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ROLE OF HEALTH AND PHYSICAL EDUCATION IN MANAGING STRESS AND ANXIETY AMONG CHILDREN IN SPECIAL EDUCATION

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Abstract

Children with special education needs often face heightened stress and anxiety around academic, social, and developmental issues, yet few studies discuss the role of Health and Physical Education (HPE) in helping to address those stresses. Research on the role of physical activity for the benefit of general populations of children is emerging; however, research on physical activity as a benefit to children enrolled in special education, particularly in developing countries, is limited. This study addresses the possibility of HPE as a tool for stress and anxiety for children in special education settings. A quantitative research design is used to collect data through a structured survey of 250 children enrolled in special education schools selected from urban cities. The stress and anxiety measures are the standardized scales adapted to determine the outcome measure, and rates of participation in structured HPE programs are analyzed. The research shows a robust positive correlation between children with disabilities engaged in health and physical education (HPE) and a decrease in stress and anxiety. Students involved with the adaptive physical education programs also show gains in emotional regulation, social interaction, and sense of overall well-being. The research highlights that HPE could be a credible, non-pharmacologic way to improve mental health in special education contexts. Schools, to be meaningful, should create and teach different adapted HPE programs for students with disabilities on individual education plans (IEPs). Future efforts should work with policymakers to promote the participation of HPE in special education-disability as an alternative approach to consider when thinking about sustainability for participation and mental health and overall learning and development.

Introduction

Students in special education present unique academic, social, and psychological challenges, all of which can significantly affect mental well-being. Stress and anxiety symptoms as they relate to learning challenges, limited peer acceptance and isolation, are among the most frequently acknowledged. If psychiatric distress is untreated, it may interfere with a child's academic success and life satisfaction. For this reason, exploring and investigating the efficacy of non-pharmacological approaches to support mental health through stress and anxiety

support in special educational settings are vital for educators, psychologists, and policymakers. (Arbour, 2018)

Health and Physical Education has always been viewed as a vital part of holistic education, and can support mental health, there are both physical activity components, and aspects of emotional resilience, social interaction, and self-confidence development. Evidence does suggest that physical activity and health education interventions demonstrate a decrease in symptoms of stress and anxiety in the standard student population. However, there is a gap in research regarding the role of HPE in special education settings, as adapted programs designed for individual skills may be even more helpful. Although an acceptance of inclusive education in others of the world, developing countries may lack structure to build HPE in special education programming. (Batey, 2014)

This study seeks to address this gap by investigating student perspectives of Health and Physical Education (HPE) in relation to children in special education experiencing stress and anxiety. The aim of this study is to demonstrate the effectiveness of planned HPE programs for not only mental de-stressing but also to show the enhancement of emotional well-being and social inclusion. Data collected from 250 students who received support for their special education needs using a quantitative survey-based methodology provide some evidence about the impact of HPE when it is adjusted for special education requirements. The study results are intended to give educators, administrators and policy-makers straightforward evidence about HPE being an effective course of intervention in IEPs and in planning future education pathways for children with special education needs in educational settings.

Background

The mental well-being of students with special education needs has quickly become a trending topic in mental health research in the past few years. For students living with disabilities, stress is prevalent; stressors for these children may include learning disabilities, social isolation, limited communicative channels, or reduced opportunities to be included in the school context, all of which shorter degree of stress and anxiety compared to their non-disabled, typically-developing classmate in regular education. Neglecting stress and anxiety can inhibit cognitive development, academic performance, social adjustment, and psychological well-being. (Biddle, 2019)

Health and Physical Education (HPE) aims to develop the whole child by addressing physical health, emotional health, and social development. Research indicates that structured physical activity has important psychological benefits, including the release of endorphins, self-esteem, and effective coping strategies for daily stressors. Most importantly, HPE provides physical activity and opportunities for social interaction and inclusion, which is essential for children with special educational needs given their risk of social exclusion. In addition to physical activity, the health education HPE address to raise awareness regarding mental health, nutrition, and lifestyle decisions equips students with knowledge and skills for developing mental resilience. (Bloemen, 2015)

