors of Quality of Life in Thyroid Cancer Patients after Radioactive Iodine Ablation (n = 218)

| | B | S.E. | p value OR | 95% C.I. for EXP(B) | |
|---|---|---|---|---|---|
| | | | | Lower | Upper |
| Gender | -1.345 | 1.080 | $0.214^{ns}$ .26 | 0.03 | 2.19 |
| Age | -2.303 | 0.779 | $\mathbf{0.003^{s.100}}$ | 0.02 | 0.47 |
| Education | 7.325 | 0.671 | $\mathbf{0.001^{s1506.28}}$ | 403.25 | 5630.41 |
| Occupation | -0.611 | 0.568 | $0.284^{ns}$ .54 | 0.18 | 1.65 |
| Marital Status | -1.872 | 0.743 | $\mathbf{0.013^{s.154}}$ | 0.04 | 0.67 |
| Income | -3.598 | 1.381 | $\mathbf{0.010^{s.027}}$ | 0.0002 | 0.42 |
| | | | | | |

*(Source: Researcher's Construct-2025)*

Notes: OR = odds ratio; CI = confidence interval. Significant predictors are shown in bold
(p< 0.05)    s= significant    ns= not significant, Binary logistic regression analysis

Table III presents the binary logistic regression analysis (n = 218), identifying several significant predictors of quality of life following radioactive iodine therapy.

Age is a significant predictor of QoL (OR=0.10, 95% CI: 0.02–0.47). The negative coefficient (-2.303) indicates that older patients are less likely to report better QoL as age increases.

Education level is a strong predictor of QoL (OR=1506.28,95% CI: 403.25–5630.41). The high odds ratio suggests that higher education significantly increases the likelihood of reporting a better QoL, highlighting its importance in QoL outcomes.

Marital status is a significant predictor of QoL (OR=0.154, 95% CI: 0.04–0.67). The negative coefficient (−1.872) indicates that unmarried patients are less likely to report good QoL than married individuals.

Income significantly impacts QoL (OR=0.027, 95% CI: 0.0002–0.42), with lower income associated with a reduced likelihood of reporting good QoL. An odds ratio of 0.027 indicates substantially lower odds of a positive QoL outcome among lower-income patients.

**TABLE-IV:** Factors Influencing Domains of Quality of Life in Thyroid Cancer Patients after RAI Ablation (n=218)

| | PWB | SWB | EWB | FWB |
|---|---|---|---|---|
| | Med (IQR) | Med (IQR) | Med (IQR) | Med (IQR) |
| **Sex** | | | | |
| Male | 7(7-8) | 17(10-19) | 7(7-7) | 16(8-18) |
| Female | 7(7-7) | 18(6-19) | 7(6-7) | 15.5(8-18) |
| p value | [a]0.660[ns] | [a]0.913[ns] | [a]0.901[ns] | [a]0.564[ns] |
| **Age** | | | | |
| 20-40 | 7(7-8) | 18(11-19) | 7(7-8) | 17(12-18) |
| 41-59 | 7(7-8) | 17(6-19) | 7(6-7) | 15(8-18) |
| 60-78 | 7(7-7) | 12(6-17) | 7(5-7) | 10(8-18) |
| p value | [b]0.029[s] | [b]0.001[s] | [b]0.001[s] | [b]0.038[s] |
| **Education** | | | | |
| Illiterate | 8(7-10) | 5(4-6) | 6(5-7) | 7(6-8) |
| Primary to secondary | 7(7-7) | 6(5-10) | 7(5-7) | 8(8-12) |
| SSC | 7(7-8) | 19(17-19) | 7(7-7) | 18(16-18) |
| HSC | 7(7-7) | 17(13-19) | 7(5-8) | 16(13-19) |
| p value | [b]0.001[s] | [b]0.001[s] | [b]0.007[s] | [b]0.001[s] |
| **Occupation** | | | | |
| Service | 7(6-7) | 18(16-19) | 7(7-7) | 16(13-18) |
| Business | 7(7-8) | 17(10-19) | 7(6-7) | 16(8-18) |
| Housewife | 7(7-7) | 16.5(5-19) | 7(5-7) | 15(8-18) |

