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Dear Our Valuable Readers,

“Head, Heart and Hands”

Nursing is a profession whose field of activity is human and based on care. Care is not specific to nursing, but is unique to nursing. What makes care “nursing care” special is to combine the moral and emotional aspects of care with professional knowledge and skills and reflect them on the nurse-patient relationship. We are honored to announce that our journal, “Journal of Nursing Care Research”, which emphasizes focusing on care in nursing practices and providing evidence-based nursing care, has started its second year of publication.

Our journal started its publication life in 2024 and published its first issue of 2025. We would like to thank our authors, reviewers and editorial team who have made great efforts in the publication of this issue. This issue is an important step taken to share scientific information that will develop and strengthen nursing care and to contribute to evidence-based nursing care. The research and review articles and case reports we present to our readers in this issue serve as a guide for providing complete nursing care to patients. In addition to studies examining disease acceptance and diabetes self-care activity levels in patients with Type 2 diabetes, our research articles focus on the fear of recurrence, psychological well-being and prosociality level in cancer patients. Another research article is a systematic review study and aims to examine the psychological resilience of nurses in the work environment. While information on the importance of self-compassion for nurses is presented in our review article, the management of primary CMV infection during pregnancy using the Roy adaptation model is detailed in our case report. We hope that the presented articles will contribute to the field of nursing and guide patient care.

Journal of Care Research continues its journey as a platform where all national and international academics and clinician nurses can share their insights, experiences and innovations. Every step that improves nursing care will improve and strengthen the health level of the individuals and society that nurses serve, as well as the development of our profession. I invite all our authors and readers to support our journal and wish it a beautiful publication life where we learn from each other...

Sincerely,

**Assoc. Prof. Hilal Seki Öz, PhD
Editor-in-Chief**

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Determination of disease acceptance and diabetes self-care activity levels in type 2 diabetes mellitus patients

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ABSTRACT

Aims: In this study, it was aimed to determine the acceptance of the disease and diabetes self-care activity levels of patients after the education given by nurses to 175 male and 129 female diabetes patients living in the northern part of Cyprus.

Methods: In the study, a three-stage questionnaire form consisting of the Demographic Information Form including the demographic characteristics of the patient receiving the training, the Disease Acceptance Scale and the Diabetes Self-Care Activities Questionnaire was used as a data collection tool.

Results: Disease acceptance scale scores did not differ statistically significantly according to gender, marital status, income status and with whom the patient lived ($p>0.05$). The disease acceptance scale was statistically significantly higher in patients with university education and above, employees and patients with social security ($p<0.05$). Diet dimension differed significantly according to gender and marital status ($p<0.05$); exercise dimension differed significantly according to education and employment status ($p<0.05$). There is a significant positive correlation between the disease acceptance score and the CBA diet ($\beta=.179$, $p<.01$) and CBA exercise ($\beta=.153$, $p<.01$). There is a significant negative correlation between the disease acceptance score and the number of years ago diagnosis ($\beta=-.214$, $p<.01$), cholesterol level ($\beta=-.187$, $p<.01$) and age variables ($\beta=-.170$, $p<.01$).

Conclusion: Acceptance of the disease was found to increase with education level. In case of disease acceptance, it was found that diet and exercise, which are the most important self-care activities of diabetes management, were managed appropriately and disease acceptance decreased with increasing age. In this case, the importance of education on disease management was revealed in order to maintain a positive disease acceptance status years after the diagnosis of the disease.

Keywords: Diabetes, disease acceptance, self-care activities, nursing

INTRODUCTION

Diabetes is a serious chronic disease that occurs when the pancreas cannot produce enough insulin, or the body cannot effectively use the insulin it produces. Diabetes is an important public health problem with an increasing number of cases and prevalence in the last decade (Soysal, 2019). The second category of diabetes, called type 2 diabetes (DM2), is the most common form that develops as a result of the combined effect of both insulin resistance and insufficient insulin secretion (Kalsi et al., 2015).

With an increasing global prevalence, DM2 is the leading cause of premature death, caused by the body not making enough insulin or not being able to use the insulin that the body produces (Ding et al., 2019). DM2 is characterized by microvascular pathology that, if mismanaged, leads to chronic complications and can lead to a range of health problems including heart disease, stroke, kidney disease, blindness,

nerve damage, leg and foot amputations and death (Lim et al., 2021). Preventable DM2 is the most common type of diabetes, usually starting when a person is in their mid-50s (Yazıcı, 2018).

The number of people with DM and 80% with DM2 living in low- and middle-income countries is increasing in every country. In 2011, 366 million people had DM and it is estimated that by 2030 the total number of people with DM will rise to 552 million, of whom 439 million will have type DM2. Another important problem is that DM caused 4.6 million deaths in 2011. By 2030, it is estimated that 4.6 million people will have DM. Although the incidence of DM2 varies greatly from one geographic region to another as a result of environmental and lifestyle risk factors, it can be said to be a growing public health problem (Oloboka et al., 2012).

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The World Health Organization (WHO) has stated that diabetes management reduces the risk of long-term complications (WHO, 2016). What needs to be done daily with diabetes management includes diet adjustment, exercise, foot care, medication adjustment and blood glucose monitoring. The aim of self-care of the patient with diabetes is to increase the quality of life and reduce complications (Coşansu, 2010; Dağdelen et al., 2023). In this sense, creating an awareness in the individual with diabetes with the education given to the patient and the person's acceptance of the disease contributes positively to the person's life while living with the disease (Ambrasio, 2015). Acceptance of the disease by the individual with chronic disease enables them to become more active in their own care, to realize self-care and to control the disease (Bertolin, 2015).

Home care in diabetic patients is an important issue in terms of improving the treatment process and the quality of life of the patient. In this process, various trainings are given to patients in health institutions, especially nurses, in order to enable patients to fulfill their own self-care and to increase their level of awareness about diabetes (Özcan, 1999; Şahin, 2015).

In order for these trainings given by nurses to be more effective and to provide more benefits to patients, their effectiveness should be evaluated and the factors affecting these effectiveness levels should be revealed. In this framework, the problem of the study is the effect of the trainings given by nurses to diabetes patients in TRNC on diabetes patients. The research is important both in terms of increasing the quality of life and diabetes attitude levels of diabetes patients and in terms of improving the content of the nursing trainings and making them more effective.

Purpose of the Study

This study was conducted to determine the levels of disease acceptance and diabetes self-care activities of diabetic patients.

METHODS

Ethics

Before starting the study, written permission was obtained from the Cyprus Science University Postgraduate Training and Researches Institute Ethics Committee (Date: 08.06.2021, Decision No: 2021/37) and TRNC Ministry of Health Dr. Burhan Nalbantoğlu State Hospital. All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki. After the purpose of the study was explained to the individuals included in the study by the researcher, written voluntary consent was obtained from those who agreed to participate in the study.

Research Type

The research will be designed in descriptive survey model and was conducted as a cross-sectional study.

Place and Time of the Research

The study was conducted in the Diabetes Outpatient Clinic of XXX State Hospital in the northern part of Cyprus between March 01 and May 31, 2021.

Population and Sample of the Study

The population of the study consisted of all patients diagnosed with diabetes who came to Dr. Burhan Nalbantoğlu State

Hospital Diabetes Outpatient Clinic in the northern part of Cyprus between March 01 and May 31, 2021, and the sample consisted of patients from this population who voluntarily wanted to participate in the survey and met the inclusion criteria. The inclusion criteria were defined as having diabetes for at least two years, having no comorbidities that would affect the results of the survey, and agreeing to participate in the study. In the study, all patients who came to the outpatient clinic between those dates were accepted as the population and the whole population was tried to be reached and 304 patients were reached in total (Czerw et al., 2022).

Data Collection Tools

As data collection tools in the study; Demographic Information Form, which includes the demographic characteristics of the patients and was prepared by the researcher by scanning the relevant literature, Acceptance of Illness Scale (AIS) and Summary of Diabetes Self-Care Activities Questionnaire (SDSCA) were used.

Demographic Information Form: The Demographic Information Form consisted of a total of 20 questions including age, gender, marital status, educational status, employment status, social security, income, with whom the patients lived at home, date of diabetes diagnosis, hospitalization at the first diagnosis, diabetes family history, type of treatment, home blood measurement status, most recent blood glucose values, diabetes education, support of relatives, complications and physical characteristics.

Acceptance of Illness Scale (AIS): The original form of the scale was developed by Felton and Revenson in 1984 based on Linkowski's Sickness Impact Scale. The scale, the Turkish validity and reliability of which was conducted by Büyükkaya Besen and Esen (2009), is used to determine the degree of disease acceptance of individuals diagnosed with hypertension, diabetes, rheumatoid arthritis and cancer. There are eight items in the five-point Likert-type Scale and the scale is scored between 1-5 with agreement and disagreement. The 6th item in the scale is reverse coded. The scale has no sub-dimensions and is evaluated based on the total score. A minimum of 8 and a maximum of 40 points can be obtained from the scale. Accepting the statements in the items in the scale is evaluated as 1 point. A low score on the scale means poor adaptation to the disease and a high score means acceptance of the disease. In the Turkish validity and reliability study, Cronbach's alpha value was found to be 0.79 and the Cronbach's alpha value of the scale was found to be 0.79 in the present study.

The summary of Diabetes Self-Care Activities Questionnaire (SDSCA): It was developed by Glasgow and Toobert in 1994 to evaluate the self-care activities of individuals diagnosed with diabetes. The Turkish validity and reliability of the scale was conducted by Coşansu (2009). This questionnaire consists of diet, exercise, blood glucose, foot care and smoking sub-dimensions of diabetes self-care activities. In order to evaluate diabetes self-care in these sub-dimensions, the individual is asked how many days (days/week) he/she has done these activities in the last week. In the answers given, there is a marking as days from 0 to 7. However, in the 11th item, which includes smoking, it is evaluated as 0-No, 1-Yes (amount of cigarettes smoked/piece/day) (Coşansu, 2010). All sub-dimensions of the scale can be scored separately and used independently: The cronbach alpha coefficients of the

questionnaire were found to be diet 0.59, exercise 0.70, blood glucose test 0.94 and foot care 0.77. In this study, diet was 0.42, exercise 0.81, blood glucose 0.93 and foot care 0.79.

Statistical Analysis

SPSS 24.0 package program was used to evaluate the data obtained in the study. Nominal and ordinal data were defined by frequency analysis, and measurement data were defined by mean and standard deviation. Kolmogorov Smirnov test was used for normality analysis of scale dimensions. Paired group differences of normally distributed parameters were analyzed by Independent Sample T test, and more than two-group comparisons were analyzed by one way ANOVA test. Spearman's rho correlation analysis was used for correlation analysis. All analyses were performed at 95% confidence interval.

RESULTS

The findings obtained from the research results are presented in this section.

When we look at [Table 1](#), it is seen that 175 (57.6%) of the participants in the study are male and 78.9% of the participants are married. 28.6% of the participants are primary school graduates, the majority of the participants (62.5%) are not working, but 80% of them have social security and 51% of them have an income equal to their expenses. Finally, it was determined that the majority of the participants (122 people, 40.1%) lived with their spouses and children.

Table 1. Sociodemographic variables

Variables	n (304)	%
Gender		
Male	175	57.6
Female	129	42.4
Marital status		
Married	240	78.9
Single	64	21.1
Educational status		
Literate	37	12.2
Primary school	87	28.6
Secondary school	52	17.1
High school	84	27.6
University and above	44	14.5
Working status		
Working	114	37.5
Not working	190	62.5
Social security		
Yes	245	80.6
No	59	19.4
Income status		
Income is less than expenses	131	43.1
Income is equal to expenses	155	51.0
Income is more than expenses	18	5.9
Whom do I live with?		
Alone	32	10.5
With my spouse	115	37.8
With my spouse and children	122	40.1
With my children	20	6.6
With my relatives	15	4.9

[Table 2](#) shows that 77.3% of the participants were not hospitalized at the first diagnosis, 76.0% had diabetes in the family, and 82.6% did not receive diabetes education. In addition, it was determined that 61.2% of the participants did not have diabetes complications, but 67.1% had non-diabetes diseases. It was found that 34.2% of the individuals participating in the study had a moderate level of support and the majority (76.0%) measured sugar at home. When the treatment modality of the participants was analyzed, it was found that 53.6% used OAD, 20.1% used insulin, 16.8% used OAD and insulin at the same time, and 9.5% used only diet therapy.

Table 2. Disease-related characteristics of diabetic individuals

Variables	n (304)	%
Initial diagnosis hospitalization status		
Yes	69	22.7
No	235	77.3
Diabetes in the family		
Yes	231	76.0
No	73	24.0
Diabetes education		
Yes	53	17.4
No	251	82.6
Diabetes complication		
Yes	118	38.8
No	186	61.2
Non-diabetic disease		
Yes	204	67.1
No	100	32.9
Diabetes-related support		
Nothing	60	19.7
Less	57	18.8
Middle	104	34.2
Very much	83	27.3
Home sugar measurement		
Yes	231	76
No	73	24
Treatment modality		
Oral antidiabetic	163	53.6
Insulin	61	20.1
Oral antidiabetic+insulin	51	16.8
Diet only	29	9.5

According to [Table 3](#), it was found that the participants were diagnosed an average of 13.57 ± 9.78 years ago, they performed 6.00 ± 10.18 glucose measurements per week, the mean of the most recent FPG was 139.14 ± 56.96 and the mean of the most recent TCS was 187.64 ± 71.44 . BMI was found to be 30.07 ± 6.32 and on the borderline of obesity. HbA1c had a mean total score of 7.84 ± 4.21 , cholesterol 192.59 ± 46.60 , triglycerides 151.12 ± 80.06 and HDL 43.90 ± 14.30 .

When we look at [Table 4](#), it was found that the mean total score of the CDQ was 31.73 ± 7.41 and the mean total score of the SLBA was 38.19 ± 14.30 . In addition, it was determined that the mean score of the diet sub-dimension was 17.37 ± 5.98 , the mean score of the exercise sub-dimension was 4.86 ± 5.24 , the mean score of the sugar measurement sub-dimension was 6.12 ± 5.65 and the mean score of the foot care sub-dimension was 9.75 ± 5.14 .