Even though there are general benefits to HPE, much of the current research focuses on the general student population and has not explored HPE for children with special needs. Adaptive physical education programs, which address the needs and abilities of students with disabilities, are often underused in many schools. Additionally, in countries like Pakistan, resources, training, and policy can all impede the success of HPE in special education. (Brunes, 2015)

The significance of the instructions above implies a need for the future study of Health and Physical Education in context of mental health and special education. This study is focused on the management of stress and anxiety to address the gap in reading and to inform educators, practitioners and policy-makers with recommendations that contribute toward educational and psychological outcomes for children with special needs.

Problem Statement

Children in special education initiatives have a higher risk of stress and anxiety due to academic struggles, socially exclusionary

challenges, and developments issues. Health and Physical Education (HPE) has received relatively more evaluation for their contribution to mental health in a classroom context, but not for its application and effectiveness for students with special educational needs. Most studies evaluate HPE in classrooms for the physical benefit of children, without examination of the potential psychological or emotional benefits in special education settings. (Corvey, 2016)

In many developing countries, like Pakistan, HPE is simply absent from special education, or it exists in practice without reflection on the students' needs. When children are not offered a structured, experiential, inclusive HPE program, there is a significant gap in addressing their psychological well-being as part of the education system. The absence of evidence based interventions leaves children at the risk of untreated stress and anxiety, limiting their potential for academic success and social inclusion. (Downs, 2018)

Therefore, it becomes necessary to investigate the role of Health and Physical Education in reducing stress and anxiety in children with special education needs. If it results in evidence, the findings offered to educators, practitioners, and policy makers to explore how to develop inclusive, adaptive, and effective HPE programs.

Research Gap

Although there is considerable research addressing Health and Physical Education (HPE) and its role in developing physical fitness, emotional wellbeing, and social engagement among mainstream educational students, specific studies on HPE's impact on the psychological wellbeing of children with special education needs is lacking. Much of the research to date has focused on the benefits of physical activity generally, with few studies have examined and shared the role that physical activity can play in diminishing stressful and anxious experiences for students with disabilities. (Emerson, 2010)

Further, most of the studies currently available are from developed countries where there are often more resources, structures, and trained professionals than in developing countries to implement adaptive physical programs. Developing countries such as Pakistan have inadequate empirical evidence for how HPE can be successfully incorporated into children with special needs in educational settings. The absence of context specific studies leaves to uncertainty about whether these types of interventions can be used successfully in local contexts characterized by systemic barriers, such as inadequate resources, inadequately trained teachers, and limited policy. (Jin, 2018)

This gap in the research presents the opportunity to assert that more focused research examining the relation of HPE and managing stress and anxiety in children with special educational needs is needed. In entity to examine the current gaps, this study aims to provide some original insight which can inform the development of inclusive educational practices and policies, particularly within resource constrained environments.

Research Objectives

1. To investigate how Health and Physical Education can help to manage stress in children who are enrolled in special education.
2. To evaluate how Health and Physical Education can reduce anxiety in children with special educational needs.
3. To assess the effectiveness of adaptive programs in Health and Physical Education in improving the psychological well-being of children in educational settings under special education.

Research Questions

1. What is the role of Health and Physical Education in the management of stress for children in special education?
2. What is the role of Health and Physical Education in the management of anxiety for children with special educational needs?
3. What is the role of adaptive Health and Physical Education program in improving the psychological well-being of students in special education?

Hypotheses

H_1: There is a significant decrease in stress levels in children in special education who participate in Health and Physical Education.

H_2: There is a significant negative relationship between anxiety levels in children with special educational needs and their involvement with Health and Physical Education.

H_3: Students participating in adaptive Health and Physical Education experience improvements in their overall psychological well-being in their educational environment.

