

**EFFECT OF PHYSICAL ACTIVITY AND  
NUTRITION EDUCATION MODULE ON  
PHYSICAL HEALTH, MENTAL HEALTH  
AND DIETARY HABITS OF SECONDARY  
SCHOOL STUDENTS IN KHYBER-  
PAKHTUNKHWA PAKISTAN**

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**ASIA e UNIVERSITY  
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EFFECT OF PHYSICAL ACTIVITY AND NUTRITION EDUCATION  
MODULE ON PHYSICAL HEALTH, MENTAL HEALTH, AND DIETARY  
HABITS OF SECONDARY SCHOOL STUDENTS IN KHYBER-  
PAKHTUNKHWA PAKISTAN

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## ABSTRACT

This study examined the effect of physical activity and nutrition education module on physical health, mental health and dietary habits of secondary school students in rural and urban areas of Khyber-Pakhtunkhwa, Pakistan. ADDIE Model was used to develop the physical activity and nutrition education module. A quasi-experimental approach was used to evaluate the effectiveness of the module. The interventional program was conducted for eight weeks. Data were collected from 60 participants before and after the 8 weeks of the intervention. A total of 30 participants were taken in each experimental and control group, which were further distributed by 15 from urban area and 15 from rural area. Physical Health Questionnaire (PHQ), Warwick-Edinburgh Mental Well-being Scale (WEMWBS) and Adolescent Food Habit Checklist (AFHC) was used to compare the physical health, mental health and dietary habits of the participants. Mann-Whitney U test and Wilcoxon Signed Ranks test utilized to achieve the objective of the study. The validity and useability of module was evaluated by panel of experts. The content validity index (CVI) was 0.9, indicate an exceptional degree of expert agreement for validity and useability. The homogeneity of the groups was confirmed before the intervention which yielded non-significant Mann-Whitney U statistics 402.50 with a  $p$  value of  $0.482 > 0.05$ . Results showed that after the intervention the physical health, mental health and dietary habit of participants were significantly improved ( $p < 0.05$ ), which confirmed the effectiveness of the module. The pre-post comparison of experimental and control group showed no significant change in physical health ( $p = 0.573$ ), mental health ( $p = 0.109$ ) and dietary habit ( $p = 0.317$ ) of participants in the control group, but a significant improvement was observed in the experimental group ( $p < 0.05$ ). Finding also showed that the module was effective for student in urban and rural area ( $p < 0.05$ ) and urban area have been improved significantly as compared to rural area. As a conclusion, this module effectively improved the physical health, mental health and dietary habits of secondary school students in Pakistan. The study implicates that physical activity and nutrition education modules can be used as a guideline to improve physical, mental and nutritional dietary habit among students.

**Keywords:** Physical activity, nutrition education, physical health, mental health, dietary habits

## **APPROVAL**

This is to certify that this thesis conforms to acceptable standards of scholarly presentation and is fully adequate, in quality and scope, for the fulfilment of the requirements for the degree of Doctor of Philosophy.

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**Professor Dr. Siow Heng Loke**

Asia e University  
Chairman, Examination Committee  
(6 March 2024)

## DECLARATION

I hereby declare that the thesis submitted in fulfilment of the PhD degree is my own work and that all contributions from any other persons or sources are properly and duly cited. I further declare that the material has not been submitted either in whole or in part, for a degree at this or any other University. In making this declaration, I understand and acknowledge any breaches in this declaration constitute academic misconduct, which may result in my expulsion from the programme and/or exclusion from the award of the degree.

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A handwritten signature in black ink, appearing to read 'Amjad Ali Khan', with a stylized flourish at the end.

Signature of Candidate:

Date: 6 March 2024

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## **LIST OF ABBREVIATION**

KP	Khyber Pakhtunkhwa
PH	Physical Health
MH	Mental Health
DH	Dietary Habits
PA	Physical Activity
WHO	World Health Organisation
SPSS	Statistical Package in Social Sciences
L2	Second Language
QCA	Qualitative Content Analysis

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.0 Introduction**

##### **1.1 Physical Health**

Physical health is an important component of good health; thus, promoting and maintaining excellent physical health in school-aged children is critical. Physical exercise, good eating, and other lifestyle variables are vital in improving health and avoiding chronic illnesses. Physical health is especially important in school students because they are at a critical age where they are forming habits that will affect their physical health in the future. Schools can play a crucial role in promoting physical health in students. A supportive and healthy school environment can encourage students to lead active and healthy lifestyles. This can include providing safe and accessible physical activity spaces, offering physical education classes, and promoting healthy eating habits through nutrition education and school meal programs.

Exercise and nutrition interventions can substantially impact physical health among school students. Exercise has been shown to improve physical fitness, reduce obesity, and minimize the risk of severe illnesses like diabetes, especially cardiac disease (Huang et al., 2020). Physical activity regularly can also help decrease stress, improve mental health, and improve academic achievement. Similarly, adequate eating can aid growth and development, maintain weight, and prevent persistent health disorders. A balanced diet consisting of whole grains, fruits, vegetables, and lean protein sources can supply important nutrients for growth and development. A balanced diet can also help avoid chronic health issues like cardiovascular illnesses, diabetes, and some forms of carcinomas (Tendon et al., 2021).