Table 3. Anthropometric characteristics and metabolic status of diabetics

Variables (n: 304)	Min	Max	Mean±SD
How many years ago	1	50	13.57±9.78
How many glucose readings per week	0	130	6.00±10.18
Last FBS	30	500	139.14±56.96
Latest PBS	2	500	187.64±71.44
BMI	19	56	30.07±6.32
HA1c	2	73	7.84±4.21
Cholesterol	76	494	192.59±46.60
Triglycerit	31	946	151.12±80.06
HDL	15	150	43.90±14.30

Min: Minimum, Max: Maximum, SD: Standard deviation, FBS: Fasting blood sugar, PBS: Postprandial blood sugar, BMI: Body-mass index, HA1c: Hemoglobin A1c, HDL: High density lipoprotein

When we look at **Table 5**, no difference was detected between gender and AIS ($p>0.05$), but a significant difference was

Table 4. Disease Acceptance Scale total score, mean scores of deba diet, foot care, exercise, glucose measurement

Variables (n: 304)	Min	Max	Mean±SD
Disease Acceptance Scale	8.00	40.00	31.73±7.41
DSCQ diet	.00	28.00	17.37±5.98
DSCQ exercise	.00	14.00	4.86±5.24
DSCQ sugar measurement	.00	14.00	6.12±5.65
DSCQ foot care	.00	14.00	9.75±5.14
Diabetes Self-Care Activities Scale total score	.00	70.00	38.19±14.30

Min: Minimum, Max: Maximum, SD: Standard deviation, DSCQ: Diabetes Self-Care Activities Questionnaire

found in the diet sub-dimension of the SDSCA ($p=0.017$), and it was found that women had higher scores than men. While there was no difference between marital status and AIS ($p>0.05$), a significant difference was found in the diet sub-dimension of the SDSCA ($p=0.027$), and it was observed that

Table 5. Comparison of the total score, mean scores of diets, foot care, exercise, glucose measurement and sociodemographic characteristics of individuals with diabetes

Variables	Disease Acceptance Scale mean±SD	DSCQ diet mean±SD	DSCQ exercise mean±SD	DSCQ sugar measurement mean±SD	DSCQ foot care mean±SD
Gender					
Male	31.79±7.14	16.41±5.91	5.18±5.22	6.80±5.72	9.42±5.19
Female	31.69±7.63	18.09±5.94	4.62±5.26	5.62±5.56	10.00±5.11
*t/p	-.120/.904	-2.410/.017	-.913/.362	-.792/.074	.973/.331
Marital status					
Married	31.73±7.39	16.97±6.02	4.63±5.09	6.19±5.74	9.55±5.33
Single	31.74±7.54	18.85±5.59	5.73±5.75	5.87±5.33	10.40±4.36
*t/p	-.008/.993	-2.228/.027	-.473/.173	.396/.692	1.459/.147
Education status					
Literate	26.74±8.24	18.69±6.52	3.51±4.94	6.27±5.80	9.59±5.04
Primary school	31.20±7.37	16.72±6.15	4.16±4.75	5.52±5.47	8.93±5.67
Middle school	31.82±6.22	16.76±5.62	4.06±4.85	5.20±5.20	10.30±4.70
High school	33.38±6.96	17.82±5.53	5.64±5.69	6.91±5.86	9.91±5.25
University and above	33.52±7.26	17.44±6.37	6.90±5.42	6.72±5.93	10.61±4.34
**f/p	6.150/.000	.946/.438	3.492/.008	1.099/.357	1.033/.390
Employment status					
Working	32.80±6.93	16.77±6.52	5.89±5.47	5.54±5.56	9.90±5.09
Not working	31.08±7.64	17.73±5.62	4.27±5.03	6.46±5.69	9.67±5.19
*t/p	1.964/.050	-1.337/.182	2.602/.010	1.351/.178	.374/.709
Social security					
Yes	32.42±6.77	17.57±5.89	5.11±5.32	6.07±5.67	9.77±5.11
No	28.70±9.23	16.54±6.30	3.82±4.83	6.33±5.59	9.70±5.34
*t/p	2.816/.006	1.171/.243	1.787/.077	-.311/.756	.091/.928
Income status					
Income less than expenditure	31.64±7.31	17.57±5.91	4.89±5.10	6.15±5.65	9.95±5.30
Income matches expenditure	32.03±7.16	17.43±5.96	4.86±5.46	6.27±5.70	9.76±4.99
Income more than expenditure	29.83±10.03	15.55±6.67	4.66±4.63	4.55±5.23	8.27±5.34
**f/p	.729/.483	.907/.405	.014/.986	.751/.473	.835/.435
Who she lives with					
Alone	31.37±7.38	17.90±5.85	3.56±5.08	5.68±5.34	10.53±4.29
With my wife	31.56±7.42	17.89±5.07	4.93±5.19	6.92±5.97	10.19±4.90
With my wife and children	32.09±7.39	16.48±6.56	4.88±5.22	5.66±5.47	9.20±5.56
With my children	29.85±7.90	18.00±7.21	4.25±5.09	4.75±5.39	9.50±5.13
With my relatives	33.40±7.268	18.60±5.96	8.00±5.88	6.33±5.35	9.53±5.27
**f/p	.616/.652	1.143/.336	1.836/.122	1.120/.347	.743/.563

*Independent samples T test, **One-way-ANOVA, DSCQ: Diabetes Self-Care Activities Questionnaire, SD: Standard deviation

the scores of single participants were higher. A statistically significant difference was found between education and the exercise sub-dimension of the SDSCA ($p=0.008$) and the AIS scores ($p=0.000$). According to employment status, there was a statistically significant difference between the exercise scores ($p=0.050$), one of the subgroups of the SDSCA, and the AIS scores ($p=0.050$). While there was no difference between the scale of SDSCA sub-dimensions and social security ($p>0.05$), it was observed that there was a statistically significant difference between the scores ($p=0.000$). There was no statistically significant difference between the scales according to income status and living with ($p>0.05$).

When we look at [Table 6](#), a significant difference was found between hospitalization status at the first diagnosis and AIS

($p=0.02$) and glucose measurement ($p=0.000$) among the subgroups of the SDSCA. A significant difference was also found between diabetes education and the SDSCA exercise ($p=0.006$) and SDSCA glucose measurement ($p=0.008$). A significant difference was found between diabetes complication and AIS ($p=0.000$), and exercise ($p=0.000$) and glucose measurement ($p=0.004$) from the sub-dimensions of the SDSCA. According to the non-diabetes disease status, a significant difference was found between the AIS ($p=0.000$) and exercise ($p=0.000$) among the sub-dimensions of the SDSCA. There was no significant difference between home glucose measurement and the patient acceptance scale ($p>0.05$), but there was a significant difference between diet ($p=0.002$), glucose measurement ($p=0.000$) and foot care ($p=0.038$), which are sub-dimensions of the SDSCA.

Table 6. Comparison of the total score of the Disease Acceptance Scale, mean scores of diets, foot care, exercise, glucose measurement and characteristics related to the disease in individuals with diabetes

Variables	Disease Acceptance Scale mean $\pm$ SD	DSCQ diet mean $\pm$ SD	DSCQ exercise mean $\pm$ SD	DSCQ sugar measurement Mean $\pm$ SD	DSCQ foot care Mean $\pm$ SD
Initial diagnosis hospitalization status					
Yes	29.77 $\pm$ 8.44	17.80 $\pm$ 5.80	5.08 $\pm$ 5.00	8.42 $\pm$ 5.54	8.97 $\pm$ 5.64
No	32.30 $\pm$ 7.00	17.24 $\pm$ 6.03	4.80 $\pm$ 5.33	5.44 $\pm$ 5.51	9.99 $\pm$ 4.97
*t/p	-2.239/.028	.677/.499	.398/.691	3.912/.000	-1.448/.149
Diabetes in the family					
Yes	31.81 $\pm$ 7.33	17.24 $\pm$ 5.96	4.90 $\pm$ 5.25	5.83 $\pm$ 5.57	9.75 $\pm$ 5.05
No	31.50 $\pm$ 7.70	17.81 $\pm$ 6.06	4.74 $\pm$ 5.27	7.04 $\pm$ 5.84	9.75 $\pm$ 5.46
*t/p	.314/.754	-.699/.485	.220/.828	-1.585/.114	.014/.989
Diabetes education					
Yes	29.77 $\pm$ 8.97	18.67 $\pm$ 5.42	36.66 $\pm$ 5.63	8.00 $\pm$ 5.70	10.81 $\pm$ 4.59
No	32.16 $\pm$ 6.98	17.10 $\pm$ 6.06	4.47 $\pm$ 5.09	5.71 $\pm$ 5.57	9.53 $\pm$ 5.24
*t/p	-1.823/.073	1.726/.085	2.774/.006	2.691/.008	1.646/.101
Diabetes complication					
Yes	29.56 $\pm$ 7.77	16.87 $\pm$ 5.89	3.49 $\pm$ 4.66	7.30 $\pm$ 5.60	9.48 $\pm$ 5.09
No	33.12 $\pm$ 6.84	17.68 $\pm$ 6.02	5.74 $\pm$ 5.42	5.38 $\pm$ 5.57	9.92 $\pm$ 5.18
*t/p	-4.154/.000	-1.132/.259	3.695/.000	2.890/.004	-.733/.464
Non-diabetes disease					
Yes	30.34 $\pm$ 7.62	17.04 $\pm$ 6.16	3.99 $\pm$ 4.92	6.21 $\pm$ 5.52	9.76 $\pm$ 5.15
No	34.52 $\pm$ 6.12	18.04 $\pm$ 5.56	6.69 $\pm$ 5.45	5.93 $\pm$ 5.94	9.74 $\pm$ 5.15
*t/p	-5.117/.000	1.353/.177	-4.284/.000	.394/.694	.029/.977
Diabetes-related support					
Nothing	33.30 $\pm$ 7.69	16.65 $\pm$ 6.60	5.34 $\pm$ 5.55	3.84 $\pm$ 5.013	10.23 $\pm$ 4.78
Less	30.83 $\pm$ 7.35	16.87 $\pm$ 5.69	4.12 $\pm$ 4.30	5.46 $\pm$ 5.43	9.87 $\pm$ 5.34
Middle	31.32 $\pm$ 7.25	16.88 $\pm$ 5.81	4.90 $\pm$ 5.30	6.19 $\pm$ 5.74	9.49 $\pm$ 5.09
Very much	31.71 $\pm$ 7.40	18.81 $\pm$ 5.75	5.00 $\pm$ 5.58	8.09 $\pm$ 5.51	9.66 $\pm$ 5.39
**f/p	.729/.48	.907/.405	.014/.986	.751/.473	.835/.435
Home sugar measurement					
Yes	31.60 $\pm$ 7.29	18.07 $\pm$ 5.48	5.03 $\pm$ 5.34	7.60 $\pm$ 5.40	10.12 $\pm$ 4.97
No	32.18 $\pm$ 7.81	15.12 $\pm$ 6.93	4.34 $\pm$ 4.95	1.44 $\pm$ 3.45	8.60 $\pm$ 5.54
*t/p	-.577/.564	3.248/.002	.235/.337	11.364/.000	2.096/.038
Treatment modality					
Oral antidiabetic	32.92 $\pm$ 6.51	16.93 $\pm$ 6.02	5.07 $\pm$ 5.40	4.40 $\pm$ 5.09	9.70 $\pm$ 4.97
Insulin	29.78 $\pm$ 7.40	18.26 $\pm$ 5.43	4.16 $\pm$ 4.87	9.68 $\pm$ 5.06	8.94 $\pm$ 5.73
Oral antidiabetic+insulin	29.50 $\pm$ 8.83	18.04 $\pm$ 5.64	5.17 $\pm$ 5.30	9.07 $\pm$ 5.41	10.29 $\pm$ 5.00
Diet	33.20 $\pm$ 7.97	16.93 $\pm$ 7.19	4.59 $\pm$ 5.09	3.31 $\pm$ 4.46	10.72 $\pm$ 5.09
**f/p	4.841/.003	.965/.410	.521/.668	24.266/.000	1.015/.386

*Independent samples T test, **One-Way-ANOVA, DSCQ: Diabetes Self-Care Activities Questionnaire, SD: Standard deviation

A statistically significant difference was found between the type of treatment and AIS ($p=0.003$) and glucose measurement ($p=0.000$), which are among the sub-dimensions of SDSCA. It was determined that there was no statistically significant difference between the total scores of the scale and the support status related to diabetes and diabetes in the family ($p>0.05$).

When we look at **Table 7**, it was found that there was a significant positive correlation between the AIS and the variables of diet and exercise, while there was a significant negative correlation between the number of years ago diagnosis, cholesterol level and age. In this case, it was found that as the disease acceptance score of individuals with diabetes increased, they met their diet and exercise requirements more and cholesterol levels were lower in individuals who accepted their disease. It was determined that there was a negative significant correlation between diet and BMI and cholesterol among the sub-dimensions of the SDSCA and that individuals who followed their diet had lower BMI and cholesterol. It was determined that there was a significant negative relationship between exercise and the number of years ago diagnosis, BMI and cholesterol. A significant negative correlation was found between foot care, one of the sub-dimensions of SDSCA, and the number of years ago diagnosis.

DISCUSSION

In this section, the findings obtained from the study conducted to evaluate the disease acceptance status and diabetes self-care activities of patients diagnosed with diabetes are discussed in line with the relevant literature.

It is seen that the anthropometric characteristics and metabolic status of the research sample are compatible with the studies in the literature (Ke et al., 2022; Tomic et al., 2022; Awad et al., 2021; Ma et al., 2021; Chawla et al., 2020). In this respect, it is possible to state that the findings of the research findings regarding the education process of diabetic patients can be spread to a more general framework.

