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Working Conditions and Quality of Life of Cancer Survivors: A Cross-Sectional Study

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Abstract

BACKGROUND/AIMS: Work ability, which is based on the self-report of individuals while they work, is the strongest predictor of cancer survivors' (CS) return to work. This study aimed to investigate the working conditions and quality of life (QoL) of individuals with cancer who survived after receiving cancer treatment.

MATERIALS AND METHODS: The sample of this cross-sectional and correlational survey type study consisted of 262 CSs. Data were collected using the Socio-Demographic and Health Information Questionnaire, the SF-36 Health-Related Quality of Life (HRQoL) and the Work Ability Index (WAI).

RESULTS: Of the 262 CSs who participated in this study, 21.4% were employed. The mean score obtained from the WAI by the employed CSs was 33.20. The mean scores the employed CSs obtained from the physical functioning and role physical subscales of the SF-36 HRQoL were higher than those of the unemployed CSs ($p<0.05$). There was a correlation between the mean score of the employed CSs obtained from the overall WAI and the mean scores they obtained from all the sub-dimensions of the SF-36 QoL scale ($p=0.01$). The strongest correlation was found between the WAI and the Social Functioning subscale of the HRQoL (SF-36).

CONCLUSION: The QoL of the employed CSs was better than that of the unemployed CSs and there was a correlation between their work ability and QoL.

Keywords: Cancer survivors, return to work, quality of life

INTRODUCTION

Cancer, which leaves deep scars on the physical, psychological, spiritual, economic and social conditions of individuals, is one of the most common diseases of modern life.[1] Working-age individuals (aged 15-64 years) represent around 40% of all newly diagnosed cancer patients in Europe.[2] Despite the increase in the number of new diagnoses, thanks to early diagnosis and effective treatment strategies, the rate of cancer survival is increasing day by day. According to the International Agency for Research on Cancer, there were 18 million new cancer cases worldwide in 2018, and 43.8 million cancer patients who had been diagnosed within the previous 5 years were still alive.[1] Thanks to the increase in life expectancy, working age, and survival rates in cancer patients, the labor force participation rates have also increased for people with chronic illnesses such as cancer.[3] Approximately 50% of those newly diagnosed with cancer and more than one third of cancer

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survivors (CSs) were in their working age.[4] The risk of unemployment within 10 years after a cancer diagnosis is 1.31 times higher in all patients diagnosed with cancer, 2.71 times higher in those individuals diagnosed as having a brain tumor, and 1.66 times higher in those individuals diagnosed with lymphoma.[5]

The rate of return to work (RTW) after cancer treatment is affected by disease-related factors (type and degree of cancer, type and duration of treatment, relapse status, presence of sequelae), CS-related factors (age, sex, physical activity status, income status, participation in family's income etc.) and job-related factors (laws of the country regarding work life, social security, retirement age, wages, re-employment, working hours, activity required by the job, difficulty of work).[6-8] RTW rates in CSs range from 39% to 77%.[3] It is known that RTW rates are higher in those people diagnosed with breast, colon and prostate cancers,[9] and that many individuals with breast cancer continue to work after their diagnosis.[10]

Work ability, which is based on the self-report of individuals while they work,[11] is the strongest predictor of CSs' RTW[12]. Problems related to cancer and its treatment may continue after the treatment is completed and traces of these problems can be observed throughout the survivor's life. CSs face many physical difficulties (e.g. fatigue)[13], and symptoms of neurocognitive disorder,[9] cognitive (e.g. brain fog) and psychological side effects (e.g. depressive symptoms).[6,7] The sequelae of cancer treatments also adversely affect individuals.[6] Widespread views and social image that the prognosis of cancer is poor may negatively affect work ability as well. There are several studies on RTW and the work ability of individuals with cancer. Most of these studies were conducted in Nordic and western countries.[6,9,10,14-16] However, the results on samples from different countries are of great importance because they indicate work ability and RTW levels of individuals with cancer, and also because business culture, work values and working conditions differ from country to country. For example, the working hours which are officially eight hours in Turkey are longer than in Nordic countries.[16] In some countries such as Japan, employers do not have a legal obligation to hire individuals with disabilities such as CSs.[17] In Turkey, according to the labor act number 4,857, 3% of employees in the private sector and 4% of employees in the public sector should be people with disabilities. CSs who are considered to be up to forty percent disabled are among these people with disabilities.[18] Our search for studies investigating the employment status, quality of life (QoL) and work ability of cancer patients demonstrated a gap in the Turkish literature. The purpose of the authors in this cross-sectional study was to investigate the working conditions and QoL of individuals who were diagnosed with cancer and who received cancer treatment. In this context, the research questions are as follows: 1) What is the employment rate and RTW rate among CSs? 2) What is the level of the QoL of employed and unemployed CSs? 3) Is there a relationship between the work abilities and the QoL of employed CS?