| | PWB | SWB | EWB | FWB |
|---|---|---|---|---|
| | Med (IQR) | Med (IQR) | Med (IQR) | Med (IQR) |
| Unemployed | 7(7-8) | 18(7-19) | 7(7-8) | 14(8-18) |
| p value | [b]**0.016**[s] | [b]**0.040**[s] | [b]0.376[ns] | [b]0.109[ns] |
| **Maritalstatus** | | | | |
| Married | 7(7-7) | 17(9-19) | 7(5-7) | 16(8-18) |
| Unmarried | 7(7-8) | 19(7-19) | 7(7-8) | 15(9-18) |
| Widow | 7(7-7) | 18(5-19) | 7(5.5-7) | 14.5(8-18) |
| p value | [b]0.133[ns] | [b]0.254[ns] | [b]0.036[s] | [b]0.640[ns] |
| **Income** | | | | |
| 5000-20000 | 7(7-8) | 17(6-19) | 7(6-7) | 15(8-18) |
| 20001-50000 | 7(7-7) | 17(13.5-19) | 7(5.5-8) | 18(11-19) |
| p value | [a]0.010[s] | [a]0.342[ns] | [a]0.586[ns] | [a]0.016[s] |

s= significant,ns= not significant, aP value reached form Mann-Whitney U,
[b]P value reached from Kruskal Wallis Test

Note-PWB: Physical well-being, SWB:Socialwell-being, FWB: Familywell-being, EWB: Emotionalwell-being

**Table IV** highlights demographic factors influencing differentdomains of quality of life in thyroid cancer patients after RAI therapy.

Age significantly influences all domains of QoL.Younger patients (aged 20-40 years) have median scores greater than those of older groups in overall quality of life score. All domain exhibited significant differences (p<0.05), indicating that younger patients generally report greater well-being across all domains.

**Education** has a substantial influence on all QoL domains. Significant differences (p < 0.05) were seen in all areas of QoL, suggesting that higher education is always associated with improved quality of life in every respect.

**Incomeinfluences physical (p = 0.010) and functional well-being (p = 0.016), with higher-income patients (20001-50000) reporting significantly better outcomes compared to lower-income patients (5000-20000).**

## DISCUSSION

This cross-sectional analytical study of 218 purposively selected thyroid cancer patients was conducted at a specialized hospital, Dhaka, to assess the quality of life (QoL) of thyroid cancer patients undergoing radioactive iodine ablation and identify its predictors following thyroidectomy.

### Descriptive Analysis of QoL and domains for Thyroid cancer patients after RAI ablation (n=218)

Physical Well-Being (PWB):

The physical well-being scores post-RAI treatment exhibit generally high levels, with moderate variability. The majority of participants report favorable physical health following the treatment.[17, 22] this reflects a general positive physical recovery post-treatment, with a relatively narrow range, indicating some consistency in physical health outcomes among the patients.

Social Well-Being (SWB):

Social well-being shows moderate well-being on average, with notable variability. Some participants report lower social well-being, potentially influenced by factors like social support. This finding aligns with research showing improved social performance following RAI therapy.[17, 22] These improvements most likely result from lower disease burden and better health. Another research revealed a brief social decrease physical recovery and re-duced cancer-related stress.[23]

Emotional Well-Being (EWB):

Emotional well-being scores indicate overall emotional stability, with most participants reporting similar emotional health. The variability is moderate, suggesting some differences in emotional well-being among participants, though the majority experience consistent emotional stability. This corresponds with conclusions of a study showing that arranged psychological support during RAI improves emotional well-being and clinical results.[24] Emotional well-being can be impacted by factors such as anxiety, depression, and uncertainty about the cancer's recurrence or long-term health, which may contribute to the lower scores observed.

