Community Mental Health Journal (2019) 55:840–848
https://doi.org/10.1007/s10597-019-00388-7

ORIGINAL PAPER

Suicide Risk and Depression in Individuals with Chronic Illness

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Received: 16 July 2018 / Accepted: 1 March 2019 / Published online: 8 March 2019

Abstract
The study aims to determine the suicide risk and depression in individuals diagnosed with chronic illnesses. The sample of the study comprised of 286 persons. The Information Form developed by the researchers on the basis of the models available in previous research, Suicide Probability Scale (SPS) and Beck Depression Scale (BDS) were used to collect data. Mann Whitney U-test, Kruskal Wallis test and Pearson correlation analysis were used to evaluate the study data. The mean score of the individuals participating in the study with reference to Suicide Probability Scale were found to be 68.80 ± 9.94 and that with reference to Beck Depression Scale 15.68 ± 9.91. Also, a significant positive relationship was found between the mean scores regarding SPS and BDS scales (r: 0.601, p: $0.000 < 0.05$). The SPS and BDS mean scores of individuals who said they had poor mental health, low quality of life and low economic status and that of those who had no support from their families were found to be high in respect of statistical significance. In accordance with these findings, chronic illness is a risk factor that might induce depression and suicide ideation and attempt. According to the statistical analysis, the results of this study shown that people with poor mental health, poor quality of life and low economic status and those who had no support from their families especially had more vulnerable to depression and suicidal behaviours compared with other people.

Keywords Chronic illness · Suicide · Depression

Introduction

Suicide is one of the most significant public health concerns all across the world. According to the most recent data available from the WHO report for 2014 titled "Preventing Suicide: A Global Imperative", an estimated number of 804,000 people committed suicide worldwide in 2012 (World Health Organization 2014). Suicide rates vary from one society to another with respect to social viewpoint on and the meaning attributed to suicides. According to the data by the Turkish Statistical Institute (TUIK) in Turkey, the number of suicides resulting in deaths was 3193 in 2016, but in 2017, sucide rate was decreased 3.9% and became 3069 people. (Türkiye İstatistik Kurumu 2015). Previous research has shown that the prevalence of physical illnesses among suicide cases ranges from 25 to 70% (Avcı et al. 2016; Qin et al. 2013; Ekici et al. 2001). In Turkey, physical illnesses rank first among the reasons of committing suicide, and according to the statistics for 2011, the rate of individuals who have committed suicide due to an illness was 19.4%. Chronic diseases are the most important cause of suicide attempts due to poor quality of life arising from impaired health and a high risk of psychiatric disorders (Avcı et al. 2016).

The figures disclosed by the World Health Organization in the World Health Statistics report made public in 2014 indicate that chronic diseases are responsible for 86% of the total number of deaths in Turkey. Of these diseases, the most frequent are the cardiovascular diseases (47%), cancer (22%) and chronic lung diseases (8%) (Jakab et al. 2014). In a similar vein, the figures published by the Statistical Institute of Turkey (TÜİK) for 2016 show that diseases of circulation system rank first among mortality causes with a rate of 39.8%, followed by benign and malignant tumours with 19.7% and respiratory system diseases causing 11.9% deaths. On the other hand, of the chronic diseases of circulation system, the most prevalent are ischemic heart disease (40.5%), cerebral-vascular disease (23.6%), other heart

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diseases (20.4%) and hypertensive diseases (9.7%) (Türkiye İstatistik Kurumu 2016).

Chronic illness are conditions not cured by medical intervention and requiring periodic monitoring and supportive care to reduce the degree of illness and to maximize the person's functioning and responsibilty for self- care (Özdemir and Taşçı 2013).