One of the most important stages of the treatment process of a disease is the patient's involvement in the process. Studies generally reveal that the level of disease acceptance differs

according to the demographic characteristics of individuals and characteristics related to the disease (Zwierzchowska, 2005). In our study, CDQ scores did not show statistically significant differences according to gender, marital status, income status and with whom the patient lived ($p>0.05$). On the other hand, a significant difference was found in favor of those with university education and above in the educational status of the patients, in favor of the employees and in favor of those with social security according to the working status ($p<0.05$). In other words, it is seen that individuals with university and higher education, those with social security and working individuals accept the disease more easily. The results obtained from the study reveal that individuals with higher levels of education and social status have a higher level of acceptance of the disease and that these individuals can also contribute more to the treatment process. Özdemir and Taşçı (2013) reported in their review on disease acceptance in different chronic diseases that demographic characteristics and education are effective on disease acceptance in different types of diseases. Similarly, there are studies in the literature reporting that the level of disease acceptance is also high in diabetic patients with high education level (Richardson, 2001; Büyükkaya Besen, 2009).

Diabetes self-care levels actually show the level and ability of diabetes patients to reflect the requirements of the disease to their daily lives, which is related to their level of internalization and acceptance of the disease in their daily lives. Therefore, it is important to measure diabetes self-care levels and to reveal the variables according to which they differ. In the literature, it has been revealed that especially the social and economic status of patients is effective on diabetes self-care practices (Bağrıaçık, 2011). In the present study, the diet score was higher in women and singles, while the exercise score was found to be higher in those with university education and above and in those who were employed. These results are consistent with the results of the literature and in general, it is seen that socio-demographic characteristics of individuals are effective on diet and exercise levels.

The level of disease acceptance is associated not only with the social and demographic characteristics of individuals, but also

Table 7. Correlation between individual and disease variables of the Disease Acceptance Scale and each self-care activity

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
AIS	1.00														
SDSCA diet	.179**	1.00													
SDSCA exercise	.153**	.209**	1.00												
SDSCA sugar measurement	.019	.295**	.150**	1.00											
SDSCA foot care	.101	.288**	.233**	.152**	1.00										
How many years ago	-.214**	.001	-.264**	.190**	-.139*	1.00									
How many glucose readings per week	-.093	.061	.019	.100	.004	-.005	1.00								
Last FBS	-.072	-.007	-.060	.121*	-.101	.154**	-.036	1.00							
Latest PBS	-.106	-.026	-.101	.135*	-.049	.113	-.100	.470**	1.00						
BMI	-.142	-.165**	-.187**	-.207**	-.082	.045	-.054	.029	.038	1.00					
HA1c	-.098	-.040	-.055	.128*	.022	.138*	.006	.269**	.183**	-.030	1.00				
Cholesterol	-.187**	-.163**	-.145*	-.052	-.018	.032	-.063	.228**	.316**	.142*	.113	1.00			
Triglyceride	-.092	-.063	-.056	.014	-.0311	.046	.182**	.150**	.178**	.150**	.136	.473**	1.00		
HDL	-.079	-.067	-.085	-.095	-.013	.037	-.166*	.081	-.008	.017	.106	.313**	.042	1.00	
Age	-.170**	-.054	-.176	-.032	-.026	.186**	.113	.031	-.006	.043	.029	.078	.029	.093	1.00

**The correlation is significant at the 0.01 level (2-tailed), SDSCA: Summary of diabetes self-care activities, FBS: Fasting blood sugar, PBS: Postprandial blood sugar, BMI: Body-mass index, HA1c: Hemoglobin A1c, HDL: High density lipoprotein

with the characteristics of the disease (Zwierzchowska, 2005). According to the findings of the study, the level of disease acceptance showed a significant difference according to the first hospitalization, non-diabetes disease, diabetes complication and treatment type ($p < 0.05$). The level of disease acceptance was higher in those who did not have a first hospitalization, in those who did not have diabetes complications and non-diabetes diseases, and in those who received diet therapy. Üstündağ and Dayapoğlu (2021) supported this in their study and reported that comorbidity negatively affected treatment and progression in patients with diabetes. Similarly, Aydoğan et al. (2020) reported that age and comorbidity were effective in diabetes treatment in patients with type II diabetes.

One of the most important factors affecting the degree of self-care in diabetic patients is the characteristics related to the disease (Özgül et al., 2016). Generally, in studies conducted in the literature, diabetes self-care is more compulsory in advanced patients, patients with higher education, and patients with more challenging treatment process. In these patients, disease-related characteristics statistically significantly and significantly affect diabetes self-care levels (Karakuş & Kasar, 2023; Bağrıaçık, 2011). In this study, the severity of the disease was higher in patients with higher levels of severity, those who received education, those who had a longer treatment period at home and those who stated that they felt the effects of the disease more. In fact, this is an expected result and it is possible to state that the individuals who suffer the most from any issue are the individuals who show the most sensitivity. In other words, it can be argued that the individuals who feel and experience the negative effects of diabetes and reduce their quality of life the most are actually the individuals who pay the most attention to diabetes self-care.

In fact, the results of the difference analysis show that individuals who received education and accepted the disease more generally took the necessary responsibilities related to the disease and had higher levels of self-care. However, in order to determine whether these results are statistically significant, correlation analysis was performed. The results obtained from the correlation analysis revealed that although there was a significant positive correlation between the SQS and the variables of SADD diet and SADD exercise, there was a significant negative correlation between the SQS and the variables of how many years ago the patient was diagnosed, cholesterol level and age. In other words, the level of disease acceptance was higher in those who practiced diet and exercise maintenance. In the literature, it was also found that there was no relationship between the level of disease acceptance and self-efficacy, which did not support our research finding (Şireci & Yılmaz Karabulutlu, 2017).

CONCLUSION

In the light of these findings, based on the finding that as the level of disease acceptance increases, patients give more importance to diet and exercise, which are the two most important dimensions of diabetes care, training to increase the level of disease acceptance in order to positively change the level of compliance with diets and exercise levels of patients. Based on the results that individuals with education, employment and social security have higher levels of acceptance of the disease and pay more attention to exercise and glucose measurements, the preparation of training programs that can also reach individuals with lower

education levels, who are not working and do not have social security. Adding to the content of the training to be given to patients that sugar measurement is affected according to the type of treatment, not only insulin users but also individuals with diabetes with other forms of treatment should pay attention to sugar measurement. Based on the finding that diabetic patients have a high level of acceptance of the disease in the absence of complications and attach importance to exercise, it may be recommended to improve the content of the trainings given to patients by nurses in order for patients to better understand the process and adopt them in their daily lives during the treatment process.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was carried out with the permission of the Cyprus Science University Postgraduate Training and Researches Institute Ethics Committee (Date: 08.06.2021, Decision No: 2021/37).

Informed Consent

All patients signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Determine of fear of recurrence, psychological well-being and prosociality level in cancer patients

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ABSTRACT

Aims: The aim of this study was to investigate the level of fear of recurrence, psychological well-being, and prosociality in cancer patients in the remission and to determine the variables affecting them.

Methods: This descriptive-cross-sectional type study was conducted between August and December 2023 in the medical oncology outpatient clinic of a state hospital in Ankara, Turkey with 172 cancer patients in remission. Data were collected using the Descriptive Information Form, fear of cancer recurrence inventory (FCRI), Psychological Well-Being Scale (PWBS), and Adult Prosociality Scale (APS). SPSS 26 statistical software was used for statistical analysis.

Results: The mean FCRI score of the participants was 13.33 ± 13.78 , the mean PWBS score was 46.88 ± 4.28 , and the mean APS score was 61.42 ± 5.18 . A statistically significant difference was found between FCRI scores according to the patients' previous psychiatric treatment status, between PWBS scores according to their educational status, and between APS scores according to gender ($p < 0.05$). In addition, a statistically significant positive correlation was found between PWBS scores and APS scores ($p < 0.05$).

Conclusion: According to the results of this study, patients had low levels of fear of cancer recurrence and high levels of psychological well-being and prosociality. Previous psychiatric treatment was found to be effective on fear of recurrence, education on psychological well-being, and gender on prosociality. In addition, as the prosociality levels of the patients increased, their psychological well-being levels also increased. Therefore, it is recommended to increase prosocial behaviors as a means of enhancing psychological well-being, given the positive relationship between them.

Keywords: Cancer, fear of recurrence, psychological well-being, prosociality

INTRODUCTION

Cancer is one of the leading causes of death in the world. With recent advances in medicine and technology, cancer has become a curable disease, prolonging the life expectancy of patients and increasing survival rates. During the remission period, when the disease is under control and the treatment process is over, patients may experience physical or mental problems even though they feel somewhat relieved. One of the mental problems experienced during this period is the fear of recurrence. Patients may experience fear, anxiety, or worry about the cancer reappearing or progressing in the same area or anywhere else in the body (Ferlay et al., 2019; Lebel et al., 2016). Research shows that high levels of fear of recurrence could impair a person's mental health, leading to anxiety, depression, sleep disorders, social isolation, and decreased quality of life (Simard et al. 2013; Ağaç & Özçetin, 2021).

Psychological well-being plays an important role in coping with the fear, anxiety, and stress experienced by cancer patients (Ağaç & Özçetin, 2021). Psychological well-being is

an individual's being in harmony with himself/herself and his/her environment, maintaining emotional balance, and getting satisfaction from life. Individuals with elevated levels of psychological well-being define themselves as happier, more capable, and more satisfied with life (Diener, Scollon, & Lucas, 2009). Psychological well-being can directly affect the ability of cancer patients to cope with the difficulties they may encounter during the remission period. Psychological well-being is critical for the general well-being of patients. Improving cancer survivors' psychological well-being can lead to better medical outcomes and overall quality of life (Diener et al. 2009; Niu, Bhurosy, & Heckman, 2021). Therefore, it is important to identify patients' psychological well-being and associated factors during remission.

Cancer is a chronic disease that deeply affects an individual's physical and psychological well-being. Individuals try to cope with this challenging process by maintaining or restructuring their personal and social development in times of illness

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or crisis. In times of crisis or illness, individuals can both strengthen their own emotional well-being and reinforce their social support networks by showing prosocial behaviors, that is, by helping others. Prosocial behavior, which is one of the essential elements of social interaction, is defined as voluntary behavior without any expectation of reward in order to benefit another person or group (Chen, 2024; Pfattheicher, Nielsen., & Thielmann, 2022). Prosocial behaviors are based on positive social behaviors such as consoling, helpfulness, sharing, cooperation, altruism, involvement, volunteerism, and empathy. Prosocial behaviors strengthen an individual's social ties, reduce loneliness and social isolation, increase self-esteem, and make them feel positive (Aknin, Van de Vondervoort, & Hamlin, 2018; Pfattheicher, Nielsen, & Thielmann, 2022). By exhibiting prosocial behaviors, cancer patients can strengthen their social support networks, which can help them cope more effectively with the physical and mental challenges caused by the disease.

In order for cancer patients in remission to have a good quality of life, it is aimed to have good mental health as well as physical health. Therefore, it is important to investigate the factors affecting mental health (Firkins, Hansen, Driessnack, & Dieckmann, 2020). Although there are studies in the literature investigating fear of recurrence and psychological well-being in cancer patients in remission (Firouzbakht, Hajian-Tilaki, & Moslemi, 2020; Hampton et al. 2024; Niu et al. 2021; Oztas, Ugurlu, & Kurt, 2022), no studies investigating prosociality has been found. The results of this study may guide the planning of psychosocial interventions to improve the quality of life of cancer patients in remission.

Aim of the Study

The aim of this study was to investigate the level of fear of recurrence, psychological well-being, and prosociality in cancer patients in the remission period and to determine the variables affecting them.

Questions of the Study

In this research, answers to the following questions were sought:

What is the level of fear of recurrence, psychological well-being, and prosociality of cancer patients in the remission period?

What are the variables affecting fear of relapse, psychological well-being, and prosociality levels of cancer patients in the remission period?

Is there a relationship between fear of recurrence, psychological well-being, and prosociality in cancer patients during the remission period?

METHODS

Ethical Aspects of the Study

In order to conduct the study, written permission was obtained from the University of Health Sciences Scientific Researches Ethics Committee with the approval of the ethics committee (Date: 22.08.2023, Decision No: 46418926) as well as and from the Medical Oncology Department of Gülhane Training and Research Hospital, University of Health Sciences, where the study was conducted. In addition, the purpose of the study was explained to the patients participating in the study,

and it was emphasized that participation was voluntary. All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

Study Design and Participants

This was a descriptive and cross-sectional study conducted in the medical oncology department of a tertiary hospital in Ankara, Türkiye. The study included 172 patients diagnosed with cancer in remission who were followed up as outpatients in the medical oncology outpatient clinic between August and December 2023. The sample size was calculated as 156 using the G* power 3.1.9.4 program, based on Cohen's (1970) parameters that $d=0.2$ (small) effect size for a single sample $=0.95$ power $(1-)=0.80$. The target sample was determined to be 172, taking into account that there may be a 10% shortfall in data collection. The study included patients who were 18 years of age or older, had completed the treatment process (chemotherapy, radiotherapy, etc.), had not received any cancer treatment for at least six months, and were in remission without a history of recurrence or metastasis.

Data Collection Tools

The data were collected using the Descriptive Information Form, fear of cancer recurrence inventory, Psychological Well-Being Scale, and Adult Prosociality Scale.

Descriptive Information Form: This form was prepared by the researchers in line with the literature (Firouzbakht et al., 2020; Hampton et al., 2024; Niu et al., 2021; Oztas et al., 2022) and consisted of questions to determine the sociodemographic and clinical characteristics of the patients.

Fear of cancer recurrence inventory (FCRI): It was developed by Simard and Savard (2009), and its Turkish validity and reliability study was conducted by Eyrenci and Berk (2018). The scale consists of a total of 22 items and is based on a 5-point Likert scale. The inventory is scored between 0-4, ranging from 0 (never/ever) to 4 (always/very much). The total score that can be obtained from the inventory varies between 0-88. A high score indicates a high level of fear of recurrence (Eyrenci & Berk, 2018). The inventory has five sub-dimensions: triggers, functional impairments, recurrence-related meta-cognitions, emotion-focused coping strategies, and quality of life.

Eyrenci and Berk (2018) found the Cronbach alpha internal consistency coefficient of the inventory to be 0.94 for the total. In this study, the Cronbach's alpha internal consistency coefficient of the inventory was 0.95 for the total, 0.92 for the Triggers subscale, 0.92 for the Functional Impairment subscale, 0.90 for the Metacognitions of Relapse subscale, 0.75 for the Emotion-Focused Coping Strategies subscale, and 0.89 for the quality of life subscale.

