



Short Communication

Sleep quality in adolescents with diabetes mellitus

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Abstract

Type 1 Diabetes Mellitus (T1DM) is a complex disease including a result of which children and adolescents medical applications daily life and lifestyle changes, lack of insulin secretion from pancreatic beta cells. Nowadays, there is no improvement in Type 1 diabetes mellitus. However, it can be maintained near-normal life with the insulin subcutaneous injection (SC) that is missing. Sleep is a concept with psychological, physiological and social dimensions that affect the health and quality of life of individuals. Sleep disorders can often be impaired due to hypoglycemia, hyperglycemia, and parents' nighttime diabetes care behaviors in adolescents with Type 1 diabetes. This sleep disorder can adversely affect the progress of the disease and the development of complications. Good sleep quality be important role in the regulation of endocrine functions and glucose metabolism in Type 1 diabetes mellitus. Besides, some studies with adolescents with diabetes have encountered the low quality of sleep as well as those with good sleep quality compared to their healthy peers. The effect of adolescents with Type 1 diabetes sleep quality that more studies are needed to learn. In the study planned in line with all this information that the quality of sleep in adolescents with type 1 diabetes was discussed.

Introduction

Sleep is primarily associated with many of the components of biological structure, including nervous system; It is defined as a process that controls behavior, intracellular mechanisms, autonomic and cognitive functions, provides energy conservation, and repair and development of tissues. Besides, sleep is a state of temporary unconsciousness where the person's communication with the environment is lost which can end with various stimulants [1-3]. In the latest recommendations regarding sleep from the American Academy of Sleep Medicine, it has been reported that school age children (6-12 years) should sleep for 9-12 hours, adolescents (13-18 years) for 8-10 hours and adults 7-8 hours [4,5]. According to the studies, it is reported that 50% to 70% of adolescents do not meet these sleep suggestions and pediatric sleep disorders affect 25% to 40% of the youth [6-8]. However, some studies show that adolescents with Type 1 diabetes mellitus do not have a higher sleep disorder than their healthy peers, while other reports show that adolescents with Type 1 diabetes mellitus experience insufficient sleep [9-11]. Therefore, in this study, sleep quality in adolescents with Type 1 diabetes was discussed.

Adolescents with type 1 diabetes mellitus and sleep quality

Research describes sleep as a key process in maintaining better cardiovascular and metabolic health [12-14]. The

interaction between sleep behavior, Type 1 diabetes mellitus physiology and treatment regimen can create a vicious circle for young people. Also, for adolescents with Type 1 diabetes mellitus, sleep may deteriorate significantly due to increased night awakenings, and it may become more difficult to complete complex tasks the next day [12]. Incoherent sleep patterns measured by actigraphy in adolescents with Type 1 diabetes mellitus have been found to be associated with lower glycemic control and diabetes management. Besides, sleeping too much can cause delays in diabetes management behaviors for children and adolescents [15-18]. One study has shown that sleep deprivation is associated with more severe attacks of hypoglycaemia and more attacks of DKA in young people [16]. In a study to examine how diabetes management technology affects both teens and parent sleep behaviors, researchers stated that adolescents who use an insulin pump have fewer sleep disorders and longer sleep times than those who use injections [19]. In a study by McDonough, et al. They found that an increase in sleep time of 15 to 20 minutes for adolescents using an insulin pump led to an additional blood sugar control or insulin administration the next day [20]. In a study conducted by Zyng, et al. Sleeping late on weekends and getting up late was found to be associated with low academic performance, mood problems, and obesity in adolescents in the general population [21]. A study in adolescents with Type 1 diabetes revealed that the average variability in weekday / weekend sleep



timing was 2.5 hours, and this variability was significantly associated with an increased need for insulin regardless of compliance with treatment [22]. In a study, Mr.Perfect found that the delay in weekend bedtime reported by adolescents with Type 1 diabetes mellitus was associated with lower scores in standard reading, writing and mathematics evaluations, and that school absences played an important role in academic results [23]. Sleep-disordered breathing / sleep apnea is one of the most common sleep disorders and is often associated with type 2 diabetes. There is evidence that Type 1 diabetes mellitus is associated with higher prevalence of sleep apnea, which can contribute to disease complications, suboptimal glycemic control, and more sleep quality [24]. There is also evidence that blood sugar levels can affect sleep behavior in a variety of ways. Night hypoglycaemia is a common condition in children and adults with Type 1 diabetes mellitus, but the effect of hypoglycaemia on sleep quality has been little researched. Porter, et al. In his study with adolescents with Type 1 diabetes mellitus, he revealed that 30% of them experienced nocturnal hypoglycemia once during the night, and showed that this condition could not be predicted by the last blood sugar controls before going to sleep [25]. Besides, it was stated in the studies that their parents who are worried about hypoglycemia experience the low quality of sleep because they manage diabetes during sleep at night [26,27]. Limited research has been done to investigate the direct effects of hyperglycaemia on sleep. The hormone melatonin is an important regulator of the sleep-wake cycle. These results show that hyperglycemia may negatively affect the maintenance of a normal circadian cycle. It is also possible that sleep is disturbed by symptoms of hyperglycemia. Hyperglycemia leads to osmotic diuresis, which leads to the need to urinate more frequently and may cause sleep disruption [12].

Conclusion

Importantly, The relationship between sleep disorder and diabetes appears to be bidirectional. For example, the low quality of sleep can make worse diabetes control, while diabetes complications can reduce sleep quality. Compared to the healthy peers of adolescents with diabetes, there have been studies with the low quality of sleep or good sleep quality. The relationship between sleep behavior and glucose variability is probably very individual, so future studies may be considered in per person. Besides, adolescents with Type 1 diabetes, which can specify the quality of sleep and more studies are needed to investigate the factors that may affect.

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