



Original Article

Experiences of Korean patients with thyroid cancer receiving radioactive iodine therapy after total thyroidectomy

Jeong Ha Shin^b, Shin-Young Lee^{a,*}^a Department of Nursing, Chosun University, Gwangju, Republic of Korea^b Department of Nursing, Chunnam Techno University, Gokseong-gun, Republic of Korea

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ABSTRACT

Objective: South Korea has a high incidence of thyroid cancer. This study aimed to describe and understand the nature of the experience of Korean patients with thyroid cancer undergoing radioactive iodine treatment after total thyroidectomy through an in-depth investigation of their experience.

Methods: Individual interviews using open questions were conducted with 22 participants living in South Korea. All were audio-recorded and transcribed verbatim. This study used the phenomenological analysis method proposed by Colaizzi to determine the essential subjects verified according to the four reliability criteria proposed by Guba and Lincoln.

Results: Three categories, 6 theme clusters, and 13 themes emerged from the study. The three categories identified were “broken life,” “solitude in a crowd,” and “positive changes in values.” The six theme clusters were “anxiety about death,” “an imperfect being,” “feeling social isolation,” “struggling alone,” “an active attitude toward life,” and “life support.” The themes that emerged the most were related to physical and psychological difficulties. Of the 13 themes, four themes were related to family-oriented values and culture.

Conclusions: This study suggests that nursing interventions are required to reduce the physical and psychological symptoms of Korean patients with thyroid cancer. It is necessary to build a support system with the patient's family members to consider family-oriented values and culture.

Introduction

The total incidence of thyroid cancer in South Korea is 26,170 (44.5/100,000 people), the highest cancer incidence following gastric, colon, and lung cancer.¹ This includes 6035 incidents in men (20.8/100,000 people) and 20,135 in women (68.9/100,000 people), with thyroid cancer ranking the sixth and second highest, respectively.¹ In terms of age, the incidence rate of thyroid cancer is 31.9 per 100,000 people in the 15- to 34-year age group and 80.1/100,000 people in the 35- to 65-year age group, ranking first among men and women.¹

The standard treatment for thyroid cancer consists of total or partial thyroidectomy followed by radioactive iodine therapy, depending on the risk of cancer recurrence.² Radioactive iodine therapy after total thyroidectomy using radioactive iodine capsules reduces the risk of cancer recurrence and detects metastatic lesions; once absorbed into the remaining thyroid tissue, radiation is released, destroying the tissue.³ Before radioactive iodine therapy, most patients should have a restricted diet for about two weeks. The hospitalized patients with high doses of radioactive iodine therapy are in isolation for a few days. To increase the

efficacy of radioactive iodine therapy, patients may experience side effects of an induced hypothyroid state owing to the temporary discontinuation of thyroid-stimulating hormone (TSH) replacement therapy drugs; side effects can also occur as a result of a low-iodine diet that keeps iodine levels as low as possible.

Previous qualitative research on patients with thyroid cancer involved patients' thyroidectomy experience,⁴ low-iodine diet,⁵ and radioactive iodine therapy.^{6–8} The studied experiences were mainly limited to partial thyroid cancer treatments, such as surgery, radioactive iodine therapy, and a low-iodine diet. For example, a study of women who underwent thyroidectomy reported the shock of receiving a sudden thyroid cancer diagnosis, along with pain and anxiety during the treatment process,⁴ and a study on the low-iodine diet reported discomfort, stress, and isolation symptoms felt by study participants.⁵ Furthermore, a study of women who had undergone radioactive iodine therapy reported a narrower range of activities and social circles in response to radiation exposure.^{6–8} Based on quantitative studies, patients with thyroid cancer are reported to have a lower quality of life. Despite a relatively high survival rate and good prognosis compared with other types of cancer with anxiety, depression,

* Corresponding author.

