

# We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

186,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index  
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?  
Contact [book.department@intechopen.com](mailto:book.department@intechopen.com)

Numbers displayed above are based on latest data collected.  
For more information visit [www.intechopen.com](http://www.intechopen.com)



---

# Health, Academic Achievement and School-Based Interventions

---

Thomas Matingwina

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/intechopen.76431>

---

## Abstract

There is a statistically significant relationship between health and academic achievement. Research evidence shows that children who are healthy are at a low risk for school problems than students who are unhealthy. Students with good health tend to perform better in school than those with poor health. Problems that emanate from poor health include a higher probability of school failure, poor levels of concentration, grade retention and dropout. However, health is a complex and elusive concept and its definition is often shrouded by assumptions and limitations. Therefore, the relationship between health and student achievement is often complex. The concept of health has been evolving over time, cutting across multiple disciplines. Of late, there has been a focus on achieving not only health but total well-being. Schools have been challenged to promote student health by providing favourable environments, policies, support services and information-based interventions. Schools should develop integrated health interventions because of their proven effectiveness in promoting healthy lifestyles among students. This chapter critically examines the concept of health and establishes the connection between health and achievement. The chapter also proposes health interventions that are effective in influencing academic achievement.

**Keywords:** student health, academic achievement, health interventions

---

## 1. Introduction

The primary objective of education institutions is to achieve education standards. However, research evidence reveals a significant relationship between academic achievement and the health status of students. Health problems such as vision and oral health problems, asthma, teen pregnancy, malnutrition, obesity, chronic stress and inattention and hyperactivity disorders and

risk-taking behaviour such as aggression and violence, unsafe sexual activity, unhealthy eating, physical inactivity and substance use are associated with low scholastic performance [1]. Considering that health problems have a significant influence on the overall performance of students, there is a need to look at the various health determinants and how they affect students. Identifying health factors that impact student performance is essential because of the relationship between health and academic performance. This chapter therefore will analyse the complex relationship that exists between the various health problems and academic achievement.

To understand the relationship between health and academic achievement, it is worthwhile to understand the concept of health. Most school-based health intervention strategies have been informed by a limited perspective of health as a concept. Health intervention strategies have tended to focus on the so-called 'pathogenic' approach by emphasising on the treatment of diseases. This is evidenced by a proliferation of school-based clinics that focus mainly on treating diseases. However, the World Health Organisation (WHO) asserted that health is not merely the absence of diseases, but a complete state of well-being. To this effect, various theories and models have been postulated in trying to define health as a complex concept. One interesting theory is the theory of Salutogenesis postulated by Antonovsky in 1917 and later advanced by Lindstrom in 2010. The theory hypothesises that health is a continuum that focuses on the relationship between health, stress and coping [2]. The theory comprehends health holistically; that is, health is more than the absence of illness. This chapter looks at the concept of health from this broad view in establishing the link between the various aspects of health and scholastic performance.

The World Health Organisation in 1986 asserted health is created and lived by people within the settings of their everyday life; where they learn, work, play and love. This argument was also raised during the Bangkok Charter for Health Promotion where the setting-based approach to health promotion was advocated [3]. Therefore, schools need to come up with health intervention strategies and provide healthy environments for students. School health services, which comprise components such as health services, health education, healthy environment, physical activity programmes, counselling, psychology, social services, nutrition services, improving employee well-being and family-society involvement approaches, are said to contribute to the academic performance of students in various ways [4]. In this regard, the Institute of Medicine concluded that there is a need to '*strengthen schools as the heart of health*' [5]. School-based health interventions are essential in offering better outcomes in both health and academic achievement. In light of the need for school-based health interventions, this chapter examines the various health interventions that influence academic performance.

## 2. Methods

The search was done in three stages. Firstly, the researchers did an intuitive search on the Internet using keywords that include student health, academic achievement, health interventions, health promotion, universities and colleges. The search was done via the Health InterNetwork Access to Research Initiative (HINARI), PubMed, Scopus, MEDLINE and Google Scholar. The authors also did a manual search on specific peer-reviewed medical journals that focus on health promotion

(Journal of School Health, Journal of American College Health, Health Promotion International, Journal of Health Communication and Health Education Research). Secondly, grey literature was identified by searching websites and organisations currently engaged in health promotion efforts such as the World Health Organisation, Centers for Disease Control and Prevention, Jed Foundation and Education Development Centre, the National Centre for the Dissemination of Disability Research, National Alliance on Mental Illness and the American Foundation for Suicide Prevention's College and the Washington-based Institute of Medicine. Lastly, the author reviewed reference lists within individual publications to ensure an exhaustive search. The articles were evaluated for their methodological rigour and quality of evidence, and authority.