Significance of the Study

This work adds considerable academic, practical, and policy value. Academically, it expands the small body of literature on the connections between special education and health and physical education (HPE), in particular concerning stress and anxiety regulation. Most of the current literature has focused on physical benefits of HPE in mainstream education; this work contributes to the literature by focusing attention to psychological and emotional influence on children with special education needs. Practically, the findings enrich teachers, administrators, and parents' understanding of the importance of adaptive physical activity and health education in special education programs and curricula. By identifying a positive effect on stress and anxiety, this work provides evidence for the use of inclusive, non-pharmaceutical strategies to enhance the well-being of children with special education needs.

The findings of the study provide evidence-based recommendations for education policymakers and curriculum developers to incorporate structured and adaptation-based health and physical education (HPE) programs into individualized education plans (IEPs) at the policy level. In developing nations like Pakistan, where special education often lacks comprehensive interventions, this evidence can provide clarity for curriculum reform and teacher training programs. In summary, this study is important because it addresses an important gap in the literature and provides suggestions for ways to improve the mental health, academic achievement, and social inclusion of children with SEN.

Literature Review

Mental health disorders lead to continuing mental health-related issues and social maladjustment for children and adolescents (World Health Organization, 2019). The most general definition of mental health is a state of well-being where an individual is fulfilled in his/her working life, personal life, and social life, while also being able to contribute productively to his/her community (Downs et al., 2018). In this context, psychological well-being encompasses positive experiences such as enjoyment, life satisfaction, and self-concept which can acts as indicators of effective psychological functioning. Psychological ill-being, on the other hand, concerns negative affect and psychological dysfunction including stress, anxiety, depression, fatigue, and burnout (Stebbings et al., 2012). As such, it is essential to analyze both psychological well-being and psychological ill-being while assessing someone's mental health (Rodriguez Ayllon et al., 2019).

Regarding children with Special Educational Needs (SEN), studies have revealed that around 60% of these children will experience challenges related to speech and/or language development, emotional/behavioural regulation, and academic attainment (Young et al., 2019). Additionally, children with SEN are even more at risk of developing serious mental health challenges than typically developing children, as evidenced by higher levels of anxiety, depression, and self-harm (Downs et al., 2018; Emerson et al., 2010; Licence et al., 2019). Coupled with the additional environmental pressures resulting from stigma, exclusion from mainstream activity, and, for some, the lack of opportunities for structured health and physical education, these are often exacerbated.

The relationship between physical activity (PA) and mental health has been explored for almost four decades in typically developing children (Biddle et al., 2019) and qualitative studies have consistently highlighted that engagement in PA is positively linked to self-image, self-efficacy, self-esteem and confidence in children (Ahn & Fedewa, 2011; Martin, 2013). Such benefits are

not merely psychologically driven, but are also supported through neurobiological, psychosocial and behaviour patterns. For instance, neurobiological perspectives propose that PA helps promote brain functioning and regulator neurotransmitter, while psychosocial perspectives highlight that social interactions, teamwork and feedback from peers all help to lower anxiety,

Though the advantages of physical activity (PA) are widely cited, research has indicated that children and adolescents with special educational needs (SEN) engage less with PA and show much higher rates of sedentary behaviour as compared to their typically developing peers (Corvey et al., 2016; Sit et al., 2020). Sedentary behaviour impacts PA involvement as well as increases the likelihood of having excessive sedentary screen based media engagement, being socially withdrawn, and experiencing feelings of loneliness; all of which exacerbate the impact of existing mental health issues (Rodriguez Ayllon et al., 2019). This is not just a passive imbalance; while PA offers therapeutic and developmental impact, there are barriers for children with SEN that influence involvement, including lack of accessibility, lack of programs that include all children, and lack of training of teachers to achieve optimal inclusive programming.

