KMAN PUBLISHING INSTITUTE
Journal Website

Article history:
Received 03 November 2023
Revised 20 December 2023
Accepted 26 December 2023
Published online 08 January 2024

Journal of Adolescent and Youth Psychological Studies

Volume 5, Issue 1, pp 19-26

E-ISSN: 2981-2526

The Effectiveness of Active Music Therapy on Anxiety and Sleep Quality in Adolescents Aged 11-14 with Stargardt Disease

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A r t i c l e I n f o

Article type:
Original Research

How to cite this article:
Mazloum Vajari, S., Ghasemnejad, S. M., Rahimibashar, M., & Foroughi Kaldareh, Z. (2024). The Effectiveness of Active Music Therapy on Anxiety and Sleep Quality in Adolescents Aged 11-14 with Stargardt Disease. *Journal of Adolescent and Youth Psychological Studies, 5*(1), 19-26.
http://doi.org/10.61838/kman.jayps.5.1.3

A B S T R A C T

Objective: This study aimed to examine the effectiveness of active music therapy on anxiety and sleep quality in adolescents aged 11-14 with Stargardt disease.

Methods and Materials: The current research is a quasi-experimental study with pre-test, post-test, and a control group. In this study, 20 patients with Stargardt disease were selected through convenience sampling and divided into two groups: experimental and control (10 individuals each). They responded to the Spielberger Anxiety Inventory and the Petersburg Sleep Quality Index. Subsequently, training sessions were conducted, followed by post-tests and a one-month follow-up. The research data were analyzed using SPSS software version 22 and the covariance analysis method.

Findings: The findings indicated that active music therapy was effective in reducing anxiety and improving sleep quality in adolescents with Stargardt disease ($P < 0.01$).

Conclusion: Music therapy is an affordable, effective, and side-effect-free method that can be introduced for reducing anxiety and improving sleep quality. Health-related centers can utilize it to create better living conditions for such individuals.

Keywords: *Active Music Therapy, Anxiety, Sleep Quality, Stargardt Disease.*

1. Introduction

Music has historically been used as a tool for creating excitement and motivation, as well as for therapeutic purposes. Music is the art of expressing emotions through sounds (Efendi & Tane, 2019). Music therapy is a type of health service similar to physical therapy. This therapy involves the therapeutic use of music to influence the physical, psychological, cognitive, and social functioning of individuals at any age (Loewy, 2020).

Nowadays, music therapy is a popular method worldwide for achieving therapeutic goals. Since 1950, music therapy has been recognized as a structured and professional field. In music therapy, music is not just a means of entertainment but a prescribed corrective agent that helps to improve maladaptive behavioral states. It involves the prescribed and organized use of music or its activities under the supervision of trained personnel or music therapists to help clients achieve therapeutic goals. Music therapy is used for its effectiveness in alleviating physical pain in homes and hospitals, aiding childbirth, balancing mood, physical rehabilitation, aiding in relaxation and sleep, facilitating learning, and overall assisting individuals in almost all areas of life. Music therapy is a legitimate and recognized method worldwide, similar to occupational and physical therapy, and is used for physical, psychological, cognitive, behavioral, or social functioning solutions (Anggerainy et al., 2019; Shum et al., 2014).

