



**INTERVENTIONS TO IMPROVE THE QUALITY OF LIFE OF THYROID
CANCER PATIENTS : A SCOPING REVIEW**

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ABSTRACT

Thyroid cancer treatment can cause side effects that have a significant impact on the patient's quality of life and health, so effective interventions are needed to address these impacts. This study aimed to explore various interventions, their impact on the quality of life of thyroid cancer patients. This study used a scoping review approach with PRISMA-ScR for article selection. Articles were obtained from Scopus, PubMed, ScienceDirect, and ProQuest databases published between 2016 and 2024 using keywords related to thyroid cancer, quality of life, intervention and therapy. Of the initial 2043 articles, 9 articles met the inclusion and exclusion criteria. The extracted data was analyzed using qualitative methods with identified were author, year of publication, research design, country, type of intervention, duration of intervention, research results, and JBI. The results of the analysis revealed three types of interventions in improving the quality of life of patients with thyroid cancer: (1) Psychological with mindfulness therapy, memory therapy, psychological nursing intervention, behavioral intervention, and technology-based therapy (mHealth); and (2) Physical with Progressive Muscle Relaxation (PMR), and home-based physical exercise (aerobics, resistance, flexibility). These findings underscore the benefits of interventions to improve the quality of life of thyroid cancer patients which include physical, psychological, and technology-based approaches.

Keywords: cancer; intervention; quality of life; therapy; thyroid

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INTRODUCTION

Thyroid cancer (Ca thyroid) is one of the most common endocrine cancers with a global incidence that has more than doubled in the last three decades, especially in Asia and North America (Xu, Zhou and Qiu, 2023). The latest study using GLOBOCAN data recorded 586,202 cases of thyroid cancer in 2020, making it the 10th most common cancer in the world (Shank, Are and Wenos, 2022). Most cases occur in countries with a high Human Development Index (HDI), especially in the Western Pacific region which accounts for 47.6% of global cases, despite having only 25.4% of the world's population. It is estimated that the incidence and mortality of thyroid cancer will increase by 29.9% and 67% respectively by 2040. Based on data collected by the Indonesian Cancer Registry from 15 cities in Indonesia, in 2011 there were 24,844 cancer cases, with thyroid cancer being one of the most common types of cancer (Amir et al., 2023).

Although the prognosis of thyroid cancer tends to be good, especially if detected early, treatments such as surgery, radiation therapy, and hormone therapy often cause significant physical and psychological side effects (American Cancer Society, 2020). These side effects, including anxiety, depression, sleep disturbances, and decreased quality of life, can affect the emotional as well as social well-being of patients (Kim et al., 2018; Liu et al., 2019) In

addition to the physical burden, patients also face psychological stress, such as anxiety about recurrence and disruption due to the effects of treatment, which requires multidisciplinary attention in treatment. Studies show that up to 30-40% of thyroid cancer patients experience sleep disturbances, and 20-25% report significant post-therapy symptoms of anxiety and depression (Liu et al., 2019; Sun et al., 2024). In this context, psychosocial interventions are needed to support the patient's quality of life holistically.

In an effort to improve the quality of life of thyroid cancer patients, various interventions have been developed, covering medical, psychological, and social approaches (Alsaud et al., 2023). However, the main challenge faced is how to identify and implement effective interventions to address the multidimensional problems experienced by patients, which are not only limited to the physical aspect, but also include psychological and social dimensions (Pace-Asciak, Russell and Tufano, 2023). Along with the advancement of thyroid cancer research and treatment, there is an increasing understanding of the importance of a holistic approach in patient care (Guo et al., 2024). Although various interventions have been implemented to improve patients' quality of life, variations in outcomes and types of interventions used indicate the need for systematic studies to identify the most effective and widely applicable interventions in clinical practice.

Scoping review is the right approach to map psychosocial interventions that have been implemented in thyroid cancer patients, including clinical-based therapies and technologies such as the mHealth app (Xu, Zhou and Qiu, 2023; Sun, Zhang and Wang, 2024). The results of this study are expected to provide comprehensive insights into effective psychosocial intervention approaches, support the development of more integrated strategies, and improve the overall quality of life of thyroid cancer patients. This study aimed to explore various interventions, their impact on the quality of life of thyroid cancer patients.