### 3. A critical glance at the concept of health

Health is arguably one of society's most important values and has been prioritised as one of the key objectives of the sustainable development goals. Many people have regarded health as one of the most precious values in life. Health therefore should be protected and enhanced as much as possible. Achieving health is important because when people are healthy, their families, communities and countries benefit. Society should make the health of especially young people a priority because they are the future workers and leaders. There is need for an understanding of the various factors that influence health when addressing health concerns of society. However, health is a complex and elusive concept, and there has not been an absolute consensus on the definitions of health. It is one of the concepts which has often been taken for granted. One of the reasons why health is difficult to define is that it permeates different disciplines (e.g., medical sociology, health psychology and medical demography) and it is imbued with political, medical, social, economic and spiritual components.

Health is an old-age concept that has been evolving over time. The concept of health first appeared in Old English literature as *haelen* and the literal meaning was 'to heal'. The word appears in Middle English as *helthe*, referring to the sound status of an individual in body, mind and spirit. Between the seventeenth and nineteenth centuries, the words *health* and *restoration* and *hygiene* featured in the literature [6]. The word health resurfaced after the Second World War with the formation of the World Health Organisation in 1948, which defined health as 'a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity' [7].

However, the definition that was proposed by WHO in 1947 has come under a lot of criticism due to several reasons; chief among them being that health cannot be considered to be a state due to its dynamic nature, for instance, a person's health can change at any moment in time. A person can suddenly develop a headache at any time and they can heal a few minutes later. The definition also does not address the spiritual aspect of health. The spiritual aspect is also an important component of health because it incorporates five dimensions of health that are values and beliefs, sense of fulfilment, wholeness in life, human spiritual interaction and God or some form of controlling power. Another criticism stems from the fact that the issue of *well-being* is subjective and difficult to measure. It can also be argued that the definition views health as an end product, whereas health can be viewed as a means to an end in achieving

something valuable, for example, students want to be healthy so that they can pass examinations. Moreover, health should not be looked at from an individual perspective as suggested by the definition; health needs to be looked at from a community or societal level because it is highly influenced by family values and societal norms. All these criticisms point to the elusive nature of health as a concept and how it has been viewed from a limited perspective. There is therefore a need to view health from a broader lens, especially when it pertains to the younger generation living in today's complex world.

### 3.1. A broader view of health

There have been modifications on the original definition that was proposed by WHO in 1948. WHO made some modifications on the definition during its first International Conference on Health Promotion held in Ottawa, Canada, in 1986, which saw the drafting of the Ottawa Charter for Health Promotion. WHO redefined health from a broader perspective:

*Health has been considered less as an abstract state and more as a means to an end which can be expressed in functional terms as a resource which permits people to lead an individually, socially, and economically productive life. Health is a resource for everyday life, not the object of living. It is a positive concept emphasizing social and personal resources as well as physical capabilities [8].*

This is a more helpful definition which resonates with recent theories that attempt to define health. One of the most interesting theories that offer helpful solutions in defining health is the theory of Salutogenesis that has been also evolving over time. The theory was postulated by Antonovsky in 1987 and later advanced by Lindström in 2010. The term Salutogenesis was coined by Antonovsky to describe health as a holistic concept. It posits that health is a continuum that focuses on the relationship between health, stress and coping. The theory comprehends health holistically; that is, health is more than the absence of illness. In the health promotion context, the term Salutogenesis is used to describe approaches which focus on factors that support human health and well-being, rather than those that focus on factors that cause disease. Fundamentally, the theory forms the opposite to the hitherto dominating concept of pathogenesis, which examines the causes of illness. The theory emphasises that quality of life or well-being is determined by various factors such as cure, protection, disease prevention, health education and health promotion. Lindstrom used the *Health in the River of Life* metaphor to argue that individuals should learn how to swim in the river of life. In other words, individuals should be equipped with requisite life skills so that they can thrive in the 'river of life'. Lindstrom also emphasises that quality of life or well-being is determined by various factors such as cure, protection and disease prevention [9].

The World Health Organisation proposes three dimensions of health, which are mental, physical and social health (see **Figure 1**). This view of health has been adopted by many professional organisations. For example, the American Occupational Therapy Association (AOTA) defines health as:

*'...the absence of illness, but not necessarily disability, a balance of physical, mental and social wellbeing attained through socially valued and individually meaningful occupation; enhancement of capacities and opportunity to strive for individual potential; community cohesion and opportunity; and social integration, support and justice, all within and as part of sustainable ecology' [10].*

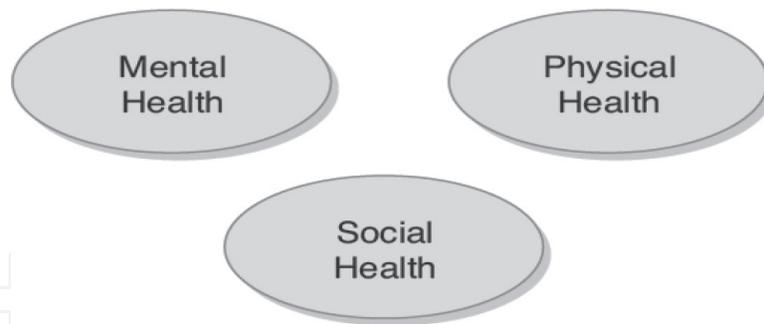


Figure 1. Dimensions of health.

