TJHSL

Turkish Journal of
Health Science and Life

Alopecia due to chemotherapy and its effect on the wellbeing cancer patients

Serap GOKCE ESKİN[a]*, Aysegul KAHRAMAN[b]

[a] *Faculty of Nursing , Medical Nursing Department, Aydin Adnan Menderes University, Aydin, Türkiye*
[b] *Nazilli Vocational School of Health Services, Health Care Services Department, Aydin, Türkiye*

ARTICLE INFO

RESEARCH ARTICLE

Article history:
Received: 11 January 2024
Accepted: 30 September 2024
Available : 31 December 2024

[a]https://orcid.org/0000-0002-8940-6116
[b]https://orcid.org/0000-0001-5716-4733

*Correspondence: Serap GOKCE ESKİN
Faculty of Nursing , Medical Nursing Department, Aydin Adnan Menderes University, Aydin, Turkey
e-mail: serap.gokce@adu.edu.tr

Turkish Journal of Health Science and Life
2024, Vol.7, No.3, 121-129.
DOI: https://doi.org/10.56150/tjhsl.1418095

ABSTRACT

Purpose: The present research is aimed to determine the effect of cancer symptoms of the patients on their well-being and the level of emotional distress that they experience due to alopecia.

Material and Methods: The population of this research with an analytical sectional design was comprised of the patients that received treatment in An University Hospital outpatient chemotherapy unit between the 1st of March and 1st of June in 2021 and met the research criteria. The number of samples was determined as 164 with G-power. Patient information form, Chemotherapy-Induced Alopecia Distress Scale, and Nightingale Symptom Assessment Scale were among the tools for data collection. The data were analyzed with the SPSS package program and a correlation analysis was conducted between descriptive statistics and average scale scores.

Results: According to the results of the research, the average age of the participants was determined to be 56.55 + 10.54. Participants' both chemotherapy-induced alopecia distress scale and mean scores of sub-dimensions and Nightingale symptom assessment scale were found lower in the participants aged 61 and above.

Conclusion: It was found out that the alopecia-induced distress and symptom-related well-being of the participants were affected by their age, marital status, and non-chemotherapeutic treatment

Keywords: Alopecia, breast cancer, distress, symptom, quality of life, nursing

1. INTRODUCTION

Cancer is the second leading cause of death globally, accounting for an estimated 9.6 million deaths or one in six deaths in 2018 (1). Cancer treatment methods are in general chemotherapy, radiotherapy, surgery, and immunotherapy, and one or more of these methods are used in the treatment according to the individual characteristics and disease status of the patients diagnosed with cancer. Depending on the drugs they take, patients may experience many side effects such as pain, nausea, vomiting, fatigue, loss of appetite, weakness, alopecia, and mucositis (2,3,4). These symptoms, which are seen due to cancer and chemotherapy, negatively affect the patient's quality of life, physical and mental health (3). Consequently, patients have difficulty maintaining their well-being. Usage of chemotherapeutic drugs affect all the cells of the body as well as the hair cells. Therefore, some or all of the hair falls out within the 2nd or 3rd weeks after the treatment begins. Alopecia is defined as the loss of hair, as well as eyebrows, eyelashes, and whole-body hair due to cancer treatment (4,5,6) Despite alopecia is not a life-threatening condition, it has a significant impact on the patients' quality of life, particularly in psychological and social terms (7). Although it has been reported that alopecia due to chemotherapy is usually temporary, it has been reported even after 3 years of follow-up that patients still have this problem (8). Hence, it is emphasized that alopecia management is important (8). Alopecia management is essential, particularly regarding its psychological repercussions with significant consequences on the quality of life of patients and their family (7). Since hair symbolizes life and identity; alopecia can result in anxiety, depression, deterioration in body image, low self-respect, and decreased well-being in patients (7,9,10,11). Management of alopecia often involves multidisciplinary management, with the need to assess the psychological implications and consequences on patients' quality of life (7). Professionals who care for patients with alopecia should be aware of how other symptoms during the cancer process affect the patient. Supportive care strategies should be developed to prepare patients for the process and minimize their impact on health (8). This study aimed to determine the well-being of the patients for cancer symptoms and the level of distress they experience due to alopecia.

