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Comparison of Psychological Problems and Sleep Quality in Two Groups of Cyberbullying Victims and Normal People

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ABSTRACT: Cyberbullying, harassment of others through new technologies, is a growing phenomenon that has important consequences for its victims. The purpose of this study was to compare psychological problems (depression, anxiety & stress) and sleep quality in two groups including victims of cyberbullying and a normal group using a causal-comparative design. The design of this research was causal comparative. The statistical population of this research included all male adolescents in Zanjan City, Iran during the 2020 year. The participants of this study were 100 male adolescents (50 victims of cyberbullying & 50 normal people), who were selected by multi stage random sampling. The instruments used in this study were Cyberbullying Experiences Questionnaire (CEQ), Depression- Anxiety- Stress Scale (DASS) and Petersburg Sleep Quality Questionnaire (PSQI). Results indicated that index of F in Quality of sleep was equal to 28.54, in Depression, 15.82, in Anxiety, 22.71, and in Stress, 34.87. The results of Multivariate Analysis of Variance (MANOVA) showed that there were significant differences ($p<.01$) between Quality of Sleep, Depression, Anxiety and Stress in victims of cyberbullying group and the normal group. The results of the current study showed that there were differences between victims of cyberbullying adolescents and normal adolescents in quality of sleep, depression, anxiety and stress. In fact, victims of cyberbullying group had higher scores on depression, anxiety and stress than the comparison group and also they had lower quality of sleep than the comparison group.

Keywords: Psychological problems, sleep quality, victims of cyberbullying.

Introduction

The use of internet and smartphones has increased rapidly and they have turned into the most popular means of communication for people (Longobardi et al., 2021). There is no doubt that technology has been made to make people's lives easier and more comfortable. Research has shown that using social networks can be very helpful to people in a variety of ways, by encouraging people to learn to use modern social media tools. More communication with foreign people may lead to more information sharing, and this in turn can lead to more interaction and creativity among people. However, on the other hand, it has led to negative consequences, including cyberbullying (Rasheed et al., 2020). In other words, regardless of the convenience provided, constant exposure to and interaction with online technologies makes users prone to some online interactions, which in some cases, may endanger their safety and mental health (Abaido, 2020).

In general, cyberbullying is recognized as a serious problem that affects all countries (Lozano-Blasco, Cortés-Pascual, & Latorre-Martínez, 2020). Cyberbullying is a systematic abuse of power that occurs through the use of information and communication technology (Slonje, Smith, & Frisén, 2013). Awareness of cyberbullying originated in the United Kingdom around 2001 (Smith et al., 2008).

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Cyberbullying is a deliberate and repetitive act to harm or humiliate someone who uses information and communication technologies such as cell phones, emails, and social media (Balakrishnan, Khan, & Arabnia, 2020). Also, cyberbullying is implemented via the use of internet, email, chat rooms, instant messaging, and websites. With the increasing penetration of computers as well as virtual networks and mobile phones among young people, the likelihood of cyberbullying has also increased (Smith et al., 2008). The most negative effect of cyberbullying is the use of internet to destructively, repetitively, and hostilely harm individuals or groups (Huang, Zhong, Zhang, & Li, 2021). Cyberbullying is different from traditional bullying. Traditional bullying is face-to-face, so people can go far away from it or ignore it. But in cyberbullying, people can turn off internet and ignore it for a while, but when re-entering social networks, messages have remained (Singh, 2021). Thus, a single act may be repeated by a perpetrator and experienced many times by the victim (Slonje et al., 2013). In a study, Jaghoory, Björkqvist, and Österman (2015) surveyed 630 Iranian and 620 Finnish adolescents to examine the differences between them in terms of cyberbullying and victims of cyberbullying since research on cyberbullying is scarce. Iranian students scored higher in both cyberbullying and victims of cyberbullying. Regarding gender differences, Finnish females were more exposed to cyberbullying, while no gender differences were found in the Iranian sample. Problems with cyberbullying indicate widespread tensions (Oksanen, Oksa, Savela, Kaakinen, & Ellonen, 2020). Cyberbullying is associated with long-term psychosocial problems (Ansary, 2020). Cyberbullying, bullying of others through new technologies, is a growing phenomenon that has important consequences for its victims. Given the growing interest in this new form of violence, research shows a link between victimization of cyberbullying and psychological problems, such as depression in adolescents (Calvete, Orue, & Gámez-Guadix, 2016).