### 3.2. Emphasis on wellness

It is interesting to note that the issue of well-being or wellness features a lot in the proposed definitions of health. It seems there is now more emphasis on wellness than health. However, the difference between health and wellness has not been adequately clarified in literature. In fact, the terms health and wellness have been viewed as near synonymous and have been used interchangeably in most instances. It is therefore important to provide clarity on the relationship between these concepts, especially considering the increasing popularity and use of the term wellness in designing school-based health interventions. Most school-based health promotion initiatives today often prefer to use the term wellness instead of health, hence the popularity of the term 'wellness centres' in schools and universities.

Wellness can be defined as a lifestyle that promotes health. This entails that for one to achieve total well-being, they have to lead a lifestyle that promotes physical, mental and social health. The Pacific Northwest Foundation believes that wellness is much more than just a state of physical health and it encompasses emotional stability, clear thinking, the ability to love, create, embrace change, exercise intuition and experience a continuing sense of spirituality [11]. This entails that health is an active process of becoming aware of and making choices towards a more successful existence. These choices mean that individuals have considered a variety of options and select those that seem to be in their best interest. Academic achievement and general success in life is therefore determined by each individual to be their personal collection of accomplishments for their life.

Wellness is multidimensional. A popular model adopted by many university, corporate and public health programmes encompasses various dimensions that include social, occupational, spiritual, physical, intellectual and emotional. The National Wellness Institute recognises eight 'dimensions', or essential life areas which collectively comprise the wellness (well-being) of all human beings. The eight dimensions of wellness proposed by The National Wellness Institute are:

- spiritual,
- emotional,
- intellectual,
- physical,

- cultural,
- occupational,
- social,
- environmental and
- precepts for wellness [12].

Some dimensions of health can be measurable at a specific point in time. For example, blood pressure, depression and sugar levels can be measured at specific intervals to determine someone's health. However, an unhealthy individual can achieve well-being. For example, someone with HIV, chronic cancer or diabetes can be well if they practise a healthy lifestyle. Conversely, an individual does not have to be well to be healthy. For example, an HIV-free individual can engage in unhealthy lifestyle such as smoking or excessive alcohol intake.

The issue of wellness is emphasised in the definition by WHO and in the Salutogenesis theory. Therefore, it is clear that wellness is an emerging concept within the health promotion context and it is an important attribute of health. It is also clear that the concept of health has been evolving over time. Previously, there has been a medical dichotomy separating health from illness, and health was seen from a traditional pathogenic approach. This view saw health as the absence of diseases or other infirmities. The World Health Organisation attempted to change this line of thinking by proposing that health is a complete state of well-being. However, as discussed previously in this chapter, this definition was also criticised, and as a result, WHO came up with a broader definition that has been authenticated by theory. This broader view of health from the definition proposed by WHO and the Salutogenesis theory by Antonovsky and Lindstrom will be helpful in determining the various health dimensions that affect students' academic achievement. As mentioned earlier on, it seems learning institutions are using a narrow approach in promoting health among student. Most schools especially in the developed world do not have comprehensive health promotion strategies and they tend to employ the 'pathogenic' approach which is more reactive than proactive. This is characterised by the presence of student clinics for the treatment of diseases, injuries and other forms of ailments. As discussed later in this chapter, there is a need to come up with school-based interventions that address the overall health and wellness of students. Moreover, these interventions should be more proactive in addressing students' health needs.

#### **4. Academic achievement and health**

Academic achievement, also referred as academic performance, is the outcome of education, the extent to which a student, teacher or institution has achieved their educational goals. Academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments that include schools, colleges and universities. School systems mostly define cognitive goals that either apply across multiple subject areas such as critical thinking or include the acquisition

of knowledge and understanding in a specific intellectual domain such as numeracy, literacy, science or history, among others. Academic achievement, therefore, should be considered to be a multifaceted construct covering multiple domains of learning [13].