MATERIALS AND METHODS

Design

The present study had a cross-sectional and correlational design. This study was conducted with individuals who were admitted to the outpatient clinic of the medical oncology clinic of a training and research hospital and who met the inclusion criteria (n=262). During the six-month data collection process (November 2018-April 2019), CSs who were selected using a non-probability sampling method were interviewed.

The inclusion criteria of the study were as follows: being in the 18-65 age group, having been diagnosed with cancer after the age of 18, knowing that they were diagnosed with cancer, not having active cancer treatment, having no cancer treatment-related complications, having no hearing or vision impairment or mental problems which might interfere with their participation in the study, and volunteering to participate in the study. Of the cancer patients, those who met the inclusion criteria gave their written consent. Data were collected in the outpatient clinic room using a face-to-face interview method between 8.30 a.m. and 4.30 p.m. on weekdays. During the six-month data collection process, 262 individuals were interviewed. As some individuals were interviewed more than once during the data collection process, a post hoc analysis was performed in the G*power 3.1 program (effect size 0.20, α=0.05). After the power of the study was determined to be 94%, the data collection process was terminated.[19]

The ethics committee permission of the study was obtained from the İzmir Katip Çelebi University Non-Interventional Clinical Research Ethics Committee (approval number: 2018/10). Written consent was obtained from cancer patients participating in this study.

Instruments

1. Socio-demographic and health information questionnaire: This questionnaire includes 10 items questioning the participants' socio-demographic characteristics, cancer type, treatment type, employment status, and working conditions if the person is employed.[6,10,12,14,15]

2. SF-36 health-related quality of life: The HRQoL developed by Ware and Sherbourne[20] in 1992 is a self-assessment form comprising 36 items. It was adapted to Turkish by Pınar.[21] It has eight subscales: Physical functioning (10 items), social functioning (2 items), role limitations caused by physical health problems (4 items), role limitations caused by emotional problems (3 items), emotional well-being (5 items), vitality (energy and fatigue) (4 items), bodily pain (2 items), and general health perceptions (5 items). An additional single item assesses changes in perceived health. The items in the form investigate the person's health-related quality of life (HRQoL) during the past four weeks. The HRQoL can be rated by taking into account each subscale separately or under two subgroups; namely the physical and the mental subscales. As the score obtained from the form increases, so does their QoL. The Cronbach's alpha value of the original scale was 0.92. It was 0.93 in the present study. This form was administered to all the participants.

3. Work ability index: This index, developed in the early 1980s, has been adapted to more than 30 languages and is used to assess an employee's health, mental and social abilities, and their compliance with the physical and mental requirements of the work done.[11] The WAI consists of seven items. The minimum and maximum possible scores to be obtained from the index are 7 and 49 respectively. The higher the score is, the better the individual's work ability is. Those scores ranging between 7 and 27 indicate poor work ability, between 28 and 36 indicate moderate work ability, between 37 and 43 indicate good work ability and between 44 and 49 indicate excellent work ability.[13] In the Turkish adaptation study of the WAI, the Cronbach's alpha value was calculated to be 0.72.[22] In the present study, it was 0.71. The index was filled in by those currently employed.