Depression is a long period of sadness, bad mood and isolation. Clinical depression causes a person to be unable to perform the normal tasks of daily life well (Ganji, 2016). Mood disorders (sometimes called emotional disorders) are an important category of psychiatric diseases. A variety of traits are used to describe mood: depressed, sad, upset, happy, manic, and happy. Other signs and symptoms of mood disorders include changes in activity levels, cognitive abilities, speech, and vegetative functions such as sleep, sexual activity, and other biological systems. These changes always disrupt the patient's interpersonal, social, and occupational functions (Kaplan, Sadock, & Grebb, 1994).

Depression is widespread among adolescents. Adolescence is the most difficult stage of all ages. Adolescent transfer is very challenging. Because this is a period when everything starts to change. There can be a lot of stress at this stage, and things that adolescent have never thought about will bother them. For example, relationship problems, parenting, school grades, and cyberbullying today. Because they have less self-confidence, feel anxious, frustrated and stressed, and prefer to be alone and try to spend their time online (Singh, 2021). The effect of cyberbullying victimization on depression is caused by changes in adolescent cognitive systems. Thus, cyberbullying is a major risk factor for lifelong depression (Calvete et al., 2016). The results of research by Wright and Wachs (2019) showed that there is a positive relationship between cyberbullying, depression and anxiety. In

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another study, W. Wang et al. (2019) showed that committing cyberbullying had a positive and significant predictive effect on depression. In addition, in a study by Rey, Quintana-Orts, Mérida-López, and Extremera (2020) analyzed the relationship between positive personality resources and clinical symptoms in 251 adolescent victims of cyberbullying in several Spanish high schools. Victims of cyberbullying who showed signs of depression reported lower levels of personality resources.

Another mental health problem that exists in adolescents who are victims of cyberbullying is anxiety. Cyberbullying predicts anxiety disorders in adolescence (Lee, 2021). Anxiety is an unpleasant emotional state that arises from a threat to one's health which is characterized by a negative impact in which the person focuses on the likelihood of risk of error or misfortune (Barlow, Durand, & Hofmann, 2016). Anxiety disorders are one of the most common classes of mental disorders and are associated with many complications and are often chronic and resistant to treatment (Kaplan et al., 1994). Using digital media, researchers have found that exposure to technology-based social networks sites can affect adolescent anxiety through negative social comparisons, leading to negative self-esteem or anxiety. Thus, the desire to be constantly connected to the social networks through digital devices, potentially contributes to the feeling of anxiety (Hoge, Bickham, & Cantor, 2017).

Cyberbullying generally creates problematic external behaviors over time, and virtual space is a risk factor for anxiety (Grigore & Maftei, 2020). Victimization of cyberbullying increases the likelihood of high anxiety (Martínez-Monteagudo, Delgado, Díaz-Herrero, & García-Fernández, 2020). The results of the study by Jenaro, Flores, and Frías (2021) showed that victims of cyberbullying scored higher on anxiety symptoms than normal individuals. Another study by Skilbred-Fjeld, Reme, and Mossige (2020) showed that anxiety is a serious problem among adolescents experiencing cyberbullying; there are statistically significant differences in the psychological results of most victim groups with normal individuals; and adolescent victims of cyberbullying had almost four times the risk of anxiety. Also in the research of Wright and Wachs (2019), the results showed that the victimization of cyberbullying has a positive relationship with the rejection of peers and anxiety in adolescents. The results of Chu, Fan, Liu, and Zhou (2018) showed that the victimization of cyberbullying has a direct relationship with anxiety after controlling the gender and age of the participants.