METHOD

Research Methods

This review uses design approaches *Scoping Review*. *Scoping review* is a comprehensive method to explore certain topics, and aims to provide a systematic and comprehensive understanding of the current development conditions in a field (Munn *et al.*, 2018; Qiu and Gu, 2022). The literature selection process is carried out by the *Preferred Reporting Item for Systematic Review and Meta-analysis extended for Scoping Review* (PRISMA-ScR) consists of 5 stages, namely identifying research questions, searching for relevant articles, filtering articles, analyzing results, and reporting research results.

Step One: Research Question

This review was guided by the following research question: "What are some effective interventions in improving the quality of life of thyroid cancer patients?"

Step Two: Identification of Relevant Studies

The study uses a three-step search strategy, according to the Joanna Briggs Institute (JBI) coverage review guidelines (Peters *et al.*, 2015). Article searches were conducted on four databases: Scopus, Pubmed, Scencedirect, and ProQuest with full text. Keywords are customized by using *the medical subject heading* (MeSH) including ("thyroid cancer" OR "thyroid carcinoma" OR "thyroid neoplasm") AND ("quality of life" OR "well-being" OR "health-related quality of life") AND ("intervention" OR "treatment" OR "Therapy" OR "care" OR "Support") AND ("Improvement" OR "enhancement" OR "increase").

Step Three: Selection of Studies and Data Management Process

The article selection process began with the identification of 2043 articles from the Scopus, PubMed, ScienceDirect, and ProQuest databases using relevant keywords and PICO. Population (P): Patients with thyroid cancer. Intervention (I): Treatment, or management aimed at improving quality of life.

Comparison (C): No comparison. Outcome (O): Quality of life, health related to quality of life. The criteria in this scoping review follow the PICO (Population, Intervention, Comparison, Outcome) framework, with the population studied being patients with thyroid cancer. In addition, articles included in the criteria are those published between 2016 and 2024, in the form of full text, and are the results of studies from randomized controlled trials (RCTs) and experimental studies. Sehas removed 57 duplicate articles, leaving 1986 articles filtered by title and abstract, resulting in 22 articles for full-text review. A total of 12 articles were removed for not meeting inclusion criteria, such as inappropriate design, unavailability of full text, or irrelevant focus. In the end, 9 articles were selected for analysis, with all articles rated as high quality using the JBI instrument (score $\geq 75\%$), ensuring that only relevant and high-quality studies were included in the *scoping review*. (See Figures 1 and Table 1).

Step Four: Charting the Data

At this stage, we extracted data from the ten included studies into a table with titles: article title-author-source country of study objectives, study design, participants and sample size, key findings and limitations. This stage is important for mapping the data format and extracting the data. Data extraction from the included studies was done using the manual tabulation method. The extracted data was analyzed using qualitative methods. The items identified were author, year of publication, research design, country, type of intervention, duration of intervention, and research results (See Table 1 and 2).

Step Five: Collating, Summarizing, and Reporting Results

At this stage, we use Excel to organize the extracted data and help in coding it into various themes. Theme analysis is used and helps identify, analyze, and narrate emerging patterns (Levac, Colquhoun and Brien, 2010). (Sørensen *et al.*, 2012). (See Table 3)