Stargardt disease, an autosomal recessive disorder, is the most common inherited macular dystrophy, with a prevalence of one in ten thousand, accounting for approximately seven percent of all retinal dystrophies. Its manifestations include a gradual and bilateral decrease in central vision during the first and second decades of life, with a poor visual prognosis (Fujinami et al., 2015). The basis of Stargardt disease is predominantly genetic, and to date, no comprehensive treatment has been proposed for all types of Stargardt. The variety of Stargardt disease is significant. Vision loss or impairment creates substantial personal and social challenges. A blind person is unable to perform daily activities and live independently, and also faces difficulties in communicating with others, requiring assistance (Fujinami et al., 2015). A thorough examination of this disease and understanding its cause is crucial as it can progressively reduce an individual's vision to the point where they can only perceive the presence of light. The genes causing this disease are mostly transmitted in an autosomal recessive manner; considering this mode of inheritance, there is a 25 percent chance of the children being affected. This gene is responsible for encoding a transport protein. Mutations in this gene hinder the synthesis of vitamin A, leading to the accumulation of toxic deposits called lipofuscin in the pigment epithelium layer of the retina, a protective cell layer. This accumulation results in the dysfunction of these cells and, due to the lack of nutrients, the photoreceptors deteriorate over time, significantly impairing vision. The age of onset and severity of symptoms in this disease vary, but in most cases, symptoms appear during childhood and adolescence. While this disease affects vision and the retina, the extent and severity of its impact can vary greatly from one individual to another. In some cases, a person's vision may remain stable for years, but suddenly experience a significant decline (Mills et al., 2017). The latest estimate by the World Health Organization shows that 161 million people worldwide have visual impairments (37 million of whom are blind). Indeed, the eye is one of the most important organs through which we perceive a vast amount of information about our surroundings. Eye injuries are among the most common reasons for seeking medical attention and can lead to irreversible or debilitating complications if severe (Rahnamaei Zonooz et al., 2010). The onset of this disease occurs at a point in the center of the retina and degenerates over time, enlarging the patient's blind spot. Differences in the onset of the disease can affect treatment methods. In most cases, both eyes are simultaneously affected by this condition, and one eye may progress faster than the other. This disease causes difficulties in performing precise and delicate tasks. The most common symptoms of this disease include severe central vision loss, rare peripheral vision loss, color vision impairment, and difficulty seeing in bright light. Night blindness and narrowing of the visual field typically do not occur in this disease and are more indicative of retinitis pigmentosa. In most cases, the vision of patients with Stargardt's disease stops at 20/200 (Mills et al., 2017).

Research on individuals with various chronic diseases has shown that psychological issues such as anxiety affect their illness and impact their physical and mental health. High levels of stress, poor social interactions with friends, and even problems with parents can have negative effects on the symptoms of the disease and the individual's adaptation to the physical illness (Aa et al., 2015; Alqahtani & Mahfouz, 2022; Fujinami et al., 2015; Law et al., 2019; Marinelli et al., 2020; Sajadinejad et al., 2012). Situational anxiety is considered when a person perceives an upcoming situation as threatening and may regard anxiety as an internal pain that causes excitement and disrupts the existing balance (Martino et al., 2020). Anxiety is a warning sign, indicating imminent danger and preparing the person to face the threat. Anxiety is a reaction to an unknown, internal, vague threat, and its source is often associated with conflict. The typical duration of anxiety distress suggests the presence of some form of harm. Physical injuries may cause or exacerbate anxiety, and this condition may lead to stereotypical behavioral responses such as avoidance or lifestyle restrictions (Alqahtani & Mahfouz, 2022; Law et al., 2019).