Functional Well-Being (FWB):

Functional well-being scores show greater variability in participants' perceived daily functioning post-RAI. While most report moderate functional capability, significant individual variation exists, likely influenced by factors such as recovery rates, age, or pre-existing health conditions..This is consistent with a study reporting the median cognitive functioning score after RAI therapy.[18]

Total QoL Score:

The total QOL score indicates an overall positive quality of life post-RAI, though there is variability, with some participants reporting lower scores. The significant variability suggests differing levels of post-treatment satisfaction among individuals. One study reported major improvements in QoL within four weeks post-RAI, while others noted significant global changes in QoL.[14, 23, 25]

### Predictors affecting Quality of life in thyroid cancer patient after radioactive iodine ablation (n=218)

Binary logistic regression analysis of predictors influencing Quality of Life following Radioactive Iodine (RAI) therapy in thyroid cancer patients offers critical insights into the socio-demographic determinants of post-treatment QoL.

Quality of life declined with increasing age, indicating a negative association between age and

QoL. Older thyroid cancer patients experienced greater challenges in QoL following RAI therapy.This finding is consistent with previous studies reporting lower QoL in older patients, likely due to greater comorbidities, reduced physiological resilience, and age-related frailty.[26] (Table-III)

The very high odds ratio indicates that individuals with higher education levels are much more likely to report better QoL after RAI therapy. This may be due to greater access to healthcare, higher health literacy, or stronger psychological resilience among those with more education. Consistent with previous research, higher educational attainment is strongly associated with better quality of life[22,27], while lower education is linked to poorer QoL.[28](Table III).

In this study, marital status was inversely associated with QoL, contrary to previous research that reported higher QoL among married individuals.[27]This may suggest that marriage provides emotional support and social stability, which can positively influence post-treatment QoL.(Table III).

Higher income was associated with better QoL after RAI therapy, likely because greater financial resources improve access to healthcare, psychological support, and overall living standards. In contrast, lower income may limit healthcare access, reduce social support, and increase financial stress. These findings align with previous research showing a positive relationship between financial status and quality of life [29.] (Table III).

**Factors Influencing Domains of Quality of Life in Thyroid Cancer Patients after RAI Ablation (n=218)**

Younger patients (aged 20–40 years) exhibited significantly higher median quality of life scores across all domains compared to older patients,suggesting that younger individuals may recover better and have fewer long-term effects from RAI therapy. This is consistent with previous research reporting improved QoL among individuals aged 30–39 following RAI therapy[23.]Age-related differences indicate a need for interventions targeting social support and emotional health in older patients.(Table IV).

Higher educational attainment was significantly associated with improved quality of life scores across all domains, consistent with findings from a study reporting better QoL outcomes among individuals with higher education levels.[22] Higher income may provide better access to healthcare services, medications, and social support systems, improving overall physical health and ability to function well in daily life.(Table-IV)

Significant differences in physical and functional scores ($p = 0.010$ and $p = 0.016$) suggest that higher income may support better healthcare access and social support, leading to improved physical health and daily function

**LIMITATIONS OF THE STUDY**

Thyroid cancer patients may experience psychological distress, which could have influenced their participation in interviews and the accuracy of their responses. Some data were based on patient recall, introducing potential recall bias.However, Sample size was large enough to make it more representative.

**CONCLUSION**

The study demonstrates improved quality of life across several domains in thyroid cancer patients. Age, education, marital status, and income were identified as key predictors of QoL, significantly affecting overall well-being.The findings provide

insights into factors addressing age-related challenges and improving education and social support systems that lead to influencing substantial improvements in QoL for patient's post-RAI therapy. Targeted interventions in these areas could reduce the physical, emotional, and social challenges patients face, supporting more personalized care. These insights can guide policymakers, healthcare providers, and researchers in improving quality of life for diverse patient groups. Future studies should examine the long-term effects of RAI therapy, focusing on personalized care and lasting well-being for thyroid cancer survivors.