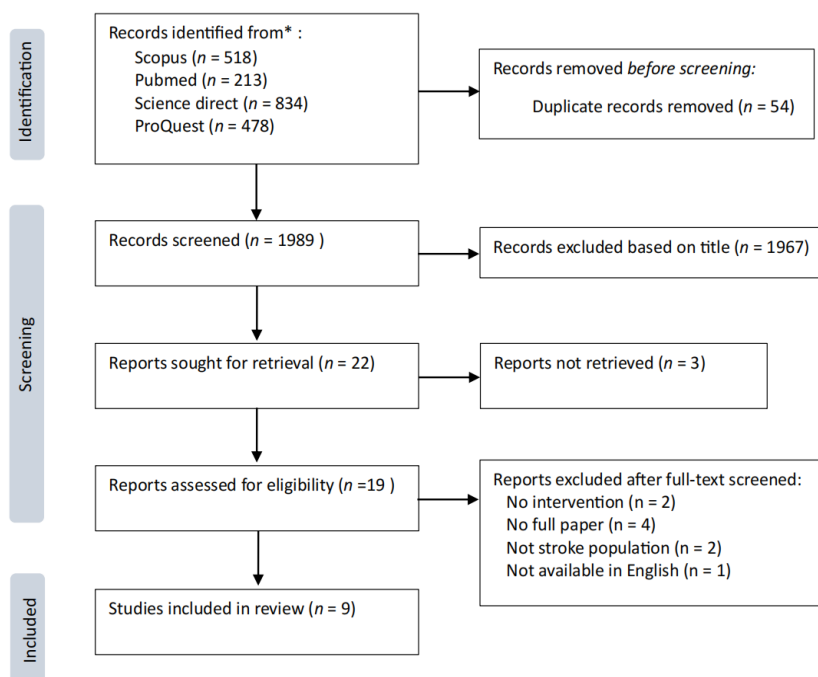


Figure 1 PRISMA diagram

RESULT

A comprehensive search yielded a total of 2043 articles. After identifying and removing 57 duplicates, the selection process is outlined in the review flowchart (Figure 1). From the initial article, (n = 518) is sourced from Scopus, (n = 213) is from Pubmed, (n = 834) is sourced from Science Direct, and (n = 478) is from ProQuest. Initial screening, conducted collaboratively by two researchers (A.H.Z and E.L), resulted in the exclusion (n=1967) of

articles based on title and abstract. The remaining 22 articles underwent a full-text review based on predetermined selection criteria. Of these, 3 articles were excluded for the following reasons: three due to the unavailability of full text. This meticulous exclusion process resulted in 19 records that underwent further in-depth analysis and synthesis. Finally, 9 studies met strict inclusion criteria and were included in this coverage review.

The quality of the included studies was assessed using JBI's critical assessment tool, with articles scoring above 75% in terms of criteria and relevance to the topic. The final set of 9 articles specifically focuses on interventions that can be done to improve the quality of life of thyroid cancer. The importance of improving the quality of life of thyroid cancer patients is emphasized by the insights gained from our thorough analysis of these 9 articles.

Study Characteristics

Studies in which articles produce articles with design *Random Control Trial* (RCT) (n=7) and *Quasi-Experimental* (n=2). The geographical scope of the included study includes China (n=8), South Korea (n=1). The high rate of thyroid cancer in China is due to the increased use of medical technology such as ultrasound, CT scans, and MRIs that detect small thyroid lesions. Rapid urbanization and economic growth also contribute as wider access to healthcare increases the likelihood of early detection. In addition, there are significant disparities between regions, with a higher incidence of thyroid cancer in more socio-economically developed regions than in less developed regions (*American Thyroid Association*, 2021). Detailed characteristics of the literature are presented in Table 1.

Table 1.

Characteristics of the literature

No	Author	Sample	Design	Country	Population	Age	Gender (%)
1.	(K. Kim <i>et al.</i> , 2018)	43 patients	Quasy experimental	South Korea	Thyroid papillary carcinoma	18-75	F: 36 (84) M: 7 (16)
2.	(Wu and Zou, 2020)	104 patients	Randomized Controlled Trial	China	Thyroid cancer	20 – 60	n/n
3.	(Money <i>et al.</i> , 2020)	286 patients	Randomized Controlled Trial	China	Thyroid cancer	20-70	F: 150 (52) M: 136 (48)
4.	(Sun <i>et al.</i> , 2024)	111 patients	Randomized Controlled Trial	China	Differentiated thyroid cancer	18-60	F: 82 (79) M: 22 (21)
5.	(Chen <i>et al.</i> , 2022)	86 patients	Randomized Controlled Trial	China	Differentiated thyroid cancer	Mean = 64.3	F: 57 (66) M: 29 (34)
6.	(Liu <i>et al.</i> , 2019)	120 patients	Randomized Controlled Trial	China	Thyroid cancer	18-70	F: 72 (71) M: 30 (29)
7.	(Wu <i>et al.</i> , 2016)	60 patients	Randomized Controlled Trial	China	Differentiated thyroid cancer	18-70	F: 45 (75) M: 15 (25)
8.	(Cent <i>et al.</i> , 2023)	330 patients	Randomized Controlled Trial	China	Thyroid cancer	18-70	F: 165 (50) M: 165 (50)
9.	(Xiong <i>et al.</i> , 2020)	79 patients	Quasy experimental	China	Thyroid cancer	Mean = 53.6	F: 55 (70) M: 24 (30)

Outcome

Analysis of the included studies revealed interventions in improving the quality of life of patients with thyroid cancer. The results showed that from the 9 articles can be grouped into two types of interventions in improving the quality of life of patients with thyroid cancer, namely psychological and physical. Psychological interventions that can be carried out are therapy *Mindfulness*, memory

therapy, psychological nursing interventions, behavioral interventions, and technology-based therapies (mHealth) (Wu and Zou, 2020) (Money *et al.*, 2020) (Chen *et al.*, 2022) (Liu *et al.*, 2019) (Wu *et al.*, 2016) (Cent *et al.*, 2023) (Sun *et al.*, 2024). Physical interventions that can be done are *Progressive Muscle Relaxation* (PMR), and home-based physical exercise (aerobics, resistance, flexibility) (Xiong *et al.*, 2020) (Kim *et al.*, 2018). These findings underscore the benefits of interventions to improve the quality of life of thyroid cancer patients which include physical, psychological, and technology-based approaches. Based on the results of the study, it can be known that the intervention is effective in reducing anxiety and depression, thereby improving the overall quality of life.