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Mental health is an important dimension of individual and societal well-being, and anxiety, as a mental health factor, not only creates problems for the individual but also interferes with their professional roles and responsibilities. Anxiety affects personal functioning and is recognized as a significant disorder that jeopardizes mental health, so much so that approximately ten percent of people will experience it at least once in their lifetime, making it a significant factor in social, cultural, and familial problems. Music can have a positive effect in reducing psychological factors and mental health issues (Matney, 2017). Sleep is one of the most important circadian cycles and a complex biological pattern, and human health is related to the quantity and quality of sleep. Sleep is a basic human need and an organized behavior that repeats daily based on the biological rhythm. It helps in mental and physiological rejuvenation and is necessary for taking on new tasks and roles. Various physical, emotional, and emotional factors can disrupt sleep patterns. Sleep is a vital need for humans, and life without it is impossible. On average, a person spends a third of their life sleeping. Contrary to popular belief, sleep is not an inactive stage; the brain and other body organs are engaged in activity and recovery during this (Mottaghi et al., 2016; Shum et al., 2014). Sleep disorders in children mean excessive or insufficient sleep for their age, abnormal types of sleep, abnormal behaviors during sleep, or the occurrence of pathophysiological events during sleep. Some studies show that sleep problems intensify symptoms in children and prolong sleep issues, being the primary complaint in individuals with the disorder. In fact, sleep disorders are a secondary symptom and a significant factor, and some studies show that sleep problems play a significant role in exacerbating diseases in children and prolonging them (Hertenstein et al., 2019). Sleep problems can affect the quality of life, increasing the likelihood of depression and anxiety and reducing the ability to cope with everyday stresses. Physical, emotional, emotional, and physical health issues can disrupt sleep patterns, and any change in sleep-wake stages can lead to sleep disorders (Lister et al., 2018, p.3). Experience has shown that sleep disruption has clinical importance. Music can reduce the fatigue and despair associated with insomnia and is one of the non-pharmacological interventions in enhancing sleep. Music can positively affect emotions and the therapeutic outcome. It can reduce fatigue associated with insomnia and is considered among non-pharmacological treatments for enhancing sleep and reducing anxiety (Anggerainy et al., 2019). Research findings show the effectiveness of music therapy in improving sleep quality and reducing anxiety in adolescents with chronic diseases, improving sleep in hospitalized children, and reducing sleep problems (Loewy, 2020). Music calms the body, and everyone can experience the effects after listening to music. Relaxing music reduces the activity of the nervous system, blood pressure, heart rate, and respiration, and through distraction and muscle relaxation, reduces anxiety and may have positive effects on sleep (Matney, 2017; Mottaghi et al., 2016; Shum et al., 2014). Relaxing music induces calming responses and reduces activity in the neuroendocrine and sympathetic nervous systems, ultimately reducing anxiety, heart rate, respiration rate, and blood pressure. Music affects the reduction of norepinephrine in circulation, which is related to the onset of sleep. It seems that appropriate and targeted music intervention in both daytime and nightly forms before sleep leads to improved night sleep and daytime alertness, and the mutual influence of these two methods results in improved sleep quality and reduced anxiety symptoms (Mottaghi et al., 2016).

Given that individuals with Stargardt disease face numerous challenges in society and family, and considering the importance of this issue and the limited research on it in Iran, it is essential to take measures to address the problems of affected individuals and to establish a suitable cultural framework in society for dealing with such individuals. Therefore, the current research was conducted with the aim of examining the effectiveness of active music therapy on anxiety and sleep quality in adolescents aged 11-14 with Stargardt disease.

2. Methods and Materials

2.1. Study Design and Participants

The methodology of this study is a quasi-experimental design with pre-test, post-test, and a control group. Twenty adolescents diagnosed with Stargardt disease were selected through convenience sampling. After sample selection, consent forms were completed by the parents. The participants were then randomly assigned to either an experimental group of ten individuals or a control group of the same number. Inclusion criteria included informed consent to participate in the study, and literacy in reading and writing, while exclusion criteria involved missing more than two therapy sessions or failing to participate in the pre-test, post-test, or follow-up stages. Both groups completed questionnaires. The experimental group received six one-hour sessions of music therapy, while the control group did

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not receive any music therapy. A post-test was then administered to the participants, followed by a one-month follow-up. Three individuals were excluded from the study for failing to complete their questionnaires, leaving a final sample of 17 participants. Ethical considerations included ensuring all participants were free to participate in the study; explaining the study's purpose to all participants; allowing participants to withdraw from the study at any time; and assuring that all data would remain confidential.

2.2. Measures

2.2.1. Anxiety

The Spielberger Anxiety Questionnaire (SAQ) consists of 40 questions, with the first 20 assessing state anxiety and the remaining 20 assessing trait anxiety. The State Anxiety Scale (manifest anxiety) includes 20 statements evaluating an individual's feelings "at this moment and time of response". The Trait Anxiety Scale (latent anxiety) also consists of 20 statements assessing general and usual feelings of individuals. Each question has four options: very little, little, a lot, and very much, scored from 1 to 4, so the scores for each of the state and trait anxiety scales can range between 20 and 80 (Spielberger, 1985). The test's internal consistency, calculated using Cronbach's alpha, was 0.66. Its test-retest reliability for students was reported as 0.77 and for university students as 0.70. In the standardization of the test in Iran, the test-retest reliability for the trait anxiety scale ranged from 0.65 to 0.86, and Cronbach's alpha for the state anxiety was calculated as 0.92 (Jalali-Farahani et al., 2022).

