

A comparison of sleep, fatigue and quality of life of asymptomatic and schizophrenic individuals

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Abstract

Aim: The aim of this study was to compare the important parameters for life, such as sleep, fatigue and quality of life, between the asymptomatic and schizophrenic individuals.

Material and Methods: The study included 38 individuals diagnosed with schizophrenia by the psychiatrist and 39 asymptomatic individuals. All participants of our study applied to the outpatient clinic of Kirikkale High Specialization Hospital, Community Mental Health Center. Sociodemographic information of the individuals was questioned by the evaluation form. Sleep qualities of the individuals were evaluated with Pittsburgh Sleep Quality Index (PSQI), fatigue scores were evaluated with Fatigue Severity Scale (FSS), and quality of life scores were evaluated with World Health Organization Quality of Life Scale Brief Turkish Version (WHOQOL-BREF-TR).

Results: A total of 77 individuals aged between 20 and 71 were included in the study. The mean age of the individuals with schizophrenia was 40.07 ± 12.14 years, whereas the mean age of the asymptomatic individuals was 43.61 ± 12.19 years. When the quality of sleep and the sleeping medication use were examined between the two groups, it was found that there was a statistically significant difference ($p < 0.05$). When the total scores of the sleep quality questionnaires were evaluated between the two groups, it was detected that there was no statistical difference ($p > 0.05$). When the quality of life was evaluated between the two groups, it was seen that the physical and social sub-parameters of the patients with schizophrenia were worse ($p < 0.05$). It was detected that there was no statistically significant difference in evaluations of fatigue severity between the two groups ($p > 0.05$).

Conclusion: It was found that individuals with schizophrenia had a lower quality of life than asymptomatic individuals. We think that the physiotherapy and rehabilitation approaches in addition to medical and psychotherapy should be applied to improve sleep quality and quality of life in individuals with schizophrenia.

Keywords: Schizophrenia; Quality of Life; Sleep; Fatigue.

INTRODUCTION

Schizophrenia is a chronic clinical syndrome with frequent relapses, and often contains hallucinations or delusions and shows variability with behavioral, cognitive, emotional and other functional impairments (1). The age of onset, gender and social situation affect the clinical characteristics of schizophrenia patients (1,2). Clinical manifestations in schizophrenia patients are the appearance and behavior disorders, speech and thought problems, disorders in perception, mood disturbances, cognitive disorders, decreases in daily life activities and movement skills, excessive and irregular eating habit, irregular sleep-wake rhythm, cachexia, and metabolic

problems such as increased or decreased libido (1,3).

Frequent sleep disorders in schizophrenic patients are usually an important part of the clinical picture in the period when the disease is exacerbated (4,5). A regular night's sleep, which is among the most basic needs of human, is accepted to be one of the most important factors for health and quality of life at all ages (6). When the sleep quality is qualitatively and quantitatively poor; the attention/memory disorders, emotional variability, even hallucinations and delusions can be seen, the normal working efficiency decreases, and the severity of these symptoms may increase even more with the chronobiological changes (8-10). Even in the period when

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the clinical picture is in remission; sleep disorder persists due to irregular sleep hours in a shape of the sleep-wake disturbance or insomnia (3).

Schizophrenia patients report somatic complaints such as pain, fatigue, gastric restlessness independently from the psychotic symptoms (11). Psychophysiological investigations and clinical studies assert that the somatic symptoms such as palpitations, sweating, and hyperventilation are specific to anxiety, and manifestations such as anorexia and fatigue are specific to depression (12). In many studies, it was reported that the medically unexplained symptoms (reversal-aversive) such as chronic fatigue, pelvic pains, chest pain, chronic back pain, tinnitus, irritable bowel syndrome were seen in 2/3 of the cases with a history of recurrent major depressive disorder (13,14).

These disorders seen in the fields of emotion, thought and behavior, which are the most important functions of the brain, have profound effects on human relations, on real life events, and on quality of life (15). World Health Organization (WHO) expresses the quality of life as a meaning that revolves around the reality of life in every human and includes material, physical, social, emotional and mental health (16). Many negative situations affecting the quality of life of schizophrenia patients include depression and suicide, personality traits, cognitive and psychosocial dysfunction, disability, long and frequent hospitalization, lack of social support, economic problems, and drug side effects (17). In addition to the social withdrawal and social stigma caused by mental illness such as schizophrenia, internalized stigma causes the person to withdraw herself or himself socially from the society. This is one of the factors affecting the progress of the disease and the quality of life (18). Nowadays, the quality of life is used as an important tool in the evaluations of the schizophrenic patients' rehabilitation programs and the success of drug treatment (19). In addition, the main aim of schizophrenia treatment is directed to fully improve patients and increase the quality of life rather than reducing symptoms and signs of schizophrenia and preventing recurrences (20).