Table 2.

Search Results

No	Title, Author and Year	Sample	Design	Country	Intervention	Duration	Instruments	Result	JBI Critical Appraisal
1.	Efficacy of a home-based exercise program after thyroidectomy for thyroid cancer patients (Kim <i>et al.</i> , 2018)	43 patients (22 experimental groups, 21 control groups)	Quasi-experimental	South Korea	Home-based exercise program (aerobics, resistance, and flexibility)	12 Weeks	Questionnaires for fatigue, anxiety, quality of life (QoL), and measurements of natural killer cell activity	The experimental group experienced significant reductions in fatigue and anxiety, improved QoL, and significant increases in natural killer cell activity compared to the control group.	8/9 (89%)
2.	Psychological nursing intervention reduces psychological distress in patients with thyroid cancer: A randomized clinical trial protocol (Wu and Zou, 2020)	104	Randomized Controlled Trial	China	Multi-Theoretical Model (MTM)-based mHealth interventions to reduce anxiety, depression, and fear of cancer and improve the quality of life of DTC patients.	3 months (March 2023 - March 2024)	PHQ-4, FCR-4, EQ-5D-5L, CSQ-3	The intervention group showed significant reductions in anxiety (P<0.026) and fear of cancer (P<0.001). Overall quality of life improved compared to the control group, but the effect on depression was not significant. The level of satisfaction with health education is higher.	10/13 (77%)

No	Title, Author and Year	Sample	Design	Country	Intervention	Duration	Instruments	Result	JBI Critical Appraisal
3.	A Psychological Nursing Intervention for Patients with Thyroid Cancer on Psychological Distress and Quality of Life: A Randomized Clinical Trial (Money <i>et al.</i> , 2020)	90	Randomized Controlled Trial	China	Psychological nursing intervention in thyroid cancer patients after surgery	4 weeks (September-December 2020)	POMS-Brief (Chinese version), HADS, QLQ-C30 (version 3.0)	This intervention reduced patients' psychological distress and improved quality of life, especially in cognitive, emotional, and social functioning compared to the control group.	11/13 (85%)
4.	Effects of a mobile health intervention based on a multitheoretical model of health behavior change on anxiety and depression, fear of cancer progression, and quality of life in patients with differentiated thyroid cancer: A randomized controlled trial (Sun <i>et al.</i> , 2024)	111	Randomized Controlled Trial	China	mHealth based on MTM theory	3 months	Web-based questionnaires, The PHQ-4 scale: measures anxiety and depression), the Fear of Cancer Recurrence Scale (FCR-4): measures fear of relapse, the EQ 5D-5L scale: measures quality of life, The CSQ-3: satisfaction with health education.	MTM-based mHealth interventions can effectively improve emotional well-being and overall quality of life in cancer patients.	11/13 (85%)
5.	Reminiscence therapy care program as a potential nursing intervention to relieve anxiety, depression, and quality of life in older papillary thyroid carcinoma patients: A randomized, controlled study (Chen <i>et al.</i> , 2022)	86	Randomized Controlled Trial	China	Memory therapy	6 months	Hospital Anxiety and Depression Scale (HADS) and Quality of Life Questionnaire-e-Core 30 (QLQ-C30)	Memory therapy can be used to reduce anxiety, depression and improve quality of life in elderly patients with PTC	10/13 (77%)