2. MATERIALS AND METHODS

It is an analytical-cross-sectional study. Questionnaires and scale forms applied by the researcher to the cancer patients in conformity with the research criteria who come to the center for chemotherapy to get treatment in the outpatient chemotherapy unit of An University Hospital.

2.1. Sample/participants

Population of the research is constituted of patients with breast cancer who have been applied one of the adriamycin, cyclophosphamide [adriamycin, cyclophosphamide (AC)] and cyclophosphamide, adriamycin, 5-fluorouracil [cyclophosphamide, adriamycin, 5-fluorouracil (CAF)] chemotherapy protocols in An University hospital outpatient chemotherapy unit between March 1 and June 1, 2021. Chemotherapy unit is a unit that serves patients who are not hospitalized. The data were collected by the researchers by face-to-face interview method from the patients who came to the chemotherapy unit. Data collection was based on self-report. Patients who lost 100-150 hairs per day for more than 2 months were considered alopecia (12).

One hundred eighty-four individuals are included in the study. The sample number was determined with the G-power program by taking Ateş & Olgun (2014) as a reference (9). Accordingly, it was determined as 164 with 80% power, 0.05 margin of error and medium influence quantity.

2.2. Data collection

The questionnaire included 89 questions in three sections: A patient information form was used to collect patients' sociodemographic characteristics and disease/treatment information. The Chemotherapy-Associated Alopecia Distress Scale was used to determine the chemotherapy-related stress level of the patients. The Nightingale Symptom Assessment Scale was used to evaluate the symptom-related well-being of cancer patients.

2.2.1.The patient information form

The patient information form was created by the researcher to determine some sociodemographic (age, education level, marital status and income status, place of residence) and disease/treatment-related characteristics (time elapsed after the diagnosis of breast cancer, disease stage, symptoms experienced) of the patients.

2.2.2.Chemotherapy-Associated Alopecia Distress Scale

Chemotherapy-Related Alopecia Distress Scale (CADS) is a measurement tool based on self-report developed to evaluate the impacts of alopecia in breast cancer patients. The scale was developed by Chao et al., (2013), and the Turkish validity and reliability study was performed by İzgü ,2020 (13,14). The original version of the scale, which was first developed, has a cut-off point. A score of 13 or more indicates that it experienced a high level of distress (13). The scale is based on patient self-report. The scale items are scored as (0: None, 1: Slightly, 2: Quite a lot, 3: A lot). The scale has 4 sub-dimensions:

physical, emotional, daily activities, and relationships. The total score of the scale is obtained by the sum of the scores obtained from the scale items, and the total score that can be obtained from the Turkish version of the scale varies between 0-44. As the scores obtained from the scale increase, alopecia-related distress increases. In the original version of the scale, it was notified that the Cronbach's alpha coefficients calculated for the sub-dimensions of the scale varied between 0.77-0.95, and the Cronbach's alpha coefficient calculated for the total score was 0.95. In our study, Cronbach's alpha value was determined as 0.88.

2.2.3.Nightingale Symptom Assessment Scale (N-SAS)

It is a symptom-related well-being scale developed by Can and Aydıner in 2011 for cancer patients. The validity-reliability of the scale was carried out by Can and Aydıner in 2011 (15). The internal validity of the study ranged from 0.81 to 0.87, and its reliability was reported to be between 0.93. In our study, Cronbach's alpha value was determined as 0.83. Consisting of 38 items in total, the scale (N-SAS) has three sub-dimensions: physically well-being (items 1-4, 6- 15, 23 -27, and 37), social well-being (items 5th and 16-22), and psychological well-being (items 28-36 and 38). The substances contained in the scale indicate the level of exposure of cancer patients receiving chemotherapy from disease/treatment-related problems. By adding the item scores in each sub-dimensions and dividing by the number of items, a total points for the sub-dimension is calculated; and the total score of the scale is calculated by collecting and dividing the subdivision total scores into three. In this Likert-type scale, the answer given by the patient to the evaluated item is scored as "0" if it is no, "1" if it is very little, "2" if it is a little, "3" if it is quite a lot, and "4" if it is too much. While the lowest score that can be obtained from the scale is 0, the maximum score is 56. A high score indicates that the level of being affected by the disease/treatment-related issues is high. The high scores obtained indicate that the overall quality of life of the patients or their well-being regarding the associated sub-dimensions is poor.