Academic achievement is commonly measured by examinations or continuous assessment. There is, however, no general agreement on how it is best tested or which aspects are most important. Some of the yardsticks that have been used to measure academic achievement include procedural knowledge such as skills or declarative knowledge such as facts. Among the many criteria that indicate academic achievement, there are very general indicators such as knowledge acquired in an educational system, more curricular-based criteria such as grades or performance on an educational achievement test, and cumulative indicators of academic achievement such as educational degrees and certificates.

Individual differences in academic performance have been linked to differences in intelligence and personality. Students with higher mental ability as demonstrated by IQ tests and those who are higher in conscientiousness (linked to effort and achievement motivation) tend to achieve highly in academic settings. Although the primary goal of educational institutions is to achieve higher standards in terms of academic performance, research shows that academic achievement is influenced by multiple factors. Factors such as learning environments, parent's academic socialisation and extra-curricular activities have a positive relationship with academic performance. Health has been seen as one of the key factors that influence academic performance. The importance of health on academic achievement was emphasised by the Centers for Disease Control and Prevention (CDC) by stating that 'CDC recognizes that the academic success of ... youth is strongly linked with their health. In turn, academic success is an excellent indicator for the overall well-being of youth, and is a primary predictor and determinant of adult health outcomes' [14].

Research evidence reveals that students with poor health have a higher probability of school failure, grade retention and dropout. Previous studies found that the health services provided at school can alleviate the problem of absenteeism, late-coming and undisciplined student behaviour, and increase graduation rate. However, the relationship between student health and academic success is complex because health is a broad concept which is complex to define. Previous research has found some significant relationship between specific attributes of health and academic achievement. For example, previous research found an association between nutrition and physical activity with higher academic performance [15]. Overweight and hypertension are associated with decreased cognitive function, and overweight is associated with poorer school performance [16]. In contrast, higher levels of physical activity have been associated with better cognitive function, such as enhanced concentration and memory [17]. Results of a randomised control trial carried out in 2011 demonstrated that overweight students randomised to a 13-week exercise program exhibited dose-response benefits of exercise on executive function and mathematics achievement as well as preliminary evidence of enhanced brain activity measured via functional magnetic resonance imaging (MRI) [18].

In a longitudinal study carried out in the United States of America, the findings revealed that after accounting for family characteristics, adolescents with poorer general health were found to

be less likely than healthier students to graduate from high school on time and attend college or post-secondary education [19]. The California's state education system published an extensive report linking academic achievement and health [20]. A study by researchers at the University of Washington found that Washington state schools with a lower prevalence of substance abuse also had higher scores on the Washington Assessment of Student Learning (WASL) [21].

This association between health and academic achievement was illustrated in more detail in a study that was carried out among our own Washington youth in 2009. The study examined the relationship using data collected from Washington state students who took the Healthy Youth Survey. The survey took place in classrooms and had questions about a variety of health factors and academic indicators, such as what grades the student usually gets in school. Students were classified as being at 'academic risk' if they said they usually get Cs, Ds or Fs in school. The study identified 13 key physical and mental health risk factors that were available in the Healthy Youth Survey and somewhat common among students (see **Table 1**). The results showed that the percentage of the students at academic risk was greater for students who reported having any of the 13 health risk factors in comparison to students without the health risks (see **Figure 1**). For example, about 22% of non-smoking students were at academic risk, but more than twice as many (57%) of students who smoke were at risk. About 20% of students who ate breakfast were at academic risk, but 34% of students who did *not* eat breakfast were at risk. For each specific risk factor, the difference in academic risk by health risk factor was statistically significant, including after adjusting for gender and socio-economic status [22].

| Health Risk   | Percent of 8th grade students with risk factor |
|---|--|
| <b>Substance Abuse</b> (any use in past 30 days)                    |  |
| Cigarette smoking   | 6.1  |
| Alcohol use   | 16.9   |
| Marijuana use   | 7.3  |
| <b>Chronic Health Conditions</b>                                    |  |
| Obesity (body mass index greater than 30)                           | 10.4   |
| Severe asthma (frequent symptoms that affect activities and sleep)  | 0.3  |
| <b>Poor Nutrition</b>   |  |
| Not eating breakfast  | 33.9   |
| Insufficient fruit and vegetable consumption (fewer than 5 per day) | 70.6   |
| Drinking 2 or more soda pops per day                                | 15.8   |
| <b>Insufficient Physical Activity</b>                               |  |
| Insufficient exercise (vigorous or moderate activity)               | 17.6   |
| Watching TV 3 or more hours on an average school day                | 31.2   |
| <b>Poor Mental Health</b>   |  |
| Feeling unsafe at school  | 17.5   |
| Depressed for at least 2 weeks in past year                         | 23.5   |
| <b>Sleep Deprivation</b>  |  |
| Fewer than 8 hours of sleep at night                                | 42.8   |