Also, according to research, most victims of cyberbullying have reported the stress caused by these behaviors. In this case, stress is defined as a physical or psychological response to any demand that leads to tension, such as anxiety. The stress that people perceive is a reaction to a stressful situation that leads to anxiety, fear, and frustration due to cyberbullying (Chu et al., 2018). Repetition of cyberbullying leads to emotional and stressful reactions. Coping styles vary according to individual differences and how individuals evaluate each threat. As a result, it can have acute effects in the short term or chronic effects in the long term (Alhujailli, Karwowski, Wan, & Hancock, 2020). The results of research by González-Cabrera, Calvete, León-Mejía, Pérez-Sancho, and Peinado (2017) showed that stress is associated with victimization of cyberbullying. Measuring patterns of cortisol secretion (stress hormone) and perceived stress is also more common in victims of cyberbullying. In another

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study, Martínez-Monteagudo et al. (2020) showed that suicidal ideas increased among victims of cyberbullying and they showed high levels of anxiety, depression, and stress.

In addition, another problem that victims of cyberbullying suffer from which is the sleep quality. Sleep quality is conceptually defined as the feeling of readiness and energy to start a new day immediately after waking up, and this is one of the concepts that is considered important today. Sleep quality and related problems are some of the factors that can affect health. Psychological and emotional problems related to poor sleep quality negatively affect adolescents' virtual behaviors and interactions, lead them to commit cyberbullying (Kırcaburun & Tosuntaş, 2018) and affect many cognitive abilities (Ellis, Walczyk, Buboltz, & Felix, 2014). To have a healthy, happy and good life, you need a quiet and quality sleep (Ozdemir, Boysan, Selvi, Yildirim, & Yilmaz, 2015). Sleep disorders increase negative evaluations and hostile interpretations of others' behavior by affecting attention processing and evaluation (Krizan & Herlache, 2016).

Research by Kırcaburun and Tosuntaş (2018) has shown that cyberbullying is associated with gender, personality, and sleep quality. The relationship between the victimization of cyberbullying and sleep problems is influenced by the frequency of victimization (Q. Wang, Liu, & Mati, 2020). Also, the results of research by Kwon et al. (2020) showed that poor sleep quality has a significant indirect effect on the relationship between victims of cyberbullying and depression symptoms. Victims of cyberbullying lead to poor sleep quality as well as poor sleep quality affecting depression symptoms. In particular, adolescent victims of cyberbullying led to poor sleep quality as well as poor sleep quality increased depression symptoms.

According to the literature and research background, in the present study, this question has been raised: Is there a difference between psychological problems and sleep quality in the two groups of victims of cyberbullying and normal people?

Research Hypothesis: Hypothesis: There is a difference between anxiety, stress and sleep quality in adolescent victims of cyberbullying with normal adolescents.

Material and Methods

The present study was a descriptive causal-comparative study. The statistical population of this study included all male adolescents in Zanjan in 2020. From this population, 300 people were selected as the study sample using simple random sampling method. Participants matched with the components of age and educational, social and economic status, which were first identified and measured through the Cyberbullying Experiences Questionnaire (CEQ). In this study, finally, 100 people were randomly selected from adolescents in Zanjan, and informed of the purpose of the study, observing ethical considerations.

Cyberbullying Experiences Questionnaire (CEQ): In order to identify the victims of cyberbullying, the Cyberbullying Experience Questionnaire (CEQ) was used in this study. It consists of 6 questions that can be scored from zero (never) to 3 (always) using a 4-point Likert scale (Yen et al., 2014). This scale includes 2 subscales to evaluate cybercrime and victimization experiences via email, blog, social

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media such as Facebook, Twitter and video clips or pictures. The first three items measure experiences of posting bad comments and cyberbullying, sending pictures, photos or videos that upset people and spreading rumors online. The last three items measure experiences related to the types of victimization (Hu et al., 2019). Cronbach's alpha indices for these two subscales in Hu et al. (2019) study were 0.64 and 0.70. Cronbach's alpha of the cyberbullying victim subscale in the study of Chu et al. (2018) was 0.82. In the present study, the Cronbach's alpha value of this subscale was 0.72.