2.3.Inclusion criteria

The study was conducted with the literate patients who volunteered to participate in the study, between the ages of 18-65, who were followed up with the diagnosis of breast cancer and received at least the second course of chemotherapy protocols. Also who did not have any physical or mental health problems that would interfere with communication, and agreed to participate in the study. Patients who reported having alopecia problem were included in the study.

2.4.Ethics approval

This research involving humans was approved by an Institutional Review Board (IRB) and conducted in accordance with accepted national and international (Helsinki Declaration) standards. Written informed consent was obtained from all participants. The privacy of study subjects was maintained.

2.5.Data analysis

Data of the research IBM SPSS 22 (Statistical Package for the Social Sciences) analyzed using the program. The number and percentage distributions of the descriptive data of individuals are presented. Independent-Samples t Test, Kruskal Wallis, Mann Whitney-U, One-Way ANOVA tests were used between the descriptive characteristics of the individuals and the “Chemotherapy-Related Alopecia Distress Scale mean score”, “Nightingale Symptom Assessment Scale (N-SAS)”.

Pearson Correlation Analysis was performed to evaluate the relationship between the Chemotherapy -Related Alopecia Distress Scale mean score and the Nightingale Symptom Assessment Scale (N-SAS).

3. RESULT AND DISCUSSION

Result of the study showed, the average score of the participants on the distress scale due to alopecia was found to be 24.47+7.39. The scale score average of all participants was above 13. The mean age of the participants was 56.55+10.54. Alopecia-related distress scale mean score was the lowest at 61 years and above. This difference between the other groups was statistically significant. Nightingale symptom

Table 1: Comparison of the individual characteristics of the participants and the mean scores of CADS and N-SAS

		n	***%***	***CADS X ± SD***		***N-SAS X ± SD***	
Age	29-44	24	14,1	25.29±7.39	KW=13.183	2.28±.43	KW=15.595
	45-60	81	47,6	25.33±7.70	P= .049	2.07±.47	P= .000
	>61	65	38,2	23.10±6.89		1.87±.42	
Marital status	Married	135	79,4	25.04±7.02	Z=-2.679	2.04±.44	t =.974
	Single	35	26,5	22.28±8.43	p=.007	1.95±.54	P=.335
Education	First school	103	60,6	24.77±8.00	KW= 1.132	2.07±.49	KW= 1.382
	High school	46	27,1	23.45±6.16	p=.568	1.96±.45	p=501
	Bachelor	21	12,4	25.23±6.81		1.96±.39	
Non-cancer Treatment	Yes	28	16,5	23.10±5.72	t =-.789	2.03±.49	t =-.019
	No	142	83,5	24.74±7.67	p=..430	2.02±.46	p=.985
Type of treatment	Chemotherapy	140	82,4	24.03±7.24	t=-1.620	2.02±.47	t=-379
	Chemotherapy + radiotherapy +surgery	30	17,6	26.53±7.87	p=.114	2.04±.46	p=.707
Treatment time	0-1year	96	56,5	24.54±7.38	KW= 1.616	2.00±.45	KW= 1.309
	1-5 years	45	26,5	25.11±8.02	p=.656	2.07±.46	p=.727
	10 years	10	5,9	21.80±5.99		1.90±.33	
	>10 years	19	11,2	24.47±6.75		2.14±.60	
Stage	I	59	34,7	23.49±7.30	KW=3.927	2.03±.50	KW=6.588
	II	48	28,2	24.33±6.90	p=.269	2.00±.44	p=.086
	III	42	24,7	26.23±7.91		2.14±.46	
	IV	21	12,4	24.04±7.57		1.84±.37	

Table 2: Correlation of participants' age with alopecia and N-SAS mean scores

Age		*Alopesi*	*NSSÖ*
	Pearson's correlation	-.152	-.270
	P	.050	.001

assessment scale (N-SAS) mean score was statistically significantly lower in individuals over the age of 61 compared to other age groups (Table 1). According to the correlation analysis, a weak negative correlation was found between age and both the mean score of the distress scale due to alopecia and the mean score of N-SAS (Table 2). Seventy nine point four percents of the participants were married and the average alopecia scale score of married individuals was statistically significantly lower than for singles. There was no statistically significant difference between the education level, marital status, symptoms, and non-cancer treatment status of the participants, the duration of diagnosis, and the total scores of both the alopecia distress scale and the N-SAS (Table 1).