**Table 1.** Health risks that may influence student achievement.

Modern-day students who are involved in school and other extra-curricular activities experience a toll on their physical and mental health. Having a mental illness is a difficult thing to deal with, especially as a teen. Mental health disorders can affect social interactions, inability to screen out environmental stimuli (sounds, sights or smells which may be distracting to the student), inability to concentrate, lack of stamina, handling time pressures and multiple tasks, handling negative feedback and the response to change. Mental illness therefore has a great impact on academic achievement. It does not only affect emotional health but it is known to influence many domains of students' lives, including their social interactions and educational achievements. Mental illness can be linked to poor attendance, particularly frequent absences for vague, non-specific physical health problems. It has also caused difficulties with academic work such as social integration, adjustment to school, behaviour regulation, attention and concentration [23]. In a 2004 study, approximately 83% of students with emotional and behavioural disorders scored below the mean of the control group in reading, writing and math [24]. **Box 1** reveals a summary of results compiled by the National Centre for Mental Health Checkups. The results show that mental illness affects attendance, perceived competence and concentration [25].

**Attendance:** High-school students who screen positive for psychosocial dysfunction have three times the absentee and tardy rates of students not identified with psychosocial dysfunction.

**Perceived competence:** Students reporting high levels of psychosocial stress are more likely to perceive themselves as less academically competent.

**Concentration:** Students with greater depression symptoms are more likely to report difficulty concentrating in class and completing homework.

**Anxiety:** Anxiety disorders, which affect 31.9% of all adolescents and co-occur in approximately one-third of depressed youth, are associated with a reduced likelihood of attending college. People with a lifetime occurrence of social phobia are almost twice as likely to fail a grade or not finish high school as those who have never had the condition.

**Depression:** High depression scores have been associated with low academic achievement; high scholastic anxiety; increased school suspensions; and decreased ability or desire to complete homework, concentrate and attend class.

**Suicidality:** Adolescents who have attempted suicide in the previous 12 months show significantly lower levels of school performance and school connectedness than non-attempters. Students who perceive their academic performance as 'failing' are 3 times more likely to report suicidal thoughts and 10 times as likely to report suicide attempts than students who feel their performance is fine.

**Substance use disorders:** Substance abuse, including alcohol abuse in isolation, is significantly associated with termination of primary and secondary school, failure to enter college and termination of college.

**Attention disorders:** Attention problems are the principal predictor of diminished achievement relative to expectations on the basis of a young person's cognitive ability.

**Box 1.** Effects of mental illness on academic achievement.

A study by the Washington State Healthy Youth Survey carried out in 2006 found that the more health risks students had, the more likely it was that they also were at academic risk. The rate of increase in academic risk was very consistent; with each extra health risk added a similar difference, whether going from one to two risks or seven to eight risks (see **Figure 2**). Fewer than 10% of students with no health risk factors reported being at academic risk (having mostly Cs, Ds or Fs). About half of students with six health risk factors, and two-thirds or more of students with at least nine health risk factors were at academic risk [26].