Statistical Analysis

The Statistical Product and Services Solutions (SPSS) for Windows 22.0 (SPSS, Inc., Chicago, IL) was used to analyze the data collected. There was no missing data because the data were collected by the researchers through face-to-face interviews. In the analysis of the data, descriptive statistics such as numbers, percentage distribution, arithmetic mean, standard deviation and median were used. As the scale scores were not normally distributed, the Mann-Whitney U test was used to compare two groups, and the Kruskal-Wallis test was used to compare three groups. Spearman's correlation coefficient was used to compare scale scores. The chi-square test was used to compare the categorical data of the employed and unemployed participants. The statistical significance level was set at $p<0.05$ at the 95% confidence interval.

RESULTS

The mean age of the participating CSs was 50.87±9.53 years (employed ones: 44.82±8.78; unemployed ones: 52.51±9.06) (minimum: 20, maximum: 64). The mean age of the employed participants was lower than that of the unemployed participants ($p<0.05$). Their median years of education was eight years (minimum-maximum: 0-15). Of them, male participants, those with a higher education level, those who underwent only surgical operations, those who had no chronic disease comorbid with cancer, and those diagnosed with testicular cancer had longer working lives than the other participants ($p<0.05$). The employment rate was lowest among those CSs diagnosed with colon and breast cancer, and those having undergone all the three treatment types ($p<0.05$). There was no correlation between the participating CSs' employment status and their marital status or perceived income level ($p>0.05$) (Table 1).

Currently, of the participants, 21.4% (n=56) were employed and 78.6% (n=206) were not. However, before they were diagnosed with cancer, 81.5% (n=212) of them did not work, but 18.5% (n=50) of them were employed (Table 2). Of the employed participants, the most popular sector was the private sector (41.1%) and 60.7% were full time workers. Of the employed participants, 46.4% were away from work for up to 180 days (6 months) and 37.5% for more than 12 months. When the participants were asked "Do you think your illness has prevented you from working?", 76.8% of them stated various reasons. Seven of the CSs had problems at work due to their health. The problems that they had were as follows: not being able to do heavy work (n=4) and not getting a leave of absence from work (n=3) (Table 1). The mean score of the Work Ability Index was 33.20±8.42, and 44.6% of CSs had a good level of work ability (Figure 1).

Of the participants, those who were employed obtained higher scores from the Physical Functioning and Role Limitations Caused by Physical Health Problems sub-dimensions of the SF-36 HRQoL than those who were not employed ($p<0.05$). As for the other sub-dimension scores, there were no differences between the employed and unemployed CSs ($p>0.05$) (Table 3). There was a moderate positive correlation between the mean scores that the employed CSs obtained from the overall WAI and all the sub-dimensions of the SF-36 HRQoL scale ($p=0.01$) (Figure 2, 3). While the strongest correlation was found between the overall WAI and the Social Functioning sub-dimension of the SF-36 HRQoL scale ($r=0.54$, $p=0.01$), the weakest relationship was seen between the overall WAI and the General Health Perceptions sub-dimension of the SF-36 HRQoL scale ($r=0.38$, $p=0.01$).

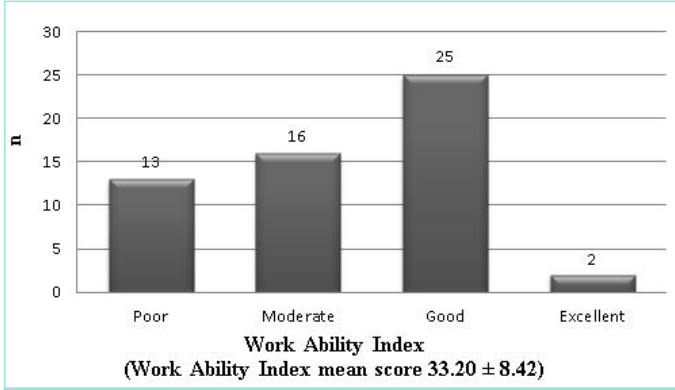

Figure 1. The work ability of employed cancer patients according to the Work Ability Index (n=56).

