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Review

The benefits of yoga in children

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ABSTRACT

The number of children suffering from stress and anxiety in Malaysia is on the rise. Evidence shows that mind–body therapies such as mindfulness therapy, meditation and yoga have been practiced in many other countries to reduce and/or manage the psychological effects of stress and anxiety. This review article looks at the intervention of yoga as a meditative movement practice in helping school children manage stress and anxiety. Articles were retrieved using a combination of databases including PubMed/MEDLINE, and PsycINFO. Not only peer-reviewed articles, but also those written in English language were included in this review. All studies reviewed had incorporated some form of meditative movement exercise. The intervention encompassed asanas (postures), pranayama (expansion of life force), dharana (concentration) and dhyana (meditation), which are the different paths in yoga. A total of eight articles met the inclusion criteria and were reviewed. The findings of this review reveal that the practice of yoga has brought about, among other things, improvement in managing and reducing stress and anxiety. Despite the limitations in most, if not all of the studies reviewed, in terms of heterogeneity and sample size, yoga appears to be an effective modality for helping children cope with stress and anxiety. It appears that if schools in Malaysia can incorporate yoga as part of the physical education curriculum, it will definitely benefit the students.

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1. Introduction

Children are constantly being exposed to state-of-the-art technology, which has mushroomed over the past decade. Even though media technologies such as computers and cell phones are knowledge resources for all, their intense use has become disquieting; there appears to be a decline in physical activity among these users, and this lack of mobility has been linked to various kinds of health issues such as obesity and physical and mental health issues [1].

What is more, learning and teaching do not only happen during school hours. It continues after school when children are required to surf the web to look for current information for their assignments. At home, parents may exert pressure on their children to excel in their studies. However, when children do not perform well, their level of confidence can be affected, contributing to student anxiety. In the meantime, parents and teachers may choose to

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ignore signs of mental stress in the children and continue to add pressure in the hope of making them competitive.

Sleep is often compromised when children are unable to meet deadlines set by schools or other learning institutions. The National Sleep Foundation recommends 8.50–9.25 h of sleep for teenagers, but teens only get 7.4–8.1 h [2]. Research has shown that when teens are deprived of sleep, they get anxious or stressed [1].

According to the Health Ministry in Malaysia, mental health problems are on the rise among Malaysian students. Mental health disorders affected one in ten individuals in 2011, but that number has risen to one in five in 2016 [3], the same rate as in the United States [4]. It has been revealed that anxiety and depression are the main kinds of mental health problems among students. In a survey of 10,123 adolescents, aged 13–18 years, in the United States, it was found that 31.9% were suffering from anxiety disorders [5]. Anxiety occurs naturally in children to varying degrees, but in some cases it can escalate and produce an anxiety disorder. Anxiety is generally a state of unwarranted fear of nervousness about real or imagined circumstances. There are many symptoms, and they may vary from one person to another, affecting physical and mental health. Common symptoms include elevated heart rate, profuse perspiration and feeling queasy due to excess release of adrenaline, noradrenaline and cortisol [6]. Other sources have reported that anxiety causes stomachaches, headaches and dizziness in children [7].

The effects of anxiety on the mind also vary. While some experience a sense of fear and distress in the absence of real danger, or the inability to relax, others may experience a sense of disorientation or brain fogginess [8]. High levels of anxiety are detrimental as they can affect both concentration and memory, which are paramount for academic success [8].

Research has revealed that mind–body cognitive therapy, mindful awareness and mind–body movements, like yoga, are effective in reducing cortisol concentrations, hence enhancing mood and well-being. However, most of these studies were done on adults [9–12].

While there have been numerous studies on the effects of mindfulness practice and meditation on various mental health issues and general well-being in children, research on the effects of classical yoga, as a meditative movement, on mental health issues in children is relatively scarce [13]. The available literature, more than a decade old, on the impact of yoga in children has shown that this mind–body practice has demonstrated positive effects in the control of anger, depression, stress, body dissatisfaction, anxiety as well as improving positive emotion [14–16].