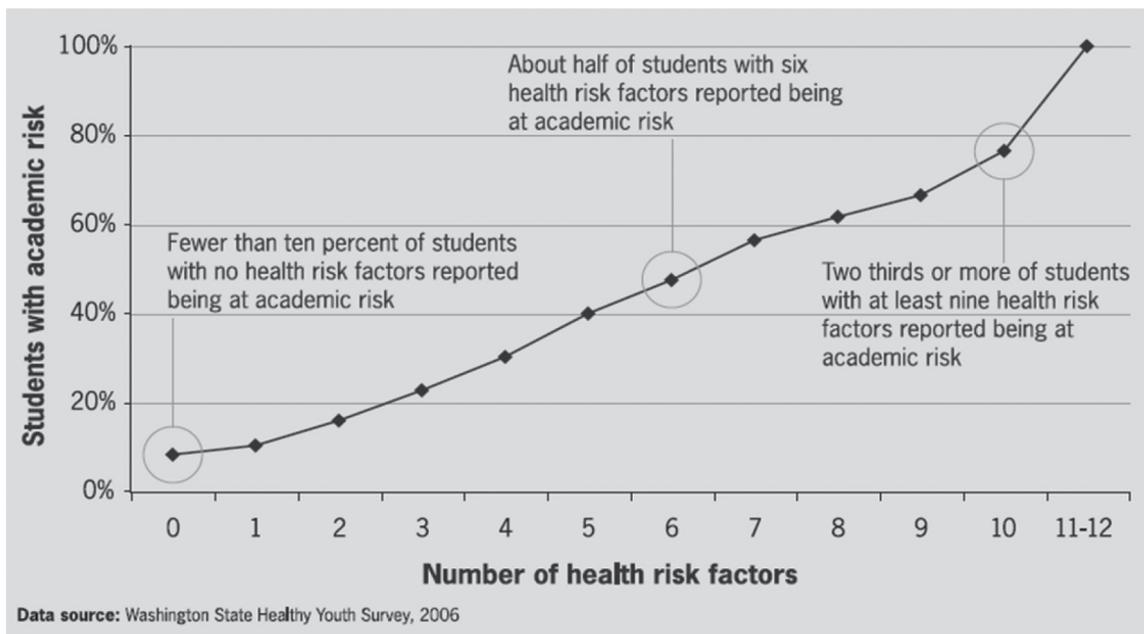


Figure 2. Number of risk factors and academic achievement.

## 5. Health interventions that influence academic achievement

The World Health Organisation observes that health is created and lived by people within the settings of their everyday life, where they learn, work, play and love. The Bangkok Charter for Health Promotion advocates setting-based approaches to health promotion. Schools therefore play a critical role in promoting the health and safety of young people and helping them establish lifelong healthy behaviours. School health programmes can play a vital role in reducing the prevalence of health risk behaviours among young people and have a positive effect on academic performance. Schools can be a context where children can learn and practise positive health behaviours within a health-promoting environment. In a May 2012 report, *Accelerating Progress in Obesity Prevention*, the Institute of Medicine evaluated obesity prevention strategies and concluded that we must 'strengthen schools as the heart of health' [5].

### 5.1. Health-promoting school policies, procedures and environments

Clearly, there are many possibilities for school-based health interventions. School staff and partners may gravitate towards classroom-based or individual-based health education because it is the traditional way to reach students at school. However, policies, procedures and 'environments' that promote healthy behaviours are also critical components for improving student health policy interventions (including changes in the school environment) can influence day-to-day norms of the school that will ultimately contribute toward behaviour change [27]. Examples of policies that may be implemented include the use of signpost to restrict smoking in some designated areas, restricting the availability of certain food products that are considered unhealthy and offering incentives to students to encourage them to lead healthy lifestyles.

## **5.2. Information-based solutions**

Prevention is better than cure. Information has played a critical role in disease prevention and the cost of information-based solutions is much less compared to the cost of treating patients. Information is a useful resource in catalysing behaviour change among school children. Disseminating health information can improve knowledge transfer from health professionals to the student population, and helps them to maintain and improve their health. Schools can introduce health intervention strategies aimed increasing awareness on a number of health issues that include food and nutrition, sexual and reproductive health, alcohol and drug abuse, depression and anxiety, physical exercise among other key health topics. Schools should use a variety of media and channels to disseminate health information, including posters, websites, nurses and social media.

## **5.3. Health-promoting curriculum, instruction and training**

Health education programmes can help students develop the knowledge, skills, attitudes and behaviours needed to adopt healthy behaviours. Educational interventions can also enhance knowledge and help-seeking among college students. Fitness and wellness courses have been seen as agents of change for modifying unhealthy lifestyles among college students. There is evidence that well-taught fitness and wellness classes have the potential to positively affect the attitudes and behaviours of the students that enrol in them. Educational modules are an important tool for health information dissemination and behaviour change. Conceptually based wellness courses, which are also referred to as lecture laboratories, have been designed to promote physical education and wellness among college students. The courses are an alternative to the traditional skill-based physical education courses. The courses consist of lectures and laboratory experiments. The lecture part of the course is designed to promote learning of conceptual information related to fitness and wellness and health behaviour change theory as well as learning of self-management skills that result in real-world application. The laboratory sessions are designed to provide students with hands on skills on matters related to wellness and physical exercises [28].

## **5.4. Supportive health services**

Supportive health services are targeted interventions or support for selected students, as well as provision of a broad range of services that can influence health. For example, school nurses and counsellors refer students who currently smoke to cessation classes or other help for quitting. The Centers for Disease Control and Prevention observes that supportive services can have a high impact on individual students, but only for the selected students who would have been identified as students at risk. These services usually require relatively more staff resources to sustain. For example, individual counselling programmes for students at risk for substance abuse may effectively impact the behaviour of individual students, but may not impact the prevalence of substance abuse at the school as a whole, because they only reach a small number of students [29].

