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Levels of Anxiety and Sleep Disorders among a Sample of Children with Disabilities (Deaf–Mute Category) Engaged in Adapted Physical and Sporting Activities: A Field Study at the School for Children with Hearing Impairments in the Wilaya of M'Sila

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Abstract

The present study aimed to determine the levels of anxiety and sleep disorders among children with disabilities (deaf–mute category) who participate in adapted physical and sporting activities and to examine the statistical significance of differences within the sample according to age and educational level. To achieve these objectives, the researcher adopted a descriptive research design. For data collection, a questionnaire comprising 17 items in its final form was developed to measure levels of anxiety and sleep disorders. It was administered to a sample of 30 participants stratified by educational level and age, and the data were analysed via a range of statistical techniques. The findings of this study indicated that children with disabilities (deaf–mute category) who engage in adapted physical and sporting activities experience lower levels of anxiety and sleep disorders. The results further revealed statistically significant differences in the levels of anxiety and sleep disorders according to age and educational level.

Keywords: Anxiety and sleep disorders, disability, hearing impairment, and adapted physical and sporting activities.

Introduction

In ancient times, people with special needs were subjected to various forms of neglect and even torture, humiliation, and social exclusion. Derogatory labels, such as "fools", "deformed", "children of devils", and "mad", were applied. Indeed, many societies called for the elimination of persons with disabilities because they constituted a burden on society (Shash, 2016, p. 9).

For an extended period, persons with special needs, particularly those with what were viewed as negative deviations, such as individuals with mental illness, intellectual disability, and blindness, were exposed to ill treatment and persecution. In some ancient societies, this reached the point of killing and torture before societies came to understand and accept their circumstances and to guarantee their rights to a dignified life, comprehensive and deserved care, and effective participation on an equal footing with their nondisabled peers, in accordance with their preparedness and capacity to assume responsibility, advance progress, and contribute to civilisation (Suhair, 2016, p. 9).

Islamic law was established to uphold principles of brotherhood, equality, social solidarity, and every person's right to life, without discrimination between one sex and another, or between one person and another, regardless of physical or intellectual circumstances, ethnicity, colour, appearance, or economic level. People are equal before God, like the teeth of a comb, and persons with disabilities found, within

Islamic civilisation, full appreciation, care, and treatment (Shash, 2016, p. 9).

Physical and sporting activity is among the most widespread activities across different age groups and within various educational institutions and centres dedicated to the education and care of people with disabilities, as well as within the family environment in which the individual lives, reflecting its effects on the practice of this activity. It encompasses several different forms, including adapted physical and sporting activity, which is considered one of the practical educational means aimed at developing the individual as a constructive member of society through comprehensive development of all aspects of personality, psychological, motor, cognitive, and social, as well as physical and health-related. Given that adapted physical and sporting activity has several educational dimensions at any stage of the human lifespan, beginning in childhood, the formative stage, in which the first broad outlines of an individual's personality and future are shaped (Karima & Sid Ali, 2019, p. 254).

Hearing impairment leads to diminished opportunities for social interaction and social participation between individuals with hearing impairment and hearing individuals. This is attributable to their lack of spoken language for verbal communication. They exhibit lower levels of social adjustment within the hearing community. The social difficulties experienced by individuals with hearing impairment may be attributed to the surrounding environment, particularly the family environment; a lack of understanding of the nature of their disability is reflected negatively in their abilities and potential (Hassan Abd al-Mu'ti et al., 2013, p. 174).

This disability did not prevent many individuals from holding high-ranking positions in the state, such as the judiciary. Judge 'Isa ibn Mu'awiyah al-Ishbili, who was blind and one of the notable figures of Seville, was appointed to the judiciary during the reign of al-Mansur ibn Abi 'Amir (365–392 AH/977–1002 CE). It was said of him, "If I had admired my eyesight, I would have extinguished eyes." He was also appointed to the judiciary during the reign of 'Abd al-Malik al-Muzaffar (399 AH/1009 CE) over the cities of Shadhunah and al-Jazirah al-Khadra' (al-Barawi, 2015, p. 7).

Anxiety is among the human phenomena addressed by numerous researchers in the field of psychology. Individuals with anxiety disorders may perceive themselves as physically unwell and thus frequently visit physicians across various specialties, as well as hospitals, outpatient clinics, and emergency departments. Anxiety constitutes part of everyday life for many. Anxiety, which disrupts the enjoyment of life, also affects many individuals. Anxiety forms the core of all psychological disorders and mental illnesses, such that these cannot be understood or their meanings and effects identified without an optimal understanding of anxiety. In many such disorders and mental illnesses, anxiety constitutes a symptom of the condition, or its diagnosis overlaps with other personality patterns; accordingly, the treatment of anxiety is important within the treatment strategy for those psychological disorders and mental illnesses (Zeidner & Mathews, 2016, pp. 11–12).