Psychological Well-Being Scale (PWBS): It was developed by Diener et al. (2009), and its Turkish validity and reliability study was conducted by Telef (2013). The scale, consisting of 8 items in total, defines important elements of human functioning, from positive relationships to feelings of competence and having a meaningful and purposeful life. The items of the scale are answered on a 1-7 scale ranging from strongly disagree (1) to strongly agree (7). The minimum score is 8, and the maximum score is 56. A high score indicates that the person has many psychological resources and strengths. Telef (2013) found the Cronbach alpha internal consistency

coefficient of the scale to be 0.80. In this study, the Cronbach's alpha internal consistency coefficient was found to be 0.89.

Adult Prosocialness Scale (APS): It was developed by Caprara et al. (2005) to identify voluntary behaviors that are performed without expecting a reward to benefit individuals or groups. The Turkish validity and reliability study was conducted by Bağcı and Samur Öztürk (2016). The scale consists of one dimension and a total of 16 items. Participants are expected to rate the behaviors specified in the scale from 1 (never) to 7 (always), indicating frequency. The score that can be obtained from the scale is between 16 and 80. A high score indicates a higher level of prosocial behaviors. Bağcı and Samur Öztürk (2016) found the Cronbach Alpha's internal consistency coefficient of the scale to be 0.91. In this study, the Cronbach Alpha internal consistency coefficient of the scale was found to be 0.85.

Data Collection

The research forms were administered to the patients by face-to-face interview method in the waiting room after their outpatient clinic examinations. The participants were informed about the purpose of the study and that participation was voluntary. It took an average of 12-15 minutes to complete the forms.

Statistical Analysis

The research data were analyzed was performed with appropriate statistical methods in the IBM statistical package for social sciences (SPSS Inc., Chicago, IL) for Windows 26.0 program. Mean, standard deviation, minimum, maximum, frequency, and percentage were used in descriptive statistics of the characteristics of the patients in the study. The Kolmogorov-Smirnov test was used to determine whether the data were normally distributed, and it was determined that the data did not meet the normal distribution. Mann Whitney U test was used for paired group comparisons, Kruskal-Wallis H test was used for three or more group comparisons, and Mann Whitney U with Bonferroni correction was used for post hoc analysis. The relationship between the scale scores was evaluated by the Spearman's correlation test. $p < 0.05$ was considered statistically significant.

RESULTS

Table 1 presents the descriptive characteristics of the patients in the study. Of the patients, 72.1% ($n=124$) were female, the age range was 18-80 years, and the mean age was 51.24 ± 12.53 years. 78.5% ($n=135$) of the patients were married, 36% ($n=62$) were primary school graduates, and 77.3% ($n=133$) were not employed. For 46.5% ($n=80$) of the patients, 37 months or more had passed since the cancer diagnosis. The proportion of patients who had previously received psychiatric treatment was 10.5% ($n=18$).

Table 2 presents the mean scores of FCRI, PWBS, and APS for the patients. The mean scores of triggers, functional impairments, metacognitions related to relapse, emotion-focused coping strategies, quality of life, and total FCRI were 4.03 ± 4.36 , 0.41 ± 1.13 , 2.52 ± 2.46 , 3.56 ± 3.42 , 2.05 ± 2.85 , and 13.33 ± 13.78 , respectively. The mean PWBS score was 46.88 ± 4.28 and the mean APS score was 61.42 ± 5.18 .

In this study, FCRI, PWBS, and APS scores were compared according to the descriptive characteristics of the patients in

Table 1. Descriptive characteristics of patients (n=172)

	n	%
Age (51.24 ± 12.53)	18-40	33 19.2
	41-50	45 26.2
	51-60	54 31.4
	61 and above	40 23.3
Gender	Female	124 72.1
	Male	48 27.9
Marital status	Married	135 78.5
	Single	37 21.5
Education status	Literate	10 5.8
	Primary school	62 36.0
	Middle school	19 11.0
	High school	27 15.7
	Undergraduate and higher	54 31.4
Employment status in an income generating job	Employee	39 22.7
	Unemployed	133 77.3
Time from cancer diagnosis to today	12 months	33 19.2
	13-24 months	31 18.0
	25-36 months	28 16.3
	37 months and above	80 46.5
Previous psychiatric treatment status	Yes	18 10.5
	None	154 89.5

Table 2. Mean FCRI, PWBS and APS scores of patients

	Mean	SD	Patients' min-max scores	Scale's min-max scores
FCRI triggers	4.03	4.36	0-17	0-24
Functional impairments	0.41	1.13	0-8	0-8
Metacognitions related to relapse	2.52	2.46	0-11	0-16
Emotion focused coping strategies	3.56	3.42	0-18	0-20
Quality of life	2.05	2.85	0-18	0-20
Total	13.33	13.78	0-64	0-88
PWBS	46.88	4.28	26-56	8-56
APS	61.42	5.18	42-78	16-80

FCRI: Fear of cancer recurrence inventory, PWBS: Psychological Well-Being Scale, APS: Adult Prosocialness Scale, SD: Standard deviation, Min: Minimum, Max: Maximum

the study and the statistically significant ones are presented in **Table 3**. A statistically significant difference was found between the total FCRI median scores according to the patients' previous psychiatric treatment status ($Z=1868.50$; $p=0.013$). The FCRI median scores of those who had received psychiatric treatment before were higher ($p < 0.05$). No statistically significant difference was found between the FCRI median scores of the participants according to other sociodemographic characteristics except for except for their previous psychiatric treatment status ($p > 0.05$).

A statistically significant difference was found between the PWBS median scores of the patients according to their educational status ($X^2=11.576$; $p=0.021$). Post hoc analysis with Bonferroni correction was conducted to determine from

Table 3. Comparing patients' median scores of FCRI, PWBS and APS according to descriptive characteristics

	FCRI total		PWBS		APS	
	Median	Min-max	Median	Min-max	Median	Min-max
Gender						
Female	7.5	0-64	48	40-56	61	42-69
Male	12	0-54	48	26-56	62	43-78
	Z=3534.50 p=0.051		Z=2782.00 p=0.492		Z=3623.50 p=0.026*	
Education status						
Literate	0	0-37	48	43-52	62.5	46-48
Primary school	10	0-54	62	26-55	61	42-69
Middle school	15	0-51	48	33-52	61	51-72
High school	12	0-37	48	43-55	63	43-70
Undergraduate and higher	12	0-64	54	33-56	62	49-68
	X ² =4.793, p=0.309		X ² =11.576, p=0.021*		X ² =1.957, p=0.744	
Previous psychiatric treatment status						
Yes	11	0-51	48	26-56	62	42-78
None	20	0-64	47	33-56	62	52-69
	Z=1868.50, p=0.013*		Z=1338.50, p=0.444		Z=1483.50, p=0.624	
Z: Mann-Whitney U test, χ ² : Kruskal-Wallis test, *p<0.05, FCRI: Fear of cancer recurrence inventory, PWBS: Psychological Well-Being Scale, APS: Adult Prosocialness Scale						

Z: Mann-Whitney U test, χ^2 : Kruskal-Wallis test, *p<0.05, FCRI: Fear of cancer recurrence inventory, PWBS: Psychological Well-Being Scale, APS: Adult Prosocialness Scale

which groups this difference originated. According to the results of this analysis, the PWBS median score of primary school graduates was found to be statistically significantly higher than those with undergraduate and higher education ($p<0.05$). There was no statistically significant difference between the PWBS median scores of the participants according to other sociodemographic characteristics except for educational status ($p>0.05$) (Table 3).

A statistically significant difference was found between the APS median scores of the patients according to gender ($Z=3623.50$; $p=0.026$). The APS median score of female patients was higher than that of male patients ($p<0.05$). No statistically significant difference was found between the APS median scores of the participants according to other sociodemographic characteristics except for gender ($p>0.05$) (Table 3).

Table 4 presents the correlation between the FCRI, PWBS, and APS scores of the patients. There was no statistically significant correlation between FCRI total and subscale scores and PWBS scores ($p>0.05$). Smilary, no statistically significant correlation was found between FCRI total and subscale scores and APS scores ($p>0.05$). A statistically significant weak positive correlation was found between PWBS scores and APS scores ($r=0.153$, $p=0.045$) ($p<0.05$).

DISCUSSION

This study was conducted to investigate the levels of fear of recurrence, psychological well-being, and prosociality in cancer patients in the remission period and to determine the variables affecting them. The fear of relapse levels of the patients in the study was found to be low. In our study, no cut-off point was determined for the Turkish version of the FCRI. However, since the patients' FCRI total and subscale mean scores were close to the lowest score that could be obtained

Table 4. Correlation between FCRI, PWBS and APS scores of patients

Scales and dimensions		2	3	4	5	6	7	8
Triggers ¹	r	0.518	0.906	0.875	0.821	0.958	-0.122	0.037
	p	<0.001	<0.001	<0.001	<0.001	<0.001	0.110	0.632
Functional impairments ²	r		0.510	0.448	0.587	0.577	-0.252	-0.044
	p			<0.001	<0.001	<0.001	0.001	0.569
Metacognitions related to relapse ³	r			0.843	0.841	0.929	-0.105	-0.028
	p				<0.001	<0.001	0.171	0.719
Emotion focused coping strategies ⁴	r				0.799	0.906	-0.031	0.012
	p					<0.001	0.684	0.878
Quality of life ⁵	r					0.898	-0.155	0.024
	p						0.056	0.759
FCRI total ⁶	r						-0.145	0.010
	p						0.057	0.895
PWBS ⁷	r							0.153
	p							0.045*
APS ⁸	r							
	p							

r: Spearman's correlation analysis, *p<0.05

from this scale, their fear of recurrence levels was evaluated as low. Simard et al. (2013) reported that approximately 39%-97% of cancer patients experience different degrees of FCR. In the literature, fear of recurrence can be considered normal and functional up to a certain level as it helps cancer survivors stay alert to potential recurrence symptoms and adhere to medical regimens in cancer survivors (Lebel et al., 2016; Hampton et al., 2024). However, studies emphasize that patients should be carefully monitored as fear of relapse can turn into chronic anxiety and negatively affect individuals' mood, quality of life, and daily functioning (Ağaç & Özçetin, 2021). In this context, it can be concluded that even though the level of fear of recurrence was found to be low in the patients in our study, they should still be monitored during the remission period.

In this study, only the status of receiving psychiatric treatment was found to affect the fear of relapse. Those who had received psychiatric treatment before had a higher level of fear of recurrence. Previous studies with cancer survivors have shown that many factors, such as age, education, family/spouse support, cancer type, anxiety, depression, and receiving psychiatric treatment, affect fear of recurrence (Jung et al., 2024; Sun, Fang, Wang, & Wu, 2024). Similar to our research result, in a study conducted by Oztas et al. (2022) with breast cancer survivors in Turkey, fear of cancer recurrence was found to be higher in individuals with psychiatric drug use. Our results highlight the importance of monitoring individuals who have previously received psychiatric treatment in terms of fear of recurrence during the remission.

In this study, patients were found to have high levels of psychological well-being because their Psychological Well-being Scale scores were close to the highest score that could be obtained from this scale. There are different results in studies investigating the level of psychological well-being in cancer survivors (Abu-Helalah, Alshraideh, Al-Hanaqta, & Arqoub, 2014; Carlson, Waller, & Mitchell, 2012). Abu-Helalah et al. (2014) found that the levels of psychological well-being of

colorectal cancer survivors were high. Carlson et al. (2012) found that the majority of cancer survivors experienced psychological distress. This difference may be due to the different characteristics of the sample group.

In this study, it was found that other descriptive characteristics such as age, gender, marital status, and employment status did not affect psychological well-being, aside from education. Psychological well-being levels of patients with primary school graduates in the study were higher than those with undergraduate and graduate education. In a study conducted by Fong et al. (2017) with breast cancer survivors, it was found that there was no relationship between education level and psychological well-being. Firouzbakht et al. (2020) found that there was a positive relationship between education level and psychological well-being. In studies investigating cancer survivors' emotional well-being, many variables such as age, cancer type, social support, cancer beliefs, cancer beliefs, self-efficacy and patient-centered communication have an effect on psychological well-being (Niu et al. 2021). In our study, it can be thought that other variables may play a role in the difference in psychological well-being in patients with primary school graduates and patients with postgraduate education.

In this study, it was determined that the prosociality level of the patients was high. There is no study in the literature to determine the level of prosociality in cancer patients. Prosocial activities such as donations, volunteering, and helping behavior are known to enhance an individual's emotional well-being, strengthen social ties, and support psychological resilience (Pfafftheicher et al. 2022). In this context, it can be considered that the high prosociality levels of the patients in our study will contribute to their effective coping with the difficulties they will experience during the remission period.

In this study, the prosociality level of female patients was found to be higher than that of male patients. Similar to our findings, in studies examining the level of prosocial behavior in different sample groups, it was determined that women tend to exhibit higher prosocial behavior than men (Espinosa & Kovářík 2015; Kuhnert et al. 2017). Our results highlight attention to the gender difference in the prosociality level of patients diagnosed with cancer.

In this study, no relationship was found between fear of recurrence and psychological well-being and prosociality of cancer patients in the remission period. However, a positive relationship was found between patients' psychological well-being and their prosociality. Accordingly, when patients feel psychologically well, they tend to exhibit more prosocial behaviors, which are voluntary social actions aimed at helping others. On the other hand, it can be said that showing prosocial behaviors, that is, doing good without expecting anything in return, and showing positive social behaviors increase their psychological well-being. In the literature, although there are no studies investigating the relationship between psychological well-being and prosociality in cancer patients. However, there are studies showing that prosocial behavior and well-being have positive effects on each other and that there is a mutual positive relationship between prosocial behavior and well-being (Aknin et al. 2018; Hui 2022; Titova & Sheldon, 2022). Our findings are consistent with this literature.

Limitations

The limitations of this study are that the data collection tools in the study are based on self-report and the study was conducted in a single center.