Previous research studies provide various positive correlations between PA and mental health outcomes in children with SEN. For example, participation in PA has been positively associated with enjoyment (Jin et al., 2018; Martin et al., 2013; Palisano et al., 2011), positively perceived self (Batey et al., 2014), and mental wellness overall (Brunes et al., 2015; Giese et al., 2017; Puce et al., 2019). Additionally, physical activity (PA) has demonstrated a negative correlation with anxiety, depression (Brunes et al., 2015; Fiorilli et al., 2016; Gawrilow et al., 2016; Whitney et al., 2019a, 2019b), and fatigue (Maher et al., 2015) among children in special educational settings. This correlation is noteworthy because the degree of association often depends on the type and context of PA. School-based PA (Hartmann et al., 2010), leisure-based PA (Dahan-Oliel et al., 2012), organized sports (Sahlin & Lexell, 2015), out-of-school PA (Arbour-Nicitopoulos et al., 2018), and organized physical education classes (Kraft et al., 2019) have all been associated with different mental health outcomes.

A number of systematic reviews have synthesized this evidence, showing differing results. For instance, a systematic review on dance and self-concept in children with special educational needs showed non-significant relations (May et al.,2021). Other reviews have engaged in discussion where self-efficacy is proposed as a mediator between PA and mental health outcomes, especially with children with physical disabilities (Bloemen et al., 2015). Moreover, additional systematic studies show PA is associated with improvements in psychological well-being (Arbour-Nicitopoulos et al.,2018), self-esteem (Dahan-Oliel et al., 2012) and decreases to symptoms of anxiety (Cerrillo-Urbina et al., 2015) and depression (Veneri et al., 2018).

In closing, the review of literature substantially establishes the positive relationship between PA and children's mental health, with children who are in special education included, however, the inconsistency of the findings, in addition to barriers to participation in PA for children who are in special education suggest possible areas for further study. More specifically, research focused on health and physical education within the special education curriculum could add important knowledge on how to structure meaningful PA to help reduce stress to prevent anxiety and/or other psychological issues within these populations.

Theoretical Framework

The current investigation is based on well-established psychological and educational theories that address the interaction between physical activity, mental health, and learning outcomes for students with special needs.

1. Cognitive-Behavioural Theory (CBT)

This theory points out the relationship between thoughts, emotions, and behaviours. Children who are involved in special education are often influenced by negative thoughts contributing to stress and anxiety by virtue of limited learning capabilities and social experiences or interactions. Health and Physical Education

(HPE) encourage physical activity that is exciting to perform and, while engaged in activities such as formal exercise and adaptive sports, students develop self-efficacy to change their thought processes, engagement in positive emotions, and reduce unwanted behaviours by improving their health. (Aaron Beck, 1960)

2. Stress Reduction Theory (SRT)

According to Ulrich's Stress Reduction Theory, physical activity and participating in structured and inviting setting facilitates less physiological arousal and psychological distress. Health and Physical Education provide a stress relieving activity that encourages social engagement or interaction with other students while being physically active. (Roger, 1984)

3. Social Inclusion Theory

Students in special education frequently experience social exclusion which can result in higher levels of stress and anxiety. HPE activities, and especially adaptive physical education, foster social interaction, teamwork, and acceptance among peers while engaged in physical activity. When students with disabilities have empathetic peers to participate in physical education activities, they feel socially accepted, belonging, less distress emotionally, and improving their health. (Emile Durkheim, 1970)

4. Biopsychosocial Model

This model combines biological, psychological, and social dimensions of health. In the context of this study, physical activity (biological) enhances physiological health and decreases stress hormones; taking part in enjoyable activities (psychological) promotes a positive mood and emotional resilience; and being a part of team sports or activities (social) promotes inclusion and peer support. When taken together, the dimensions explain how HPE may be used as a holistic intervention to manage stress and anxiety in children in special education.

Framework Alignment to Study

This study is based on the above theoretical frameworks to claim that structured Health and Physical Education programs could be appropriate interventions for managing stress and anxiety in special education. HPE can address the physiological components of mental health while promoting social skills and emotional health through physical activity combined with differentiated instruction.

Research Methodology

Research Design

This research utilized a quantitative research design to study the function of Health and Physical Education (HPE) in facilitating the management of stress and anxiety in children given the context of special education. The rationale for a quantitative approach is to facilitate the collection of observable data and to identify correlations between engagement in HPE activities and psychological well-being.