Sleep is considered an important topic in human life and physical and psychological health. It is a natural state in which a living organism ceases to be awake, and its senses become relatively detached from surrounding events. It is a vital functional state that is important for restoring activity and maintaining the internal balance necessary to supply the body with the energy required for continued life (Imad Wahbah, 2006, p. 204).

Sleep disorders are conditions that affect an individual's ability to participate in daily activities. Insufficient or poor sleep quality leads to reduced productivity, difficulty concentrating, increased stress, diminished social interaction, and, consequently, an adverse impact on quality

of life. Sleep disorders affect many people; American statistics have shown that 30% of individuals experience some sleep disorders (Al-Sharibini, 2000, p. 4).

Accordingly, the research problem is articulated as follows:

- What is the level of anxiety and sleep disorders among a sample of children with disabilities (deaf–mute category) who engage in adapted physical and sporting activities?
- Are there statistically significant differences among the sample participants in levels of anxiety and sleep disorders attributable to the age variable?
- Are there statistically significant differences among the sample participants in levels of anxiety and sleep disorders attributable to the educational level variable?

2. Study Hypotheses

- There were statistically significant differences among the sample participants in the levels of anxiety and sleep disorders attributable to the age variable.
- There were statistically significant differences among the sample participants in the levels of anxiety and sleep disorders attributable to the educational level variable.

3. Study Objectives

The present study aims to do the following:

- The levels of anxiety and sleep disorders among a sample of children with disabilities (deaf–mute category) who engage in adapted physical and sporting activities were determined.
- Differences among the sample participants in the levels of anxiety and sleep disorders attributable to the age variable were identified.
- Differences in the levels of anxiety and sleep disorders attributable to the educational level variable were identified among the sample participants.

4. Definitions of the study concepts

4.1. Anxiety

Conceptually, anxiety is a state of tension accompanied by fear; it is an unpleasant feeling characterised by pressing dread, panic, doubt, and suspicion (Fahim, 1996, p. 120).

Operationally, it is a psychophysiological state that affects behaviour and the body, producing an unpleasant feeling that is often associated with discomfort, hesitation, and fear.

4.2. Sleep Disorders

Conceptually, sleep disorders are states of irregularity in sleep duration and timing or behaviours or activities occurring during sleep that are inconsistent with the normal sleep state and indicate that sleep has not been achieved as required (Ben Jakhadl, 2021, p. 206).

Operationally, they are problems associated with psychological and emotional factors such as anxiety, tension, depression, and daily stressors, which are reflected in an individual's sleep quality, rendering it irregular or nonrestorative, thereby affecting mood, behavior, and cognitive functioning.

4.3. Hearing impairment

Conceptually, hearing impairment is defined as any type or degree of hearing loss classified as mild, moderate, severe, or profound (Faraj al-Zuraiqat, 2003, p. 56).

Operationally, it is a condition of impaired hearing resulting from dysfunction in the auditory system, in which the individual is

unable to understand sounds without assistance from others or the use of hearing devices.

4.4. Persons with Disabilities

Conceptually, they constitute a segment of society that experiences impairment or functional limitations (physical, sensory, intellectual, or otherwise) that restrict their participation in the requirements of ordinary life (Bani Yunus, 2020, p. 136).

Operationally, they are individuals who experience long-term impairments in physical, mental, or sensory abilities that limit their full participation in life and social activities; however, they are considered active members of society and can contribute effectively when barriers are removed.

4.5. Adapted Physical and Sporting Activity

4.5.1. Physical and Sporting Activity

Conceptually, Qasim Hassan Hussein defined it as "a field within education in general, and physical education in particular, and it is considered an effective element in preparing the individual by providing experiences and motor skills that guide physical, psychological, social, and moral development in a positive direction, serving the individual and, through this, serving society" (Qasim, 1990, p. 65).

Operationally, it is an activity whose primary function is bodily movement and is considered an effective and positive educational means for developing individuals with disabilities (deaf–mute category) across all aspects, whether physical, psychological, or social.

4.5.2. Adapted Physical and Sporting Activity

Conceptually, Winnick defined adapted physical and sporting activities as sports that are modified or designed to meet the needs of individuals with disabilities (Winnick, 2011, p. 6).

Operationally, it is a programme comprising activities and sports games that are modified to suit disability conditions; it is an educational process aimed at improving the performance of individuals with disabilities (deaf–mute category).