E-mail address: shinyoung0114@gmail.com (SY. Lee).<https://doi.org/10.1016/j.apjon.2021.12.010>

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and other associated symptoms, these factors affect the quality of life of patients with thyroid cancer.^{9–14} Symptoms have been reported from the discontinuation of thyroid hormone therapy, as well as anxiety and depression from isolation from the medical team and family due to radiation exposure,^{11,12} along with difficulties arising from insufficient information provided on the exposure and management of radioactive substances.^{10,14} Patient satisfaction concerning the health care provider's emotional support was low in patients with thyroid cancer undergoing radioactive iodine treatment in isolation rooms. The health care providers were not sensitive or did not acknowledge the patient's fear.^{8,14} Among studies on thyroid cancer experiences, qualitative studies have mostly addressed the experiences of partial treatment processes in female patients with thyroid cancer, whereas quantitative studies focused on quality of life, anxiety, and depression, indicating limits on gaining a comprehensive understanding of the total treatment experience from multiple perspectives. Studies involving both men and women that comprehensively explore the complete process of diagnosis, surgery, and radioactive iodine therapy are almost nonexistent. This study aimed to comprehensively examine the meaning and context of the experiences of Korean patients with thyroid cancer who underwent radioactive iodine therapy following thyroidectomy.

Methods

Study design

This qualitative research explores the experiences of Korean patients with thyroid cancer using a phenomenological approach based on Colaizzi's analysis method.¹⁶ The investigation of patients' experiences when undergoing radioactive iodine therapy following thyroidectomy is based on phenomenological understanding. A qualitative research method is appropriate for understanding the essential structure of the unique nature of human experience.¹⁵ Phenomenology is a primary academic theory that provides the most representative description of lived experience on various epistemological grounds and requires a holistic approach to the subject's reality.¹⁵ This study uses a phenomenological approach to comprehensively explore the treatment experiences of patients with thyroid cancer. Colaizzi¹⁶ proposed a method of analysis suitable for this study's intentions to identify meaning and accurately describe a phenomenon's nature. It focuses on deriving shared attributes from the experiences of participants in their daily lives. This study applies Colaizzi's analysis method¹⁶ for an in-depth investigation of the meaning behind the experiences of Korean patients with thyroid cancer and the nature of the phenomena that occur in the treatment process.

Ethical considerations

To avoid infringing on the privacy and human rights of the study participants, the participants were recruited upon approval by the C University Bioethics Review Committee (IRB No. 2-1041055-AB-N-01-2016-0026). Written consent was obtained from all the participants prior to the interviews. They were explained about their right to withdraw from the study at any point in the research process after explaining its purpose and methods.

Selection of study participants and data collection

The participants in this study were both men and women who had been diagnosed with thyroid cancer within the past five years, who underwent surgery and radioactive iodine therapy with induced hypothyroidism, who did not present with recurrence of metastasis, and who did not have any comorbidities. Patients who had other cancers except thyroid cancer and metastasized thyroid cancer and did not undergo radioactive iodine therapy were excluded from this study. The participants in this study were recruited from a nuclear medicine service center.

Data were collected through individual interviews. Interviews were held at the participants' location of choice, such as the participant's home or workplace in South Korea, to allow the participant to be interviewed in a comfortable atmosphere. In this study, data were collected using unstructured interviews and open-ended questions to enable participants to talk freely about their experiences. The researcher began the interview with the general question, "What is your experience with thyroid cancer?" and then posed additional questions such as "What is your experience with your diagnosis of thyroid cancer?", "What is your experience with thyroid surgery?", and "What is your experience with radioactive iodine treatment?" The length of the interviews ranged from 40 to 90 min. Following the interviews, the recorded content was transcribed verbatim.

Data analysis

The phenomenological analysis method proposed by Colaizzi¹⁶ was used to identify the essential themes. Data collection and analysis were performed simultaneously, and the analysis procedure directly followed the phenomenological method. First, the participants' recollections were transcribed and read repeatedly to understand their meaning. Next, clear sentences or phrases about the experiences of patients with thyroid cancer were selected to extract significant statements. Upon careful examination of the significant statements, redundant expressions were excluded, and general and abstract meanings were reformulated into themes. Three nursing professors with extensive qualitative research experience reviewed the content to ensure that the context remained consistent with the raw data. Theme clusters were identified based on organized themes. Finally, the common elements identified in each theme cluster were integrated and categorized.