2.2.2. Sleep Quality

The Petersburg Sleep Quality Questionnaire (PSQQ) comprises 18 questions and includes seven sub-scales: mental quality of sleep, delay in falling asleep, duration of sleep, effective sleep, sleep disturbances, use of sleep medications, and daily functional disorders. The first four questions are open-ended, and the remaining 14 have four options. Responses to all questions are rated on a four-point Likert scale ranging from 0 to 3, where 0 indicates no problem, 1 indicates a mild problem, 2 indicates a moderate problem, and 3 indicates a severe problem. This scoring is used to determine the scales, with several questions addressing each sub-scale, and the final score being the sum of these scale scores. The questionnaire distinguishes between optimal and suboptimal sleep quality by evaluating seven sleep characteristics over the past month: mental quality of sleep (question 18 score), delay in falling asleep (questions 2 to 6 scores), duration of effective sleep (question 4 score), percentage of sleep sufficiency (questions 1, 3, and 4), sleep disturbances (questions 6 to 15), use of sleep medications (question 15), and daily functional disorders (questions 16 and 17). The total score of the seven scales, ranging from 0 to 21, is indicative of overall sleep quality, with higher scores representing poorer sleep quality. In fact, a score above five is considered a significant sleep problem (Shum et al., 2014). In Iran, the tool's validity was assessed through content validity, and its reliability was determined through a test-retest method with a two-week interval among 230 students, resulting in a 0.97 score. For the reliability of the scale, the test-retest method was used, yielding a coefficient of 0.79, and the overall Cronbach's alpha for the scale was 0.75 (Mottaghi et al., 2016).

2.3. Intervention

2.3.1. Music Therapy

In the first session, the participants are welcomed and introduced to the concept of music therapy, its goals, and potential benefits, particularly focusing on anxiety reduction and sleep improvement. An initial assessment is conducted to understand each participant's musical preferences and previous experiences with music. This session includes a guided relaxation activity with soft background music to help participants feel comfortable and at ease. The session concludes with a group discussion, allowing participants to share their feelings and set personal goals for the therapy.

The second session is dedicated to exploring the impact of rhythm on emotions and anxiety. It begins with a light stretching exercise accompanied by music to warm up. Participants then engage in creating and sharing different rhythms using percussion instruments, fostering a sense of community and collaboration. The session progresses to incorporating movements or dance to the created rhythms, helping participants to physically express themselves and release stress. The session ends with a reflection on how rhythm and movement affect their mood and anxiety levels.

This session focuses on using music as a medium to express and understand emotions. It starts with listening to various music clips and identifying the emotions they evoke, enhancing emotional awareness. Participants are then encouraged to create simple melodies using instruments to express their current feelings, promoting emotional expression through creativity. The session also includes an analysis of song lyrics for emotional content, followed by a

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group sharing period where participants discuss their experiences with expressing emotions through music.

The fourth session aims to utilize music as a tool for enhancing sleep quality. The session begins with a discussion about the importance of sleep and factors affecting sleep patterns. Participants listen to calming music and lullabies, understanding how different types of music can induce relaxation and sleepiness. They are then guided to create a personal playlist of soothing music for bedtime. The session concludes with teaching a relaxation technique that participants can use before sleeping to improve sleep quality.

In this session, participants engage in creative expression through songwriting. It starts with a brainstorming activity where participants come up with themes for their songs, reflecting their personal experiences and emotions. This is followed by a songwriting workshop where they write simple lyrics, either individually or in groups, fostering creativity and self-expression. Participants have the option to perform their created songs, which is followed by a discussion reflecting on the emotional impact and process of songwriting.

The final session serves as a closing and review of the entire therapy process. It begins with a recap of the previous sessions, discussing the key takeaways and personal growth experienced by the participants. The group revisits their favorite activity from the previous sessions, reinforcing the positive experiences. The session also includes planning for the future, discussing how participants can continue to use music in their daily lives for anxiety relief and improved sleep. The session ends with collecting feedback and a farewell, offering guidance for continuing to benefit from music therapy independently.

2.4. Data analysis

Data analysis was conducted using SPSS software version 22, employing descriptive statistical tests including mean and standard deviation, and inferential statistics including Levene's test, Box's test, and analysis of covariance (ANCOVA).