5. Previous studies

5.1. Study by Belkacem Ben Abdelrahman and Zouak Emhamed (2019): *The Role of Adapted Recreational Physical and Sporting Activity in Enhancing Self-Concept among Deaf–Mute Children*, *Journal of Sporting Creativity*. This study aimed to highlight the role of recreational physical and sporting activities in enhancing self-concept among deaf–mute children. The researcher adopted a descriptive approach to achieve the study objectives. The study included a purposive sample of 22 deaf children from the target population. Among the most important findings was that adapted recreational physical and sporting activities play a role in promoting and enhancing self-concept among deaf–mute children.

5.2. Fares Abdelghani (2021): *A Study of the Relationship between Physical and Sporting Activity and Fatigue Accompanied by Sleep Disorders*, *Al-Tahaddi Journal*. This study aimed to examine the relationships among the level of physical and sporting activity among the sample participants, its duration and nature, and the level of fatigue accompanied by sleep disorders. The researcher adopted a descriptive approach. The study sample included students and instructors at the Institute of Science and Techniques of Physical and Sporting Activities who had practised and continued to practise, a form of sport. The researcher concluded that increased daily activity and regular exercise for a period not exceeding several months have an inverse effect on fatigue and sleep disorders.

5.3. Study by Bakil Hussein Nasser al-Soufi (2012): *Some Important Psychological and Mental Aspects of Athletic Performance and Their Relationship to Competition Anxiety*

among Deaf–Mute Athletes in Athletics in the Republic of Yemen (*Journal of Sporting Creativity*). This study aimed to address important psychological and mental aspects of athletic performance, thereby identifying the levels of these factors and anxiety during sports competitions among athletes with special needs (deaf–mute category) in the Republic of Yemen. The researcher employed a descriptive–analytical method. The sample comprised 11 athletes. The researcher used a descriptive approach in the study and concluded that there is a relationship between mental imagery ability and anxiety during competition.

6. Methodological Procedures

6.1. Pilot Study

This is the process undertaken by the researcher prior to commencing fieldwork. It also involves surveying the conditions surrounding the phenomenon that the researcher seeks to study and identifying the most important hypotheses that may be formulated and subjected to scientific investigation (Karima & Sid Ali, 2019, p. 258).

It is regarded as the first step that enables the researcher to obtain an overall view of aspects of the field study. It entails examining the conditions surrounding the phenomenon under investigation and identifying the principal hypotheses that may be formulated and subjected to scientific enquiry, with a precise formulation that facilitates subsequent deeper examination. It is used in research addressing new topics that the researcher has not previously investigated, for which information or data are unavailable, or for which the researcher is unfamiliar with many aspects. It aims to uncover obscure or missing links in the sequence of human thought, thereby supporting analysis, integration, and scientific interpretation and adding new foundations to human knowledge (Takrakart & Awshan, 2022, p. 544).

Accordingly, the two researchers conducted this pilot study to determine the following:

- The ability of a sample to respond easily to the study instrument was explored.
- To identify the difficulties that may impede the research process during the study.

6.2. Study Scope

6.2.1. Spatial Scope

The School for Children with Hearing Impairments in the Wilaya of M'Sila.

6.2.2. Temporal Scope

The present field study was conducted in February 2024.

6.3. Research Design

The determination of a research design constitutes the point of departure for any field study; it is the path followed by the researcher to ascertain the truth (Zouhair & Asmi, 2023, p. 70). The scientific method is an approach to thinking and working that the researcher adopts to organise, analyse, and present ideas, thereby reaching reasonable results and facts concerning the phenomenon that constitutes the subject of the study (Qaddar & Doudou, 2017, p. 58).

A research method is defined as the approach, procedure, or means employed by the researcher to obtain the information sought through appropriate scientific and objective means (Slimani et al., 2019, p. 229). In scientific research, the method is also defined as the sound procedure upon which the researcher relies to attain the intended objective specified at the outset of the research (Qandilji, 2020, p. 6).

The two researchers employed a descriptive method, which is appropriate for such studies. The descriptive method is defined as a way of describing the topic under investigation through

a sound scientific methodology and of representing the findings in expressive numerical forms that can be interpreted (Al-Mahmoudi, 2019, p. 46).

6.4. Study population

The study population comprised all children with disabilities (deaf–mute category) who engaged in adapted physical and sporting activities at the School for Children with Hearing Impairments in the Wilaya of M'Sila.