In the study, the sub-dimensions of the participants' alopecia distress scale were compared with their demographic characteristics. Hereunder, the physical distress sub-dimension of individuals over the age of 61 was statistically significantly lower than other age groups (Table 2). Similarly, the physical distress sub-dimension of the N-SAS was found to be significantly lower over the age of 61. However, the social distress sub-dimension of the N-SAS of the participants over the age of 61 was also statistically significantly lower

Table 3: Comparison of the individual characteristics of the participants and the mean scores of the sub-dimensions of CADS

		Physical *X ± SD*	*Emotional* *X ± SD*	*Daily life activity* *X ± SD*	*Relationship* *X ± SD*
Age (years)	29-44	7.79±3.14	4.75±1.67	9.25±3.45	3.50±.97
	45-60	7.18±2.38	5.30±2.07	8.62±3.04	4.20±1.80
	>61	6.23±2.28	4.90±2.14	7.76±2.45	4.20±.56
		KW=8.283	KW=11.654	KW=13.692	KW=8.587
		P= .016	P=.049	P=.050	P=.016
Mariatal Status	Married	7.11±2.05	5.12±1.96	8.63±2.82	4.17±1.57
	Single	6.11±2.44	4.88±2.39	7.42±3.12	3.85±1.84
		t=2.137	t=.547	t=1.062	t=.920
		p= .037	p=.587	p=.145	p=.362
Education status	First school	6.95±2.45	5.20±2.24	8.46±3.07	4.15±1.73
	High school	6.65±2.44	4.78±1.67	8.02±2.79	4.00±1.47
	Bachelor	7.23±3.01	5.09±1.81	8.80±2.48	4.09±1.51
		KW=.594	KW=.658	KW=1.733	KW=.089
		p=.743	p=.720	p=.420	p=.957
Non-cancer Treatment	Yes	5.85±1.91	5.25±2.28	7.89±2.06	4.10±1.49
	No	7.11±2.57	5.04±2.01	8.48±3.06	4.10±1.66
		Z= -.136	Z=-2.243	Z=-.576	Z=-.136
		p=.891	p=.046	p= .565	p=.891
Symptoms	Physiological	6.76±2.43	4.97±2.03	8.27±2.87	4.05±1.50
	Psychosocial	7.82±2.77	5.53±2.20	9.03±3.19	4.28±2.17
		t=-1.307	t=-1.238	t=-1.262	t=-.548
		p=.062	p=.224	p=.247	p=.588
Treatment time (years)	0-1	6.93±2.49	5.02±1.87	8.45±3.01	4.04±1.63
	1-5	7.13±2.80	5.28±2.50	8.60±3.01	4.08±1.48
	10	6.30±2.35	4.60±1.34	6.90±2.55	4.00±1.41
	>10	6.52±2.06	5.10±2.13	8.31±2.38	4.52±2.06
		KW=1.114	KW=.193	KW=3.216	KW=.911
		p=.774	p=.979	p=.360	p=.823
Stage	I	6.45±2.46	4.71±1.66	8.27±3.17	4.05±1.49
	II	6.95±2.54	5.16±2.18	8.14±2.57	4.06±1.47
	III	7.50±2.53	5.38±2.30	8.95±2.85	4.40±2.08
	IV	6.85±2.49	5.28±2.19	8.14±3.16	3.76±1.30
		KW=4.415	KW=2.177	KW=2.815	KW=1.627
		p=.220	p=.536	p=.421	p=.653

(Table 3). While the mean physical sub-dimension on the alopecia scale of the married participants was statistically significantly higher, there was no significant difference in the physical sub-dimension of the N-SAS (Table 2,3). There was no statistically significant difference between both alopecia scale sub-dimensions and N-SAS sub-dimensions according to educational status, symptoms, duration of treatment, and the stage of the disease. Alopecia-related distress scale mental distress sub-dimension of individuals receiving non-cancer treatment was statistically significantly higher. similarly, the mean score of the psychological distress sub-dimension of the N-SRS scale was also statistically significantly higher. (Table 2,3).