3. Findings and Results

Data related to five demographic variables are presented in Table 1.

Table 1

Frequency Distribution of Experimental and Control Group Samples Based on Demographic Variables

Variable	Intervention Group	Control Group
	Count	Percent
Age	11-12	2
	12-14	6
Birth Order	First Child	5
	Second or More	3
Parental Relation	First Degree Relatives	8
	Second Degree Relatives or None	0
Gender	Male	4
	Female	4
Number of Children	Only Child	5
	Two or More	3

To describe the status of the variables, namely anxiety and sleep quality, descriptive indices and the results of the analysis of covariance are presented in Table 2. The use of these tests requires adherence to several initial assumptions, which can be used after verifying these assumptions. These include the assumption of normal distribution of scores, the assumption of homogeneity of variances. The use of parametric tests requires adherence to several initial assumptions, which can be used after verifying these assumptions. Accordingly, given that the hypothesis testing of this research required the use of multivariate analysis of covariance, the necessary assumptions had to be observed.

Initially, the Shapiro-Wilk test was used to examine the normal distribution of research variables, with results indicating all variables had a normal distribution ($W = 0.98$, $p > 0.05$). Then, Levene's test was used to examine the equality of variances of the research groups, which was not statistically significant ($F = 1.25$, $p > 0.05$), confirming the assumption of variance equality. Another important assumption of multivariate analysis of covariance was the homogeneity of regression coefficients. It should be noted

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that the homogeneity test of regression coefficients was examined through the interaction of the pre-test and the treatment method in the post-test stage. The interaction of these pre-tests with the independent variable was not significant and indicated the homogeneity of the regression coefficients. Therefore, the assumption of homogeneity of regression coefficients was also established. Given the establishment of the assumptions of multivariate analysis of covariance, we were allowed to use this statistical test. Another important assumption of multivariate analysis of covariance was the homogeneity of regression coefficients. It should be noted that the homogeneity test of regression coefficients was examined through the interaction of the pre-test and the treatment method in the post-test stage. The interaction of these pre-tests with the independent variable was not significant, indicating the homogeneity of the regression coefficients ($F = 2.57$, $p > 0.05$). This result confirmed that the assumption of homogeneity of regression coefficients was met, validating the use of multivariate analysis of covariance in this study.

Table 2

Results of Analysis of Covariance Along with Standard Deviation and Mean of Anxiety and Sleep Quality of Two Groups

Variable	Experimental Group	Control Group	Analysis of Covariance Results	Significance Level
	Pre-test	Post-test	Pre-test	Post-test
Anxiety	10.37 ± 4.22	8.27 ± 4.77	13.32 ± 3.55	14.33 ± 2.34
Sleep Quality	14.5 ± 4.13	13.54 ± 2.92	14.22 ± 3.37	14.70 ± 2.50

The results of the analysis of covariance showed that there was a significant difference in the scores of the pre-test and post-test of the dependent variables ($p < 0.001$). The results of the analysis of covariance indicated that the difference in pre-test and post-test scores between the two intervention and control groups in the dimensions of the anxiety questionnaire and quality of life was significant, and this effect in the post-test scores of the variables of anxiety and sleep quality clearly indicated the impact of active music therapy on these variables.

4. Discussion and Conclusion

The results of the data analysis in the current study demonstrated that active music therapy significantly reduced anxiety among adolescents and substantially improved their sleep quality, aligning with the outcomes of previous research. Considering these adolescents cannot fully meet all their needs independently and struggle to adapt to environmental conditions, societal regulations, customs, values, and prohibitions, they often experience maladjustment leading to negative impacts on their sleep quality. This misalignment can disrupt their sleep cycle, significantly increasing anxiety and nightmares (Mottaghi et al., 2016). Eyes are one of the most crucial organs of the body, and their care is immensely important and necessary. Undoubtedly, due to the sensitivity of this sensory organ, any issues can affect all aspects of an individual's life (Fujinami et al., 2015). Vision loss in diseases like Stargardt's can cause significant stress, impacting vision and various aspects of life, leading to serious consequences like depression, anxiety, fear, and changes in adaptability. Research findings confirm that relaxation techniques as the first step and doctor-patient-family communication and increased social support for the patient as the second step are effective in enhancing positive feelings and offering rehabilitative services (Aa et al., 2015; Mills et al., 2017).