No	Title, Author and Year	Sample	Design	Country	Intervention	Duration	Instruments	Result	JBICritical Appraisal
6.	Mindfulness-based stress reduction in patients with differentiated thyroid cancer receiving Radioactive Iodine Therapy: A Randomized Controlled trial (Liu <i>et al.</i> , 2019)	120	Randomized Controlled Trial	China	Mindfulness-based stress reduction (MBSR)	8 weeks	QoL Questionnaire Core 30 Items (QLQ-C30), Self-rating Depression Scale (SDS), and Self-rating Anxiety Scale (SAS).	The MBSR program improves various health-related quality of life scales and reduces depression and anxiety in DTC patients undergoing RIT.	11/13 (85%)
7.	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 (Wu <i>et al.</i> , 2016)	60	Randomized Controlled Trial	China	Psychological and behavioral interventions,	12 months	the Quality of Life Core Questionnaire, Self-rating Depression Scale, and Self-rating Anxiety Score, respectively	Psychological and behavioral intervention strategies combined with routine treatment can improve the quality of life and mental health of differentiated thyroid cancer patients. Modern medical models and better living standards emphasize the importance of addressing the physiological and psychological needs of patients, in addition to focusing on survival. Consistent interventions over one year showed significant improvements in both aspects	10/13 (77%)
8.	The impact of targeted nursing intervention on postoperative medication adherence, quality of life, and psychological flexibility of thyroid cancer patients (Xu <i>et al.</i> ,	330	Randomized Controlled Trial	China	Directed nursing interventions on quality of life	3 weeks	the SF-36 Short Form Health Survey	Targeted nursing interventions have a positive effect on postoperative treatment adherence, quality of life, and	12/13 (92%)

No	Title, Author and Year	Sample	Design	Country	Intervention	Duration	Instruments	Result	JBICritical Appraisal
								psychological flexibility of thyroid cancer patients	
9.	Effect of Progressive Muscle Relaxation (PMR) on Mental Health, Sleep Quality, and Quality of Life in Patients Who Underwent Thyroid Cancer Surgery (Xiong <i>et al.</i> , 2020)	79	Experimental quasy	China	Progressive Muscle Relaxation (PMR)	3 months	The self-rating depression scale (SDS), Self-Rating Anxiety Scale (SAS), The Pittsburgh sleep quality index (PSQI), The Whoqol-bref World Health,Orga nization quality of life scale (WHOQOL-BREF)	PMR has a positive impact on mental health, improving sleep quality and overall quality of life. PMR can be an effective supportive treatment for post-operative thyroid cancer patients in reducing anxiety, promoting relaxation, improving sleep, improving quality of life.	9/9 (100%)

Table 3. Theme Identification

Themes	Details aspects	Sources
Psychological intervention	Mindfullnes therapy	(Liu <i>et al.</i> , 2019)
	Psychological nursing intervention	(Wu and Zou, 2020); (Wang <i>et al.</i> , 2020), (Cent <i>et al.</i> , 2023)
	Behavioral interventions	(Wu <i>et al.</i> , 2016)
	Memory therapy	(Chen <i>et al.</i> , 2022)
	Technology-based intervention (m-Health)	(Sun <i>et al.</i> , 2024)
Physical intervention	<i>Progressive muscle relaxation</i>	(Xiong <i>et al.</i> , 2020)
	Home-based exercises (aerobic, resistance and flexibility)	(Kim <i>et al.</i> , 2018)

DISCUSSION

The quality of life of cancer patients is crucial in cancer care, as treatment focuses not only on physical healing, but also on the emotional, psychological, and social well-being of patients (Sulistyarini, Nainggolan and Mukaromah, 2022). Cancer patients often face a variety of challenges that affect their quality of life, such as pain, fatigue, anxiety, depression, as well as changes in their physical appearance and social roles (Yunike, Kusumawaty and Winta, 2024). In addition, side effects from medications, such as chemotherapy and radiation, can worsen the patient's physical and mental condition (Supaati Supaati, Anis Ardiyanti and Nafisatun Nisa, 2024). Therefore, interventions to improve the quality of life are very important, with a comprehensive and holistic approach.

This intervention to improve the quality of life of cancer patients aims to relieve bothersome symptoms, improve physical and mental conditions, and increase patients' life satisfaction (Rodin *et al.*, 2020). Various methods, such as psychological therapy, physical exercise, and social support, are urgently needed to help patients cope with these challenges (Larasati and Noni, 2022). The findings of this scoping review identified two main categories of interventions to improve the quality of life of thyroid cancer patients, namely psychological and physical interventions. Psychological interventions that can be carried out are therapy *Mindfulness*, memory therapy, psychological nursing interventions, behavioral interventions, and technology-based therapies (mHealth) (Wu and Zou, 2020) (Money *et al.*, 2020) (Chen *et al.*, 2022) (Liu *et al.*, 2019) (Wu *et al.*, 2016) (Cent *et al.*, 2023) (Sun *et al.*, 2024). Physical interventions that can be done are *Progressive Muscle Relaxation* (PMR), and home-based physical exercise (aerobics, resistance, flexibility) (Xiong *et al.*, 2020) (Kim *et al.*, 2018).