The chronic disease itself can be a source of stress due to its impacts on the life of the individual disturbing her/his harmony of life, difficulties resulting from the symptoms, findings and the treatment process of the disease, disruption of relations in the family, loss of certain abilities, change of body image and similar factors (Tüzer 2001; Mete 2008). For this reason, besides struggling to deal with the physical problems a chronic disease causes, it is also of great importance to cope with the psychosocial problems which the patient thereby experiences. Patients have to grapple with psychosocial problems in many disease groups such as diabetes, cancer types, cardio-vascular disorders, dermatologic diseases, diseases of respiratory systems (Kılıç 2011). The individuals diagnosed with these diseases suffer from quite a few psychosocial problems such as worry, anger, despair, hopelessness, anxiety, self-withdrawal, loss of status in family and workplace, decrease in self-confidence, fear of death, fear of getting non-self-sufficient/dependant on others, a depressive mood and social isolation (Sertöz and Mete 2004; Grandmaison et al. 2014; Bag 2014). On the other hand, factors such as the impact of chronic diseases on the life quality of patients, usually making them dependant on others, give rise to depression, which, in turn, induce despair, dismay and suicide ideation (Ahn et al. 2010).

A chronic illness can affect the ability to participate in work or leisure activities leading to social isolation, and is associated with increased rates of anxiety and depression. Research available in the literature has reported a high risk of suicide to be associated with a number of medical conditions, such as diabetes mellitus (DM), HIV/AIDS, chronic kidney disease asthma, cancer, congestive heart failure, epilepsy, multiple sclerosis (MS) and stroke. However, the mechanisms underlying this relationship have not yet been explored, and the results of these studies have been inconsistent across studies where the sample population consisted of multiple age groups or where depression was uncontrolled (Karasouli et al. 2014; Webb et al. 2012).

It is very important for healthcare professionals to assess patients with chronic diseases in terms of depression and suicide. Health care providers, expecially nurses are considered "front-line" in the suicide prevention and depression recognition. Because nurses have more amount of contact with patients and is easier be on alert in respect of ideation and probability of suicide in patients with chronic diseases, sharing their impressions with the whole team and immediately initiating an intervention (Mete 2008; Lee et al. 2014; Güleç and Büyükkınacı 2011; Demirel and Eşel 2003). It may be said, in the light of the aforesaid, that chronic diseases negatively affect an individual in respect of physical, mental and social well-being, thus making them reliant on an integral care. Among healthcare personnel, nurses are in the best position, in respect of knowledge and skills, to be able evaluate the individuals with a chronic disease in an integrated manner and assume responsibility both for their physical and psychosocial care. They should keep the physical symptoms under control, helping patients and their families adapt themselves to the life style changes forced by the disease, assessing the anxiety, depression and especially the suicide probability which the disease can provoke. Even though several theories have been proposed in the literature to explain the quality of life of individuals with a chronic disease and the difficulties they have to face, there have only been few studies that have investigated the ideation of suicide in such individuals. The present study is therefore of great significance in two respects: Firstly, it makes several contributions to the current literature. Secondly, it underlines the roles and responsibilities of nurses who serve in psychiatry clinics, especially of those who work in the field of consultation liaison psychiatry.

Methods

The aim of this study was to assess the suicide risk and depression in individuals with chronic illness. This descriptive cross-sectional study was conducted with patients who between November 2016 and April 2017 had been admitted to the internal medicine, chest diseases, norology, cardiology inpatient clinics of a public hospitals in Turkey, due to the diagnosis of chronic diseases.

Population and Sample of the Study

Population and Sample

Reviewing the health statistics of the Ministry of Health, we see that the prevalence of chronic diseases varies depending on the type of the disease and the gender of patients. The number of individuals to be included in the sample was determined with sampling formula which is used in cases of unknown population ($Z = 1.96$, $d = 2$, pq: 0.5 for 95% confidence interval, p and q values were accepted as 0.5) and the minimal number of patients to be included in the sample was found as 322. In addition, the research sample was calculated using G* power analyzed according to the confidence interval of 95%, alpha: 5% and power 80% on the basis of previous research. Accordingly, sample size was found as 226.

The sample of this study consisted of 286 patient who had been diagnosed of a chronic disease and consented to

participate in the study. Inclusion criteria were patients over 18 years of age with a chronic disease diagnosed in the last 6 months and who were literate, able to communicate, free of comprehension difficulties, sufficiently physically and cognitively capable, and willing to participate in the study. The exclusion criteria included those diagnosed with dementia, delirium or amajor psychiatric disorder that could adversely affect alertness or formal thought processes.