Rigor

To establish the validity of our research quality, a verification procedure was conducted according to the four reliability criteria of Guba and Lincoln¹⁷ (true value, applicability, consistency, and neutrality). For true value in this study, the transcribed interview content and analysis results were shared with three participants to verify consistency with the participants' statements. For applicability, data collection and analysis were conducted simultaneously in this study, and two participants verified the analyzed content of participants' experiences. Data were collected until no additional data were available. Telephone follow-up or subsequent interviews ensured the accuracy and validity of the recorded interview content.

The research process was described in detail. Furthermore, the study's reliability was established by seeking constant consultation from the three nursing researchers in deriving a research topic during the analysis procedure. For neutrality, efforts were taken to eliminate the researcher's prejudices and stereotypes on the description and interpretation of phenomena and to maintain a neutral attitude to avoid the influence of the researcher's reactions on the interview.

Results

A total of 22 individuals participated in this study, and for sufficient sampling, data were collected to saturation until no new content was disclosed. The participants' average age was 45.4 years (range, 33–69 years) and included 6 men and 16 women (Table 1).

Analysis of the statements regarding the experiences of patients with thyroid cancer identified 3 categories, 6 theme clusters, and 13 themes. The three categories were "broken life," "solitude in a crowd," and "positive changes in values" (Table 2).

Broken life

The first category of participants' experiences of thyroid cancer was "broken life." The theme clusters for this category were "anxiety about death" and "imperfect beings."

Table 1
Characteristics of the participants.

ID	Gender	Age (years)	Religion	Education	Marital status
P01	Female	44	None	University	Married
P02	Female	38	None	University	Married
P03	Female	56	None	University	Married
P04	Female	69	Christianity	Middle school	Married
P05	Female	41	Christianity	University	Married
P06	Male	33	Christianity	University	Married
P07	Male	43	Christianity	University	Married
P08	Male	34	Christianity	High school	Single
P09	Female	46	Christianity	University	Married
P10	Male	46	Catholic	University	Married
P11	Female	43	Christianity	High school	Married
P12	Female	45	Christianity	University	Married
P13	Female	42	Catholic	University	Married
P14	Male	60	Christianity	University	Married
P15	Female	36	None	University	Married
P16	Male	50	None	University	Single
P17	Female	47	None	High school	Married
P18	Female	40	None	University	Married
P19	Female	42	None	University	Married
P20	Female	52	Catholic	University	Married
P21	Female	51	Buddhism	High school	Married
P22	Female	41	None	University	Married

Table 2
Experiences of patients with thyroid cancer.

Categories	Theme clusters	Themes
Broken life	Anxiety about death	A sudden cancer diagnosis is scary and shocking Anxiety about unpredictable metastases Concerned about the family to be left behind after death
	An imperfect being	Suffering during the treatment process Deterioration of self-esteem due to changes in appearance
Solitude in a crowd	Feeling social isolation	Being treated like an infectious disease patient Staying away from people around me
	Struggling alone	A sad, unrecognized disease Resentment for the medical staff's indifference
Positive changes in values	An active attitude toward life	Efforts to accept and stay positive Taking better care of health
	Support for life	Acquiring strength through family support Enduring with faith in myself

Anxiety about death

All study participants expressed shock and disbelief regarding their sudden cancer diagnosis. They found the sudden cancer diagnosis “scary and shocking,” had “anxiety about unpredictable metastases,” and felt “concerned about the family to be left behind after death.”

A sudden cancer diagnosis is scary and shocking

All participants found it difficult to admit that they had cancer. Although they were aware that thyroid cancer was considered a slower, less severe type of cancer, they experienced fear toward their cancer diagnosis and at the thought of death.

Although they said, “it is cancer” as if it were nothing, tears flowed from my eyes as soon as I heard those words. Although thyroid cancer is considered an easily treated cancer, a cancer that can be recovered from quickly, the term “cancer” itself had a sinking feeling. My hands were shaking so much, and I felt as if the sky was falling. (P2)

Anxiety about unpredictable metastases

Participants (n = 10) were subject to negative emotions, thought that their cancer would grow and spread each day, and felt shocked by their

thyroid cancer diagnosis.