Psychological interventions such as Mindfulness Therapy, psychological nursing intervention, Behavioral interventions, Memory Therapy, and Technology-Based Intervention (m-Health) is very influential in improving the quality of life of thyroid cancer patients. Mindfulness helps patients reduce anxiety and stress by focusing on the feelings and present moments (Liu *et al.*, 2019). Psychological nursing intervention Provide emotional support and coping techniques to manage postoperative distress, increasing patients' sense of control and confidence(Wu and Zou, 2020); (Wang *et al.*, 2020), Behavioral interventions change negative mindsets, reduce anxiety and depression, and improve social relationships, which supports the patient's quality of life (Wu *et al.*, 2016). Memory therapy help patients reminisce about positive experiences, reduce feelings of loss, and improve emotional well-being (Chen *et al.*, 2022). m-Health Offer psychological and educational support through digital applications, increase accessibility to help and information, and reduce patient anxiety and fear (Sun *et al.*, 2024). Overall, these interventions reduce psychological distress, improve emotional well-being, and support the quality of life of cancer patients physically, mentally, and socially.

Physical intervention, like Progressive Muscle Relaxation (PMR) and Home-based workouts which includes aerobics, resistance, and flexibility, has a significant impact on quality of life of thyroid cancer patients. PMR helps patients reduce muscle tension and stress, which is often experienced as a result of medication or illness-related anxiety (Xiong *et al.*, 2020). By reducing physical and emotional tension, PMR can increase mental well-being, reduces anxiety, and improves sleep quality, which in turn favors psychological recovery and the patient's emotional balance (Prasestiyo, Allenidekania and Maria, 2022). This allows patients to feel more relaxed and better prepared to face the challenges faced during treatment. Meanwhile, Home-based workouts such as aerobics, resistance, and flexibility focus on Improved physical condition patients, by increasing strength, endurance, and mobility (Kim *et al.*, 2018). This exercise can reduce fatigue, which is a common symptom in thyroid cancer patients, as well as increasing Energy and Body Functions Overall. By improving physical condition, patients can also feel an improvement overall quality of life, because they feel healthier and are better able to carry out daily activities (Nindrahayu *et al.*, 2023). These two interventions work synergistically to support the physical and psychological well-being of patients, improving their overall quality of life, both emotionally, mentally, and physically.

These findings suggest that a holistic approach to the treatment of thyroid cancer patients, which includes psychological and physical interventions, has great potential to improve their quality of life. Psychological interventions are effective in reducing anxiety, stress, and depression, while physical interventions such as Progressive Muscle Relaxation (PMR) and physical exercise can support improved overall body health. By combining these two types of

interventions, the treatment approach becomes more comprehensive, focusing not only on physical treatment, but also on the mental and emotional well-being of patients. Therefore, it is important for healthcare providers to consider the integration of these various interventions in the care of thyroid cancer patients, both as part of primary treatment and as an adjunct support. This approach can help patients overcome the emotional and physical challenges they face during the cancer treatment process, thereby significantly improving their quality of life.

This review has several limitations. The majority of studies were from China, so the results may not be fully representative of populations outside East Asia. In addition, the varying duration of interventions (ranging from 4 weeks to 12 months) and the use of different instruments may have affected the consistency of the results. The small sample sizes in some studies may limit the validity of the findings. Another limitation is the lack of long-term follow-up data, making it difficult to assess the sustained effects of the interventions. Finally, other contributing factors, such as social support or nutritional interventions, were not addressed in this study. Future studies should include more diverse samples, use more uniform instruments, and include long-term follow-up to obtain a more comprehensive picture.

CONCLUSION

Each quality of life improvement intervention has its own characteristics, advantages and challenges. The two main interventions to improve the quality of life of thyroid cancer patients are psychological interventions (mindfulness therapy, memory therapy, and mHealth), physical (*Progressive Muscle Relaxation* and home-based exercise). The intervention is effective in reducing anxiety, depression, and sleep disorders, as well as supporting the physical and emotional well-being of patients. For implementation, an integrated multidisciplinary approach is needed in health facilities, the development of health technologies such as mHealth, training of health workers related to holistic interventions, and follow-up research to strengthen the effectiveness of interventions in various contexts. This effort aims to support the comprehensive improvement of patients' quality of life.