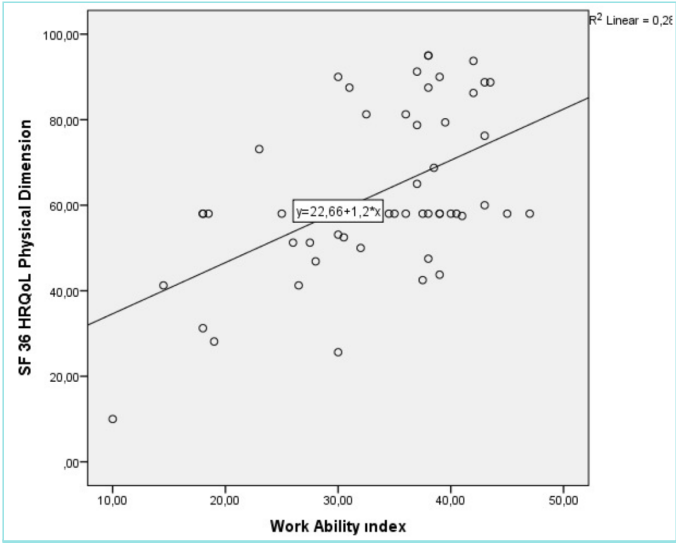

Figure 2. Correlation between Work Ability Index and SF-36 health-related quality of life scale (physical dimension).

HRQoL: Health-related quality of life.

DISCUSSION

In the current study, the results reflect the work conditions and QoL of CSs living in a developing country. In addition, the results of this study can be a source for those planning to carry out training and adaptation programs for CSs in work life.

Considering the high number of people who have cancer and those who have recovered from cancer today, the absence of these people in work life affects both the country's economy and the CSs' lives. Returning to work is a sign of a re-transition to a routine life. CSs need an income to live on and health insurance for their health expenditures. Therefore, the employment of CSs will be beneficial for both the individual and the development of the country[23,24]. In the present study, the rate of the employed CSs did not decrease after cancer treatment; conversely, it slightly increased by 12% (Table 2). The employed CSs were at a younger age (Table 1). In Turkey, since 2003, the retirement age has been 60 for women and 65 for men.[18] Since the retirement age has increased, young CSs have to continue to work. In addition, more than one third of the CSs had their own businesses, which positively affected them

Table 1. Comparisons between participants currently employed or unemployed			
Characteristics	**Employed (n=56)**	**Unemployed (n=206)**	**p[a]**
	n (%)	**n (%)**	
Sex			
Female	34 (60.7)	159 (77.2)	χ^2=6.157
Male	22 (39.3)	47 (22.8)	p=0.013
Marital status			
Married	40 (71.4)	153 (74.3)	p>0.05
Single/divorced/widow/widower/living separately	16 (28.6)	53 (25.7)	
Educational level			
Illiterate[†]	-	16 (7.8)	
Primary education	23 (41.1)	132 (64.1)	χ^2=15.325
High school	21 (37.5)	40 (19.4)	p=0.001
University and above	12 (21.4)	18 (8.7)	
Perceived income level			
Income less than expenses	20 (35.7)	109 (52.9)	
Income equal to expenses	29 (51.8)	79 (38.3)	p>0.05
Income more than expenses	7 (12.5)	18 (8.7)	
Cancer type			
Breast	26 (46.4)	112 (54.4)	
Column	5 (8.9)	30 (14.6)	
Testicular/kidney	6 (10.7)	6 (2.9)	χ^2=12.82
Ovarian/uterine/cervix	4 (7.1)	10 (4.9)	p=0.005
Lung, nasopharynx	2 (3.6)	6 (2.9)	
Stomach/pancreas/liver/esophagus	2 (3.6)	24 (11.7)	
Others[†††]	15 (26.8)	24 (11.7)	
Treatment type			
Chemotherapy	4 (7.1)	11 (5.3)	
Surgery	12 (21.4)	14 (6.8)	χ^2=12.015
Surgery + chemotherapy, or surgery + radiation therapy	17 (30.4)	62 (30.1)	p=0.007
Surgery + chemotherapy + radiation therapy	23 (41.1)	119 (57.8)	
The presence of a chronic disease comorbid with cancer			
No	40 (71.4)	97 (47.1)	χ^2=8.973
Yes	16 (28.6)	109 (52.9)	p=0.003
Type of the chronic disease comorbid with cancer (n=126)[††]			
Hypertension	2 (12.5)	21 (19.3)	
Diabetes	3 (18.8)	22 (20.2)	
Hypertension and diabetes	-	21 (19.3)	-
Others	11 (68.8)	43 (39.5)	
Age	**X ± SD**	**X ± SD**	t=-5,669
	44.82±8.78 (21-61)	52.51±9.06 (20-64)	p=0.001