CONCLUSION

This study analyzed the levels of fear of recurrence, psychological well-being, and prosociality; the factors affecting them; and the relationship between them in cancer patients in the remission period. According to the results of this study, patients had low levels of fear of recurrence and high levels of psychological well-being and prosociality. Previous psychiatric treatment affects fear of relapse, education level affects psychological well-being, and gender affects prosociality. These results may guide the planning of interventions to improve the quality of life of patients in remission. In addition, this study showed that there is a positive relationship between psychological well-being and prosociality. Therefore, patients can be encouraged for prosocial behaviors.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was carried out with the permission of the University of Health Sciences Scientific Researches Ethics Committee (Date: 22.08.2023, Decision No: 46418926).

Informed Consent

All patients signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Psychological resilience of nurses in the work environment: a systematic review study

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ABSTRACT

Aims: This study aims to systematically examine the psychological resilience of nurses in the work environment.

Methods: PubMed (MEDLINE), Science Direct, Wiley, EBSCO, and SCOPUS databases were searched using the keywords (“resilience” OR “resilient” OR “resiliency”) AND (“workplace”) AND (“wellbeing”) AND (“nurse” OR “nurses” OR “nursing”) for quantitative or qualitative studies published in the last 5 years and using a validated measurement tool.

Results: As a result of the reviews, 15 out of 6207 studies met the inclusion criteria. The studies were organized around three main themes: psychological resilience levels of nurses (n: 7), the results and effects of resilience (n: 7) and factors that increase resilience (n: 3). It was observed that trainings for nurses (n: 1) and web-based learning methods (n: 1) were used to increase the resilience of nurses. It was determined that these training programs positively affected the resilience of nurses and the variables taken within the scope of the study.

Conclusion: As a result of increasing the psychological resilience of nurses in the work environment, it has an important place in increasing professional performance, job commitment, general psychological well-being, and job satisfaction, decreasing the rate of inability to devote oneself to work, thinking about leaving the job or leaving the job, and preventing burnout. Considering all these factors, it is seen that increasing the resilience of nurses is important not only at the individual level but also in terms of increasing the quality and sustainability of health services.

Keywords: Psychological resilience, nurse, workplace, well-being

INTRODUCTION

Although there are multiple definitions of psychological resilience, psychological resilience is often defined as the ability to successfully cope with adverse conditions (Henshall, Davey, & Jackson, 2020). Psychological resilience plays a critical role in individuals' adaptation processes to challenging life events. In the literature, it is emphasized that psychological resilience is an innate trait in some individuals, while it is a capacity that can be developed over time for other individuals (Kaba & Keklik, 2016; Çapan & Arıcıoğlu, 2014). The level of resistance shown by individuals in the face of challenging life events such as trauma, loss, stressful working environments, and crisis situations is directly related to their psychological resilience. In this context, psychological resilience allows individuals to develop flexibility and adaptation skills by maintaining their inner strength despite the adversities they experience (Çam & Büyükbayram, 2017; Itzhaki et al., 2015).

It is known that psychological resilience is important in the workplace. In particular, it is known that employees with

high levels of psychological resilience can cope with stressful situations in the workplace more easily. It is seen that the stress sources of employees at the workplace are caused by various factors such as role ambiguity within the team, workload, communication problems with management, and working conditions (Köse, 2013). Problems such as mobbing, conflicts, career problems, low wages and difficult working conditions are perceived as solvable problems and employees become stronger by fighting them (Kavi & Karakale, 2018).

Nursing is a professional group that requires constant interaction with people by nature and is exposed to various stress factors (Cooper, Leslie & Brown, 2022). In addition to working with individuals dealing with health problems, nurses face various stressors such as deficiencies in the health system, problems with other health professionals, violence, insufficient resources, traumatic events, economic difficulties, global health crises, and lack of sleep (Cooper, Leslie & Brown, 2022; Delgado et al., 2022; Günüşen, 2017). These factors can

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lead to consequences such as decreased job satisfaction, a tendency to leave the profession, and negativities in patient care (Yu et al., 2019). It is possible for nurses to maintain their physical and mental well-being in working environments with intense stress factors through psychological resilience (Çam & Büyükbayram, 2017). The importance of psychological resilience increases even more as nurses working in special fields such as psychiatry and oncology encounter suicide, death, and trauma more frequently (Cooper et al., 2020). In oncology, nurses with high psychological resilience, emotional burden decrease, happiness level increase, and patient care quality improvement (Xu et al., 2020).

It is stated in the literature that the psychological resilience level of nurses is affected by various factors. It is stated that economic factors are an important variable in this context, and nurses with poor or moderate economic income may have higher psychological resilience with the development of planning and organizational skills (Ayar & Karaman, 2022). In addition, global health crises also affect the psychological resilience of nurses (Afshari et al., 2021; Gökçe Işıklı et al., 2021). It is known that nurses' feeling of commitment to the profession reduces workload and thus increases psychological resilience (Kara, 2019). It is stated that psychological resilience positively affects nurses' characteristics such as self-confidence, autonomy, and adaptability and plays an important role in protecting their individual health by preventing mental problems such as burnout and depression (Bozdağ & Ergün, 2021; Hoşgör & Yaman, 2022). In addition, it is emphasized that it increases productivity and performance in the profession by positively affecting self-esteem (Erkayiran, & Demirkiran, 2024). Therefore, supporting the psychological resilience of nurses is considered an important element that increases not only their individual health but also the quality of health services (Erkayiran, & Demirkiran, 2024; Hoşgör & Yaman, 2022).

Psychological resilience increases the capacity of individuals to cope with stressful and traumatic events, resulting in positive outcomes at both individual and organizational levels. It is stated that individuals with high psychological resilience are more optimistic, have improved problem-solving skills, had high self-esteem and self-efficacy, and had higher academic and professional success (Çapan & Arıcıoğlu, 2015; Popa-Velea et al., 2021; Shengyao et al., 2024). In the case of nurses, it has been determined that high psychological resilience increases professional commitment, job satisfaction, and quality of life, and reduces stress, burnout, anxiety, and depression levels (Çam & Büyükbayram, 2017; Sihvola et al., 2023; Piotrowski et al., 2022; Matos et al., 2010).

At the organizational level, psychological resilience of nurses improves the quality of patient care by reducing turnover rates and strengthens job satisfaction and organizational commitment (Unruh et al., 2016; Brown et al., 2018; Kelly et al., 2021; Labrague & de Los Santos, 2021). Studies show that approximately one-third of newly graduated nurses leave the profession within the first two years (Unruh et al., 2016). It is stated that nurses with high psychological resilience have higher job commitment and organizational belonging, thus contributing to organizational culture and productivity (Kelly et al., 2021; Hudgins, 2016).

It is seen that psychological resilience is a critical factor in terms of patient care quality. While the quality of care provided by

nurses with high psychological resilience increases, care costs decrease, and continuity in patient care is ensured by reducing turnover (Wei et al., 2019). It is stated that psychological resilience has a protective effect on nurses' ability to maintain their professional functions, especially during crisis periods such as pandemics and disasters (Labrague & de Los Santos, 2021). In addition, psychological resilience reduces the workload of nurses caring for patients with traumatic events by reducing compassion fatigue and contributes positively to patient care (Flanders et al., 2020).

It is accepted that psychological resilience is a developable trait, and various strategies are recommended to increase individuals' ability to cope with stress and traumatic events. The process of increasing psychological resilience recommended by the American Psychological Association includes various steps such as strengthening social support systems, believing that problems can be overcome, accepting change, acting towards goals, and being hopeful (APA, 2018). Individual and organizational strategies to increase psychological resilience are of significant importance in this context. Methods such as strengthening social support systems, gaining positive thinking skills, disseminating awareness practices, and promoting training programs are effective in increasing the psychological resilience level of individuals (Allen et al., 2018). In addition, creating work environments that support psychological resilience in the workplace, providing flexible working arrangements, and implementing policies for employee welfare are among the important steps to be taken at the organizational level (McAllister, 2013; Cusack et al., 2016; Allen et al., 2018).

METHODS

Ethical Aspects of the Study

Since the research articles included in the sample of this study were taken from electronic databases that are open to access and there is no risk of any material/moral harm to the researchers during the realization of the study, ethics committee approval is not required. The studies included in the study are included in the bibliography. All procedures were carried out in accordance with the ethical rules and the principles.

Aim of the Study

The aim of this systematic review study is to systematically examine the psychological resilience of nurses in the work environment. For this purpose, the answers to the following questions were examined:

- What are the psychological resilience levels of nurses in the work environment?
- What are the effects of psychological resilience levels of nurses in the work environment?
- Which interventions can be applied to increase the psychological resilience levels of nurses in the work environment?

Literature Review Process

This systematic review was prepared in accordance with the Preferred Reporting Items for Systematic Reviews and MetaAnalyses (PRISMA) and Cochrane Guidelines. For this purpose, PubMed (MEDLINE), Science Direct, Wiley, EBSCO, and SCOPUS databases were searched retrospectively by using

the keywords ["resilience" OR "resilient" OR "resiliency" (mesh) AND ("workplace") (mesh) AND ("wellbeing") (mesh) AND ("nurse" OR "nurses" OR "nursing")] of the studies published on the subject in October 2024. In this context, inclusion and exclusion criteria for the systematic review were determined according to patient/population, intervention, comparison, and outcomes (PICOS).

Inclusion criteria: English qualitative and quantitative studies published in the last 5 years between January 2020 and October 2024 with the relevant keywords, the full text of which can be accessed online, were included in this study. In this context, inclusion and exclusion criteria were determined according to patient/population, intervention, comparison, and outcomes (PICOS).

- **Population:** Nurses working in any health institution,
- **Interventions:** No intervention or stress management practices, support groups,
- **Comparison:** With or without comparison,
- **Results:** Psychological resilience,
- **Types of studies:** Experimental, descriptive and qualitative studies.

Exclusion criteria: Systematic reviews, reviews, meta-analysis studies, thesis studies, oral or poster presentations, letters to the editor, duplicate studies that are not directly related to the subject, studies that include other health professionals, and studies whose full text could not be accessed were not included in this study.

Study selection: Five researchers independently screened all titles and abstracts for inclusion, using the inclusion criteria described. Data were screened and checked for accuracy and discrepancies. The full texts were then pre-reviewed by seven researchers. During the full-text review, each full-text article was independently reviewed for inclusion or exclusion according to the eligibility criteria described. As a result of the literature search, a total of 6207 studies were found. After the duplications were removed, the abstracts of 17 studies containing one or more of the keywords determined in the title and abstract were analyzed. As a result of the review, 13 studies that examined the psychological resilience of nurses in the work environment and whose full text could be accessed and met the inclusion and exclusion criteria were included in this systematic review (Figure). The "PRISMA" checklist was used by the researchers for the control of the study.

Statistical Analysis

Since it was not a meta-analysis study and the accepted articles did not meet the conditions for meta-analysis, no statistical analysis was performed.

RESULTS

As a result of the searches, 6207 studies were reached. After eliminating duplications, inappropriate studies in terms of topics, content, methods or sampling, 13 studies met the inclusion criteria. When the methodologies of the studies were examined, it was determined that 6 were qualitative, 7 were quantitative (2 of which were randomized controlled), and 1 was a mixed method. The study by Delgado et al. (2022) had the lowest sample size (n: 11), while the study by Xu et al. (2022) had the highest sample size (n: 683). It was determined that the studies included in the systematic review were generally conducted in Australia and the USA.

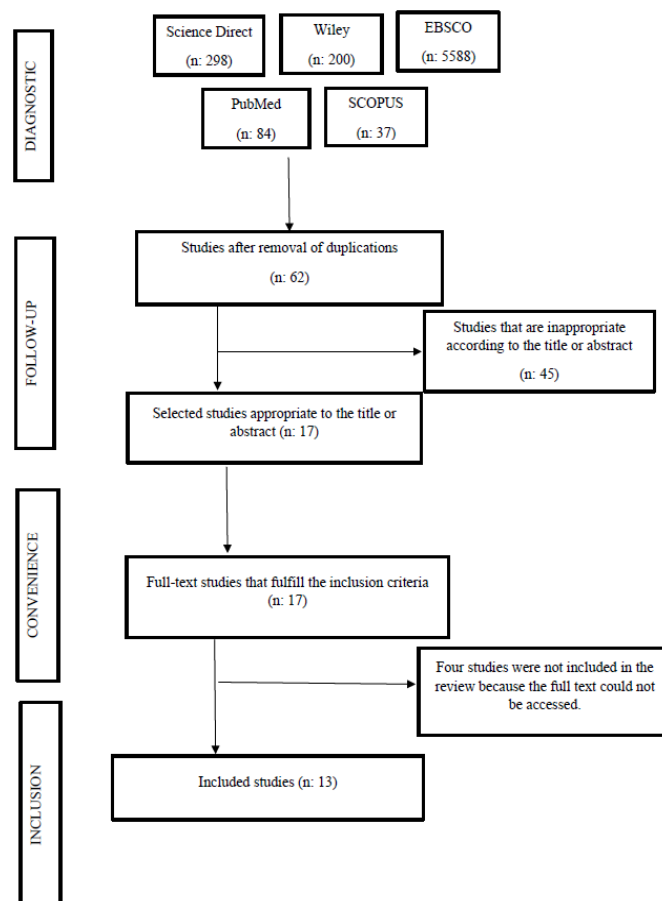


Figure. Flowchart of studies included in the systematic review (PRISMA-P flowchart)

When the studies included in this systematic review were examined, it was determined that the studies focused on three main areas. These areas are resilience levels of nurses (n: 7), the results and effects of resilience (workplace commitment, burnout, emotional labor, workplace stress, and psychological well-being, n: 7) and factors to increase resilience (n: 4). It was observed that trainings for nurses (n: 1) and web-based learning methods (n: 1) were used to increase the resilience of nurses. It was determined that these training programs positively affected the resilience of nurses and the variables (psychological well-being, distress, etc.) taken within the scope of the study. Information about the basic characteristics of each study, including the name of the author and the year of publication, the purpose of the study, the sample size, and the results of the studies, is shown in Table.

DISCUSSION

The aim of this systematic review is to systematically examine the levels of psychological resilience of nurses in the workplace, the factors affecting it, its effects, and intervention studies on psychological resilience. When the studies in this systematic review were looked at, the results about nurses' psychological resilience at work were broken down into three main groups: the levels of psychological resilience, the effects of psychological resilience, and factors that can help increase psychological resilience.