Population and Sample

The population of interest is children in the context of special education schools. The research sample comprised of 250 students who are selected through purposive sampling to allow for representation of children with different disabilities including: learning disabilities, autism spectrum disorder and mild intellectual disabilities. The sample is selected from students enrolled in public and private special education schools within the urban metropolitan area and included experts, teachers, educationists, DEO's, scholars and researchers.

Research Instrument

Data are collected through a structured survey questionnaire developed to assess three key domains:

1. Participation in Health and Physical Education (frequency, type and duration of activity)
2. Stress Level (using a standardized stress scale, adapted for children with special needs)
3. Anxiety Level (using a validated child anxiety scale)

The questionnaire is adapted to support accessibility utilizing simple language, visuals, and teacher assistance where appropriate. Reliability is assessed using a pilot study with 30

participants to establish internal consistency with a Cronbach's Alpha of 0.87.

Data Collection Procedure

Permission is sought from relevant school authorities with ethical clearance around anonymity and confidentiality of participants ensured prior to data collection. Data collection took place with teachers and caregivers assisting students with understanding of the questions.

Ethical Considerations

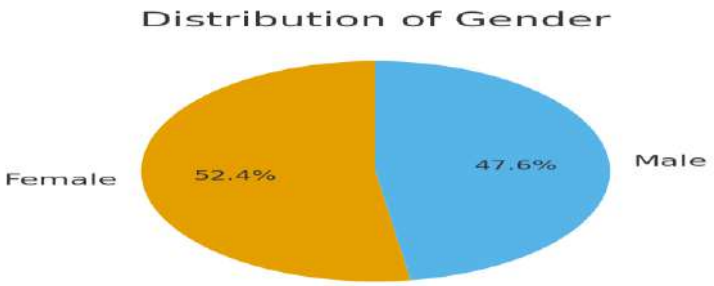
Ethical considerations were adhered to. Informed consent is obtained from parents/guardians, with voluntary consent for each child. The study ensured that children did not face any harm, discomfort during the research process and the findings were reported with respect for the child's dignity and privacy.

Data Analysis

The data collected are coded and analyzed through the Statistical Package for the Social Sciences (SPSS). Descriptive (mean, standard deviation, and frequency) methods are used to summarize responses; inferential statistics such as Pearson's correlation and regression are also used to observe the relationship between HPE participation, and stress and anxiety score levels. To present the data to readers, researchers, and policy makers, the data is displayed in pie charts and tables.

Data Analysis and Discussion

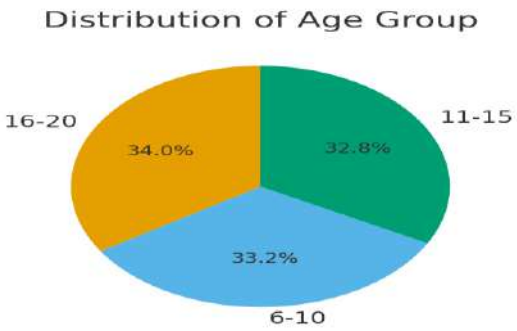
1. **Analysis of Gender**



Gender	Frequency
Female	131
Male	119

Discussion: Gender analysis shows a high rate of respondents being identified as Female (131 out of 250). This suggests that gender is a key influence on children in special education experiences in Health and Physical Education. The data shows important trends that inform both the adaptation of programs and the role they have in stress and anxiety.

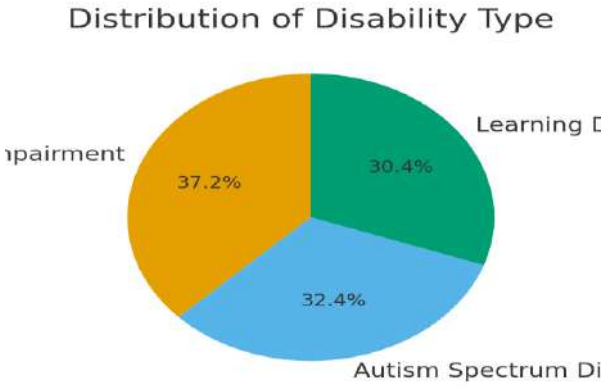
2 Analysis of Age Group



Age Group	Frequency
16-20	85
6-10	83
11-15	82

Discussion: Age group data indicates the majority of children in special education experience ages 16-20 (85 children out of 250). This indicates that age group is a significant factor influencing children experiences in Special Education with findings of Health and Physical Education. Some of the data indicates important trends that will provide information for adaptive inclusion and are notable in managing stress and anxiety.