Music, as an invigorating and dynamic method, can enhance empowerment and positive self-perception while reducing despair, inadequacy, and incapacity. Given that music shifts mood from negative to positive phases and individuals in positive phases feel more empowered and satisfied with life, it appears that music can be an influential factor in focusing on a sense of empowerment and creating efficiency, thereby reducing anxiety. This is because anxiety leads to low self-esteem, making an individual more vulnerable (Matney, 2017). Researchers have shown that listening to music reduces stress. Just forty-five minutes of relaxing music before sleep can be soothing for the night. Music, especially uplifting songs, can make you feel more optimistic and positive, which helps release stress and can be a reason for better sleep quality and less future despair (Efendi & Tane, 2019; Loewy, 2020; Matney, 2017).

5. Limitations & Suggestions

Among the limitations of this research were the use of self-report questionnaires, which might lead to some individuals providing inaccurate responses. The extensive number of questions in the questionnaires could affect the

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E-ISSN: 2981-2526

accuracy of the participants' responses due to the prolonged duration of the survey. Further research in different populations or other chronic diseases is recommended to determine the impact of culture and society on the effectiveness of these treatments. Future reliance on this and similar research might provide access to interesting and significant practical solutions that could reduce many of the detrimental effects of the disease and pave the way for assisting in the psychological growth and appropriate treatment of these adolescents and their families.

One of the primary goals of any research is to apply the results in various practical fields to improve the quality of healthcare and contribute to its advancement. Music therapy, with its appropriate interventions, facilitates and eases other therapeutic interventions for solving sleep disorders and anxiety. At a professional and specialized level, one of the necessities of studies like the present one is to provide therapists and psychologists with tested and confirmed treatments for use when necessary for these individuals. Timely diagnosis and appropriate interventions by therapists can significantly help in improving the adverse conditions of sleep disorders and anxiety in adolescents with Stargardt disease.

Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

Soheila Mazloum Vajari contributed to the research design, data collection, and the implementation of active music therapy sessions. Seyedeh Madineh Ghasemnejad provided expertise in research methodology, data analysis, and interpretation. Masoumeh Rahimibashar assisted in data collection and coordinated various aspects of the study. Zahra Foroughi Kaldareh contributed to data analysis and overall research coordination.

References

Aa, H. P. A. v. d., Rens, G. H. M. B. v., Comijs, H. C., Margrain, T. H., Gallindo-Garre, F., Twisk, J. W. R., & Nispen, R. M. A. v. (2015). Stepped care for depression and anxiety in visually impaired older adults: multicentre randomised controlled trial. *bmj*, *351*, h6127. https://doi.org/10.1136/bmj.h6127

Alqahtani, N. H., & Mahfouz, M. E. M. (2022). The Prevalence and Risk Factors of Irritable Bowel Syndrome in Saudi Arabia in 2019. *Int J Prev Med*, *13*, 13. https://doi.org/10.4103/ijpvm.IJPVM_486_20

Anggerainy, S. W., Wanda, D., & Nurhaeni, N. (2019). Music Therapy and Story Telling: Nursing Interventions to Improve Sleep in Hospitalized Children. *Comprehensive Child and Adolescent Nursing*, *42*(sup1), 82-89. https://doi.org/10.1080/24694193.2019.1578299

Efendi, D., & Tane, R. (2019). The effects of music therapy on vital signs, feeding, and sleep in premature infants. *NurseLine Journal*, *4*(1), 31-36. https://doi.org/10.19184/nlj.v4i1.8709

Fujinami, K., Zernant, J., Chana, R. K., Wright, G. A., Tsunoda, K., Ozawa, Y., Tsubota, K., Robson, A. G., Holder, G. E., Allikmets, R., Michaelides, M., & Moore, A. T. (2015). Clinical and Molecular Characteristics of Childhood-Onset Stargardt Disease. *Ophthalmology*, *122*(2), 326-334. https://doi.org/10.1016/j.ophtha.2014.08.012