Psychological Resilience Levels of Nurses

It is known that psychological resilience levels of nurses are shaped as a result of individual, professional, and environmental factors. Abualruz et al. 2024 in Jordan, it was determined that although the psychological resilience levels

Table. Characteristics of the reviewed studies						
Authors and year	Aim	Sample size	Location	Other factors examined with psychological resilience	Data collection forms	Obtained results
Abualruz et al., 2024.	This study aimed to investigate the relationship between emotional intelligence and psychological resilience and the effects of this relationship on depression, anxiety and stress among nurses.	155 nurses	Jordan	Depression anxiety stress	Depression Anxiety Stress Scale, Brief Resilience Scale Brief Emotional Intelligence Scale	As a result of this study, it was found that there was a negative relationship between emotional intelligence, psychological resilience and psychological problems and emotional intelligence was positively related to psychological resilience.
Foster et al., 2024.	This study aimed to determine the effects of the psychological resilience building program applied to mental health nurses on coping self-efficacy and psychological distress, well-being, psychological resilience, posttraumatic growth, emotional intelligence behaviors, workplace belonging and turnover intention.	144 nurses	Austria	Psychological resilience	Self-coping Mental health Semi-structured Interview Form Resilience Scale Self-efficacy	It was found that the training and support interventions implemented within the scope of the study increased the psychological resilience of mental health nurses. It was observed that the negative effects of stress, burnout and workload decreased in nurses participating in the intervention.
Mensah & Mpaun, 2024.	This study aimed to examine the impact of workplace sexual harassment exposure on psychological well-being among Ghanaian nurses and to investigate how this relationship is influenced by psychological resilience and conflict resolution climate.	343 nurses	Ghana	Sexual harassment in the workplace Psychological well-being Conflict resolution climate.	Sexual Experience at Workplace Questionnaire Psychological Well-Being Scale Brief Resilience Scale Conflict Resolution Climate Scale	As a result of this study, it was found that sexual harassment in the workplace showed a negative relationship with nurses' psychological well-being and nurses with high psychological resilience were more protected against the negative effects of harassment. It was also found that conflict resolution climate did not significantly affect the relationship between sexual harassment and psychological well-being.
Li et al., 2024.	In this study, it was aimed to investigate the demands of nurses for the workplace environment related to psychological resilience.	20 nurses	China	Burnout	Semi-structured Interview Form	In this study, the main factors that increase the psychological resilience of nurses were reported as supportive leadership, strong relationships with colleagues, emotional safety, physical environmental conditions and training-development opportunities, and the need for access to psychological support services.
Foster Evans & Alexander, 2023.	This study aimed to examine mental health nurses' stories of how they apply their resilience in practice and to understand the resilience resources they use in challenging workplace interactions and situations.	12 mental health nurses	Australia	Burnout dissonance adaptation	Semi-structured interview questions Workplace resilience inventory Caring behaviors inventory	As a result of this study, mental health nurses' psychological resilience was positively associated with emotional intelligence, self-management and developing a positive growth mindset. Nurses were noted for their ability to utilize their professional selves in challenging situations, maintain supportive relationships, and apply self-care strategies. These were also positively associated with resilience.
Henshall et al., 2023.	This study aimed to evaluate the effectiveness of an online resilience development program (resolution) for nurses and to examine the effects of the program on nurses' levels of resilience and psychological well-being.	107 nurses	Southern England	Psychological well-being	Brief Resilience Scale Warwick-Edinburgh Spiritual Well-Being Scale	As a result of the data obtained from the study, the nurses who participated in the program stated that the web-based resolution program improved their psychological resilience, self-confidence, relationships with colleagues, communication skills and patient care skills. However, there was no statistically significant difference in the effects of the program on psychological resilience and psychological well-being compared to the control group. However, it positively affected the psychological resilience and well-being levels of the nurses who participated in the program.
Sutarno et al., 2023.	In this study, it was aimed to examine the effect of coping methods such as psychological resilience and spiritual support on increasing nurses' participation in the workplace.	414 nurses	Indonesia	Burnout Spiritual support Psychological resilience	Utrecht Workplace Involvement Scale, Self-Control Scale, Information Seeking and Counseling Scale, Spiritual Support Scale, Resilience Scale	As a result of this study, it was found that psychological resilience and spiritual support increased nurses' workplace engagement through coping strategies such as information seeking, counseling and self-control.
Conolly et al., 2022.	The aim of this study is to examine how nurses conceptualize their resilience during COVID-19 and its impact on their mental well-being.	52 nurses	England	Psychological resilience	Semi-structured Interview Form	In this study, it was determined that the change in the working environment of nurses during the COVID-19 pandemic caused many nurses to feel that they did not have enough psychological resilience and their mental health was negatively affected.
Cooper, Leslie & Brown, 2022.	The aim of this study is to examine how nurses conceptualize their resilience during COVID-19 and its impact on their mental well-being.	Qualitative part 25 nurses Quantitative part: 392 nurses	Australia	Stressors psychological resilience	Semi-structured focus interviews	As a result of this study, it was determined that psychological resilience of nurses is affected by individual factors as well as external factors such as working conditions, management performance and team support. As a result of improving these factors, it was found that they positively affect mental health and job satisfaction by increasing psychological resilience.
Delgado et al., 2022.	The aim of this study was to explore how mental health nurses build and maintain their psychological resilience in the face of high levels of emotional labor.	11 nurses	Australia	Psychological resilience	Semi-structured Interview Form	This study examined the resilience of mental health nurses under four themes. Nurses increased their emotional awareness by developing sensitivity to themselves and others, and coped with challenges with professional meaning and a positive mindset. They practiced proactive self-care strategies to maintain psychological balance. However, lack of organizational support and high workload caused emotional burnout in some cases. The study also emphasizes that psychological resilience should be strengthened by individual and organizational support.
Xu et al., 2022.	This study aimed to examine psychological distress and psychological resilience levels of psychiatric nurses as second victims after violence.	683 nurses	China	Stress	Second victim experience and support tool Psychological Resilience Scale	The study revealed that nurses were frequently exposed to psychological violence at work (80.2%) and that this negatively affected their psychology. Despite inadequate support mechanisms, psychological resilience was found to be important as a protective factor.
Abram & Jacobowitz, 2021.	The aim of this study was to compare the levels of psychological resilience and burnout among health students and psychiatric clinical nurses and to better understand their effects on professional and personal well-being.	51 nurse 119 students	USA	Burnout well-being	Semi-structured or unstructured interviews	In this study, a negative relationship was found between psychological resilience and burnout among both psychiatric nurses and health students. This result suggests that psychological resilience may be protective against the development of burnout. The age factor was found to have a significant effect on resilience, but the work or school environment did not significantly change this effect. Health students were reported to have higher burnout and lower resilience than mental health nurses.
Boitshwarelo et al., 2020.	This study aimed to discover and identify the strengths of nurse managers with high psychological resilience that they use to cope with work-related stress.	42 nurses	Botswana	Dealing with stress	Wagnild and Young Resilience Scale	As a result of this study, it was determined that nurse managers with psychological resilience have strengths in coping with workplace stressors, and their strengths are protecting personal data, using life skills, applying appropriate leadership skills, and accessing social support, thus enabling nurses to overcome difficulties and provide quality nursing services.

of nurses were at normal levels, depression, anxiety, and stress levels were high. In the same study, emotional intelligence was found to be effective on the psychological resilience of nurses (Abualruz et al., 2024). Foster Evans and Alexander examined the psychological resilience of young and inexperienced nurses in their study in 2023. It was noteworthy that young and inexperienced nurses participating in the study had lower levels of psychological resilience than other participants, and this was related to the development process of professional experience and skills to cope with crises (Foster et al., 2023). In a different study, the psychological resilience levels of health sciences faculty students and nurses who worked in psychiatric clinics were compared. When age was taken into account, the results showed that the psychological resilience levels of students were not higher than those of nurses (Abram & Jacobowitz, 2021). Delgado et al. (2022) stated that nurses maintain their resilience by developing individual skills such as emotional intelligence and self-management.

Among the factors affecting psychological resilience, professional factors such as working environment conditions, leadership support, and solidarity within the team play an important role (Li et al., 2024). As a result of a qualitative study on the methods of protecting the psychological resilience of nurses working in a long-term care home during the COVID-19 pandemic period, it was determined that nurses' positive thoughts on issues such as dynamic role, self-protection, acting together, and sense of leadership were effective in increasing their psychological resilience, while their negative thoughts reduced their psychological resilience levels (Connelly et al., 2022). As a result of the same study, it was found that individual characteristics of nurses were effective on their psychological resilience (Connelly et al., 2022). The study conducted in 2022 found that nurses maintained their resilience by developing emotional awareness and applying proactive self-care strategies. While it was stated that these strategies had positive effects on psychological resilience by positively affecting occupational meaning and posttraumatic growth, it was observed that lack of organizational support and high workload threatened the continuity of psychological resilience. (Delgado et al., 2022). Foster Evans and Alexander (2023) interviewed nurses with psychological resilience and found that nurses' behaviors, such as proactive professional self-management, self-sustaining through supportive relationships, actively participating in practice, learning and self-care, and seeking positive solutions and outcomes, are important for their psychological resilience.

It is known that social support and a positive work environment are among other environmental factors that positively affect psychological resilience. Li et al. (2024) found that establishing strong relationships with colleagues positively affected the psychological resilience of nurses. Especially during the COVID-19 pandemic period, psychological resilience was found to have a protective effect in nurses, but it was determined that long-term increased workload and psychological distress caused a decrease in psychological resilience (Conolly et al., 2022). Psychological resilience of psychiatric nurses as secondary victims after violence was examined, and it was found that supporting nurses and organizing the working environment increased psychological resilience, while increasing distress levels negatively affected psychological resilience. (Xu et al., 2022). In a study, the opinions of nurses about the external factors

affecting psychological resilience were taken, and it was determined that problems such as workload, unpredictable nature of the profession, lack of perceived support from managers and social environment, communication problems, difficulties in team management, acute patient group, and feeling insecure at work negatively affected psychological resilience (Cooper, Leslie & Brown, 2022). In another study, it was stated that institutions have as much responsibility as individual responsibilities in developing the psychological resilience of nurses. (Foster Evans & Alexander, 2023). In the same study, it was recommended that organizations should support professional development for new and experienced nurses, develop organizational strategies to build positive team cultures, and prioritize strategies to reduce workplace stressors and strengthen the psychological safety and well-being of nurses, especially for nurses to retain their jobs (Foster Evans, & Alexander, 2023).

The Effects and Outcomes of Psychological Resilience on Nurses

Psychological resilience has many positive consequences on nurses, both individually and institutionally (Li et al. 2024; Henshall et al., 2023; Conolly et al., 2022; Delgado et al., 2022; Sutarno et al., 2022). The results showed that resilience and spiritual support have both direct and indirect positive effects on engagement at work. These effects are mediated by self-control and seeking information and counseling. All variables explained 69% of the variance in workplace engagement. This study was the first to look at how coping strategies affect nurses' ability to be engaged at work by transferring the effects of coping resources to that group (Sutarno et al., 2022).

In addition, Cooper, Leslie, and Brown (2022) found that appropriate leadership practices and team support positively affect nurses' mental health and job satisfaction by increasing psychological resilience. Mensah and Mpaun (2024) found that psychological resilience positively affected nurse care quality. In another study, the psychological resilience of nurses was found to be effective in reducing the negative effects of emotional labor (Delgado et al., 2022). Abualruz et al. (2024) found that nurses with psychological resilience had lower levels of depression, stress, and anxiety. In a study examining the consequences of bullying that nurses are exposed to at work, it was found that nurses with psychological resilience were effective in reducing the psychological distress they experienced due to workplace bullying (Mensah & Mpaun, 2024). In a study, it was determined that increasing the psychological resilience levels of nurses working in psychiatric clinics had positive effects on burnout (Abram & Jacobowitz, 2021).

Factors That Increasing Psychological Resilience of Nurses

In the literature, there are studies examining the factors that increase the psychological resilience of nurses (Duva et al., 2022; Henshall et al., 2023; Foster et al., 2024; Li et al., 2024). Workshops, structured stress management and psychological resilience trainings (Chesak, 2013), mindfulness-based stress reduction programs (Foureur et al, 2013), focus group studies for the development of personal skills (Mealer, 2012; Chesak, 2013; Cusack et al., 2016), cognitive behavioral therapy (Mealer, 2012; Chesak, 2013; Foureur et al., 2013; Cusack et al., 2016) and art therapy (Armstrong et al., 2011; Karreman, & Vingerhoets, 2012) are known to be effective.

In the organizational sense, it is important to provide leadership support, teamwork, and a positive workplace environment (Henshall et al., 2023). Li et al. (2024) conducted a study to examine nurses' perspectives on increasing psychological resilience in the workplace and found that career, practice, and personal support and development practices are important for increasing psychological resilience. In this context, the nurses who participated in the study stated that institutional practices such as supportive leadership, transparent communication and receiving feedback, methods to recognize self-worth, salary improvements, feasibility of shift lists, training opportunities, and establishing strong relationships with colleagues are important for their psychological resilience (Li et al., 2024). At the organizational level, the role of leadership and management support in enhancing psychological resilience was emphasized by Boitshwarelo et al. (2020). Leaders' encouragement of strong social support mechanisms enables nurses to cope with stress more effectively.

At the individual level, developing self-control and information-seeking skills increases nurses' workplace engagement (Sutarno et al., 2023). In particular, spiritual support mechanisms were found to be effective in increasing psychological resilience, and this was positively reflected in workplace interactions (Sutarno et al., 2023). Boitshwarelo et al. (2020) reported that nurses' communication skills, active listening skills, decision-making and problem-solving skills, and access to peer, family, friend, manager, and professional support are important in the development and enhancement of psychological resilience.