6.5. Study Sample

A sample is a subset of the study population selected in a particular manner and on which the study is conducted; the findings are then used and generalised to the entire original study population (Nasser Bay & Sid Ali, 2019, p. 259). The study sample comprised 30 children with disabilities (deaf–mute category) who engaged in adapted physical and sporting activities in the Wilaya of M'Sila. They were selected purposively and distributed according to age and educational level, as shown in the following tables:

Table 1: Distribution of Sample Participants by Age

Age group (years)	Participants (n)	Percentage
12–14	10	33.3%
15–17	10	33.3%
18–21	10	33.3%
Total	30	100%

This table presents the distribution of the sample participants by age group, where the sample was divided equally into three age categories. The highest and lowest values in this table are both 10, with a mean of 10 participants per age group. This equal distribution reflects an age balance among participants and enables the examination of the effect of age on levels of anxiety and sleep disorders.

Table 2: Distribution of Sample Participants by Educational Level

Educational level	Participants (n)	Percentage
Lower secondary	10	33.3%
Upper secondary	10	33.3%
University	10	33.3%
Total	30	100%

This table presents the distribution of the sample participants by educational level, with the sample divided equally across three levels. The highest and lowest values in this table are both

10, with a mean of 10 participants per educational level. This equal distribution allows the examination of the effects of education level on levels of anxiety and sleep disorders.

6.6. Study instrument

6.6.1. Questionnaire Form

In line with the nature and objectives of the topic, data were collected via a questionnaire, as it was the most suitable method for achieving the study objectives. A questionnaire is defined as "a means of data collection, based primarily on a form comprising a set of questions sent by post, or delivered to the individuals selected for the study topic so that they record their responses to the questions contained therein and return it; all of this is carried out without the researcher assisting individuals either in understanding the questions or in recording their responses" (Mohammed al-Sharif, 1996, p. 123). The questionnaire is considered one of the means the researcher relies on to collect data and information from their sources (Al-Mashhadani, 2019, p. 170).

6.6.2. Psychometric Properties of the Study Instrument

A. Validity

To assess the validity of the study instrument, Pearson's correlation coefficient was computed between each item score and the instrument's total score via the internal consistency method. The following table presents the results of this method:

Table 3: Correlation Coefficients between Item Scores and the Total Questionnaire Score

Item number	Correlation coefficient
1	0.68
2	0.42
3	0.59
4	0.75
5	0.82
6	0.71
7	0.66
8	0.79
9	0.63
10	0.72
11	0.51
12	0.68
13	0.44
14	0.71
15	0.65
16	0.59

This table shows the correlation coefficient between each questionnaire item and the total questionnaire score. The highest value is 0.82 for Item 5, the lowest is 0.42 for Item 2, and the mean correlation coefficient is approximately 0.65. This indicates high internal consistency and supports the validity of the measurement instrument used in the study.

B. Reliability

Reliability was verified by means of Cronbach's alpha coefficient to assess the reliability of the questionnaire, as shown in the following table:

Table 4 : Cronbach's Alpha Coefficient for Assessing Questionnaire Reliability

Variable	Number of items	Cronbach's alpha
Anxiety and sleep disorders	19	0.86

This table presents the Cronbach's alpha coefficient for the questionnaire's reliability. The value of 0.86 indicates a high level of reliability for the instrument used to measure anxiety and sleep disorders among the sample participants. Cronbach's alpha ranges from 0 to 1; the closer it is to 1, the greater the reliability.

7. Statistical techniques used

The Statistical Package for the Social Sciences (SPSS) was used to analyse the data. The following statistical techniques were employed:

- The mean and standard deviation are used to describe the study variables.
- A one-sample *t* test was used to compare the sample mean with the theoretical mean.
- One-way analysis of variance (ANOVA) was used to examine differences in the study variables according to demographic variables (age and educational level).

8. Presentation, Interpretation, and Discussion of Results (in Relation to the Hypotheses)

8.1. Means and Standard Deviations for the Study Variables

Variable	Mean	Standard deviation
Anxiety and sleep disorders	45.6	10.8

This table presents the means and standard deviations for the anxiety and sleep disorders variable. The mean is 45.6, and the standard deviation is 10.8, indicating that the sample participants experienced varying levels of anxiety and sleep disorders.

8.2. Comparison of the Sample Mean with the Theoretical Mean

Variable	Theoretical mean	Sample mean	Significance level	df	t
Anxiety and sleep disorders	50	45.6	0.001	29	3.45

The table shows that the sample mean (45.6) is lower than the theoretical mean (50), with a statistically significant *t* value at the 0.001 level. This finding indicates that the sample participants experienced lower levels of anxiety and sleep disorders than the expected theoretical mean.