Table 4: Comparison of the individual characteristics of the participants and the mean scores of the N-SAS sub-dimensions

		Physical ***X ± SD***	***Social*** ***X ± SD***	***Psychological*** ***X ± SD***
Age (years)	29-44	2.25±.51	2.97±.92	1.62±.55
	45-60	2.24±.59	2.42±.91	1.56±.51
	>61	1.93±.53	2.00±070	1.68±.59
		KW=12.739	KW=21.155	KW=11.959
		p=.002	p=.000	p=.037
Mariatal Status	Married	2.17±.56	2.36±.85	1.61±.58
	Single	1.96±.63	2.25±1.04	1.64±.36
		Z=-2.202	t= .581	t=1.777
		p=.028	p=.564	p=.082
Education status	First school	2.16±.61	2.39±.91	1.65±.50
	High school	2.02±.57	2.21±.93	1.65±.67
	Bachelor	2.19±.40	2.34±.71	1.35±.38
		KW= 2.916	KW=1.769	KW=2.231
		p=.233	p=.413	p=.270
Non-cancer Treatment	Yes	2.06±.55	2.08±.89	1.93±.74
	No	2.13±.58	2.39±.89	1.55±.48
		Z=-.563 p=.573	Z=-1.775 p=.076	Z=-2.803p=.005
Symptoms	Physiological	2.12±.58	2.31±.92	1.63±.54
	Psychosocial	2.12±.58	2.48±.78	1.53±.55
		t=-.292	t=-1.218	t=1.108
		p=.772	p=.230	p=.275
Treatment time(years)	0-1	2.04±.59	2.32±.84	1.63±.51
	1-5	2.25±.50	2.37±.95	1.58±.58
	10	2.09±.52	2.08±.44	1.52±.58
	>10	2.25±.66	2.48±1.19	1.68±.63
		KW=6.051	KW=.497	1.602
		p=.109	p=.920	p=.659
Stage	I	2.09±.62	2.37±.95	1.64±.59
	II	2.12±.57	2.27±.90	1.60±.56
	III	2.29±.55	2.56±.87	1.58±.47
	IV	1.91±.42	1.95±.66	1.65±.53
		KW=6.559	KW=7.271	KW=.427
		p=.087	p=.064	p=.935

Table 5: Correlation between CADS and N-SAS mean scores of the participants.

	Pearson's correlation coefficient (r)	***P***
CADS	.436	.000
N-SAS		

There was a statistically significant positive correlation between the CADS score and N-SAS total scores of participants receiving breast cancer chemotherapy (Table 4).

DISCUSSION

In our research, the well-being associated with the symptoms was evaluated with the distress experienced by alopecia-related cancer patients receiving chemotherapy. The distress and well-being of individuals affect the satisfaction of their needs. In a systematic review by Peterson et al., they listed the requirements for individuals experiencing alopecia due to chemotherapy. These needs include physical, psychological/emotional, familial, social, interpersonal/intimacy, practical, daily living, spiritual, health system/knowledge, patient-clinician communication, and cognitive needs (16). In our research, the majority of these needs of patients receiving chemotherapy were evaluated using the N-SAS.

In this context, it was determined that age, marital status, and receiving non-cancer treatment affected the distress experienced by the participants due to alopecia and the symptom-related well-being.

In our study, it was observed that all of the participants had a high level of distress due to alopecia. In the literature, this rate varies between 40% and 80% (10,12) We believe that the fact that all of the participants in our study were women caused a higher rate of distress. Because hair loss affects women more physically, mentally, and socially (10,17).

In our study, it was determined that the quality of life due to hair loss of participants aged 61 and over was better than other age groups. When the subgroups were examined, it was determined that the quality of life of this age group was statistically significantly higher in terms of physical, emotional, daily activities, and relationships when compared to other groups. Similar results were met in terms of N-SAS and its sub-dimensions. Symptom-related quality of life of participants aged 61 years and older was better in all areas, both in terms of scale and sub-dimensions. Studies have reported that the quality of life may be higher than that of young cancer patients, as people tend to feel more comfortable and have higher self-respect with increasing age (18,19). Boland et al., (2020) reported that there is limited information about the experience of alopecia caused by chemotherapy in older women is limited (17). The fact that younger women are generally more socially active may cause them to suffer more from alopecia, which affects their physical appearance, and other cancer symptoms that interfere with their socialization. This result can also be associated with expectations. Elderly individuals experience more physiological, social, and emotional changes than other age groups. These changes cause hair loss to be more acceptable and therefore affect older individuals less psychologically. In a study, as some of the cancer patients prefer wearing turban in order to hide alopecia, it was thought that women with cancer who were using head-scarves during their daily lives had less body image problems (20). In our society, the use of turban is common among older women. We believe that individuals aged 61 and over have lower levels of distress because they can hide their physical appearance in the social environment with a turban.