Foster et al. implemented the promoting adult resilience (PAR) program in 2024 to increase the psychological resilience of mental health nurses, which includes topics such as promoting self-efficacy in coping with stress, increasing the mental health and well-being of adults in the workplace; promoting stress management skills; promoting psychological resilience; improving relationships and reducing conflict by increasing interpersonal and communication skills; increasing the ability to manage and regulate emotions in times of stress and distress and promoting the capacity for post-traumatic growth. As a result of this program, improvement was observed in the coping self-efficacy, well-being, psychological resilience and post-traumatic growth of the nurses on the 2nd day and 3rd month after the training, while their psychological distress levels decreased (Foster et al., 2024). In another study, a web-based program called "REsOluTioN" was implemented for 4 weeks to improve the psychological resilience of nurses. At the end of the program, it was determined that the majority of the participants improved their psychological resilience, self-confidence, patient care skills, relationships with colleagues and communication skills (Henshall et al., 2023). Considering these studies, it may be recommended to monitor the long-term effects of interventions aimed at increasing the psychological resilience of nurses and to ensure the continuity of these interventions.

Limitations

This study has certain limitations. The first one is that only a small number of studies could be included in the systematic review. Secondly, only studies published in English were included in the systematic review, and non-English articles were excluded due to limited resources. Thirdly, only studies related to nurses were included in the systematic review.

CONCLUSION

As a result of increasing the psychological resilience of nurses in the work environment, it has been observed that it has an important place in increasing professional performance, job commitment, general psychological well-being, and job satisfaction, decreasing the rate of inability to devote oneself to work, thinking about leaving the job or leaving the job, and preventing burnout. Considering all these factors, it is seen that increasing the psychological resilience of nurses is important not only at the individual level but also in terms of increasing the quality and sustainability of health services. In this context, it is important for health institutions to develop strategies to increase the psychological resilience of nurses and to prioritize the well-being of nurses.

ETHICAL DECLARATIONS

Ethics Committee Approval

Since the research articles included in the sample of this study were taken from open-access electronic databases, ethics committee approval was not required.

Informed Consent

Since the research articles included in the sample of this study were retrieved from open-access electronic databases, informed consent was not required.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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A review on the importance of self-compassion for nurses

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ABSTRACT

Self-compassion refers to the development of an understanding and supportive attitude towards oneself. Since the nursing profession requires intense emotional labor and physical effort, self-compassion plays a critical role in increasing the professional resilience of nurses. Nurses with high levels of self-compassion can improve their professional quality of life by reducing the risk of burnout and compassion fatigue. Research shows that self-compassion mindfulness interventions increase nurses' self-compassion levels and reduce their job stress. It reveals that self-compassion during the student period is effective in coping with stress and developing positive attitudes towards the profession during the nursing education process. Promoting self-compassion has the potential to improve not only individual well-being but also the quality of care provided to patients. With this review study, it is aimed to present information about the concept of self-compassion, its importance in the nursing profession, and its contributions to nurses themselves and nursing care.

Keywords: Self-compassion, nursing, care

INTRODUCTION

Self-compassion is defined as the ability to show understanding and support to oneself that one shows to others when faced with difficulties. Today, the role of self-compassion in increasing an individual's emotional well-being and psychological resilience is receiving increasing attention (Şahin Altun, Kabakçı & Olçun, 2020). Self-compassion encourages a kind, understanding and inclusive attitude towards oneself rather than a critical approach to oneself. This concept has positive effects on psychological well-being and professional performance, especially in occupational groups with high emotional burden (Yıldırım, 2019).

Nursing is a profession that requires intense efforts to support the physical, emotional and spiritual health of individuals and is carried out with dedication and empathy (Kinchin, 2021). The intense workload, emotional demands, and stress factors involved in this profession may increase the risk of nurses facing problems such as burnout, compassion fatigue, and emotional disconnection over time (Dilmaç Pınar & Ceylan, 2024). In this context, self-compassion stands out as a powerful internal resource that enables nurses to cope with the challenges they face while fulfilling their professional roles. Studies have shown that individuals with high levels of self-compassion have low stress perception and are more resilient against difficulties in business life (Dilmaç Pınar & Ceylan, 2024; Kinchin, 2021; Neff, 2023).

The importance of self-compassion in the nursing profession becomes even more evident as it prevents occupational burnout by increasing the capacity of individuals to protect

their own emotional and physical health. Self-compassion enables individuals to be kinder to themselves and less judgmental of their mistakes or failures. This attitude contributes to both increased well-being at the individual level and improved relationships with patients (Boğahan & Yaman, 2022). Promoting self-compassion has the potential to not only improve individual health but also the quality of nursing practice (Yılmaz, 2020). In recent years, studies on programs and strategies to increase nurses' self-compassion levels have attracted attention. Mindfulness-based interventions have been observed to increase nurses' self-compassion, improve their professional quality of life, and reduce work stress (Boğahan & Yaman, 2022; Yıldırım, 2019). These findings suggest that self-compassion is critical not only for individual well-being but also for professional productivity and quality of care provided to patients. In addition, research on nursing students emphasizes the effects of self-compassion on coping with stress during the learning process and developing positive attitudes towards the profession (Dilmaç Pınar & Ceylan, 2024).

Self-compassion should be considered not only as an individual characteristic but also as a skill that enhances sustainability and quality in professional health practices. This concept is a tool that enables nurses to cope with the challenges they face not only in their professional lives but also in their personal lives. Therefore, the integration of self-compassion into nursing practice should be considered as a strategic priority in terms of supporting individual and professional health (Karakaş,

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Çelebi, Çingöl & Zengin, 2022). Accordingly, the role of self-compassion in the nursing profession is of great importance for individuals to strengthen their internal resources and cope more effectively with the difficulties they face. In this review study, it was aimed to emphasize the importance of self-compassion both individually and professionally and to address the place of this concept in nursing practice in a more comprehensive manner.

THE CONCEPT OF SELF-COMPASSION

Self-compassion is an important concept that refers to the development of a compassionate, understanding and supportive attitude towards oneself. Although this concept derives from Buddhist philosophy, today it is considered as a critical tool in psychology and health sciences to enhance individual well-being (Neff, 2003; Neff, 2023). Self-compassion involves accepting the experience as a part of being human and having a kind attitude towards oneself in this process, instead of criticizing oneself mercilessly when faced with a challenging situation. Studies pioneered by Kristin Neff (2003) suggest that self-compassion has three basic components: kindness to self, acceptance of shared human experience, and mindfulness. These components enable individuals to cope more effectively with challenging life events (Neff, 2003; Neff, 2023). It has been revealed that self-compassion increases an individual's psychological resilience, improves their ability to cope with stress and increases their general well-being (Şahin Altun, Kabakçı & Olçun, 2020). Self-compassion facilitates individuals to focus on the learning process by accepting their mistakes and encourages a constructive approach instead of a constantly critical attitude. In this respect, self-compassion is an important tool not only for individual psychological health but also for strengthening social relationships (Dilmaç Pınar & Ceylan, 2024).

THE IMPORTANCE OF THE CONCEPT OF SELF-CARE IN THE NURSING PROFESSION

Nursing is a discipline that requires intense emotional labor and physical effort. Nurses have to constantly use their qualities such as empathy, compassion and patience in order to provide the best care to their patients. This high emotional demand can lead to negative consequences such as burnout, compassion fatigue, and work stress (Uslu & Buldukoğlu, 2017). Self-compassion stands out as an important psychological resource for nurses to cope with such challenges. Nurses who develop a compassionate approach towards themselves can cope with the emotional burden of their profession more effectively and improve their professional life quality by protecting their own health (Dilmaç Pınar & Ceylan, 2024). Recent studies show that self-compassion reduces burnout levels of nurses and supports work-life balance (Yıldırım, 2019; Dilmaç Pınar & Ceylan, 2024). For example, mindfulness-based programs have been found to increase self-compassion levels in nurses and reduce perceived work stress. These findings reveal that self-compassion enables individuals to balance their professional and personal lives and plays a protective role against burnout (Yıldırım, 2019).

Self-compassion enables nurses to provide services more effectively in their profession. This is important not only for individual health and well-being but also for the quality of care provided to patients. Nurses with high levels of self-compassion can remain more calm and focused in stressful

situations and show more empathy and understanding towards patients. This creates a positive effect for both patients and the healthcare team (Yılmaz, 2020). When the literature is examined, different aspects of self-compassion in nurses are discussed and the importance of this concept in business life is focused on.

In a study conducted with nursing students, it was reported that self-compassion levels showed a strong relationship with psychological resilience (Dilmaç Pınar & Ceylan, 2024). This shows that self-compassion strengthens not only emotional resilience but also individuals' perception of professional competence. In another study, the effect of mindfulness-based programmes on job stress and self-compassion levels in nurses was examined and it was shown that these interventions reduced job stress and positively affected self-compassion levels by increasing the mindfulness levels of nurses (Yıldırım, 2019; Candan, 2019). In a study conducted on female nurses, the role of self-compassion between cognitive flexibility and health promotion was discussed. The study revealed that self-compassion is an important variable that supports health promotion behaviours (Erol Kaya, 2021). In a study examining postgraduate theses on compassion in nursing, it was emphasised that self-compassion is a preventive factor for burnout and compassion fatigue (Karakaş, Çelebi, Çingöl & Zengin, 2022). A study on the relationship between social media addiction and self-compassion shows that self-compassion can shape social media usage habits in nursing students (Boğahan & Yaman, 2022).

THE EFFECT OF SELF-COMPASSION ON OCCUPATIONAL QUALITY OF LIFE IN NURSES

The nursing profession is defined as a challenging occupational group that requires emotional resilience and psychological well-being. Self-compassion contributes positively to the quality of professional life by enabling individuals to develop a kind and supportive attitude towards themselves (Neff, 2003). This concept is considered as an important internal resource that improves nurses' ability to cope with professional burnout, compassion fatigue and stress (Neff, 2003). In a study conducted with health professionals, it was shown that self-compassion increases feelings of empathy and compassion along with mindfulness and enables individuals to cope more effectively with stress in their work life (Raab, 2014). Nurses in particular benefit greatly from the psychological resilience offered by self-compassion when coping with intense workload and emotional demands. This increases the quality of professional life and also improves the quality of care provided to patients (Hofmeyer et al., 2018). A study examining the effects of self-compassion on sleep quality and occupational endurance revealed that health professionals exhibited better sleep quality and higher endurance with an increase in self-compassion levels (Kemper, Mo, & Khayat, 2015). These findings emphasise the importance of self-compassion in protecting both physical and mental health of nurses.

Self-compassion is not only an individual characteristic but also a critical skill for the professional sustainability of nurses. In a study conducted among community nurses, it was stated that self-compassion reduces the risk of occupational burnout and increases the level of well-being, and self-compassion

provides a positive change in both individual and professional life (Durkin et al., 2016). In this direction, the integration of self-compassion into nursing practice is considered as a strategy that improves the quality of professional life by increasing individual resilience. In this context, it is of great importance to make programmes and trainings aimed at increasing the level of self-compassion more widespread in the health sector (Neff, 2003; Raab, 2014; Hofmeyer et al., 2018; Kemper, Mo, & Khayat, 2015; Durkin et al., 2016).

THE EFFECT OF SELF-COMPASSION CONCEPT ON NURSING CARE

Self-compassion is an important internal resource for nurses to sustain their professional roles and provide quality care to patients. While the nursing profession requires empathy, patience and intense emotional labour, neglecting one's own emotional and physical health in this process can lead to burnout (Uslu & Buldukoğlu, 2017). Studies show that nurses with high levels of self-compassion have increased job satisfaction, strengthened emotional resilience and exhibit a more empathetic approach towards patients (Şahin Altun, Kabakçı & Olçun, 2020). Encouraging self-compassion helps nurses manage work stress and allows them to carry out care processes more effectively and consciously (Yıldırım, 2019).

Studies on the effects of self-compassion on nursing care show that mindfulness-based interventions improve nurses' attitudes towards patient care by increasing their psychological resilience (Candan, 2019). Nurses with high levels of self-compassion are more sensitive and patient in their communication with their patients, while their risk of making mistakes in care processes decreases as they are more successful in stress management (Dilmaç Pınar, 2020). The ability of nurses to make more conscious and ethical decisions by adopting a patient-centred care approach is directly related to their level of self-compassion (Raab, 2014). Therefore, implementing training programmes to improve nurses' self-compassion skills is a critical step in improving professional sustainability and patient care quality (Hofmeyer et al., 2018). Finally, studies on nursing students show that the level of self-compassion is determinant in both coping with stress in the learning process and strengthening the perception of professional competence (Dilmaç Pınar & Ceylan, 2024; Erol Kaya, 2021). In addition, research on female nurses has revealed that self-compassion is an important factor supporting health promotion behaviours (Erol Kaya, 2021). It has been observed that nurses with high levels of self-compassion not only experience higher job satisfaction and reduced risk of burnout, but also are more effective and compassionate in patient care processes. Promoting self-compassion contributes to nurses to improve not only their own well-being but also patient care processes, thereby improving the overall quality of healthcare services.

Self-compassion, which is considered as one of the cornerstones of compassionate care, enables nurses to exhibit a more sensitive, patient and understanding attitude towards their patients. Studies show that nurses with high levels of self-compassion act more calmly and consciously in stressful and emotionally challenging patient care processes and are more successful in empathising with the patient (Durkin et al., 2016; Neff, 2023; Kinchen, 2021). In this context, the implementation of programmes to improve nurses' self-compassion skills is critical not only for professional

sustainability but also for improving the quality of patient care. Integration of self-compassion into nursing practice directly contributes to strengthening the relationship with patients, conducting care processes more consciously and ethically, and increasing patient satisfaction (Durkin et al., 2016; Dilmaç Pınar & Ceylan, 2024; Erol Kaya, 2021).

CONCLUSION

Self-compassion, as an important psychological resource in both individual and professional life, contributes to protecting nurses from burnout and increasing their professional resilience. Especially in the nursing profession, which requires intensive emotional labour, the development of self-compassion both increases individual well-being and improves the quality of care provided to patients. It is revealed that self-compassion-based mindfulness programmes increase nurses' self-compassion levels and strengthen their professional satisfaction and resilience against work stress. In this context, integrating self-compassion into nursing education and professional development programmes should be considered as a strategic priority for nurses to practice their profession in a sustainable manner.