Measures

This study has been conducted in descriptive form to investigate the suicide probability in individuals diagnosed with chronic diseases. Of the initial population, 286 patients over 18 years of age with a chronic disease diagnosed in the last 6 months, who agreed to participate in the study and orderly filled out the scales and forms were accepted in the study. Prior to the initiation of the study, approval was obtained from the Ethics Committee of Ömer Halisdemir University on April 18, 2016 with approval number 4 and written consent from the General Secretary of the State Hospitals Union of the province of Niğde. Study data were collected by using the Information Form, Suicide Probability Scale and Beck Depression Scale. Data collection was completed in about 15–20 min for each patient through data collection tools.

Information Form

Information Form developed by the researchers on the basis of forms available in previous research (Mete 2008; Lee et al. 2014; Güleç and Büyükkınacı 2011; Demirel and Eşel 2003; Karasouli et al. 2014; Webb et al. 2012). The information form includes 17 questions about socio-demographic profile of patients (age, gender, educational background, civil status etc.) and information about their chronic disease (type of disease, duration, probability of home care, effects of the disease on the patient's life etc.).

Suicide Probability Scale

The Suicide Probability Scale (SPS) developed by Cull and Gill (1990) to identify adolescents and adults who may tend to attempt suicide includes 36 items. It is a Likert type scale that includes 4 responses as "never or rarely", "sometimes", "frequently" and "mostly or always". The items of the scale are based on well developed theoretic explanations drafted with special focus on the notions of anger, hopelessness and self-conception.

The SPS scale was first translated into Turkish by Eskin (1993) by permission of Western Psychological Services. The text translated by Eskin into Turkish was then controlled by two language specialists, one of whom was also a psychologist. Then, Eskin (1993) conducted a reliability study with university students in Turkey, where positive results were obtained (Eskin 1993).

Internal consistency coefficient in a study conducted amongst university students was found as 0.87, test-retesting reliability coefficient as 0.89 (Eskin 1992). The Cronbach's alpha reliability coefficient for our study was found to be 0.75. Higher scores obtained in the scale indicate a higher probability of suicide.

Beck Depression Scale

Beck Depression Scale (BPS) that was developed by Beck et al. (1961) includes 21 items. It is a self-assessment scale that is used to assess depressive moods. Validity and reliability study of this inventory was conducted by Hisli (1989). In the reliability study, the Cronbach alpha coefficient was found as 0.80. The Cronbach's alpha reliability coefficient for our study was determined to be 0.90. The items in the scale are assessed with scores from 0 to 3 depending on the severity of depression. The highest score that can be taken by this inventory is 63, whereby the cut off score of the scale is 17. Higher scores indicate a high depressive symptom level and a high volume of depression (Hisli 1989) Higher BDE scores, on the other hand, indicate a more serious depression.

Statistical Analysis

The statistics program of SPSS 15.0 (Statistical Package for Social Sciences) was used to evaluate the study data. 'Single Sample Kolmogorov Smirnov' was used to test whether or not the study data had a consistent normal distribution. As it was found that the data had no normal distribution, Mann Whitney *U*-test, a non-parametric test, was used to compare the scores of variables with two groups, or Kurskal Wallis test to compare the scores of variables with more groups. Pearson correlation analysis was used to assess the relations between the scales of SPS and BPS. Bonferroni test applied as Post Hoc test for multiple comparisons of groups.

Results

Of the participants, while 45.8% were in the age group 51–64 and 42.7% over 65 years of age, 56.6 and 72.7% were women and married respectively. While 32.9% were illiterate, 40.2% are primary school graduates and 5.9% high school graduates. On the other hand, 57% do not work. 62.6% of participants have said "middle level" while 19.6% said they have "poor" economic status. Of the patients, % 57 were not employed, 53.8% were live in a village and 79.0% had nuclear family (Table 1).