In the literature, it is stated that married participants experience a lot of distress due to alopecia, and they often experience physical distress in terms of symptoms. Alopecia is a side effect that also has a social aspect because it changes body image (17). It has been reported that cancer-related symptoms and especially alopecia negatively affect sexual life (11,21). Villar et al. (2017) observed that married patients experienced more distress and had a lower quality of life (21). Mostly, patients stated that they feared that their spouses might end the relationship or leave them for another woman due to illness. This may be because the patients participating in our study thought that their spouses would not see themselves as beautiful and attractive as before due to the change in their physical appearance and that this situation would negatively affect their relations with their spouses.

In our study, it was observed that individuals receiving non-cancer treatment-experienced mental distress due to alopecia, and their quality of life in the psychological field was low on the N-SAS. Similar to our study, Ateş & Olgun, (2014) found that cancer patients with other diseases had a lower quality of life due to alopecia (9). Villar et al., (2017) state that health problems that are frequently detected in cancer cover the psychological area, and therefore comorbidities negatively affect the quality of life of cancer patients (21). It was determined that the educational status, duration of treatment, symptoms, and disease stage of the participants did not affect their distress.

4. CONCLUSION

As a result, chemotherapy and cancer-related symptoms and especially alopecia are important problems for women diagnosed with breast cancer. Determining the distress experienced by patients due to alopecia and other symptoms and planning care interventions are extremely important in terms of evaluating the interventions planned to prevent or reduce the effects of alopecia in clinical studies. For this reason, it is recommended that especially young cancer patients and cancer patients with comorbidities should not be overlooked during the planning process or patient care.

Financial Support: "This research received no grant from any funding agency/sector."

Conflicts of Interest: "The authors declared that there is no conflict of interest."

Ethical Statement: The study procedures were in accordance with and approved by the Institution Review Board of the Faculty of Health Science (date: 24.02.2021; number: 2021/009).