## REFERENCES

1.    Du P, Zhang ZX, Wang K, Huang YK, Zhang Y, Lu KX, Hu C, Li YR, Bai JM, Bian WH, Yuan YF. Super massive black holes with high accretion rates in active galactic nuclei. IX. 10 new observations of reverberation mapping and shortened Hβ lags. The Astrophysical Journal. 2018 Mar 20; 856(1):6.

2.    Vigneri R, Malandrino P, Russo M. Is thyroid cancer increasing in incidence and aggressiveness? The Journal of Clinical Endocrinology & Metabolism. 2020 Jul; 105(7):e2639-40.

3.    Lee K, Anastasopoulou C, Chandran C, Cassaro S. Thyroid cancer. Stat Pearls [Internet]. 2021. Available from:[https://www.ncbi.nlm.nih.gov/books/NBK459299

4.    American Cancer Society. Key statistics for thyroid cancer [Internet]. 2024. Available from: [https://www.cancer.org/cancer/thyroid-cancer/about/key-statistics.html

5.    Lyu Z, Zhang Y, Sheng C, Huang Y, Zhang Q, Chen K. Global burden of thyroid cancer in 2022: Incidence and mortality estimates from GLOBOCAN. Chinese Medical Journal. 2024 Nov 5; 137(21):2567-76.

6.    Jin Q, Wu J, Huang C, Li J, Zhang Y, Ji Y, Liu X, Duan H, Feng Z, Liu Y, Zhang Y. Global landscape of early-onset thyroid cancer: current burden, temporal trend and future projections on the basis of GLOBOCAN 2022. Journal of Global Health. 2025 Apr 11; 15:04113.

7.    Fu M, Peng Z, Wu M. Thyroid cancer in Asia: incidence, mortality in 2022, and future projections to 2050. European Journal of Cancer Prevention. 2025:10-97.

8.    National Cancer Institute. Cancer stat facts: Thyroid cancer [Internet]. 2021. Available from: [https://seer.cancer.gov/statfacts/html/thyro.html

9.    Selim S, Kamrul-Hasan AB. Thyroid disorders in Bangladesh: An epidemiological perspective. Bangladesh Journal of Endocrinology and Metabolism. 2023 May 1; 2(2):63-4.

10.    Ustjanauskas AE, Malcarne VL. Health related quality of life. *The Wiley Encyclopedia of Health Psychology.* Wiley; 2020:149-154.

11.    World Health Organization (WHO). Latest global cancer data. Press release No. 263. 2018 Sep [Internet]. p. 6–11. Available from: [https://www.who.int/news-room/fact-sheets/detail/cancer](https://www.who.int/news-room/fact-sheets/detail/cancer) [Accessed 2024 Sep 3].

12.    Haugen BR. 2015 American Thyroid Association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer: what is new and what has changed? Cancer. 2017 Feb 1; 123(3):372-81.

13.    Pace-Asciak P, Russell JO, Tufano RP. Improving quality of life in patients with differentiated thyroid cancer. Frontiers in Oncology. 2023 Jan 27; 13:1032581.

14. Wu, H.X., Zhong, H., Xu, Y.D., Xu, C.P., Zhang, Y. and Zhang, W., 2016. Psychological and behavioral intervention improves the quality of life and mental health of patients suffering from differentiated thyroid cancer treated with postoperative radioactive iodine-131. Neuropsychiatric disease and treatment, pp.1055-1060.

15. Andresen NS, Buatti JM, Tewfik HH, Pagedar NA, Anderson CM, Watkins JM. Radioiodine ablation following thyroidectomy for differentiated thyroid cancer: literature review of utility, dose, and toxicity. European thyroid journal. 2017 Jul 1;6(4):187-96.

16. Pacini F, Fuhrer D, Elisei R, Handkiewicz-Junak D, Leboulleux S, Luster M, Schlumberger M, Smit JW. 2022 ETA Consensus Statement: What are the indications for post-surgical radioiodine therapy in differentiated thyroid cancer?. European Thyroid Journal. 2022 Feb 1; 11(1).