Table 1 Sociodemographic characteristics of participants (n = 286)

Characteristics	Number of patients	%
Age		
37–50	33	11.5
51–64	131	45.8
65 and over	122	42.7
Gender		
Women	162	56.6
Men	124	43.4
Educational status		
Illiterate	94	32.9
Literate	40	14.0
Primary school	115	40.2
Secondary school	20	7.0
High school	17	5.9
Marital status		
Married	208	72.7
Single	78	27.3
Employment		
Employed	123	43.0
Not employed	163	57.0
Economic status		
High	51	17.8
Middle	179	62.6
Low	56	19.6
Place of residence		
Village	154	53.8
Town	61	21.3
City	71	24.8
Family type		
Nuclear family	226	79.0
Extended family	60	21.0

Of the patients, 34.3% had chronic respiratory disease, 33.6% had chronic endocrine disease, 30.4% had chronic cardiovascular disease. As for the duration of the disease, 36.7% had a chronic disease for 6–10 years, 31.5% had 1–5 years, 14.3% had 11–15 years and 17.5% had 16 years and more. While 90.9% of the patients stated that they were supported by their families in problems arising from the disease, 38.5% said that they had economic problems, 37.8% had job problems, 17.8% had communication problems with family/friends and 27.6% said they could not fulfil their roles and responsibilities in the family. Of patients who had no support from family, 57.7% were women, 42.3% were men, 53.8% were 51–64 in the age group, disease 42.3% had disease duration of 6–10 years.

When asked about subjective assestment of their own mental states and their quality life, 35.3% of the patients indicated that had "good" mental health, 19.2% had responded that had "bad" mental health. Asked about their life quality, while 19.2% said that their life quality was good, 16.1% said they had poor life quality (Table 2).

The mean score of the study subjects in respect of Suicide Probability Scale was found to be 68.80 ± 9.94 and that in respect of Beck Depression Scale to be 15.68 ± 9.91. On the other hand, a significant positive relationship was found between these mean scores (Table 3).

Comparing some variables of the research subjects with the mean scores of Suicide Probability Scale, It was was determined that those in the age group of 37–50, women, high school graduates, single ones, those not having a job, the ones living in extended family, those have chronic cardiovascular diseases and the patients who had had a chronic disease for 1–5 years had higher scores in the suicide probability scale compared with others, but we found that these score differences were not statistically significant ($p > 0.05$). On the other hand, we found that The SPS mean score of patient who received no support from their families had significantly higher than patients supported by the family. The SPS mean score of patients who stated they had low economic situation had significantly higher than those with high and middle economic situation. Patients living in the city, those who stated they had poor life quality and poor mental health had higher scores in the suicide probability scale ($p < 0.05$) (Table 4).

In the present study, comparing some variables of the research subjects with the depression mean scores, shown that men, those living in a village, those diagnosed with chronic cardiovascular disease, the ones who had had a chronic disease for 11–15 years had higher depression scores, that, however, these score differences were not statistically significant ($p > 0.05$). On the other hand, the patients who stated they had poor mental health, poor life quality and low economic status, those who had no support from their families, high school graduates had higher depression scores compared with others, and that the differences between these score means were statistically significant ($p < 0.05$). (Tables 3, 4). Also, mean depression score of patients in the age of group of 51–64 was higher significantly than those in the age of group 37–50 (Tables 3, 5).

Discussion

Chronic diseases give rise to functional disorders and loss of abilities in patients. Loss of certain abilities, feelings of inefficacy and incapacity they experience cause hopelessness and despair and provoke depression in these individuals, which, in turn, induce suicide ideation to put an end to the suffering they and their families experience. Our findings build on the literature linking suicidal behaviors to chronic illness and depression.The results of the study performed by Misono et al. (2008) has demonstrated patients diagnosed

Table 2 Characteristics related to chronic diseases of participants (n = 286)

Characteristics	Number of patients	%
Current chronic disease		
Have cardiovascular disease	87	30.4
Have respiratory disease	98	34.3
Have endocrine disease	96	33.6
Have urinary disease	5	1.7
Duration of disease (year)		
1–5	90	31.5
6–10	105	36.7
11–15	41	14.3
16 and over	50	17.5
Support from family in problems associated with the disease		
Have family support	260	90.9
Have no family support	26	9.1
Impacts of the disease on the life of the patient		
Problems in workplace	108	37.8
Financial problems	110	38.5
Communication problems in family/circle of friends	51	17.8
Experiencing problems in fulfilling the role/responsibilities in the family	79	27.6
Mental health		
Good	101	35.3
Medium	130	45.5
Poor	55	19.2
Life quality		
Good	55	19.2
Medium	185	64.7
Poor	46	16.1