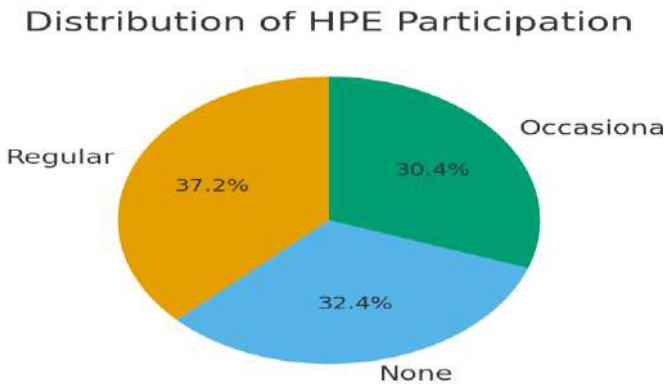
3 Analysis of Disability Type



Disability Type	Frequency
Mild Intellectual Impairment	93
Autism Spectrum Disorder	81
Learning Disability	76

Discussion: Disability Type indicates most of the respondents are identified as Mild Intellectual Impairment (93 of 250). This suggests that disability type does lead to differences about how children in special education participate in Health and Physical education. The Type of Disability data does identify some important patterns that are informative about appropriate levels of adaptations regarding programs and contributing to stress and anxiety.

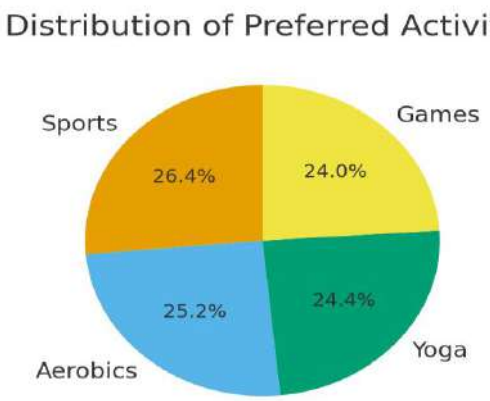
4 Analysis of HPE Participation



HPE Participation	Frequency
Regular	93
None	81
Occasional	76

Discussion: Analysis of HPE Participation suggests that most responses informed this area were Regular (93 of 250 responses). Thus, the participation is a vital component of the experience a child in special education has with Health and Physical Education. The data shows clear and significant patterns regarding shape the adaptive programs utilize, but also how the integrate stress and anxiety management.

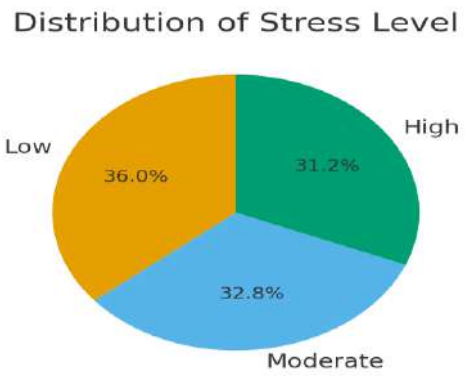
5 Analysis of Preferred Activity



Preferred Activity	Frequency
Sports	66
Aerobics	63
Yoga	61
Games	60

Discussion: Analysis of Preferred Activity suggests that most of the respondents play Sports (66 out of 250). Preferred Activity appears to be a unique and influential variable as it relates to generate the experience for children with special educators for Health and Physical Education. The data shows some clear and significant patterns in relation to the development of and influence of the adaptive program the play in stress and anxiety management.