Even though it was explained that cancer would not spread quickly in my body, and I was aware of this, I felt as if the cancer was growing. Waiting, feeling as though it would spread overnight, thinking that it would spread even if it had been said that it would not, and thinking it could spread quicker as I am young, made each day painful. The anxiety that it would spread and grow every second, every minute. (P5)

Concerned about their family who would be left after their death

Following their cancer diagnosis, participants (n = 19) worried about their families, those who they would be leaving at their death, and thought especially about not fulfilling their parental roles. Participants expressed that if they left their children, the household environment would disappear and that the living conditions at home would deteriorate.

When I was diagnosed, I worried about my children more than myself. What will my children do if I die from cancer? I was scared. I was not scared that I would die, but about who would be responsible for my children; I was worried for my children's future, not worried about the disease, because they are still young. (P12)

An imperfect being

After being diagnosed with cancer, the participants struggled to define themselves as imperfect beings. In the theme cluster of “an imperfect being,” as experienced by patients, the themes “suffering during the treatment process” and “deterioration of self-esteem due to changes in appearance” were identified.

Suffering during the treatment process

All participants experienced a difficult period of physical and psychological symptoms due to continuous surgery and radioactive iodine therapy in patients with cancer. They often felt guilty about their families. In particular, during radioactive iodine therapy, men found the restriction of iodine challenging. Women found it challenging to prepare both their low-iodine diet and food for their families.

I think the low-iodine diet was the most difficult. It was tough to cook solely for me. It was hard to prepare food for my spouse or family while preparing a low-salt diet for myself. Since I have a family, and the children are young, I have to cook for them but could not taste the food. These things made it very difficult. Since I have a family and have to account for both, I did not prepare for myself instead of skipping meals. (P9)

Deterioration of self-esteem due to changes in appearance

Participants (n = 8) of this study, both male and female, were concerned about scarring following surgery during their thyroid cancer treatment and demonstrated decreased confidence due to incision wounds.

I was worried about the scarring. The students will see, it may be disturbing, even as a man. I work as a physical education teacher, and I was worried about the scars affecting my job. (P6)

It is impossible as a girl to not care about beauty. Because the scar remains, some that are aesthetically pleasing may be less obvious, but it is different for every skin. Since you can see the surgical scarring clearly, I hope that this is put into consideration. (P11)

Solitude in a crowd

The second category of participants' thyroid cancer experience was “solitude in a crowd,” with the theme clusters “feeling social isolation” and “struggling alone.”

Feeling social isolation

The participants' sense of isolation appeared as the themes “being treated like an infectious disease patient” and “staying away from people around me.”

Being treated like an infectious disease patient

Participants ($n = 13$) reported experiencing isolation and fear of disconnection in the isolation room during their hospitalization for radioactive iodine therapy and how the medical staff's protective equipment and actions made it seem as though they were being treated as infectious disease patients.

I was so scared. Most importantly, everything they used was disposable, which made me miserable. Going into the isolation room was okay, but I think the way they treated me inside the room was more frightening. They said it was for treatment purposes, but since they made it seem like I could not be touched, I think I kept crying. (P9)

Staying away from people around me

All participants in this study worried about their children, family, and those nearby were exposed to radiation following their radioactive iodine therapy. Even after the hospital's isolation treatment was over and the recommended isolation period had ended, they tended to avoid contact with people in fear of harming others, thus experiencing limitations in social relationships.

Since I have children, I feed them when I am there. Although I am supposed to do the dishes, wash my clothes separately, and stay isolated, even if I am in the room and using separate bathrooms, I have to cook continuously, which is concerning for my children, more about my family than myself. (P13)

Struggling alone

Themes in "struggling alone" included "a sad, unrecognized disease" and "resentment for the medical staff's indifference." Women who participated in the study felt challenged by family members who did not take thyroid cancer treatment seriously and those around them who were not understanding during their experience with the treatment procedure. Additionally, they expressed disappointment in the medical staff, who treated them based only on their blood test results.