[a]chi-square test, [†]not included in the analysis because there were no illiterate individuals in the employed CSs, [††]test statistics were not performed due to the insufficient number of the participants in categories, [†††]brain, lymph, thyroid, cell tumors, melanoma, soft tissue sarcoma and cancer whose primary site cannot be determined, SD: standard deviation.

to RTW (Table 2). In the literature, there have been studies indicating that CSs who worked before the diagnosis continued to work after treatment. In these studies, the rate of the CSs who continued working after treatment varied over a wide range (from 11.3% to 95.1%).[6,9,10,15,25-27] As in other studies, in the present study, the rate of RTW was high. These differences in working rates are probably due to the fact that working conditions and business cultures vary from country to country. In the current study, that the number of CSs who worked before and after the diagnosis was low is a reflection of Turkey's socio-cultural and economic conditions. The unemployment rate in Turkey (13% in 2019) is relatively lower than that in Spain (13.9%) and Greece (17%) but higher than those in the other OECD countries and the USA.[28] Moreover,

Table 2. Characteristics of the participants currently employed (n=56)	
Characteristics	**n (%)**
Did you work before you were diagnosed with cancer?	
Yes	46 (82.1)
No	10 (17.9)
Do you currently work?	
Yes	56 (21.4)
No	206 (78.6)
What sector are you currently employed in?	
Private sector	23 (41.1)
Public sector	13 (23.2)
Self-employment (food, livestock, agriculture)	20 (35.7)
Type of current employment	
Part-time	2 (3.6)
Full-time	34 (60.7)
Shift	8 (14.3)
Self-employed	12 (21.4)
Duration of being away from work after being diagnosed with cancer	
1-180 days	26 (46.4)
181-360 days	7 (12.5)
>361 days	21 (37.5)
No days	2 (3.6)
Do you think your illness has prevented you from working?	
No	13 (23.2)
I am able continue working but I have some complaints	10 (17.9)
Sometimes I have to slow down and change my work schedule	5 (8.9)
I often slow down my work rate	11 (19.6)
I usually can work part-time	5 (8.9)
I cannot work at full performance	12 (21.4)
Are you having problems at work due to your health?	
No	49 (87.5)
Yes (having to do heavy work, not getting a leave of absence from work)	7(12.5)
Do you think there have been any changes in your employer's or colleagues' attitudes or behaviors towards you due to your illness?	
No	53 (94.6)
Yes (unfavorable approaches)	3 (5.4)

according to data released by the Turkish Statistical Institute (TurkStat) in 2019, the labor force participation rate which is 52.9% on average (34.7% in women; 72.4% in men) has ranged between 50.5 and 53.2% over the last five years.[29] These rates are lower than the employment rates in the other OECD countries (68.3%). Similar to this study, as the education level increases, so does the labor force participation rate in other studies.[30] Another finding in the present study is that the number of women working before or after their diagnosis is low. Among OECD countries, the country where the women's labor force participation rate is the lowest is Turkey.[28] As the largest proportion of people only have primary level education in Turkey, women either do not work or work in jobs which require no skills. Therefore, women mostly prefer to be a homemaker due to the effects of the traditional structure of Turkish culture. The fact that the majority of the CSs in the present study were both women and were only primary school graduates may explain the