Table 3 Relation between Suicide Probability Scale and Beck Depression Scale (n = 286)

	$\bar{x} \pm$ SD	Correlation analysis
Suicide Probability Scale	68.80 ± 9.94	r: 0.601; p: 0.000 < 0.05*
Beck Depression Scale	15.68 ± 9.91	r: 0.601; p: 0.000 < 0.05

*Pearson correlation analysis, $p < 0.05$

with cancer have a higher risk of suicide in the first 5 and 15 years compared with the population with normal health. In patients on haemodialysis with chronic renal failure, Chen et al. (2010) found that depressed patients had greater levels of fatigue and anxiety, more common suicidal ideation, and poorer quality of life than non-depressed patients. Conti et al. (2017) found that DM was significantly associated with a marked increase in suicidal behaviours and suicidal ideation (SI), especially in patients with depressive symptoms. The study conducted by Webb et al. found that in a total of 873 adult suicide cases, including coronary heart disease, stroke, chronic obstructive pulmonary disease, and osteoporosis, were linked with elevated suicide risk, and, with the exception of osteoporosis, the increase was explained by clinical depression. Consistent with previous research, our study has also demonstrated that patients with higher depression levels have a higher risk in respect of a suicide attempt.

The present study was found that the patients who reside in the city, those who had low economic status, poor mental health and poor life quality and the patients who cannot receive support from their families are more vulnerable to the risk of suicide. It is a real challenge to live with a chronic disease, with all the symptoms and a difficult treatment process. The costs of treatment, often associated with high amounts, and the loss of certain abilities resulting from the disease have great impact on the work performance of the affected people. In turn, the resulting financial difficulties and the drawbacks patients experience as a result of symptoms negatively affect the life quality and mental condition of patients. In addition to these, the difficulties of a life in urban areas and the lack of support from families that would help patients to cope with such difficulties add fuel to the fire, as a result of which it becomes more and more difficult to combat against the disease, and finally death is deemed as a salvation from the situation they are in. Pompili et al. (2009) found that poor quality of life was related to low self-efficacy, high hopelessness, and suicidal tendencies in

Table 4 Mean scores of Beck depression and Suicide Probability Scales according to the participant sociodemographic characteristics (n = 286)

Sociodemographic characteristics	Number	SPS $\bar{x} \pm SD$	BDS $\bar{x} \pm SD$
Age			
37–50	33	71.21 ± 10.41	11.72 9.18[a]
51–64	131	68.54 ± 11.72	16.64 ± 12.10[b]
65 and over	122	68.42 ± 7.38	15.72 ± 6.84
		KW: 2.586, p: 0.274	KW: 9.490*, p: 0.009
Gender			
Women	162	68.81 ± 9.01	15.61 ± 8.44
Men	124	68.79 ± 11.06	15.77 ± 11.60
		Z: −0.2.71, p: 0.786	Z: −1.354, p: 0.176
Educational status			
Illiterate	94	68.65 ± 10.09	17.52 ± 9.06[a]
Literate	40	66.17 ± 10.43	14.47 ± 7.75[b]
Primary school	115	69.20 ± 8.67	14.46 ± 9.69[c]
Secondary school	20	69.25 ± 13.25	14.20 ± 11.94[d]
High school	17	72.52 ± 11.12	18.35 ± 15.64[e]
		KW: 5.208, p: 0.267	KW: 11.356*, p: 0.023
Marital status			
Married	208	68.07 ± 9.84	14.45 ± 9.32
Single	78	70.74 ± 10.73	18.97 ± 10.74
		Z: −1.788, p: 0.074	Z: −3.981**, p: 0.000
Employment			
Employed	123	69.34 ± 12.04	15.85 ± 11.92
Not employed	163	68.39 ± 8.00	15.55 ± 8.12
		Z: −0.044, p: 0.965	Z: −1.482, p: 0.138
Economic status			
High	51	69.88 11.73[ac]	14.70 ± 10.78[ac]
Middle	179	66.58 ± 8.12[bc]	13.72 ± 8.21[bc]
Low	56	74.92 ± 10.85[abc]	22.85 ± 10.94[abc]
		KW: 26.988*, p: 0.000	KW: 38.754*, p: 0.000
Place of residence			
Village	154	68.59 ± 8.36 [ac]	16.32 ± 8.72
Town	61	65.65 ± 11.66[bc]	14.63 ± 10.53
City	71	71.97 ± 10.66 [abc]	15.19 ± 11.69
		KW: 15.770*, p: 0.000	KW: 5.578, p: 0.061
Family type			
Nuclear family	226	68.47 ± 10.10	15.54 ± 10.11
Extended family	60	70.05 ± 9.27	16.21 ± 9.22
		Z: −0.938, p: 0.348	Z: −0.955, p: 0.339