REFERENCES

- Alsaud, J.S. *et al.* (2023) 'Quality of Life in Thyroid Cancer Patients', *Cureus*, 15(9), pp. 1–10. Available at: <https://doi.org/10.7759/cureus.45222>.
- American Cancer Society (2020) 'Treating Thyroid Cancer', *Cancer.Org*, pp. 1–30.
- Amir, N. aulia B. *et al.* (2023) 'Clinical Diagnosis and Management of Thyroid Cancer', *Unram Medical Journal*, 12(3), pp. 240–246. Available at: <https://doi.org/10.29303/jku.v12i3.963>.
- Association, A.T. (2021) 'Clinical Thyroidology for the Public', 14(12).
- Chen, L. *et al.* (2022) 'Reminiscence therapy care program as a potential nursing intervention to relieve anxiety, depression, and quality of life in older papillary thyroid carcinoma patients: A randomized, controlled study', *Frontiers in Psychology*, 13(November), pp. 1–10. Available at: <https://doi.org/10.3389/fpsyg.2022.1064439>.
- Guo, M. *et al.* (2024) 'Advances in targeted therapy and biomarker research in thyroid cancer', *Frontiers in Endocrinology*, 15(March), pp. 1–16. Available at: <https://doi.org/10.3389/fendo.2024.1372553>.
- Kim, K. *et al.* (2018) 'Efficacy of a Home-Based Exercise Program After Thyroidectomy for Thyroid Cancer Patients', *Journal of Cancer Rehabilitation*, 42(3), pp. 208–216. Available at: <https://doi.org/10.1089/thy.2017.0277>.
- Kim, Kyunghye *et al.* (2018) 'Efficacy of A Home-Based Exercise Program After Thyroidectomy for Thyroid Cancer Patients', *Thyroid*, 28(2), pp. 236–245. Available at: <https://doi.org/10.1089/thy.2017.0277>.

- Larasati, A.D. and Noni, I.B. (2022) 'Intervensi Komplementer untuk Menurunkan Fatigue dan Meningkatkan Kualitas hidup Pasien Kanker: A Systematic Review', *ASJN (Aisyiyah Surakarta Journal of Nursing)*, 3(1), pp. 34–42. Available at: <https://doi.org/10.30787/asjn.v3i1.838>.
- Levac, D., Colquhoun, H. and Brien, K.K.O. (2010) 'Scoping Studies: Advancing The Methodology', *Implementation Science*, 5, pp. 1–9.
- Liu, J., Zhang, Y. and Wang, T. (2019) 'Mindfulness-Based Stress Reduction in Patients with Differentiated Thyroid Cancer Receiving Radioactive Iodine Therapy: A Randomized Controlled Trial', *Journal of Psychosocial Oncology*, 37(4), pp. 493–506. Available at: <https://doi.org/10.2147/cmar.s183299>.
- Liu, T. *et al.* (2019) 'Mindfulness-based stress reduction in patients with differentiated thyroid cancer receiving radioactive iodine therapy: A randomized controlled trial', *Cancer Management and Research*, 11, pp. 467–474. Available at: <https://doi.org/10.2147/CMAR.S183299>.
- Munn, Z. *et al.* (2018) 'Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach', *BMC Medical Research Methodology*, pp. 147–160. Available at: <https://doi.org/10.4324/9781315159416>.
- Nindrahayu, O. *et al.* (2023) 'Kekuatan Otot Tungkai Pada Lansia Di Lembaga Kesejahteraan Sosial Lanjut Usia Batara Hati Mulia Kabupaten Gowa', *Open Journal Systems*, 18(1978), pp. 617–626. Available at: <https://binapatria.id/index.php/MBI>.
- Pace-Asciak, P., Russell, J.O. and Tufano, R.P. (2023) 'Review: Improving quality of life in patients with differentiated thyroid cancer', *Frontiers in Oncology*, 13(January), pp. 1–7. Available at: <https://doi.org/10.3389/fonc.2023.1032581>.
- Peters, M.D. *et al.* (2015) 'Guidance for Conducting Systematic Scoping Reviews', *Int J Evid Based Healthc*, 13, pp. 141–146. Available at: <https://doi.org/10.1097/XEB.000000000000050>.
- Prasestiyo, H., Allenidekania, A. and Maria, R. (2022) 'Progressive Muscle Relaxation: Alternatif Mengurangi Gejala pada Pasien Kemoterapi', *Jurnal Keperawatan Silampari*, 5(2), pp. 1013–1020. Available at: <https://doi.org/10.31539/jks.v5i2.3592>.
- Qiu, R. and Gu, Y. (2022) 'Interpretation of the PRISMA extension for scoping review (PRISMA-ScR)', *Chinese Journal of Evidence-Based Medicine*, 22(6), pp. 722–730. Available at: <https://doi.org/10.7507/1672-2531.202203042>.
- Rodin, G. *et al.* (2020) 'Psychological interventions for patients with advanced disease: Implications for oncology and palliative care', *Journal of Clinical Oncology*, 38(9), pp. 885–904. Available at: <https://doi.org/10.1200/JCO.19.00058>.
- Shank, J.B., Are, C. and Wenos, C.D. (2022) 'Thyroid Cancer: Global Burden and Trends', *Indian Journal of Surgical Oncology*, 13(1), pp. 40–45. Available at: <https://doi.org/10.1007/s13193-021-01429-y>.
- Sørensen, K. *et al.* (2012) 'Health Literacy and Public Health: A Systematic Review and Integration of Definitions and Models', *BMC Public Health*, 12(1), p. 80. Available at: <https://doi.org/10.1186/1471-2458-12-80>.
- Sulistyarini, W.D., Nainggolan, E.N. and Mukaromah, S. (2022) 'Ketahanan Diri Pasien Kanker Payudara Yang Menjalani Pengobatan Kemoterapi: Literature Review', *Jurnal Keperawatan Wiyata*, 3(1), p. 32. Available at: <https://doi.org/10.35728/jkw.v3i1.542>.
- Sun, X. *et al.* (2024) 'Impact of a mobile health intervention based on multi-theory model of health behavior change on self-management in patients with differentiated thyroid cancer: protocol for a randomized controlled trial', *Frontiers in Public Health*, 12. Available at: <https://doi.org/10.3389/fpubh.2024.1327442>.
- Sun, Z., Zhang, H. and Wang, C. (2024) 'Effects of a Mobile Health Intervention Based on a Multitheoretical Model of Health Behavior Change on Anxiety and Depression in Patients with Differentiated Thyroid Cancer: A Randomized Controlled Trial. BMC