A sad, unrecognized disease

As patients with thyroid cancer experienced pain, participants ($n = 14$) felt sadness in the perspectives and attitudes of family members and those around them who took the disease lightly, claiming thyroid cancer was not a serious or severe cancer.

The fact that thyroid cancer is still very tiring and painful for the person going through it, despite being told that it is nothing, I will have to take medication forever and have no energy even after surgery. You may not die from it, but it is still challenging, very difficult for the person, I want to say that. (P21)

Resentment for the medical staff's indifference

The participants ($n = 12$) reported that when they were diagnosed with thyroid cancer and their treatment began, they were faced with the medical staff's perception and attitude, as they did not think of it as a severe disease.

There is discrimination against cancer. There is a difference between severe and other types of cancer. Some things were important from my perspective after surgery, but I felt that it did not matter for the medical staff. They do not care. I think that they were neglected, even though they should have frequently been checking patients' conditions. (P12)

Positive changes in values

The third category in the participants' thyroid cancer treatment experience was "positive changes in values." Participants in the study endured the fear of death, anxiety, and pain to live and experienced positive changes due to their thyroid cancer treatment as they lived as patients with cancer. The theme clusters included "an active attitude

toward life" and "life support."

An active attitude toward life

Study participants positively accepted the thyroid cancer treatment process, planning to maintain their health and a changed lifestyle. "Efforts to accept and stay positive" and "taking better care of their health" were the identified themes.

Efforts to accept and stay positive

Participants ($n = 16$) in this study reported that they tried to think of and judge all circumstances as positively as possible.

You are alone in an enclosed space. Even during radioactive iodine therapy, I exercised regularly. Even though it was difficult at the time, I thought to myself that I need to gain back my health and finish the treatment since the surgery was quick and successful. With this in mind, I exercised regularly, ate well, and watched television, which made radiation therapy bearable. (P17)

I got a new life. You do not know what will happen to whom, when. Whether a situation is good or bad, the thought that I will not get this time back has changed my mindset to do my best when I can, even during difficult times. (P11)

Taking better care of health

Experiencing thyroid cancer prompted the participants ($n = 12$) to look back on their lives and plan changes in their lifestyles to maintain a healthy life.

If this had not happened, I would not have looked after myself more. I used to be confident in my health, but after this, I have changed and take care of my health and things like cholesterol. (P4)

My thoughts on food and lifestyle have changed significantly. Making changes to my work environment and myself, I am now living a satisfying life. The exercise was 100% incorporated. I never used to exercise. I also included many vegetables and vitamins. (P7)

Support for life

In "life support," themes included "acquiring strength through family support" and "enduring with faith in myself."

Acquiring strength through family support

Participants ($n = 18$) reported feeling fearful of the isolation rooms' cold, prison-like environment when admitted for thyroid cancer treatment. They did not wish to return to the disconnection. However, they endured such a difficult treatment process for thyroid cancer treatment through family support.

If there is one thing that helped me endure, it is family. (P7)

What helped me endure were my babies. I had to endure because of my babies, my family. (P22)

Enduring with faith in myself

In the difficult thyroid cancer treatment process, faith in oneself was as much of a source of power as faith toward the family in enabling the participants ($n = 9$) to endure through the treatment process and live positively as a patient with cancer.

I tend to trust myself. I thought there would be no problem since I trust myself. (P6)

Survival, I think that is me, myself, and my responsibility. I feel a strong responsibility toward my parents because I thought I was the center of the household as the eldest son. (P16)

Discussion

This study demonstrates how family-oriented values and culture in South Korea have a great influence on the experiences of patients with thyroid cancer. There were four main themes related to family centeredness