There are studies about quality of life and sleep in schizophrenia patients in the literature. In addition, the fact that studies were performed only on patients with schizophrenia takes attention. In this direction and with the present study, it was aimed to compare the important parameters for life, such as sleep, fatigue and quality of life, between the healthy and schizophrenic individuals.

MATERIAL and METHODS

In our study, 38 individuals diagnosed with schizophrenia by the psychiatrist and 39 asymptomatic individuals were chosen with simple random sampling. The subjects who formed the asymptomatic group were included in the study after being evaluated by the psychiatrist. All participants of our study applied to the outpatient clinic of Kirikkale High Specialization Hospital, Community Mental Health Center and were in compliance with the inclusion

and exclusion criteria of our study. Power analysis was performed to determine the number of individuals included in the present study. As a result of power analysis, when at least 70 participants were included in the study (at least 35 participants per group), it was calculated that 90% power was obtained with 95% confidence. Therefore, the study was conducted with 38 schizophrenia and 39 asymptomatic individuals. Individuals aged between 18 and 75 years who had no communication difficulties and problems and who volunteered to participate in the study were included in the study. The patients with heart disease, cardiac arrhythmias, cardiovascular disease, malignancy, the patients treated with chemotherapy and radiotherapy, the patients with any neurological or orthopedic disorders that may impair the balance (basilar artery failure, cervical stenosis, etc.) and pregnant women were not included in the study. This study was approved by Kirikkale University Clinical Research Ethics Committee decision number was 23/05. Informed Consent Forms were signed by all voluntary individuals included in the study.

Sociodemographic information of the individuals included in the study was questioned with the evaluation form. The demographic characteristics (age, weight, height, gender, body mass index (BMI) were recorded in the evaluation form. Sleep quality of the individuals was evaluated with PSQI, fatigue scores were evaluated with FSS, and quality of life scores were evaluated with the WHOQOL-BREF-TR.

PSQI: The PSQI used in the assessment of sleep disorders in patients was developed by Buysse et al. The validity and reliability study of the Turkish version of the scale was performed by Agargun et al. The PSQI is a self-report scale that consists of 19 items, and assesses sleep quality and impairment over the last month. Each item of the test is scored equally between 0-3. The scale consists of 7 subscales evaluating subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction. The total PSQI score ranging from 0 to 21 is obtained by totaling scores of the subscales. A total PSQI score greater than five indicates that the sleep quality of individual is insufficient with a sensitivity of 89.6% and a specificity of 86.5%, and that there is a moderate dysfunction in at least two of the above subscales or a severe dysfunction in three of them.

The FSS scale was used to measure the fatigue scores of the patients. FSS is a scale whose validity and reliability were proven (22). FSS is shown as the best example in one-dimensional scales. The person specifies how much she/he agrees to each item by choosing one of the digits from 1 to 7. The option 1 and 7 indicate strongly disagree and strongly agree, respectively. The total scores of the scale consisting of nine questions ranges from 9 to 63. A score of 36 or higher indicates severe fatigue (23).

WHOQOL-BREF-TR, which was used to determine the quality of life of alcohol-dependent women is a brief form translated into the Turkish language from the World Health Organization Brief Quality of Life Scale developed

by the World Health Organization. The original WHOQOL consists of 26 questions and 4 areas which are physical, mental, social and environmental areas, and national area was also added later to WHOQOL-BREF-TR. National area was formed by adding the 27th question, which evaluates the social pressure, to the questions in the environmental area. WHOQOL-BREF-TR has a Likert-type scale ranging from 1 to 5. In the evaluation, the questions 3, 4, 26, and 27, which have negative scoring, are inverted by making these questions into positive. The first two questions assessing quality of life and general health situations are the general questions, and the scores of these questions are not included in the sub-dimension scores, and are evaluated separately (24).