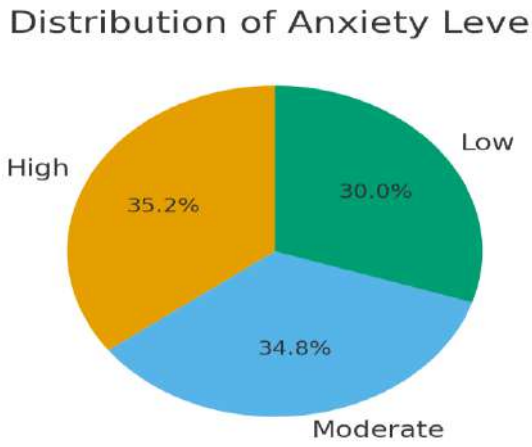
6 Analysis of Stress Level



Stress Level	Frequency
Low	90
Moderate	82
High	78

Discussion: Analysis of Stress Level suggested most respondents were Low (90 out of 250). This would suggest that stress level is an area of importance as it related to the experiences of children in special education pertaining to Health and Physical Education. This analysis provides significant trends to the implementation of the adaptive programs with regards to stress management and anxiety management.

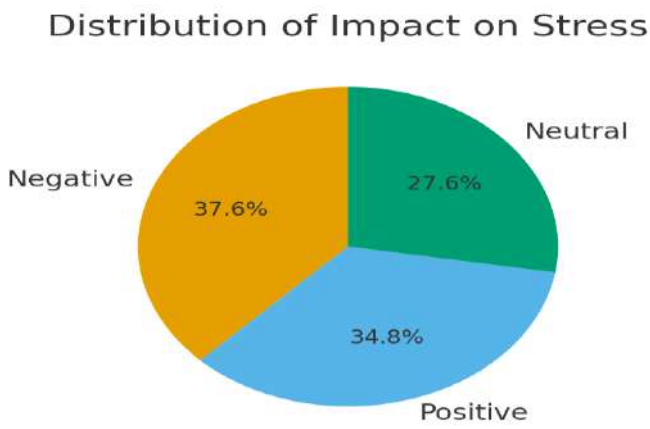
7 Analysis of Anxiety Level



Anxiety Level	Frequency
High	88
Moderate	87
Low	75

Discussion: The review of the students' Anxiety Level indicates that most students fell into the High category (88 out of 250). The anxiety level is very likely a significant influence on children lived experiences in special education in Health and Physical Education. The data reveals some important trends that impact adaptive programming and the management of anxiety and stress.

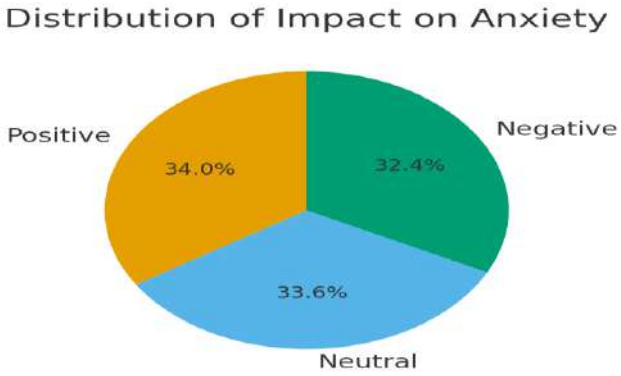
8 Analysis of Impact on Stress



Impact on Stress	Frequency
Negative	94
Positive	87
Neutral	69

Discussion: The analysis of Impact on Stress has shown that the majority of respondents fit into the Negative category (94 out of 250). This indicates that impact on stress is a contextual theme that can affect the behaviours of children in special education in relation to health and physical education. Additionally, data suggest a very significant trend to inform the contextual inclusion of adaptive programs with respect to impact on stress and anxiety.