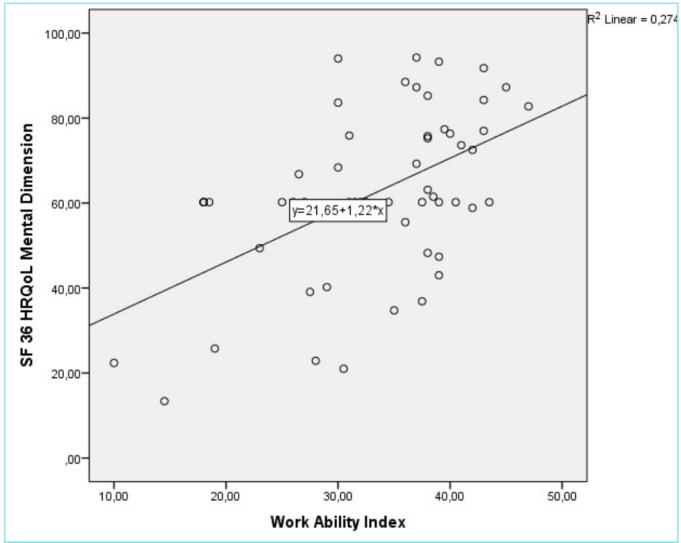

Figure 3. Correlation between Work Ability Index and SF-36 health-related quality of life scale (mental dimension).

HRQoL: Health-related quality of life.

low number of employed CSs in our sample (Table 1). In addition, since 2012, all Turkish citizens have been able to benefit from health services within the scope of general health insurance.[31] This health insurance system reduces the need for people to work. All of the aforementioned economic and social conditions affect the labor force participation rate. The employment rate in the province where this study was performed was similar to that in Turkey overall.[32] Therefore, the data on employment rates obtained in the present study reflect the sample of Turkey.

Many factors affect CSs' RTW.[6,9,24] The first one of these factors is the type of cancer and its treatment. In the present study, confirming previous studies,[6,9,10] the rate of RTW was higher in those CSs diagnosed with breast cancer (Table 1). The employment rate is higher among those who are younger and have a higher education level.[6,10] As indicated in Cheung et al.'s[10] study, the presence of a chronic disease accompanying the cancer diagnosis is a condition that prevents the person from working. One out of nine employed CSs reported that they had problems such as doing heavy work and not getting a leave of absence from work (Table 2). These problems may negatively affect the rate of job retention of individuals in the long term,[24] and lead to disability retirement. Supporting CSs on this journey brings about social benefits in terms of the economy and work efficiency. Therefore, multi-dimensional approaches such as workplace cancer management, legislative disabilities acts, and reducing physical problems should be adopted.[33]

Due to the long-term side effects of cancer treatment, CSs' QoL becomes a crucial issue[14,34,35]. The QOL of the employed CSs in the present study is high in terms of physical functioning and physical roles. The reason for this may be their lower average age, fewer chronic diseases, and higher education levels. The number of studies comparing the QOL of employed and unemployed CSs is limited.[10] At this point, it is recommended that in the future, comparative studies which may reveal the QOL status of employed and unemployed CSs should be conducted.

Work ability is a strong predictor of an individual's RTW and ability to continue at work.[11,12] In CSs with different cancer types,[36,37] the mean

Table 3. The mean scores the employed and unemployed participants obtained from the SF-36 health-related quality of life scale

Sub-dimensions of the SF-36 health-related quality of life scale	Employed participants	Unemployed participants	p[a]
	Median (1st and 3rd quartiles)	Median (1st and 3rd quartiles)	MWU: 3513.50 p=0.048
Physical functioning	60.00 (51.3-80)	59.59 (40-80)	MWU: 4081.00 p=0.042
Role limitation - physical	45.55 (0-100)	25.00 (0-100)	p>0.05
Bodily pain	77.50 (55-100)	76.25 (45-100)	p>0.05
General health perceptions	60.00 (50-70)	59.04 (45-75)	p>0.05
Vitality (energy and fatigue)	50.07 (30-63.8)	50.00 (33.8-65)	p>0.05
Social functioning	75.00 (50-100)	75.00 (50-100)	p>0.05
Role limitation - emotional	59.95 (8.33-100)	53.22 (0-100)	p>0.05
Mental health	66.46 (53-76)	64.91 (52-76)	p>0.05
Physical dimension	58.04 (52.7-79.2)	58.03 (41.1-70.8)	p>0.05
Mental dimension	60.21 (56.3-76.2)	60.21 (45.2-73.9)	MWU: 3513.50 p=0.048