in this study. First, in the theme “concerned about the family to be left behind after death,” the women who participated in this study had an average age of 45.4 years. Furthermore, they tended to be mothers with young children and spouses, leading them to experience anxiety and fear based on concerns regarding the care and living conditions of the family who would be left behind in the case of their demise after their diagnosis. Second, in the theme “suffering during the treatment process,” women who played the main role in childrearing expressed difficulties preparing both their own low-iodine diet and food for their family. Third, in the theme “staying away from people around me,” many were concerned about having to be in close contact with their children, in fear of exposing them to radiation. In particular, as women are responsible for childcare more than men, they had greater concerns in the context of a family-oriented lifestyle, involving food preparation for the family and exposing their children to radiation. Fourth, in the theme “acquiring strength through family support,” it was evident that family support was a driving force in overcoming thyroid cancer. As previous research emphasized the struggles of the patient, such as the inconvenience of the low-iodine diet,⁵ restricted social relationships, and feelings of isolation,^{4,18} and no other studies have addressed family concerns or difficulties in family life faced by mothers during treatment, the aforementioned results are important findings of this study. The importance of family support is consistent with previous findings that demonstrate that patients can successfully overcome the treatment process by continuing treatment until completion to satisfy their families' support, and family support is often extended even in extreme situations, including death.^{7,19–21} The interdependent nature of family results in a change in the system, function, and structure of the household upon the occurrence of a life-threatening disease, such as cancer.²² Koreans particularly have family-oriented values and cultures based on traditional Confucian teachings and place their families before themselves as a way of life, meaning that family has the biggest influence on Koreans' health behaviors.^{23,24}

The participants of this study experienced fear and shock from the idea of cancer itself upon diagnosis. However, the general perception is that thyroid cancer is not a severe type of cancer²⁵ because of its good treatment results and high survival rate. This is consistent with research findings that patients with cancer experience severe anxiety and fear during the process of becoming diagnosed with cancer, irrespective of their type of cancer diagnosis.²⁶ Therefore, the anxiety felt by patients with thyroid cancer is similar to that felt by patients with other cancer.^{11,12} The most critical factors for anxiety in patients with cancer in this study were death and metastasis. This is consistent with research findings that demonstrate that patients with cancer undergo psychological challenges only from cancer diagnosis due to severe anxiety regarding death, losing their will to live from cancer diagnosis, and psychological pressures.²⁷ Therefore, it is necessary to establish a method to deliver general information on thyroid cancer treatment while strengthening emotional support. Additionally, participants felt disappointed in family members and others around them who did not treat them as a patient and complained of being discriminated against during treatment, all based on their type of cancer. This is aligned with previous research findings that address negative experiences that arose from the perceptions of people close to the patient who did not take thyroid cancer seriously.^{7,25} There is a need to raise awareness of thyroid cancer through informative education and various advertising programs, considering that thyroid cancer treatment may become more difficult owing to the lack of understanding from family, relatives, and people nearby.

The participants of this study had many difficulties with the low-iodine diet during radioactive iodine therapy, which supports previous findings regarding the presence of significant physical and psychological challenges related to radioactive iodine therapy.^{4,11,14,28} Furthermore, the challenge of having to eat sour foods to prevent side effects of the treatment was demonstrated. This is aligned with previous research regarding the limited choice of low-iodine foods owing to the nature of Korean food, leading to difficulties in dietary control⁴ and the shortage of detailed information on the low-iodine diet in medical

institutions.¹⁴ Based on these findings, detailed and accessible education on iodine-containing food items are needed to familiarize patients, and efforts to improve access to various low-iodine diet plans are also needed.

Unlike surgery, chemotherapy, and radiation treatment options of patients with other cancer, patients with thyroid cancer must remain alone and disconnected in an isolation room following surgery, ingest a low-iodine diet, and undergo radioactive iodine therapy.²⁹ This exacerbates participants' emotional struggles involving anxiety, fear, and isolation caused by the particular environment in which they were being treated^{9,14} and often results in excessively long isolation periods beyond the recommended time. This supports previous studies that found that isolation treatment is more shocking for patients with thyroid cancer than surgery,²⁵ and that undergoing radioactive iodine therapy and remaining in the isolation room is a stress source.³⁰ Therefore, it is necessary to implement improvements to the isolation environment and support to enable patients to feel comfortable in the isolation rooms, have freer contact with family or medical staff, and allow them to indirectly experience the outdoors through a window in the room.