In addition to promoting healthy nutrition and exercise, schools can also promote physical health by creating a supportive and healthy environment. This can include providing safe and accessible physical activity spaces, offering physical education classes, and promoting healthy eating habits through nutrition education and school meal programs. Schools could allow kids to engage in physical activity during playtime, after-school activities, or physical education lessons. They may also encourage students to choose healthy foods by providing them with options for nutritious cuisine in the cafeteria, such as veggies, fruits, and low-fat dairy items.

In urban and rural areas of Khyber Pakhtunkhwa, Pakistan, the prevalence of physical health problems among school students is a significant concern. Studies have shown that the sedentary lifestyle and poor eating habits of school students in this region can lead to obesity, heart disease, and other chronic health conditions. Therefore, promoting physical activity and healthy nutrition among school students in this region is critical for improving physical health and preventing chronic health conditions. A research study by Huang et al. (2020) highlights the impact of exercise and nutrition interventions on physical health among secondary school students. The study found that exercise and nutrition interventions were effective in improving physical health among school students. The students who participated in the exercise and nutrition interventions showed improvements in their body fitness (BMI), body mass index, and overall health. The study also found that students who received nutrition education and participated in physical activity had healthier dietary habits than those who did not participate in the interventions. Promoting physical health among school students is very important for maintaining complete health and wellness and preventing chronic health conditions in the future. Schools and other organizations are responsible for providing a healthy and supportive environment and the resources

and opportunities that improve physical activity and healthy nutrition. In rural and urban areas of Khyber Pakhtunkhwa, Pakistan, exercise and nutrition programs have been proven effective in improving physical health among school students.

## **1.2 Mental Health**

Mental health encompasses our social, emotional, and psychological health. That influences our ideas, feelings, and behaviours. It also helps with decision-making, interpersonal relationships, and coping with stress. Maintaining one's mental health is critical throughout life, from infancy through adolescence to adulthood. The link between mental and physical health is critical. Several linkages between mental wellness and chronic physical problems significantly influence a person's standard of life, health care and other financially sponsored service needs, and social repercussions. The World Health Organisation (WHO) defines health as mental, social, and physical health, not just the absence of disease or incapacity. The World Health Organisation (WHO) states that "mental health is essential to physical health" (World Health Organisation, 2005).

In particular, during adolescence, when people are going through substantial changes and experiencing new problems, mental wellness is a crucial aspect of complete health and wellness. Due to the stresses and pressures of school and social life, school-aged adolescents are particularly prone to mental health difficulties. Recent research has investigated that having a weak psychological state can have a variety of detrimental effects on students' performance in the classroom, including poorer academic achievement, substance addiction, and a higher likelihood of developing physical health issues. On the other side, supporting mental health in school-aged students can have a lot of benefits, including improved academic

performance, increased resilience, and a lower risk of mental health issues (Maugarei et al., 2020).

Schools are critical in fostering mental health among kids. This may be accomplished by forming a safe and supportive learning environment, supplying psychiatric resources and information, and implementing programs and activities promoting resilience and emotional well-being. Exercise and diet programs also help to promote mental wellness in students. According to research by Liu et al. (2019), exercise has been demonstrated to enhance mental health and mood and lessen symptoms of anxiety and sadness. Similar to how a diet may promote healthy brain function, it can also improve overall emotional wellness (Davis et al., 2020). Schools and other organizations are responsible for promoting mental health and avoiding mental health issues since it is a crucial part of students' overall body and wellness. Exercise and nutrition treatments can have a beneficial effect in boosting mental health among school pupils. They should be addressed as part of a complete school health promotion strategy.

Emotions, ideas, behaviours, and social connections all go under mental health, a person's psychological well-being. It is an integral aspect of a person's overall health and can affect every aspect of their life. Mental health difficulties can vary from modest, transient diseases like anxiety or depression to serious, chronic illnesses like schizophrenia or bipolar disorder. Mental health, according to the World Health Organisation (WHO), is "a state of health in which someone fulfils his or her potential, can cope with everyday challenges, is able to work effectively and efficiently, and can contribute to the community in which he or she lives" (Maugarei et al., 2020). Mental health is not merely the complete absence of mental disease; it is a positive term incorporating several psychological, social, and emotional health.

A complex combination of biological, ecological, and social variables impacts mental health. Genetics can affect mental health by altering the development of specific brain structures and neurotransmitter systems. Environmental variables such as stress, trauma, abuse, poverty, and not having peer support may lead to mental health issues.

Conversely, positive social support and coping methods can assist in safeguarding and enhancing mental health (Gidugu et al., 2019). According to the (NIMH), one in five individuals in the United States has a mental disorder in a given year. Depression, bipolar illness, and anxiety disorders are the most prevalent mental health issues. Mental health issues can significantly impact a person's general health and well-being, which can also be linked to other medical illnesses, including chronic pain.

There is a rising acknowledgement of the necessity of treating psychiatric health, both in terms of lowering the burden of mental disease and fostering positive mental health. Effective treatments for mental health disorders, including psychotherapy, medicines, and alternative treatments like mindfulness-based therapies and physical activity, are available. However, despite the availability of effective treatments, many people do not receive the care they need, either because they do not seek help or because of barriers to accessing care, such as expense, negativity, or lack of access to adequate therapies (Gidugu et al., 2019). The stigma of mental illness is a significant barrier to recognizing and caring for mental health disorders. Individuals with mental disorders may encounter discrimination and prejudice and feel humiliated or embarrassed about their condition. This can lead to further social isolation and reduced availability of care. Overcoming negative perceptions surrounding mental health is crucial to improving positive mental well-being and minimizing the burden