Depression- Anxiety- Stress Scale (DASS): The Depression- Anxiety- Stress Scale (DASS) was used to measure depression, anxiety and stress. This scale scores depression, anxiety, and stress on a 4-point Likert scale (zero= is not true about me at all, and 3= is true about me completely) (Zlomke, 2009). This scale includes 3 subscales of anxiety, depression and stress, each of which has 7 items. Depression subscale includes statements that measure unhappy mood, lack of self-confidence, hopelessness, worthlessness of life, lack of interest in engaging in affairs, lack of enjoyment of life, and lack of energy and ability. The subscale of anxiety includes statements that measures physiological arousal, situational fears and anxieties. And the stress subscale includes statements about difficulty in achieving calm, nervous tension, irritability and restlessness (Lovibond & Lovibond, 1995). In a study by Clara, Cox and Ines (2001), using confirmatory factor analysis, the scale was performed on depressed and anxious patients and Cronbach' s Alpha indices of depression, anxiety and stress were calculated as 0.92, 0.81 and 0.88 (Zanon et al., 2021). In the present study, Cronbach' s alpha indices of depression, anxiety and stress were calculated as 0.87, 0.90 and 0.71. In the present study, the validity of this questionnaire was examined by confirmatory factor analysis. All items had a factor load greater than 0.40.

Petersburg Sleep Quality Questionnaire (PSQI): To measure sleep quality, the Petersburg Sleep Quality Questionnaire was used, which includes 9 questions and measures7 components: psychological sleep quality, sleep delay, sleep duration, sleep efficiency and effectiveness, sleep disorder, amount of sleeping pills, and dysfunction (Zar, Ahmadi, & Shayan Nooshabadi, 2020). This scale is scored in a 4-point Likert scale (from zero to 3 points): Zero (no), 1) less than once a week, 2) once or twice a week, and 3) three or more times a week (Mostafaei, 2021). The total score is in a range from 0 to 21. A high score in each question or in the total score indicates the poor sleep (Babamiri, Moeini, Tahmasian, Roshnai, & Barati, 2016). Zhang et al. (2019) in a study obtained the reliability coefficient of the PSQI as 0.73.

In Iran, in the research of M, Alavi, Ghalehbandi, B, and A (2008), Cronbach's alpha coefficient of this questionnaire was 0.78 to 0.82. In another study by Sarabadani, Morovati, and Bakhshi (2019), the reliability coefficient of the PSQI was 0.72 and the validity of this scale was examined by confirmatory factor analysis method. It was revealed that all the items had a factor load bigger than 0.40. In the present study, the validity of this questionnaire was examined by confirmatory factor analysis. The results showed that all the items had a factor load greater than 0.40 and the reliability of this questionnaire was obtained 0.81 by Cronbach's alpha method.

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Results

Table 1 show mean and standard deviation of study variables in cyberbullying victimization and normal groups.

Table 1. Mean and Standard Deviation of study variables in cyberbullying victimization and normal groups

Variables	Group	Mean	SD
Quality of Sleep	cyberbullying victimization	15.70	4.04
	Normal	10.44	5.66
Depression	cyberbullying victimization	17.06	3.38
	Normal	12.54	7.28
Anxiety	cyberbullying victimization	15.74	3.65
	Normal	10.02	7.65
Stress	cyberbullying victimization	17.34	2.74
	Normal	11.26	6.74

As can be seen in Table 1, the highest and lowest mean (standard deviation) among the adolescent victims of cyberbullying belonged to the stress (17.34 (2.74)) and the quality of sleep (15.70 (4.04)), respectively. Before using the multivariate analysis of variance (MANOVA) test, Box and Levin test was used to check its assumptions. This test was not significant for any of the variables, so parametric tests can be used for data analysis.

Table 2. Multivariate Tests for Compare Means of Quality of Sleep and Depression, Anxiety and Stress in cyberbullying victimization and Normal adolescents

Effect	Value	F	Hypothesis df	Error df	*p*
Pillai's Trace	.526	26.398	4.000	95.000	.000
Wilks' Lambda	.474	26.398	4.000	95.000	.000
Hotelling's Trace	.674	26.398	4.000	95.000	.000
Roy's Largest Root	.674	26.398	4.000	95.000	.000

According to Table 2, it can be inferred that there is a significant difference between adolescent victims of cyberbullying and normal group in terms of at least one of the dependent variables.