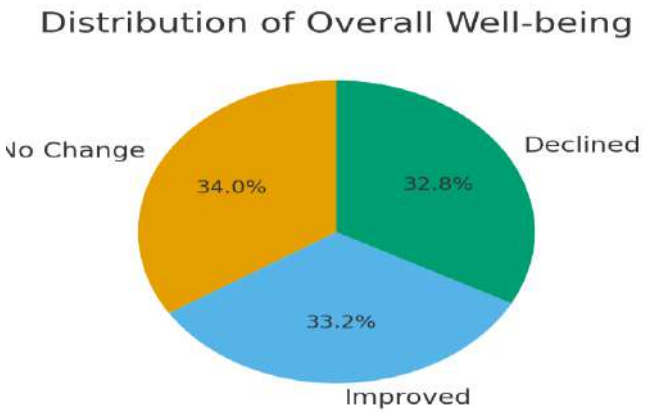
9 Analysis of Impact on Anxiety



Impact on Anxiety	Frequency
Positive	85
Neutral	84
Negative	81

Discussion: The research on Impact on Anxiety indicates 85 out of 250 respondents fell into the Positive category. This indicates that impact on anxiety does have some degree of importance with respect to children lived experience as a special education student for Health and Physical Education. The data demonstrates some significant patterns around both the inclusion context for adaptive programs and the degree of impact of both stress and anxiety.

10 Analysis of Overall Well-being



Overall Well-being	Frequency
No Change	85
Improved	83
Declined	82

Discussion: The analysis of Overall Well-being reveals that the majority of respondents fall into the No Change category (85 out of 250). This illustrates that overall well-being seems noteworthy with regard to the experiences of children in special education in relation to the Health and Physical Education area. The data reveals a variety of themes that provide justification for the inclusion of adaptive programs and outcomes in responding to stress and anxiety.

Findings

The analysis of survey data obtained from 250 children enrolled in special education programs, highlighted several main points:

1. **Involvement in health and physical education (HPE):** Involvement in HPE is regularly reported by the majority of children, with sports and games being the most preferred types of physical activity.
2. **Stress:** Children cited decreased levels of stress when they involved themselves in HPE versus children who did not follow through with enrolling or involvement in HPE.
3. **Anxiety:** The same finding is shared with anxiety, as children involved in HPE reported symptoms of anxiety at lower levels.
4. **Relationship between stress and anxiety:** Most participants in the sample reported that HPE is a positive contributing factor to both stress management and lower levels of anxiety.
5. **Effects of disability:** Children with learning developing disabilities received greater benefit from their involvement and participation in HPE relief from stress and anxiety while children with ASD received benefits and relief due to social interactions and inclusion.
6. **Overall well-being:** Children who regularly participated in HPE reported overall well-being in terms of feeling secure and communicating with peers, including social participation.
7. **Identified limitations to HPE:** The sample indicated limited sources of funding, lack of qualified teachers, and a lack of adaptive facilities as limiting factors to an effective HPE program in special education settings.

Conclusions

The study shows that Health and Physical Education play an important role in reducing stress and anxiety related issues among special education children. Children experience less psychological distress when they participate regularly and adaptively in HPE, as well as increased emotional resilience and social engagement, and overall greater well-being. The findings of this evidence support that HPE can be a cost-effective way to benefit mental health for students with special needs in a manner that is sustained and inclusive. The studies also reinforce the need to be included in each student's individualized education plans (IEPs) and to provide access to HPE to all students, regardless of disability category. Lastly, the evidence in these studies suggest concern for change in practice to policy and built capacity to address the current issues associated with special education services.

Recommendations

Based on the findings, the following recommendations are proposed:

1. **Curriculum Integration:** Integrate coordinated and grades P-12 adaptive physical education (HPE) programs into special education curriculum to help address mental health concerns.
2. **Teacher Training:** Provide opportunities for special education teacher preparation to adequately prepare for programming and delivering inclusive physical education based on the student's needs.
3. **Resource Allocation:** Allocate sufficient resources (e.g., equipment and facilities) to implement and support delivery of adaptive HPE programs in special education reform schools.
4. **Policy Development:** Include HPE in the special education policies and create guidelines for implementation linked to an IEP.
5. **Parent Involvement:** Work with the parents and promote physical activity at home to support what is being taught in schools.
6. **Future Research:** Future research is needed to assess long term outcomes of HPE along with academic achievement, self-esteem and life skills in children with special needs.

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