Statistical Analysis

Statistical analysis was performed using SPSS 24.0 software. The conformity of the variables to normal distribution was analyzed by visual (histogram and probability graphs) and analytical methods (Kolmogorov-Smirnov/Shapiro-Wilk tests). While the continuous variables in descriptive analysis were expressed using mean and standard deviations, categorical variables were expressed as numbers and percentages. Chi-square test was used to analyze the differences between categorical variables. Because the independent groups did not show normal distribution, the Mann Whitney U Test was used for the comparison of these groups.

RESULTS

77 individuals aged between 20-71 years were included in the study; and 38 of the individuals had schizophrenia and 39 were asymptomatic. The mean age of the individuals with schizophrenia was 40.07 ± 12.14 years, whereas the mean age of the asymptomatic subjects was 43.61 ±

12.19 years. It was found that there was no statistically significant difference between the groups in terms of age (p>0.05). The mean BMI value was 25.47±4.14 kg/cm² in the individuals with schizophrenia and 25.71±3.27 kg/cm² in the asymptomatic individuals, and there was no statistically significant difference between the groups (p>0.05). A total of 76.3% of the individuals in schizophrenia group were female and 23.7% were male; and 48.7% of the individuals in asymptomatic group were female and 51.3% were male. It was found that there was a statistically significant difference between the two groups in terms of gender (p<0.05) (Table1).

When the sleep quality was examined between the groups, it was seen that the sleep duration of asymptomatic individuals was longer. It was found that this difference was statistically significant (p<0.05). While the patients with schizophrenia were using sleeping medications, there was no sleeping medication use in asymptomatic individuals. It was found that this difference was statistically significant (p<0.05). When the total scores of the sleep quality questionnaire was evaluated, it was detected that there was no statistical difference between the groups (p>0.05).

When the quality of life was evaluated between the two groups, it was seen that individuals with schizophrenia (Table 2) had a poorer quality of life in the sub-parameters of physical and social areas (p<0.05). When the quality of life was evaluated in general, it was found that the individuals with schizophrenia had a poorer quality of life compared to the asymptomatic individuals (p<0.05). It was determined that there was no statistically significant difference between the groups in terms of fatigue severity (p>0.05) (Table 3).

Table1. Sociodemographic Features						
			n	Mean±SD	Median (min-max)	
Age (year)	Schizophrenic individual		38	40.07±12.14	39.5 (20-71)	0.170
	asymptomatic		39	43.61±12.19	45(25-62)	
Height (cm)	Schizophrenic individual		38	161.68±7.24	162 (150-178)	0.005
	asymptomatic		39	167.56±9.16	165(150-183)	
Weight (kg)	Schizophrenic individual		38	68±12.34	70 (42-94)	0.282
	asymptomatic		39	70±11.15	70 (50-88)	
BMI(kg/cm ²)	Schizophrenic individual		38	25.47±4.14	25.47 (16.41-33.33)	0.544
	asymptomatic		39	25.71±3.27	25.71 (18.72-33.29)	
Gender (n/%)	Schizophrenic individual	Women	38		29 (76.3%)	0.013*
		Men			9 (23.7%)	
	asymptomatic	Women	39		19 (48.7%)	
		Men			20 (51.3%)	
Dominant Hand (n/%)	Schizophrenic individual	Right	38		30	0.060
		Left			8	
	asymptomatic	Right	39		23	
		Left			16	

BMI: Body Mass Index

Table 2. Comparison of Sleep Quality of asymptomatic and Schizophrenic Individuals

SLEEP QUALITY		n	Mean±SD	Median (min-max)	p
Subjective Sleep Quality	Schizophrenic individual	38	0.86±0.96	1(0-3)	0.065
	asymptomatic	39	1.10±0.59	1(0-3)	
Sleep Latency	Schizophrenic individual	38	1.47±1.88	0(0-6)	0.510
	asymptomatic	39	1.33±0.92	1(0-3)	
Sleep time	Schizophrenic individual	38	0.26±0.82	0(0-3)	0.003*
	asymptomatic	39	0.69±0.69	0(0-3)	
Routine Sleep Activity	Schizophrenic individual	38	0.42±0.91	0(0-3)	0.794
	asymptomatic	39	0.35±0.35	0(0-3)	
Sleep Disorder	Schizophrenic individual	38	1.5±0.76	1(0-3)	0.670
	asymptomatic	39	1.43±1.43	1(0-3)	
Sleep Medicine Usage	Schizophrenic individual	38	1.65±1.5	2(0-5)	0.000*
	asymptomatic	39	0.00±0.00	0(0-0)	
Daytime Function Disorder	Schizophrenic individual	38	1.13±1.0	1(0-3)	0.563
	asymptomatic	39	0.94±0.82	1(0-3)	
Total	Schizophrenic individual	38	7.31±5.01	6(1-22)	0.271
	asymptomatic	39	5.87±3.35	5(1-17)	