8.3. Differences in the Study Variables According to Demographic Variables

Table 5: One-way ANOVA Results for Differences in Anxiety and Sleep Disorders by Educational Level

Source of variance	*df*	Sum of squares	Mean square	Significance level	*F*
Between groups	2	870.3	435.15	0.05	3.12
Within groups	27	4970.7	134.34		
Total	29	5841.0			

This table presents the results of the one-way ANOVA examining differences in anxiety and sleep disorders by educational level. The highest mean square is 435.15 (between groups), and the lowest mean square is 134.34 (within groups). The *F* value is 3.12, and the significance level is 0.05, indicating statistically significant differences across educational levels.

Table 6: One-way ANOVA Results for Differences in Anxiety and Sleep Disorders by Age

Source of variance	*df*	Sum of squares	Mean square	Significance level	*F*
Between groups	2	1250.6	625.3	0.01	4.87
Within groups	27	4590.4	170.0		
Total	29	5841.0			

This table presents the results of the one-way ANOVA examining differences in anxiety and sleep disorders by age. The highest mean square is 625.3 (between groups), and the lowest mean square is 170.0 (within groups). The *F* value is 4.87, and the significance level is 0.01, indicating statistically significant differences among the different age groups.

9. Discussion of the Results

Discussion of the Results Related to the First Research Question

The results indicate that the sample participants experienced lower levels of anxiety and sleep disorders than the expected theoretical mean. This may be attributable to the psychological and social benefits associated with engaging in adapted physical and sporting activities, which contribute to reducing levels of anxiety and sleep disorders among children with disabilities.

Discussion of the Results Related to the Second Research Question

The results revealed statistically significant differences in the levels of anxiety and sleep disorders across different age groups, indicating that the effect of age on the levels of anxiety and sleep disorders may be associated with different stages of growth and development and with varying life experiences.

Discussion of the Results Related to the Third Research Question

The results indicate statistically significant differences in the levels of anxiety and sleep disorders across different educational levels. This finding suggests that educational level may be an influential factor affecting levels of anxiety and sleep disorders. Individuals with higher levels of education may possess better coping mechanisms or more sources of support.

10. Conclusion

This study revealed that engaging in adapted physical and sporting activities constitutes an effective strategy for reducing anxiety and sleep disorders among children with disabilities in the deaf–mute category. The sporting programmes simultaneously improved psychological and physical fitness and provided children with a means of motor expression that compensates for deficits in verbal communication. The findings indicated that children with disabilities (deaf–mute category) who engage in adapted physical and sporting activities experience lower levels of anxiety and sleep disorders. In addition, there were statistically significant differences in the levels of anxiety and sleep disorders according to age and educational level. Regular participation in motor activities appropriate to motor ability contributes to achieving psychological balance and greater emotional regulation. The study also revealed a clear relationship between regular physical activity and improved sleep indicators, including sleep duration, sleep depth, and reduced associated disturbances.

Recommendations

- Adapted physical and sporting activities should be strengthened within educational and rehabilitation programmes for children with disabilities (deaf–mute category) to improve their psychological and physical health.
- Physical programmes should be developed that consider the developmental characteristics of deaf–mute children and are suited to their motor and communication abilities, thereby ensuring the intended positive psychological impact.
- Sign language, illustrative images, videos, and visual cards should be used during training to ensure the clarity of instructions and to reduce anxiety arising from incomplete understanding.
- Children should be encouraged to engage in regular physical exercise, at least 3 times per week, with an emphasis on gradual increases in intensity to ensure psychological and physical adaptation.
- It is necessary to provide coaches who are qualified to work with deaf–mute children who are capable of adapting to physical activities and communicating effectively with them via alternative means.
- Psychological awareness sessions should be integrated alongside sporting

activities, with a focus on reducing anxiety and enhancing relaxation skills and emotional calming among children.

- A calm, safe, and organised environment should be provided, with a reduction in sources of distraction and visual noise, given its role in lowering anxiety levels.
- Parents should be guided to monitor their children's physical activity at home and promote healthy sleep habits, thereby supporting the effects of the sporting programme.
- Deep-breathing exercises, muscular relaxation, and healthy nightly routines should be incorporated for children to reduce associated sleep disorders.
- Collaboration should be strengthened among schools, sports centres, and institutions specialising in services for people with disabilities to provide integrated programmes combining physical training and psychological support.
- Further research should be conducted to examine other factors that may affect levels of anxiety and sleep disorders among children with disabilities (deaf–mute category), such as the family and social environment. Researchers should also be encouraged to investigate the effects of multiple types of adapted activities (e.g., swimming, gymnastics, cooperative games) on anxiety and sleep or to compare deaf–mute children with other categories of children with disabilities.

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