In this study, the participants had an opportunity to look back on their experiences during the process of thyroid cancer treatment, which they considered an essential process in their lives. Throughout the treatment process, the participants reflected on their past, where they worked without taking care of their health and began to take better care of themselves afterward. This supports previous studies that found that patients with cancer value their bodies and take better care of their health owing to their disease and that they have a positive mindset and plan for a changed life.^{11,31} Timely interventions will be required to enable patients with cancer to process, reflect on their past, and plan for their future to allow them to stay positive and successfully overcome the treatment process.

Limitations

This study has limited generalizability because the small number of Korean patients with thyroid cancer in this study could not represent the whole population. It is difficult to determine whether the findings from this study apply to different subgroups or locations. Additionally, the qualitative design makes it difficult to prove causality. Thus, it is limited to state that patients with thyroid cancer or family support experiences cause positive value changes.

Clinical implications

This study has several important clinical implications. First, Korean patients with thyroid cancer in this study had family concerns for those left behind and family life difficulties due to thyroid cancer. However, this study found that a positive aspect of family in that the presence of a family, family responsibilities, and family support for patients with thyroid cancer could be a driving force to overcome the disease. Considering that familism is very important for Korean patients with thyroid cancer owing to traditional culture, strengthening family support is essential to recover Korean patients with thyroid cancer during diagnosis and treatment process of thyroid cancer. Second, participants experienced anxiety and loneliness from prolonged, self-induced isolation from family and others, longer than recommended, out of fear of radiation exposure. Appropriate education and connection to a medical institution that would allow them to reside with others may be needed to reduce unnecessary isolation.

Conclusions

The experiences of patients with thyroid cancer began with shock and anxiety toward death following a sudden cancer diagnosis. Patients with thyroid cancer endured the treatment process alone, realizing that they

were patients with cancer, and planned a positive change in life following treatment. The low-iodine diet, radioactive iodine treatment, radiation exposure, and thyroid hormone therapy are unique characteristics of thyroid cancer. Based on the experiences of patients with thyroid cancer who underwent radioactive iodine therapy as outlined in this study, consideration of family-oriented values and culture and consequent interventions for physical and psychological symptoms at different stages (diagnosis, surgery, radioactive iodine therapy) are required. This should include the development of a support system and intervention program for family and medical staff.

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Declaration of competing interest

None declared.