### 5.5. Integrated school-based interventions

As discussed earlier on in this article, health is a complex phenomenon that is influenced by multiple factors. Therefore, stand-alone interventions that focus on specific health problems may not be effective in addressing the overall health needs of students [30]. Many health promotion bodies that include the Jed Foundation and the National Centre for the Dissemination of Disability Research have advocated for integrated health intervention strategies. As an introduction to describing integrated school health interventions, the Centers for Disease Control and Prevention (CDC) notes on their Website:

*Schools by themselves cannot—and should not be expected to—solve the nation’s most serious health and social problems. Families, health care workers, the media, religious organizations, community organizations that serve youth, and young people themselves also must be systematically involved. However, schools could provide a critical facility in which many agencies might work together to maintain the well-being of young people [31].*

Intervention programmes that include more than one approach can create synergy, and eliminate unnecessary duplication of effort and wastage of resources (human and capital). The *Guide to Community Preventive Services*, which conducts rigorous reviews of health interventions, found strong evidence in support for the effectiveness of integrated health interventions. The review found a link between integrated interventions and reduction in violence and sexual risk behaviours in adolescents [32].

## 6. Conclusion

Research evidence reveals a complex relationship between health and academic achievement. Studies that have been carried out show a significant correlation between academic performance and health problems such as mental illness, depression and anxiety, vision and oral health problems, asthma, teen pregnancy, malnutrition, obesity, chronic stress, aggression and violence, unsafe sexual activity, unhealthy eating, physical inactivity and substance abuse. The effects of such health problems include poor retention, school failure, grade retention, school dropout, absenteeism and poor concentration. Research has also revealed that the more health risks students had, the more likely it was that they also were at academic risk. Schools and universities are in a unique position of educating students about life in general and more specifically about diseases. Schools should create enabling environments and policies that and support services promote student health individually and collectively. Comprehensive school health services, which comprise multiple interventions, are said to positively contribute to the academic performance of students.

### Author details

Thomas Matingwina

Address all correspondence to: [tmatingwina@gmail.com](mailto:tmatingwina@gmail.com)

Department of Library and Information Science, National University of Science and Technology, Bulawayo, Zimbabwe

## References

- [1] Knopf JA, Finnie RK, Peng Y, Hahn RA, Truman BI, Vernon-Smiley M, et al. School-based health centres to advance health equity: A community guide systematic review. *American Journal of Preventive Medicine*. 2016;**51**(1):114-126. DOI: 10.1016/j.amepre.2016.01.009
- [2] Antonovsky A. *Health, Stress and Coping*. San Francisco: Jossey-Bass; 1979
- [3] World Health Organisation (WHO). The 6th Global Conference on Health Promotion; 11 August 2005; Bangkok. Bangkok: World Health Organisation; 2005. Available from: [http://www.who.int/healthpromotion/conferences/6gchp/hpr\\_050829\\_%20BCHP.pdf](http://www.who.int/healthpromotion/conferences/6gchp/hpr_050829_%20BCHP.pdf) [Accessed: 2 May 2018]
- [4] Rasberry CN, Slade S, Lohrmann DK, Valois RF. Lessons learned from the whole child and coordinated school health approaches. *Journal of School Health*. 2015;**85**:759-765. DOI: 10.1111/josh.12307
- [5] Institute of Medicine. *Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation*. Washington, DC: The National Academies Press; 2012
- [6] Cook H. Historical keywords. *Lancet*. 2004;**364**:1481
- [7] United Nations Department of Public Information. The Universal Declaration of Human Rights [Internet]. 1948. Available from: [www.ohchr.org/en/udhr/pages/language.aspx?langid=eng](http://www.ohchr.org/en/udhr/pages/language.aspx?langid=eng) [Accessed: 21 June 2012]
- [8] World Health Organisation (WHO). Ottawa Charter for health promotion. *Health Promotion*. 1986;**1**(4):iii-iiiv
- [9] Lindström B. Salutogenesis: An Introduction [Internet]. 2010. Available from: [http://www.centrelearoack.org/assets/PDF/04\\_activites/cdr-GCPB121122-Lindstom\\_pub\\_introsalutogenesis.pdf](http://www.centrelearoack.org/assets/PDF/04_activites/cdr-GCPB121122-Lindstom_pub_introsalutogenesis.pdf) [Accessed: 2 May 2018]
- [10] American Occupational Therapy Association. [Internet]. 2018. Available from: <https://www.aota.org/Practice/Health-Wellness.aspx> [Accessed: 2 May 2018]
- [11] Pacific Northwest Foundation. [Internet]. 2017. Available from: [http://www.pnf.org/Definitions\\_of\\_Health\\_C.pdf](http://www.pnf.org/Definitions_of_Health_C.pdf) [Accessed: 2 May 2018]
- [12] The National Wellness Institute. About Wellness. [Internet]. 2018. <http://www.national-wellness.org/?page=AboutWellness> [Accessed: 2 May 2018]
- [13] Steinmayr R, Meißner A, Weidinger AF, Wirthwein L. Academic achievement. *Oxford Bibliographies Online Datasets*. 2014. DOI: 10.1093/obo/9780199756810-0108
- [14] Centers for Disease Control and Prevention. Healthy Youth! Student Health and Academic Achievement. [Internet]. 2005. Available from: [www.cdc.gov/healthyyouth/health\\_and\\_academics/index.htm](http://www.cdc.gov/healthyyouth/health_and_academics/index.htm) [Accessed: 2 May 2018]
- [15] Edwards JU, Mauch L, Winkelmann MR. Relationship of nutrition and physical activity behaviors and fitness measures to academic performance for sixth graders in a midwest city school district. *Journal of School Health*. 2011;**8**:65-73