Hertenstein, E., Feige, B., Gmeiner, T., Kienzler, C., Spiegelhalder, K., Johann, A., Jansson-Fröjmark, M., Palagini, L., Rücker, G., Riemann, D., & Baglioni, C. (2019). Insomnia as a predictor of mental disorders: A systematic review and meta-analysis. *Sleep Medicine Reviews*, *43*, 96-105. https://doi.org/10.1016/j.smrv.2018.10.006

Jalali-Farahani, S., Amiri, P., Olazadeh, K., Panahi, R., & Azizi, F. (2022). Comparison of Anxiety, Stress, and Depression in Type 2 Diabetes Patients Before and after the Covid-19 Pandemic Considering Perceived Social Support: Tehran Lipid and Glucose Study (TLGS) [Original]. *Iranian Journal of Endocrinology and Metabolism*, *24*(5), 301-310. http://ijem.sbmu.ac.ir/article-1-3056-en.html

Law, E., Fisher, E., Eccleston, C., & Palermo, T. M. (2019). Psychological interventions for parents of children and adolescents with chronic illness. *Cochrane Database of Systematic Reviews*(3). https://doi.org/10.1002/14651858.CD009660.pub4

Loewy, J. (2020). Music therapy as a potential intervention for sleep improvement. *Nature and science of sleep*, 1-9. https://doi.org/10.2147/NSS.S194938

Marinelli, C., Savarino, E. V., Marsilio, I., Lorenzon, G., Gavaruzzi, T., D'Incà, R., & Zingone, F. (2020). Sleep disturbance in Inflammatory Bowel Disease: prevalence and

JAYPS Adolescent and Youth Psychological Studies E-ISSN: 2981-2526

risk factors – A cross-sectional study. *Scientific reports*, *10*(1), 507. https://doi.org/10.1038/s41598-020-57460-6

Martino, G., Caputo, A., Schwarz, P., Bellone, F., Fries, W., Quattropani, M. C., & Vicario, C. M. (2020). Alexithymia and Inflammatory Bowel Disease: A Systematic Review [Systematic Review]. *Frontiers in psychology*, *11*. https://doi.org/10.3389/fpsyg.2020.01763

Matney, B. (2017). The effect of specific music instrumentation on anxiety reduction in university music students: A feasibility study. *The Arts in Psychotherapy*, *54*, 47-55. https://doi.org/10.1016/j.aip.2017.02.006

Mills, J. O., Jalil, A., & Stanga, P. E. (2017). Electronic retinal implants and artificial vision: journey and present. *Eye*, *31*(10), 1383-1398. https://doi.org/10.1038/eye.2017.65

Mottaghi, R., Kamkar, A., & Maredpoor, A. (2016). Effectiveness of Targeted Musical Therapy on Sleep Quality and Overcoming Insomnia in Seniors [Research]. *Salmand: Iranian Journal of Ageing*, *11*(2), 348-357. https://doi.org/10.21859/sija-1102348

Rahnamaei Zonooz, N., Samadi Rad, B., & Aminpour, M. R. (2010). EVALUATION OF PREVALENCE AND ETIOLOGY OF EYE INJURY IN REFERRALS TO TABRIZ LEGAL MEDICINE CENTER DURING 2005, 2006 [Research]. *Studies in Medical Sciences*, *21*(2), 267-272. http://umj.umsu.ac.ir/article-1-689-en.html

Sajadinejad, M. S., Asgari, K., Molavi, H., Kalantari, M., & Adibi, P. (2012). Psychological Issues in Inflammatory Bowel Disease: An Overview. *Gastroenterology Research and Practice*, *2012*, 106502. https://doi.org/10.1155/2012/106502

Shum, A., Taylor, B. J., Thayala, J., & Chan, M. F. (2014). The effects of sedative music on sleep quality of older community-dwelling adults in Singapore. *Complementary Therapies in Medicine*, *22*(1), 49-56. https://doi.org/10.1016/j.ctim.2013.11.003

Spielberger, C. D. (1985). The experience and expression of anger: Construction and validation of an anger expression scale. *Anger and hostility in cardiovascular behavioral disorder*, 5-30.

JAYPS Adolescent and Youth Psychological Studies
E-ISSN: 2981-2526