References

- National Cancer Information Center. Cancer incidence rates. Available from: <http://www.cancer.gov/lay1/S1T639C641/contents.do>. Accessed November 30, 2021.
- Yi KH, Lee EK, Kang HC, et al. Revised Korean thyroid association management guidelines for patients with thyroid nodules and thyroid cancer. *Int J Thyroidol*. 2016;9(2):59–126.
- Haugen BR. American thyroid association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer: what is new and what has changed? *Cancer*. 2015;123:372–381, 2017.
- Lee KM, Lee GJ. Phenomenology of the experiences of women with thyroidectomy. *Asian Oncol Nurs*. 2013;13(3):152–162.
- Lee KJ, Chang SO, Jung KY. Experiences with a low-iodine diet: a qualitative study of patients with thyroid cancer receiving radioactive iodine therapy. *Eur J Oncol Nurs*. 2016;23:43–50.
- Sawka AM, Thepamongkhon K, Brouwer M, et al. Clinical review 170: a systematic review and meta analysis of the effectiveness of radioactive iodine remnant ablation for well-differentiated thyroid cancer. *J Clin Endocrinol Metab*. 2004;89:3668–3676.
- Kang KO, Kim HK, Kim JY, Lim ST. The experience of receiving radioactive iodine therapy among thyroid cancer patients. *J East West Nurs Res*. 2016;22(2):148–157.
- Stajduhar KI, Neithercut J, Chu E, et al. Thyroid cancer: patients' experiences of receiving iodine-131 therapy. *Oncol Nurs Forum*. 2000;27(8):1213–1218.
- Chun N. Effect of depression and anxiety on symptoms in thyroid cancer patients undergoing radioactive iodine (I131) therapy. *Asian Oncol Nurs*. 2012;12(4):297–304.
- Kim J-S. Postoperative quality of life in patients with papillary thyroid cancer. *J Korea Acad Ind Coop Soc*. 2011;12(3):1260–1269.
- Yoo SH, Choi-Kwon SM. Changes in quality of life and related factors in thyroid cancer patients with radioactive iodine remnant ablation. *J Korean Acad Nurs*. 2013;43(6):801–811.
- Yang J, Yi M. Factors influencing quality of life in thyroid cancer patients with thyroidectomy. *Asian Oncol Nurs*. 2015;15(2):59–66.
- Tagay S, Herpertz S, Langkafel M, et al. Health-related quality of life, depression and anxiety in thyroid cancer patients. *Qual Life Res*. 2006;15:695–703.
- Kim J-S, Son H-M. The experiences of thyroid cancer patients receiving radioactive iodine therapy. *J Korea Acad Ind Coop Soc*. 2010;11(12):4935–4944.
- Patton MQ. *Qualitative research & evaluation methods: integrating theory and practice*. 4th ed. Sage Publishing; 2014.
- Colaizzi PF. Psychological research as the phenomenologist views it. In: Valle RS, King M, eds. *Existential-phenomenological alternatives for psychology*. New York: Oxford University Press; 1978:48–71.
- Guba EG, Lincoln YS. Competing paradigms in qualitative research. In: Denzin NK, Lincoln YS, eds. *Handbook of qualitative research*. Thousand Oaks, California: Handbook of Qualitative Research; 1994:105–117.
- Kang H-T, Bahk HJ, Shim J-Y, Kim NK. Management of long-term colorectal cancer survivors in Korea. *J Korean Med Assoc*. 2016;59(4):276–286.
- Kim H, Lim J-W, Shin S. Quality of life and social support of the buddhist patients with cancer. *J Indian Philos*. 2011;33:241–268.
- Laryionava K, Pfeil TA, Dietrich M, Reiter-Theil S, Hiddemann W, Winkler EC. The second patient? Family members of cancer patients and their role in end-of-life decision making. *BMC Palliat Care*. 2018;17(28):1–9.
- Kim KH, Chung BY, Kim KD, Byun HS. Perceived family support and quality of life in patients with cancer. *Asian Oncol Nurs*. 2009;9(1):52–59.
- Kaakinen JR, Coehlo DP, Steele R, Robinson M. *Family health care nursing: theory, practice, and research*. 6th ed. Philadelphia: F. A. Davis Company; 2018.
- Chang SJ, Lee KJ, Kim IS, Lee WH. Older Korean people's desire to participate in health care decision making. *Nurs Ethics*. 2008;15(1):73–86.
- Kang Y, Crogan NL. Social and cultural construction of urinary incontinence among Korean American elderly women. *Geriatr Nurs Mar Apr*. 2008;29(2):105–111.
- Easley J, Miedeman B, Robinson L. It's the "good" cancer, so who cares? Perceived lack of support among young thyroid cancer survivors. *Oncol Nurs Forum*. 2013;40(6):596–600.
- Sellick SM, Edwardson AD. Screening new cancer patients for psychological distress using the hospital anxiety and depression scale. *Psycho Oncol*. 2007;16(6):534–542.
- Cho S-J. Psychiatric and psychosocial intervention for cancer patients and their families. *J Korean Neuropsychiatr Assoc*. 2007;46(5):430–446.
- Kim TY. *A phenomenological study on experience of overcoming anxiety among female thyroid cancer survivors*. Busan: Department of Education, Kyungsoo University; 2015.
- Huang SM, Lee CH, Chien LY, Liu HE, Tai CJ. Postoperative quality of life among patients with thyroid cancer. *J Adv Nurs*. 2004;47(5):492–499.
- Korean Thyroid Association. *Thyroid cancer guidebook*; 2019. Available from: <http://www.thyroid.kr/people/sub02.html#>. Accessed November 30, 2021.
- Taieb D, Sebag F, Cherenko M, et al. Quality of life changes and clinical outcomes in thyroid cancer patients undergoing radioiodine remnant ablation (RRA) with recombinant human TSH (rhTSH): a randomized controlled study. *Clin Endocrinol*. 2009;71:115–123.