The Convention on the Rights of a Child [17] defines a "child" as a person who is below 18 years of age. In this paper, all the children who had participated in the studies reviewed were between 7 and 18 years of age. Mental health covers a wide range of disorders, including eating disorders, dissociative disorders (i.e., affecting a person's memory), psychosis, obsessive–compulsive disorder, autism, attention deficit hyperactive disorder, anxiety, depression and post-traumatic stress disorder [18]. For the purposes of this review, only studies that have employed therapeutic yoga in children suffering from stress and anxiety are included. Studies conducted in the last seven years have been retrieved and scrutinized. If the findings of this review shed some light on the therapeutic effects of yoga on children, the next step would be to propose a hatha yoga curriculum to the Malaysian Education Ministry to either supplement or replace the current physical education lessons in schools.

2. Yoga as meditative movement

Among the meditative movements practiced world-wide today, yoga is one of the most popular mind–body disciplines. Even though yoga is an ancient practice, it is pragmatic in its approach. Having emerged in India in the 6th century, classical yoga, as classified by Patanjali, the founder of yoga, encompasses eight paths [19]. These include yama (universal ethics), niyama (individual ethics), asanas (postures), pranayama (expansion of life force), prathyhara (withdrawal of senses), dharana (concentration), dhyana (meditation) and lastly samadhi (blissful state). The practice of yoga is so flexible that it allows individuals to concentrate on the paths that are beneficial to them and pay less attention to the others.

Yoga as a complementary therapy for various physiological diseases and psychological disorders has been widely studied in adults [20,21]. Nonetheless, studies on the therapeutic use of yoga in children is not as extensive as with adults [21]. Existing research indicates that yoga can have multiple benefits, including improving flexibility, promoting weight loss and enhancing emotional and psychosocial health [22].

Given that mental health is a growing problem in schools and other learning institutions, there is an effort to provide children with the tools necessary to cope with the behavioral expectations placed upon them [23]. Children face not only intellectual challenges at school, but also interpersonal demands which may require highly developed self-regulation skills, such as mindfulness, resilience and anger control. Studies have also revealed that stress reactivity in children is related to blood pressure readings, levels of adiposity and negative behaviors [24–26]. According to Morgan et al. [27] children who underwent high levels of psychological stress had greater total adiposity than those who were less stressed. Similarly, Roemmich et al. [24] pointed out that children who experienced larger increases in heart rate reactivity to an interpersonal stressor had a much larger percentage of body fat and body mass index percentile. Increases in total adiposity and heart rate, if unresolved, can lead to diseases such as type 2 diabetes, hypertension and cardiovascular diseases as early as childhood [28].

While there may be other solutions, the practice of yoga offers one opportunity to develop skills (i.e., mindfulness, resilience and anger control) to address the underlying stress. Evidence from research maintains that an array of yoga techniques can result in positive effects in an individual's physiological and mental health through the down-regulation of the hypothalamo–pituitary–adrenal axis and sympathetic nervous system [29,30]. Studies also suggested that yoga may develop students' mind–body awareness, self-regulation and physical fitness, which in turn, enhance behavior, and mental, physical and emotional health. The 81 studies reviewed by Ross and Thomas [29] comprised not only a variety of trial designs, but also a variety of sub-populations (college students, adults and senior citizens). It should be noted that even though all the studies employed a yoga intervention, the structure of the yoga session, type of yoga and frequency of yoga class varied from study to study.

3. Methods

A comprehensive search was carried out of studies that had focused on yoga as an intervention for children suffering from stress and anxiety. The articles were identified using a combination of databases, including PubMed, MEDLINE, and PsycINFO. Using pertinent key words and phrases such as "intervention of yoga," "anxiety," "depression" and "stress," and limiting the search to only full text and peer-reviewed articles written in English, over 1000 articles were identified. In order to streamline the review, only studies that had been conducted with children below 18 years of age, and were published in the last 7 years were included. Studies of children suffering from multiple diseases were excluded, as

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