REFERENCES

1. World Health Organisation (WHO) 2021 https://www.who.int/news-room/fact-sheets/detail/cancer (Accessed 14.01.2023)
2. Yates P. Symptom Management and Palliative Care for Patients with Cancer. Nurs Clin North Am. 2017;52(1):179-191. doi: 10.1016/j.cnur.2016.10.006.
3. Galizia D, Milani A, Geuna E, Martinello R, Cagnazzo C, Foresto M, Longo V, Berchialla P, Solinas G, Calori A, Grasso B, Volpone C, Bertola G, Parola G, Tealdi G, Giuliano PL, Ballari AM, Aglietta M, Montemurro F. Self-evaluation of duration of adjuvant chemotherapy side effects in breast cancer patients: A prospective study. Cancer Med. 2018;7(9):4339-4344. doi: 10.1002/cam4.1687.
4. Jedličková H, Vokurka S, Vojtíšek R, Malečková A. Alopecia and Hair Damage Induced by Oncological Therapy. Klin Onkol. 2019;32(5):353-359. English. doi: 10.14735/amko2019353.
5. Freites-Martinez A, Chan D, Sibaud V, Shapiro J, Fabbrocini G, Tosti A, Cho J, Goldfarb S, Modi S, Gajria D, Norton L, Paus R, Cigler T, Lacouture ME. Assessment of Quality of Life and Treatment Outcomes of Patients With Persistent Postchemotherapy Alopecia. JAMA Dermatol. 2019; 1;155(6):724-728. doi: 10.1001/jamadermatol.2018.5071
6. Williams LA, Ginex PK, Ebanks GL Jr, Ganstwig K, Ciccolini K, Kwong BK, Robison J, Shelton G, Strelo J, Wiley K, Maloney C, Moriarty KA, Vrabel M, Morgan RL. ONS Guidelines™ for Cancer Treatment-Related Skin Toxicity. Oncol Nurs Forum. 2020;47(5):539-556. doi: 10.1188/20.ONF.539-556
7. Quesada S, Guichard A, Fiteni F. Cancer-Related Alopecia: From Etiologies to Global Management. Cancers (Basel). 2021 Nov 5;13(21):5556. doi: 10.3390/cancers13215556
8. Kang D, Kim IR, Choi EK, Im YH, Park YH, Ahn JS, Lee JE, Nam SJ, Lee HK, Park JH, Lee DY, Lacouture ME, Guallar E, Cho J. Permanent Chemotherapy-Induced Alopecia in Patients with Breast Cancer: A 3-Year Prospective Cohort Study. Oncologist. 2019;24(3):414-420. doi: 10.1634/theoncologist.2018-0184.
9. Ates S, Olgun N. Chemotherapy induced alopecia and quality of life. Journal of Hacettepe University Faculty of Nursing. 2014;14(1):67-80.
10. van Alphen K, Versluis A, Dercksen W, de Haas H, Lugtenberg R, Tiemensma J, Kroep J, Broadbent E, Kaptein AA, van den Hurk C. Giving A Face to Chemotherapy-Induced Alopecia: A Feasibility Study on Drawings by Patients. Asia Pac J Oncol Nurs. 2020; 7(2):218-224. doi: 10.4103/apjon.apjon_8_20
11. Jayasinghe, R., Fernando, A., Jayarajah, U., & Seneviratne, S. (2021). Post treatment quality of life among Sri Lankan women with breast cancer. BMC cancer, 21(1), 305. https://doi.org/10.1186/s12885-021-08055-5
12. Can G. Evidence to Practice Consensus in Oncology Nursing.p.183-185. Nobel Medicine Bookstores Tic. Ltd. Sti. Istanbul, 2014
13. Cho J, Choi EK, Kim IR, Im YH, Park YH, Lee S, Lee JE, Yang JH, Nam SJ. Development and validation of Chemotherapy-induced Alopecia Distress Scale (CADS) for breast cancer patients. Ann Oncol. 2014;25(2):346-51. doi: 10.1093/annonc/mdt476.
14. Izgu N. Turkish adaptation of chemotherapy induced alopecia distress scale: a validity and reliability study. Turkiye Klinikleri J Nurs Sci.2020;12(2):227-35 doi: 10.5336/nurses.2019-73001
15. Can G, Aydiner A. Development and validation of the Nightingale Symptom Assessment Scale (N-SAS) and predictors of the quality of life of the cancer patients in Turkey. Eur J Oncol Nurs. 2011;15(1):3-11. doi: 10.1016/j.ejon.2009.10.010.
16. Paterson C, Kozlovskaia M, Turner M, Strickland K, Roberts C, Ogilvie R, Pranavan G, Craft P. Identifying the supportive care needs of men and women affected by chemotherapy-induced alopecia? A systematic review. J Cancer Surviv. 2021 Feb;15(1):14-28. doi: 10.1007/s11764-020-00907-6.
17. Boland V, Brady AM, Drury A. The physical, psychological and social experiences of alopecia among women receiving chemotherapy: An integrative literature review. Eur J Oncol Nurs. 2020 Dec;49:101840. doi: 10.1016/j.ejon.2020.101840.
18. Rohde GE, Young T, Winstanley J, Arraras JI, Black K, Boyle F, Bredart A, Costantini A, Guo J, Irarrazaval ME, Kobayashi K, Kruizinga R, Navarro M, Omidvari S, Serpentini S, Spry N, van Laarhoven H, Yang G, Vivat B. Associations between sex, age and spiritual well-being scores on the EORTC QLQ-SWB32 for patients receiving palliative care for cancer: A further analysis of data from an international validation study. Eur J Cancer Care (Engl). 2019;28(6):e13145. doi: 10.1111/ecc.13145
19. Orth U, Erol RY, Luciano EC. Development of self-esteem from

age 4 to 94 years: A meta-analysis of longitudinal studies. Psychol Bull. 2018;144(10):1045-1080. doi: 10.1037/bul0000161.

20. Erol O, Can G, Aydıner A. Effects of alopecia on body image and quality of life of Turkish cancer women with or without headscarf. Support Care Cancer. 2012 ;20(10):2349-2356. doi: 10.1007/s00520-011-1338-y.
21. Villar RR, Fernández SP, Garea CC, Pillado MTS, Barreiro VB, Martín CG. Quality of life and anxiety in women with breast cancer before and after treatment. Rev Lat Am Enfermagem. 2017;21-25:e2958. doi: 10.1590/1518-8345.2258.2958.