- Cancer', *BMC Cancer*, 24(1), pp. 466–477. Available at: <https://doi.org/10.1186/s12916-024-03652-0>.
- Supaati Supaati, Anis Ardiyanti and Nafisatun Nisa (2024) 'Hubungan Self Efficacy Terhadap Kualitas Hidup Pasien Kanker Payudara', *DIAGNOSA: Jurnal Ilmu Kesehatan dan Keperawatan*, 2(3), pp. 57–67. Available at: <https://doi.org/10.59581/diagnosa-widyakarya.v2i3.3945>.
- Wang, S. *et al.* (2020) 'A Psychological Nursing Intervention for Patients with Thyroid Cancer on Psychological Distress and Quality of Life: A Randomized Clinical Trial', *Journal of Nervous and Mental Disease*, 208(7), pp. 533–539. Available at: <https://doi.org/10.1097/NMD.0000000000001157>.
- Wu, H.X. *et al.* (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*, 12, pp. 1055–1060. Available at: <https://doi.org/10.2147/NDT.S105460>.
- Wu, L. and Zou, Y. (2020) 'Psychological nursing intervention reduces psychological distress in patients with thyroid cancer: A randomized clinical trial protocol', *Medicine Study Protocol Clinical Trial*, 99(38), p. E22346. Available at: <https://doi.org/10.1097/MD.00000000000022346>.
- Xiong, C. *et al.* (2020) 'Effect of progressive muscle relaxation (PMR) on mental health, sleep quality and quality of life in patients who underwent thyroid cancer surgery', *Int J Clin Exp Med*, 13(8), pp. 5831–5837. Available at: www.ijcem.com/.
- Xu, X. *et al.* (2023) 'The Impact of Targeted Nursing Intervention on Postoperative Medication Adherence, Quality of Life, and Psychological Flexibility of Thyroid Cancer Patients', *Asian-Pacific Journal of Clinical Oncology*, 13(1), pp. 104–116.
- Xu, X., Zhou, L. and Qiu, W. (2023) 'The Impact of Targeted Nursing Intervention on Postoperative Medication Adherence, Quality of Life, and Psychological Flexibility of Thyroid Cancer Patients', *Journal of Clinical Nursing*, 32(2), pp. 310–320. Available at: <https://doi.org/10.1111/ajco.14037>.
- Yunike, Y., Kusumawaty, I. and Winta, M.V.I. (2024) 'Tinjauan Literatur Kondisi Psikologis Remaja Penderita Kanker', *Berajah Journal*, 4(1), pp. 129–142.