ETHICAL DECLARATIONS

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Management of primary CMV infection in pregnancy using the Roy adaptation model: a case report

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ABSTRACT

Primary cytomegalovirus infection during pregnancy can result in significant maternal and fetal complications. This study explores the application of the Roy adaptation model (RAM) as a theoretical framework for managing such high-risk pregnancies. A case study approach was employed, focusing on RAMs four adaptive modes: physiological, self-concept, role function, and interdependence. Nursing interventions tailored to these adaptive modes aimed to enhance maternal psychological and physiological adaptation, alleviate anxiety, and strengthen maternal-fetal attachment. Family support played a pivotal role in achieving positive outcomes. The findings demonstrate that RAM effectively addresses the multifaceted needs of high-risk pregnancies, emphasizing its value as a guiding framework for individualized maternal care. This approach highlights the importance of integrating theoretical nursing models into practice to improve outcomes for both mother and fetus.

Keywords: Cytomegalovirus infection, high-risk pregnancy, Roy adaptation model, nursing care, maternal-fetal adaptation

INTRODUCTION

Cytomegalovirus (CMV), a member of the human herpesvirus family, is a leading cause of non-genetic congenital anomalies (Khalil, Heath, Jones, Soe, Ville, 2018). Transmission routes include body fluids, semen, breast milk, organ transplantation, and transplacental transmission. CMV infection is classified as primary, occurring in seronegative individuals, or secondary, involving reinfection in previously infected individuals (CDC, 2024).

Although CMV poses minimal risk to healthy individuals, infection during pregnancy significantly increases the risk of fetal transmission. The transplacental transmission rate is 30–40% in primary infections and 1-2% in secondary infections (Khalil, et al. 2018; CDC, 2024). CMV affects 0.2-2.2% of all births, with approximately 7 in every 1000 newborns being infected, varying by region (NHS, 2024).

Despite its potential to cause severe congenital anomalies, routine antenatal screening for CMV is not recommended internationally due to the lack of effective preventive treatments and the unpredictability of sequelae (Barton, Forrester, McDonald, 2020). Diagnoses are often retrospective, based on ultrasound findings or symptoms observed in newborns, especially in cases where prenatal follow-up was inadequate or in high-prevalence regions.

Detection of CMV infection during pregnancy can cause significant stress for pregnant women and their families.

Irreversible sequelae and uncertain outcomes may disrupt expectations of a healthy birth, potentially leading to psychological trauma and a mourning process, particularly in cases of fetal transmission (Melender, Lauri, 1999).

Managing such negative experiences, enhancing coping mechanisms, and providing counseling are crucial. The Roy adaptation model (RAM) addresses biological, psychological, and social challenges of pregnancy, supporting adaptation. Studies show its effectiveness in managing pregnancy-related anxiety, fostering maternal adaptation, and promoting mother-infant attachment postpartum (Roy, 2009; DeSanto-Madeya, Fawcett, 2009). Gynecology nurses play a critical role in using this model to improve maternal and fetal outcomes through individualized care.

This study evaluates the application of the RAM in managing primary CMV infection during pregnancy and its impact on maternal and fetal health outcomes.

ROY ADAPTATION MODEL (RAM)

The RAM, developed by Sister Callista Roy in 1964 and applied in 1968, integrates theories from Harry Helson's adaptation theory, Bertalanffy's general systems theory, Selye's adaptation theory, and other interdisciplinary concepts. The model posits that humans are bio-psychosocial beings who adapt to environmental stimuli that evolve throughout life (Roy, 2009).

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Stimuli

Environmental stimuli are classified into three types:

- **Focal stimuli:** An event or object that captures immediate attention, such as high blood pressure in pregnancy, drawing focus to health concerns (Roy, 2009).
- **Contextual stimuli:** Personal or environmental factors that amplify the focal stimulus, such as stress or lack of support worsening hypertension in pregnancy (Roy, 2009).
- **Residual stimuli:** Influences shaped by past experiences or cultural beliefs, like persistent anxiety in a woman with a history of miscarriage (Roy, 2009).

Responses

Individuals respond to stimuli through internal and external behaviors. Turning toward a sound is an external response, while an increased heart rate caused by the sound is internal. These responses are categorized into Functional and Effector subsystems (Roy, 2009).

Functional subsystem coping mechanism:

- **Regulatory:** Neuro-chemical-endocrine responses. For example, increased heart rate or adrenaline levels in an individual experiencing anxiety (Roy, 2009; DeSanto-Madeya, Fawcett, 2009).
- **Cognitive:** Cognitive responses to stimuli such as attention, memory, learning, problem solving, decision making, defense. By analyzing the source of anxiety, a pregnant woman can decide to practice relaxation techniques (Roy, 2009; DeSanto-Madeya, Fawcett, 2009).

Effector subsystem adaptation: According to the RAM, there are four adaptations (Roy, 2009).

- **Physiological adaptation domain:** Focuses on protecting physical integrity and meeting basic needs, including oxygenation, nutrition, elimination, movement, rest, fluid-electrolyte balance, and neurological/endocrine functions (Roy, 2009; DeSanto-Madeya, Fawcett, 2009).
- **Self-concept adaptation domain:** Reflects behaviors and beliefs aligned with the individual's philosophy of life, such as adopting a positive outlook during illness (Roy, 2009; DeSanto-Madeya, Fawcett, 2009).
- **Role function domain:** Covers societal and familial roles, including preparing a pregnant woman for motherhood (Roy, 2009; DeSanto-Madeya, Fawcett, 2009).
- **Mutual commitment adaptation domain:** Encompasses behaviors and social support in relationships, where spousal and family support aid in stress management during pregnancy (Roy, 2009; DeSanto-Madeya, Fawcett, 2009).

Behavioral responses: Behavioral responses, according to Roy, can be;

- **Adaptive:** For example, adhering to dietary guidelines and treatment plans following a diabetes diagnosis (Roy, 2009).
- **Maladaptive:** Such as delaying treatment by refusing the diagnosis (Roy, 2009).

CASE

The study data were collected on August 15, 2019, at the perinatology outpatient clinic of a training and research hospital in İstanbul. A 29-year-old pregnant woman, married for 4 years and a university graduate, was referred to the clinic for follow-up due to elevated AST, ALT, and LDH levels detected at 12 weeks of gestation.

Acknowledgments

Written informed consent was obtained from the patient for the publication of this case report.

Past Health History

The patient has no history of alcohol or smoking. Her blood group is A-Rh (+). She has Hashimoto thyroiditis, migraine, and allergic asthma, and is on Euthyrox (50 mg daily) and Miflonide (2 inhalations daily). Menarche occurred at 14, and her menstrual cycles were regular (26-28 days). She is not consanguineous with her husband. In 2018, she underwent a dilation and curettage at 8 weeks of gestation due to absent fetal heart tones. Pathology revealed a partial mole. Beta-hCG levels decreased steadily over 6 months of follow-up, with no increase observed.

Current Health History

At the 12th week of pregnancy, Doppler evaluation was within normal limits. Blood tests revealed positive results for anti-rubella IgG, anti-toxoplasma IgG, anti-HBS, and anti-HAV IgG. Elevated levels of AST (88), ALT (85), and LDH (334) were observed. Anti-CMV IgM and anti-CMV IgG tests were positive, with low avidity noted at the 13th-week control. CMV PCR in maternal blood was negative. The patient was diagnosed with primary CMV and informed that low avidity and anti-CMV IgM positivity indicated primary infection with potential fetal sequelae risks.

The need for amniocentesis at 21 weeks for fetal evaluation was explained, along with possible pre- and postnatal sequelae, follow-up and treatment options (e.g., hyperimmunoglobulin, ganciclovir). The patient was also counseled on confidence intervals and the option of termination. However, the patient decided to continue the pregnancy. At the 16th week, hyperechogenic bowel appearance was detected. Amniocentesis performed at 21 weeks showed no evidence of prenatal CMV. Karyotype analysis and DNA isolation were normal, while cystic fibrosis gene screening revealed a combined heterozygous gene mutation. The patient received genetic counseling.

The oral glucose tolerance test (OGTT) was within normal limits. Subsequent ultrasound findings did not indicate CMV-related abnormalities. The patient delivered at 39 weeks and 2 days via cesarean section. The newborn showed no CMV symptoms. CMV PCR in newborn urine was negative. Hearing and eye screenings, as well as neonatal cranial ultrasonography, were all within normal limits.

Nursing History

At the 12th gestational week, the pregnant woman, diagnosed with primary CMV, was referred to us for counseling. It was noted that this was her second pregnancy (following one missed abortion), and she expressed significant anxiety due to the diagnosis. The woman reported feelings of detachment from her baby and uncertainty about the future.

CASE EVALUATION ACCORDING TO ROY ADAPTATION MODEL

Physiological Adaptation Domain

NIC initiatives: Relaxation techniques (NIC 6040): The pregnant woman was taught regular breathing exercises and various relaxation techniques. With the effect of these techniques, it was observed that the pregnant woman achieved physical and psychological relaxation, decreased muscle tension and improved sleep quality. This approach supported the general well-being of the pregnant woman by reducing her stress-induced physiological reactions (Bulechek, Butcher, Dochterman, & Wagner, 2017).

Anxiety control (NIC 5820): The pregnant woman was taught how to recognize anxiety, manage stressors and calm down (e.g., positive thinking, mental reframing). During the interventions, the pregnant woman received regular counseling on self-awareness and stress management (Bulechek, Butcher, Dochterman, & Wagner, 2017).

NOC results:

- **Anxiety level (NOC 1210):** It was stated that the pregnant woman's anxiety level was visibly reduced, she felt calmer and her ability to cope with stress improved (Moorhead, Johnson, Maas, & Swanson, 2018).
- **Physiological health level (NOC 2002):** It was determined that the blood pressure, heart rhythm and other physiological parameters of the pregnant woman were in balance, and that this state of well-being reflected positively on daily life activities (Moorhead, Johnson, Maas, & Swanson, 2018).

Self-Concept Adaptation Domain

NIC initiatives:

- **Role support (NIC 5400):** Psychological support was provided to the pregnant woman to develop a positive perspective on preparing for the role of motherhood. In addition, the reasons for her negative thoughts about motherhood were emphasized and she was informed about these issues (Bulechek, Butcher, Dochterman, & Wagner, 2017).
- **Fear management (NIC 5380):** Fears related to the birth process and the postpartum period were identified and special strategies were developed to cope with these fears. For example, visualization techniques and examples of positive experiences were shared (Bulechek, Butcher, Dochterman, & Wagner, 2017).

NOC results:

- **Role performance (NOC 1501):** It was observed that the pregnant woman developed a positive attitude towards her role as a mother, her self-confidence increased and she was more prepared for the process (Moorhead, Johnson, Maas, & Swanson, 2018).
- **Confidence level (NOC 1212):** It was stated that the pregnant woman's sense of self-confidence about the motherhood process increased significantly. This confidence manifested itself especially in her decisions about prenatal and postnatal processes (Moorhead, Johnson, Maas, & Swanson, 2018).

Role Function Compliance Area

NIC initiatives:

- **Social support (NIC 5440):** The pregnant woman was supported to establish a stronger communication with her family, partner and social environment. The importance of social ties that will make the pregnant woman feel that she is not alone in this process was explained (Bulechek, Butcher, Dochterman, & Wagner, 2017).
- **Nursing counseling (NIC 5280):** Regular counseling was provided during pregnancy and successful strategies for anxiety management were developed. In addition, the participation of the pregnant woman in the counseling process was encouraged and the process was individualized (Bulechek, Butcher, Dochterman, & Wagner, 2017).

NOC results:

- **Social support (NOC 1504):** It was observed that the pregnant woman's social support network was strengthened, family members were more active in the process and the pregnant woman's feeling of loneliness decreased (Moorhead, Johnson, Maas, & Swanson, 2018).
- **Compliance with treatment (NOC 1603):** It was observed that the pregnant woman showed high compliance with nursing interventions and applied the recommended techniques and strategies to her daily life (Moorhead, Johnson, Maas, & Swanson, 2018).

Mutual Interdependence Harmony Space

NIC initiatives:

- **Providing emotional support (NIC 5270):** The pregnant woman was offered activities to strengthen her emotional bonds with her partner, family and close friends. For example, recommendations like spending time together and sharing activities were given. The role of these bonds in stress management was emphasized (Bulechek, Butcher, Dochterman, & Wagner, 2017).
- **Enhancing the family process (NIC 7140):** By focusing on the role of the pregnant woman in the family, she was enabled to communicate more effectively with other family members. Communication techniques and problem solving methods were worked on to strengthen family ties (Bulechek, Butcher, Dochterman, & Wagner, 2017).

NOC results:

- **Family support (NOC 2202):** The pregnant woman stated that the emotional and physical support she received from her family members increased and that she felt stronger with this support (Moorhead, Johnson, Maas, & Swanson, 2018).
- **Emotional well-being (NOC 1205):** Expectant mothers reported feeling more peaceful, valuable and powerful psychologically and emotionally. This positively supported the overall mental health of the pregnant woman (Moorhead, Johnson, Maas, & Swanson, 2018).

CONCLUSION

To ensure successful adaptation to pregnancy and motherhood, individualized and holistic care training for pregnant women

is essential. These trainings enhance women's psychological, physiological, and social adaptation to pregnancy and support the healthy progression of the process. Nurses and midwives play a critical role in identifying factors influencing adaptation, diagnosing risky situations early, and implementing necessary interventions (Alligood, 1994; Mercer RT, Ferketich, Trisyani M, Rachmawati, 2019). By planning preventive practices, nurses and midwives can help minimize or prevent adaptation problems that may arise during pregnancy. Additionally, training provided to family members significantly contributes to meeting the psychosocial needs of pregnant women by ensuring they receive sufficient support. These trainings not only create a healthier and more supportive environment for women during pregnancy but also contribute to safeguarding and improving the overall health of both mother and baby (Ferketich, Trisyani M, Rachmawati, 2019). The RAM provides a structured framework for offering individualized and holistic care to pregnant women. Addressing both physiological and psychological challenges, this model helps pregnant women navigate the complexities of adaptation to pregnancy and motherhood. By emphasizing the integration of environmental factors and coping mechanisms, the model further empowers nurses and midwives to implement targeted interventions, thereby improving maternal and fetal outcomes in high-risk pregnancies (Ferketich, Trisyani M, Rachmawati, 2019).

ETHICAL DECLARATIONS

Informed Consent

The patient signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

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Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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