- [16] Shore SM, Sachs ML, Lidicker JR, Brett SN, Wright AR, Libonati JR. Decreased scholastic achievement in overweight middle school students. *Obesity*. 2008;**16**:1535-1538
- [17] Singh A, Uijtdewilligen L, Twisk J, VanMechelen W, Chinapaw M. Physical activity and performance at school: A systematic review of the literature including a methodological quality assessment. *Archives of Pediatrics & Adolescent Medicine*. 2012;**166**:49-55
- [18] Davis CL, Tomporowski PD, McDowell JE, et al. Exercise improves executive function and achievement and alters brain activation in overweight children: A randomized controlled trial. *Health Psychology*. 2011;**30**:91-98
- [19] Haas SA, Fosse NE. Health and the educational attainment of adolescents: Evidence from the NLSY97. *Journal of Health and Social Behaviour*. 2008;**49**:178-192
- [20] California Department of Education. Getting Results: Developing Safe and Healthy Kids Update 5: Student Health, Supportive Schools, and Academic Success. 2005. [www.gettingresults.org/](http://www.gettingresults.org/) [Accessed: 2 May 2018]
- [21] Arthur MW, Brown EC, Briney JS. Multilevel Examination of the Relationships Between Risk/Protective Factors and Academic Test Scores. Social Development Research Group, School of Social Work, University of Washington. [Internet]. 2006. Available from: [www1.dshs.wa.gov/pdf/hrsa/dasa/ResearchReports/MERRPFATS0706.pdf](http://www1.dshs.wa.gov/pdf/hrsa/dasa/ResearchReports/MERRPFATS0706.pdf) [Accessed: 2 May 2018]
- [22] Dilley J. Research Review: School-Based Health Interventions and Academic Achievement. Healthy Students, Successful Students Partnership. Washington; 2009
- [23] DeSocio J, Hootman J. Children's mental health and school success. *The Journal of School Nursing*. 2004;**20**:189-196
- [24] Nelson R et al. Academic achievement of K-12 students with emotional and behavioral disorders. *Exceptional Children*. 2004;**71**:59-73
- [25] National Centre for Mental Health Checkups. Youth Mental Health and Academic Achievement. U.S. Department of Health and Human Services; 1999
- [26] Washington State Healthy Youth Survey. [Internet]. 2006. Available from: [www.doh.wa.gov/healthyyouth/default.htm](http://www.doh.wa.gov/healthyyouth/default.htm) [Accessed: 2 May 2018]
- [27] Miller GF, Sliwa S, Brener ND, Park S, Merlo CL. School district policies and adolescents' soda consumption. *Journal of Adolescent Health*. 2016;**59**:17-23. DOI: 10.1016/j.jadohealth.2016.02.003
- [28] Kulinna P, Warfield WW, Jonaitis S, Dean M, Corbin C. The progression and characteristics of conceptually based fitness/wellness courses at American universities and colleges. *Journal of American College Health*. 2009;**58**:127-131. DOI: 10.1080/07448480903221327
- [29] Centers for Disease Control and Prevention. The Guide to Community Preventive Services: What Works to Promote Health? [Internet]. 2005. Available from: [www.thecommunityguide.org/index.html](http://www.thecommunityguide.org/index.html) [Accessed: 2 May 2018]

- [30] Lewallen TC, Hunt H, Potts-Datema W, Zaza S, Giles W. The whole school, whole community, whole child model: A new approach for improving educational attainment and healthy development for students. *Journal of School Health*. 2015;**85**:729-739. DOI: 10.1111/josh.12310
- [31] Centers for Disease Control and Prevention. Healthy Youth! Student Health and Academic Achievement [Internet]. 2009. Available from: [www.cdc.gov/healthyyouth/health\\_and\\_academics/index.htm](http://www.cdc.gov/healthyyouth/health_and_academics/index.htm) [Accessed: 2 May 2018]
- [32] Centers for Disease Control and Prevention. Youth risk behavior surveillance: United States, 2015. *Morbidity and Mortality Weekly Report: Surveillance Summary*. 2016;**6**:1-174. Available from: <https://www.cdc.gov/std/stats15/std-surveillance-2015-print.pdf> [Accessed: 2 May 2018]