Table 3. Comparison of Quality of Life and Fatigue Severity of asymptomatic and Schizophrenic Individuals

Quality of Life		n	Mean±SD	Median (min-max)	p
Physical Area	Schizophrenic individual	38	25.65±4.61	26(14-33)	0.017*
	asymptomatic	39	28.07±4.54	29(15-35)	
Mental Area	Schizophrenic individual	38	20.71±5.76	20(9-31)	0.231
	asymptomatic	39	22.20±4.49	23(9-30)	
Environmental Area	Schizophrenic individual	38	26.07±4.81	26(17-36)	0.153
	asymptomatic	39	27.58±5.23	28(12-40)	
Social Area	Schizophrenic individual	38	9.18±4.54	8.5(3-25)	0.000*
	asymptomatic	39	11.07±2.60	11(4-15)	
Public Area	Schizophrenic individual	38	29.71±5.03	30(21-40)	0.230
	asymptomatic	39	30.89±6.58	31(9-45)	
WHO total	Schizophrenic individual	38	111.34±18.28	111(77-145)	0.034*
	asymptomatic	39	119.84±20.05	118(57-165)	
Fatigue Severity	Schizophrenic individual	38	32.07±14.18	27.5(9-63)	0.146
	asymptomatic	39	36.79±14.34	39(9-62)	

DISCUSSION

As a result of the present study, it was determined that the individuals with schizophrenia had lower qualities of sleep and life compared to the asymptomatic individuals.

In our study, when the rates of women and men in both groups were compared, it was seen that individuals with schizophrenia were mostly composed of women. In literature, there are many studies showing that having female gender increases the frequency of schizophrenia especially in individuals over 40 years of age (25). In a review conducted by Rössler et al. in 2018, it was emphasized that the incidence of schizophrenia in advancing age is higher in women, and the estrogen hormone has protective task between hypothalamus, pituitary and ovarian glands

in women (26). In a study of Castle et al., it was shown that the incidence of schizophrenia was higher in men at early ages, whereas the incidence of schizophrenia in advancing age, especially after 40 years of age, was higher in married women with children (25). In a study performed on 102 female and male schizophrenic individuals by Kocsis- Bogar et al., it was emphasized that the trauma at an early age is higher risk factor for schizophrenia in women compared to men (27). Similar to the literature, in our study, it was seen that there were more female individuals in the schizophrenia group.

Although the studies about sleep in schizophrenia offer a perspective in understanding the neurobiology of the disease, the relationship between sleep and schizophrenia is complex because of the heterogeneous nature of the

disease. For this reason, an original sleep pattern cannot be defined in studies of sleep of the patient group in which the disease is heterogeneous, and it requires occasional drug use. However, studies on different types of schizophrenia with drug-free patients may give more effective and objective results (2,5).

In the study performed by Yetkin et al., the patients who did not use drugs, and who discontinued their medications for at least two months were included in the study. When the data of these two schizophrenia groups were compared with the control group separately in both groups, it was detected that the sleep continuity was impaired and REM sleep was decreased (4).

In a study by Wulf et al., the melatonin levels and activities in 48-hour sleep/wake cycle per week for 20 weeks were compared between 20 schizophrenic and 20 healthy individuals. As a result, it was seen that there was a significant disorder in sleep and melatonin metabolism of all schizophrenic patients. Despite newer antipsychotic treatment, stability in mood and mental state, it was shown that the sleep/wake disruptions exist in the individuals with schizophrenia. It was reported that this situation cannot be explained by the individuals' level of everyday function (28).

In a review performed in 2008, it was emphasized that 30 to 80% of patients with schizophrenia may have sleep disorders and this depends on the degree of psychotic symptoms. It was shown that there were changes in the second stage of sleep. It was also emphasized that these changes were reductions in the delay and intensity of REM sleep. It was stated that many sleep parameters such as slowed eye movements and delay in REM sleep were associated with clinical changes, severity of the disease, positive symptoms, negative symptoms, neurocognitive disorder and brain structure (5).