Table 3. Tests of ANOVA for Compare Means of Quality of Sleep and Depression, Anxiety and Stress in Cyberbullying Victimization and Normal adolescent

Source	Dependent Variable	SS	DF	MS	F	*p*	Eta
Group	Quality of Sleep	691.69	1	691.69	28.54	.000	0.226
	Depression	510.76	1	510.76	15.82	.000	0.139
	Anxiety	817.96	1	817.96	22.71	.000	0.188
	Stress	924.16	1	924.16	34.87	.000	0.262

According to Table 3, there is a significant difference between adolescent victims of cyberbullying and normal group in terms of all research variables. The results of this table show that there is a significant difference between quality of sleep, depression, anxiety and stress in adolescent victims of cyberbullying and normal group. Therefore, the research hypothesis was confirmed.

Discussion

In the present study, a comparison of psychological problems and quality of sleep in two groups of victims of cyberbullying and normal people was performed. The results showed that there was a difference between the two groups of victims of cyberbullying and normal people. Victims of cyberbullying are more likely to have psychological problems and poor sleep quality. Gámez-Guadix, Orue, Smith, and Calvete (2013) in a study using structural equation modeling analysis, showed that victimization of cyberbullying predicts depression symptoms and problematic internet use. In another study, Niu, He, Lin, Sun, and Longobardi (2020) showed a significant direct relationship between victimization of cyberbullying and depression. Also in the research of Wright, Wachs, and Harper (2018), it was shown that there is a significant relationship between victimization of cyberbullying, anxiety and depression. The results of the research of Garaigordobil and Machimbarrena (2019) showed that people who were victims of cyberbullying scored higher on all aspects of stress. In explaining the results, it can be inferred that the ease of access to technological tools such as computers and mobile phones and their improper use, has made cyberbullying an increasing and serious problem. Exposure to repeated and severe stress severely impairs the health and function of individuals, and this in turn causes very serious and lasting effects, including the development of mental disorders. Thus, cyberbullying is associated with various psychological problems and the relationship between victimization of cyberbullying and the mental symptoms of stress and anxiety is justified by the cortisol reaction. In addition, victimization of cyberbullying causes mood disorders and depression.

Another variable that was studied in this study in adolescent victims of cyberbullying was quality of sleep. The results of the present study showed that victims of cyberbullying have poorer sleep quality compared to normal people. In the studies of Liu, Liu, and Yuan (2021), the results showed that cyberbullying and quality of sleep predicted each other over time, and that there were significant two-

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way relationships between quality of sleep and emotional disorders. Also in the research of Tu, Spencer, El-Sheikh, and Erath (2019), the results of regression analysis showed that the prediction of quality of sleep is poorer in adolescent victims than their peers over time. In other words, the findings provided evidence that peer victimization experiences could negatively affect adolescents' quality of over time. In explaining the results, it can be inferred that sleep is one of the basic human needs that is necessary to maintain energy, physical condition and physical well-being, and reduces anxiety and stress, but any disturbance in its normal flow causes psychological problems. Poor sleep has negative consequences for personal and interpersonal functioning. Given that adolescents' social lives increasingly include interactions through digital media, according to Erreygers, Vandebosch, Vranjes, Baillien, and De Witte (2019), such interactions also decrease the quality of sleep by increasing sleep problems in adolescent victims of cyberbullying.

Since better understanding the phenomenon of cyberbullying requires more research to examine this phenomenon among different groups, it is suggested that the phenomenon of cyberbullying be studied and compared between different groups, for example, in the group of females and males. In this study, psychological problems (depression, anxiety and stress) and quality of sleep of cyberbullying adolescents and normal adolescents were compared. It is suggested that this phenomenon be compared with other variables in future research. Practical suggestions can also be given to parents, adolescents and school members to be aware of the phenomenon of cyberbullying and the consequences of becoming a victim, and also to be trained in strategies to prevent cyberbullying and victimization and how to use internet appropriately through educational classes. It is worth noting that this study suffered some limitations. For instance, the sample group was delimited to just male adolescents. Therefore, generalizations to other age and gender groups should be made with caution. It is suggested that other studies compare victims of cyberbullying in terms of other psychological variables with male and female samples.

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