17. Gkatzia N, Papadopoulos A, Kostagiolas P, Karianos T, Saranti S. Quality of life survey following radioiodine ablation in patients with differentiated thyroid cancer. SN Comprehensive Clinical Medicine. 2021 Jan;3(1):158-65.

18. Dal Maso L, Tavilla A, Pacini F, Serraino D, Van Dijk BA, Chirlaque MD, Capocaccia R, Larranaga N, Colonna M, Agius D, Ardanaz E. Survival of 86,690 patients with thyroid cancer: a population-based study in 29 European countries from EUROCARE-5. European Journal of Cancer. 2017 May 1; 77:140-52.

19. Guimaraes V, DeGROOT LJ. Moderate hypothyroidism in preparation for whole body 131I scintiscans and thyroglobulin testing. Thyroid. 1996 Apr; 6(2):69-73.

20. Cella DF. Measuring quality of life in palliative care. InSeminars in oncology 1995 Apr 1 (Vol. 22, No. 2 Suppl 3, pp. 73-81).

21. Victorson D, Barocas J, Song J, Cella D. Reliability across studies from the functional assessment of cancer therapy-general (FACT-G) and its subscales: a reliability generalization. Quality of Life Research. 2008 Nov; 17(9):1137-46.

22. RazaviRatki SK, Fallahi B, Namiranian N, Emami-Ardekani A, Saghari M, Mirabzadeh A, Fard-Esfahani A, Beiki D, Eftekhari M, Pooyafard F. Factors affecting the quality of life of well-differentiated thyroid carcinoma patients: A cross-sectional study on 435 Iranian patients. Iranian Journal of Nuclear Medicine. 2016 Jul 1; 24(2):92-8.

23. Yoo SH, Choi-Kwon S. Changes in quality of life and related factors in thyroid cancer patients with radioactive iodine remnant ablation. Journal of Korean Academy of Nursing. 2013 Dec 1; 43(6):801-11.

24. Giordano A, Bochicchio I, Gallicchio R, Deiana G, Storto R, Nardelli A, Di Cosola M, Lettini A, Storto G. Assessment of psychological status by a comprehensive approach in thyroid cancer patients undergoing radionuclide therapy: A feasibility study. Science Progress. 2024 Jul; 107(3)

25. Ramim JE, Cardoso MA, de Oliveira GL, Gomes ML, Guimarães TT, de Mello RC, Bergmann A, Pujatti PB. Health-related quality of life of thyroid cancer patient's under-going radioiodine therapy: a cohort real-world study in a reference public cancer hospi-tal in Brazil. Supportive Care in Cancer. 2020 Aug;28(8):3771-9.

26.  Taïeb D, Baumstarck-Barrau K, Sebag F, Fortanier C, De Micco C, Loundou A, Auquier P, Palazzo FF, Henry JF, Mundler O. Heath-related quality of life in thyroid cancer patients following radioiodine ablation. Health and quality of life outcomes. 2011 May 13; 9(1):33.

27.  Rukshani D,Kahandawala P, Jayawardana K, Karunarathne D, Galgamuwa LS, Kumara C, Gamage C. Factors associated with quality of life among cancer patients in Sri Lanka. International Journal of Community Medicine and Public Health. 2018 Jun 22; 5(7):2705-13.

28.  Aschebrook-Kilfoy B, James B, Nagar S, Kaplan S, Seng V, Ahsan H, Angelos P, Kaplan EL, Guerrero MA, Kuo JH, Lee JA. Risk factors for decreased quality of life in thyroid cancer survivors: initial findings from the North American Thyroid Cancer 27Survivorship Study. Thyroid. 2015 Dec 1; 25(12):1313-21.

29.  Wang T, Jiang M, Ren Y, Liu Q, Zhao G, Cao C, Wang H. Health-related quality of life of community thyroid cancer survivors in Hangzhou, China. Thyroid. 2018 Aug 1; 28(8):1013-23.