[a,b,c]Post hoc Bonferroni test, $p < 0.05$

*The Kruskal–Wallis test, $p < 0.05$

**The Mann–Whitney *U* test, $p < 0.05$

patients with diabetes mellitus. Patel et al. (2012) found that depressed patients on haemodialysis had greater levels of fatigue and anxiety, more common suicidal ideation, and poorer quality of life than non-depressed patients.

Similarly, reviewing the previous research on cancer patients, we see, for instance, that Lee et al. (2014) found that patients with higher life quality would tend to be less inclined to suicide ideation, but a poor financial condition would increase the probability of suicide. Misono et al. (2008), on the other hand, demonstrated that cancer patients, especially those in advanced periods of the disease, single and male patients tend more to nourish an ideation of suicide. Social support provided by networks comprising family, relatives, friends, neighbours, and

Table 5 Mean scores of Beck Depression and Suicide Probability Scales According to the Participant Characteristics of Chronic Diseases

Characteristics of chronic diseases	Number	SPS $\bar{x} \pm SD$	BDS $\bar{x} \pm SD$
Duration of disease			
1–5	90	69.93 ± 9.77	14.68 ± 9.95
6–10	105	68.31 ± 11.18	15.74 ± 9.79
11–15	41	67.73 ± 9.94	17.63 ± 12.42
16 and over	50	68.68 ± 7.15	15.76 ± 7.61
		KW: 1.870, p: 0.600	KW: 2.739, p: 0.434
Current chronic disease			
Have cardiovascular disease	87	73.43 ± 1.16	16.75 ± 10.27
Have respiratory disease	98	68.52 ± 7.02	14.84 ± 8.66
Have endocrine disease	96	66.98 ± 1.04	15.66 ± 10.87
Have urinary disease	5	63.40 ± 8.70	13.80 ± 8.16
		KW: 5.908, p: 0.116	KW: 2.103, p: 0.551
Support from family in problems associated with the disease			
Have family support	260	68.26 ± 9.46	14.94 ± 9.10
Have no family support	26	74.19 ± 12.83	23.07 ± 14.18
		Z: − 2.438*, p: 0.015	Z: − 3.464*, p: 0.001
Mental condition			
Good	101	66.68 ± 6.80^{ac}	11.55 ± 7.04^{a}
Medium	130	67.29 ± 10.10^{bc}	14.80 ± 7.95^{b}
Poor	55	76.27 ± 11.01^{abc}	25.36 ± 12.13^{c}
		KW: 28.400**, p: 0.00	KW: 42.200**, p: 0.00
Life quality			
Good	55	66.87 ± 9.34^{ac}	9.74 ± 7.30^{a}
Medium	185	67.26 ± 8.86^{bc}	14.64 ± 7.15^{b}
Poor	46	77.30 ± 10.54^{abc}	26.95 ± 13.12^{c}
		KW: 33.281**, p: 0.000	KW: 66.947**, p: 0.000

[a,b,c]Post Hoc Bonferroni test, $p < 0.05$

*The Mann–Whitney *U*-test, $p < 0.05$

**The Kruskal–Wallis test, $p < 0.05$

co-workers and coping skills are protective factors of great importance against suicide (Kumar and George 2013). In a study that aimed to investigate the relationship of social circle, family relations and social support with probability of suicide, the researchers provided evidence that a functional family and social support lower the risk of suicide in patients (Compton et al. 2005). Avcı et al. (2016) found that people who used feeble and submissive coping styles had increased suicide probability, and that those who drew on an optimistic style and those who sought social support had decreased levels of suicide probability. According to WHO (2014), social extremes, including low and high income, constitute risk factors in respect of suicidal tendency. The reason of this may be that individuals with a lower socioeconomic position experience higher levels of adversity/stress and fewer life chances, a condition which could increase their susceptibility to mental illness and psychological distress (e.g. feelings of hopelessness, entrapment) (Knipe et al. 2015).