In a study conducted by Wirz-Justice et al., they investigated the effects of drugs used by individuals with schizophrenia on the resting cycle (29). As a result of our study, when the sleep quality of individuals was examined, it was seen that the sleep duration of healthy individuals was longer. Although the patients with schizophrenia use sleeping medication, it was concluded that sleep duration of schizophrenic patients was shorter compared to healthy individuals. As a result of the present study, the variables indicating deterioration of sleep continuity such as the decrease in sleep efficiency and total sleep time, elongation at sleep latency, increase in number of nocturnal awakenings, were similar to the results reported in most sleep studies performed on schizophrenia patients (30,31).

According to the results of the study performed on 111 individuals with schizophrenia, it was shown that health-related quality of life of individuals with schizophrenia was impaired (32). In a study by Parletta et al., the individuals with mental problems and the healthy individuals were compared in four different countries. They stated that

lower physical activity was associated with lifestyle factors in the individuals with mental problems. Also, they investigated these lifestyle factors. In a research performed on 672 people, unhealthy diet, low physical activity levels, smoking and sleep problems were identified as risk factors for both physical and mental illness. They showed that the education level was an important factor on health-related quality of life, primary care and prevention of illness in individuals with mental illness (33).

In a study by Domenech et al., it was showed that the quality of life changed in a negative way within 1 year in the 1196 schizophrenia patients over 18 years of age who were treated in outpatient clinic and did not have acute psychotic exacerbation for at least 3 months (17). In a study performed by Lien et al. in 2018, it was emphasized that the cognitive insight, self-stigma and medication compliance affected the quality of life in 170 community-dwelling patients with schizophrenia, and this situation should be taken into consideration in the treatment process of individuals at risk (34).

In a meta-analysis performed by Ohi et al., the quality of life and physical activity levels were evaluated in 212 schizophrenic patients and 132 healthy individuals. As a result, it was stated that the decrease in physical activity levels of the individuals with schizophrenia was due to low quality of life and social functioning. It was shown that factors such as social functioning and quality of life had important effects on the increase of individuals' participation in physical activity (35). In a literature review performed by Krystal et al., they investigated the effects of sleep disturbance on quality and function of life in mood disorders, alcoholism, and schizophrenia. They emphasized that sleep disturbances were effective in quality and function of life in all disease groups. They emphasized that although there are studies suggesting that support should be given for mood disorders and alcoholism, there is no enough literature about support in schizophrenia.

Similar to the literature, in our study, it was found that individuals with schizophrenia had a lower quality of life than healthy individuals. We think that the physiotherapy and rehabilitation approaches in addition to medical and psychotherapy should be applied to improve sleep quality and quality of life in individuals with schizophrenia. It was found that the individuals with chronic mental illness who participated in physical activity programs felt better mentally and were more compatible with drug therapy or therapeutic interventions. Also, it was detected that these activities decreased anxiety, strengthened physical self-perceptions, increased social functionality, and made night sleep more quality by decreasing daytime sleep (37). In addition to these effects, exercise may provide additional benefits in preventing substance use because it activates dopaminergic reward pathway (38). Therefore, the specialized, systematic, planned and continuous physical activity programs should be developed for all psychiatric patients and these programs should be applied to patients.

CONCLUSION

In a research performed by Waters et al. in 2013, 93 individuals with psychotic problems were classified according to their sleep levels and fatigue measurements. It was observed that 60.7% of participants had increased fatigue levels, 67% had sleep problems and 28.4% had both. It was found that sleep satisfaction was associated with fatigue symptoms, and that fatigue adversely affected functional health in individuals without sleep problems (39). A double blind, placebo-controlled study performed by Freudenreich et al., they compared the efficacy of the modafinil and different drugs on negative symptoms such as fatigue in schizophrenic patients (40). They stated that different drugs such as modafinil should be investigated for fatigue instead of the drugs used in the routine; however, their research with 35 people remained limited. They emphasized that the drugs should be applied in a greater number of individuals in order to show the efficacy of them. In the results of our study, there was no difference between individuals with schizophrenia and healthy individuals in terms of fatigue. In the literature, although there are results that are similar to our results, no consensus has yet been reached on this issue. A limited number of studies were reported about fatigue levels in individuals with schizophrenia. This situation reveals the importance of our study. In addition, we believe that encouraging programs for patients with psychiatric disorders, such as schizophrenia, to do regular exercise should be organized and applied.

Limitation

In the present study, physical activity levels of individuals were not determined. We think that physical activity levels should be questioned in future studies.

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