[a]Mann-Whitney U test.

scores obtained from the WAI by employed CSs indicate a good level of work ability. However, only a fifth of the individuals reported that their disease did not interfere with their working. Regardless of work ability, which is evaluated subjectively, the individuals' emphasis regarding disability is related to work responsibilities and work arrangements. Therefore, support for employed CSs in these areas comes to the fore. Work ability is associated with global health, physical functioning and role functioning.[25] The analysis of the relationship between work ability and QOL demonstrated that the work ability levels of CSs were good and were associated with all the sub-dimensions of the SF-36 Health-Related QOL scale which is consistent with the result of the research conducted with ovarian CSs.[34] This relationship is the strongest in the social dimension. These results show that working life has a positive effect on CSs. Considering the fact that the rate of CSs is increasing day by day, carrying out individual and corporate initiatives aimed at improving their QOL gains importance. At this point, healthcare teams should follow up CSs, employers, corporate executives, and the government which sets the legal dimensions of this issue.

Study Limitations

One of the limitations of the present study is that the sample size of the employed CSs was small. The hospital where the present study was conducted is a state-owned hospital. This hospital has a capacity of 1,200 beds and provides health service in all departments, which slows down the achievement of work and prolongs the duration of waiting times in the hospital. Therefore, individuals working and diagnosed with cancer prefer private hospitals for various reasons (fast hospital procedures, early RTW and thus not losing their job, etc). Costs of most of the cancer treatments in private hospitals are covered by the social security system. Therefore, in the present study, the number of CSs who worked before they were diagnosed with cancer was low because most of them were either homemakers or retirees. It is recommended that this should be considered when our findings are interpreted. In addition, due to the design and objective of this study, no information regarding work-related characteristics (i.e. job requirements, workload, pressure of competition, work responsibilities, work arrangements, job satisfaction and financial pressures) were investigated.

Another limitation was that the QOL of the CSs was not fully reflected as no specific instrument was developed to measure QOL among Turkish CSs. Finally, the number of studies on CSs' work ability and QOL is limited. Therefore, we could not sufficiently compare our findings on this issue with those of other studies. The results of this study may serve as a baseline for future studies to verify our findings.

CONCLUSION

In conclusion, while existing studies present results obtained in developed countries, the current study presents results obtained in a developing country, where the incidence of both cancer cases and CSs is increasing. Clearly, younger CSs are an integral part of the workforce. Given the findings of the present study, it is important to assess the work-related needs of employed CSs and the impact on their QOL.

In Turkey where the present study was conducted, no programs are available for RTW. Although the rate of employed CSs is still low, as the rate of CSs increases, so does the rate of CSs who should work. Therefore, it is essential to start and accomplish multi-faceted approaches covering not only the employed CSs but also their colleagues, healthcare professionals, occupational health practitioners and policymakers. It is also necessary both for oncology nursing managers and for occupational health nurses to plan RTW programs concerning these patients in order to facilitate their RTW. Any such initiatives which are likely to improve the QOL of CSs may be provided with better support.

MAIN POINTS

- The rate of RTW after cancer treatment is affected by disease-related factors, CS-related factors and job-related factors.
- Work ability is a strong predictor of CSs' RTW and ability to stay at work
- The QOL of the employed CSs in the present study is high in terms of physical functioning and physical roles.

ETHICS

Ethics Committee Approval: The ethics committee permission of the study was obtained from the İzmir Katip Çelebi University Non-

Interventional Clinical Research Ethics Committee (approval number: 2018/10).

Informed Consent: Written consent was obtained from cancer patients participating in this study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: M.Y., Design: M.Y., Supervision: M.Y., A.A., Materials: G.D., Data Collection and/or Processing: G.U., F.E.A., G.D., Analysis and/or Interpretation: G.U., F.E.A., Literature Search: G.U., Writing: M.Y., G.U., Critical Review: M.Y., A.A.

DISCLOSURES

Conflict of Interest: No conflict of interest was declared by the authors.

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