The study has shown that the study subjects who stated they had poor mental health, poor life quality and insufficient financials means, the ones who cannot receive support from their families, those who are single, high school graduates and the patients in the age group of 51–64 had statistically significant higher mean scores; we can say, in other words, that the conditions of these individuals would promote depressive tendencies. Forced to live with a chronic disease and to combat the resulting difficulties, in a condition that makes it almost impossible to regain and sustain the well-being, these individuals fall into despair and depression. Furthermore, difficulties and loss of certain abilities provoked by the disease have substantial impact on the mental condition and life quality of patients. On the other hand, exposure to a long-standing disease, the challenges of aging in the course of time, lack of support of a spouse for single patients, lack of support from their families are all factors that might promote depressive tendencies. Previous research has provided evidence that cancers, acute or

chronic disorders that must be surgically intervened and the very existence of a chronic disease increase the prevalence of depression (Goldberg 2010; Rittner et al. 2003). Similarly, Lou et al. (2012) found that KOAH patients had higher depression prevalence. In addition to such research, it is known, as also evidenced in the present study, some other characteristics, besides chronic disorders, do also promote depressive tendencies in patients. Another similar study performed with haemodialysis patients has provided evidence that the patients in the age group of 47–60 with lower income, and also women and married patients, unlike our study, had higher mean scores in Beck Depression Scale (Çelik and Acar 2007). Also unlike to our study, in a study carried out with 245 patients treated in the emergency department of a cardiology clinic, Kutlu et al. (2016) have shown that the patients having a job, patients with primary school and lower educational background and women had significantly higher anxiety and depression scores (Kutlu et al. 2016). Reviewing the findings of the present study and those of previous research, we see that the results similarly evidence that a lower life quality, insufficient financial means and poor mental condition promote depressive symptoms. However, whilst we have found in this study that single patients and high school graduates have higher depression levels, other studies have shown that married patients and those with lower educational level have higher levels of depression. It is probable that such varying results have roots in the loss of certain abilities, because the results of previous research indicate that depressive symptoms in patients with chronic disease rather result from the symptoms provoked by the disease itself (Goldberg 2010; Rittner et al. 2003).

Conclusion

From the results of the study it is possible to conclude that depressed patients have greater risk of suicide. In addition, poor life quality, low socioeconomic status and lack of support from the family substantially promote depression and suicide ideation.

The present finding suggests that enhancing the psychosocial social and economic support, promotion of good physical and psychological health that improve their quality of life are needed to reduce their suicide risk in patients with chronic disease.

In addition, depressed patients with a chronic illness should be identified early and offered appropriate treatment. Health-care professionals should be highly aware of the risk-relevant factors, with a view to the early detection of suicide intention, psychological screening and action plans for appropriate follow-up to reduce the suicide risk in chronic patients.

Nurses especially have a special role as important members of a healthcare team in detection and early intervention of comorbid depression and the suicide prevention .Therefore, nurses should assess the physical and mental symptoms, psycho-social problems and disability experienced by individuals with chronic diseases, and provide holistic care for patients' needs. Besides, interviewing the patients in face-to-face interviews, nurses serving in the fields of psychiatry and consultant liaison should provide them supporting therapies to protect-enhance the mental health of patients, reduce the symptoms and promote their life quality.

Limitations of the Study

The results of this study are limited on patients admitted in public hospital in Turkey, due to the diagnosis of chronic diseases, so they cannot be generalized on other cities in Turkey. The results of this study should be interpreted in light of its limitations.. Future studies on suicide risk and depression in individuals with chronic illness should be conducted with a larger sample size.

Compliance with Ethical Standards

Conflict of interest All listed authors meet the authorship criteria and that all authors are in agreement with the content of the manuscript. The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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