Bulletin of Environment, Pharmacology and Life Sciences
Bull. Env. Pharmacol. Life Sci., Vol 11 [11] October 2022 :235-238

Online ISSN 2277-1808
Journal's URL:http://www.bepls.com
CODEN: BEPLAD

REVIEW ARTICLE **OPEN ACCESS**

Diabetes in adolescents and young people

Sonal Patel[1], Vijoy Kumar Singh
1PhD Scholar, Department of Medical Surgical Nursing, Sumandeep Nursing College, Sumandeep Vidyapeeth Deemed to be University, Piparia, Vadodara, Gujarat state, India
2Professor & HOD Department of Surgery, SBKSMIRC & DGH, Sumandeep Vidyapeeth Deemed to be University, Piparia, Vadodara, Gujarat state, India

ABSTRACT
Diabetes is a chronic condition that affects the physical and mental health of children and youth, as well as their families and caregivers. The paper reviews the literature on the epidemiology, pathophysiology, complications, and management of diabetes in this population group. The paper also discusses the psychosocial aspects of diabetes, such as the effects of stress, coping, self-care, and quality of life. The paper concludes with some recommendations for improving the care and support of adolescents and young people with diabetes, such as enhancing education, communication, and empowerment. The paper highlights the need for more research and intervention on this topic, as diabetes is a growing global health problem that poses significant challenges and risks for the future generation.
Key words: *Non-Communicable diseases, Type 1 Diabetes, Cancer, Insulin dependent diabetes, Type 2 Diabetes.*

Received 22.10.2022 Revised 25.10.2022 Accepted 16.11.2022

INTRODUCTION

"With all of the holiday cheer in the air, it's easy to overlook the ingredients in the foods. Ingredients such as salt, sugar, and fat - all of which leads to diseases such as high blood pressure, diabetes, strokes, heart disease, and cancer [1]."
- Lee Haney.

Adolescents with diabetes are of serious concern these days as these non- communicable diseases are on the rise worldwide. Nations will deprive of healthy young people and will become burden to the respective nations [2].Asthama is the first leading cause of death in adolescents and diabetes, especially those with type-II in which premature mortality and morbidity are not uncommon [3].

Diabetes is a long-term condition that can have a major impact on the life of a child or young person, as well as their family or caregivers. In addition, the overweight and obese associated with type 2 diabetes increase the risk, especially of kidney complications in particular, and problems such as hypertension and dyslipidemia [4]. This can affect a young person's health, increasing the risk of clinical and psychological complications [5].

Type 1 diabetes is the most common childhood disease, characterized by a deficiency of insulin that produces βeta-cells in the pancreas. Internationally, there is a difference in the incidence of type 1 diabetes in paediatric patients [6]. Diabetes mellitus (type 1) is an autoimmune condition that leads to a complete insulin deficiency that leads to hyperglycaemia and its associated manifestations [7]. People with Type 1 diabetes have at least twice the risk of developing cardiovascular disease compared to people without diabetes [8]. Adolescence is the transitional stage of development between childhood and adulthood that involves the biological and psychosocial changes of adolescence. It poses unique challenges on the person with diabetes, their family and the diabetes care team [9, 10].

Adolescent and young people with type 1 diabetes (T1D) experience a greater incidence of mental distress, the duration of burnout, and the inability to cope with the daily burdens of living with diabetes, compared to adults.[11] Diabetes is a major public health burden associated with high rates of morbidity, hospitalization, use of health care services and mortality.[12] in India 70 million adults suffer from diabetes, which affects 422 million people worldwide. Type-1 diabetes is an autoimmune disease in which the immune system destroys the cells producing insulin in the pancreas, making itn necessary to use insulin to survive.[13] Diabetes mellitus is the most common metabolic disease in young and is type 1 diabetes, caused by beta-cell destruction and complete insulin deficiency, accounting for more than 90% of diabetes in young people under 25 years [14].

RELATED ARTICLES

Insulin-dependent diabetes mellitus (IDDM) is a complex, chronic disease that is difficult to control during adolescence. This study evaluated the effects of a 6-week, family-oriented, group intervention on adolescents' metabolic control and psychosocial and family functioning [15].

Katherine ASauder PhD (2019), This study found that One in three adolescents and young adults with type 1 diabetes have at least one early diabetes-related complication or comorbidity. Our objective was to investigate the prevalence and pattern of co- occurring complications in this population, as well as the related risk factors. Interpretation that Early complications occur more frequently than expected in adolescents and young adults with type 1 diabetes. Identification of individuals with adverse risk factors could enable targeted behaviour or medical interventions that reduce the likelihood of early development of lifelong diabetes-related disease [16].

This study found that people diagnosed with Type 2 diabetes (T2D) are increasingly being diagnosed at an early ages. We investigated the association of adolescent obesity with incident T2D in early adulthood. A nationwide, population-based study assessed 1,462,362 adolescents (59% men, average age 17.4 years) during 1996–2016. The Data were linked to the Israeli National Diabetes Registry. The study concluded that Severe obesity significantly increased the risk of developing T2D in early adulthood in both species. Severe obesity in adolescent is likely to increase the incidence of diabetes incidence in young adults in the coming decades [17].

Accumulated data indicate that type 2 diabetes mellitus (T2DM) in younger people (aged <40 years), known as young-earlyT2DM, has a faster deterioration in β-cell function than that seen in later-onset T2DM. Moreover, individuals with young-early T2DM appear to be a higher risk of complications than those with type 1 diabetes mellitus [18].

This study sought to determine the prevalence and impact of mental health problem in a population of adolescents and young adults with type 1 diabetes. A cross- sectional study of 150 patients aged 11 to 25 years with type 1 diabetes was conducted from the urban, academic diabetes center. Participants completed 3 valid mental health disorder screening tool: Beck's Depression Inventory, the Screen for Child Anxiety Related Emotional Disorders-41 anxiety screen, and the Eating Disorder Screen for Primary Care. More than a third screened positive: 11.3% for depression, 21.3% for anxiety, and 20.7% for disordered eating (14.7% had ≥2 positive screens). Patients with a positive screen had twice the odds of having poor glycemic control as those without, as measured by HgbA1c. This study supports screening for mental health problem in adolescents and young adults with type 1 diabetes [19].

The study was aiming Adolescents with Type 2 diabetes are more likely to have cardiovascular disease (CVD) risk factors but there are few data available among adolescents with prediabetes. We characterized CVD risk factors among adolescents with prediabetes in the USA and compared levels of those risk factors with adolescents with normal glucose.The result revealed that The weighted prevalence of prediabetes was 17.4%. After adjustment, prediabetes (vs. normal glucose) was associated with obesity (OR 1.86, 95% CI 1.35–2.55), low HDL-cholesterol (OR 1.62, 95% CI 1.08–2.44), high triglycerides (OR 1.61, 95% CI 1.12–2.30) and elevated liver transaminase (OR 2.09, 95% CI 1.19–3.67), but not with hypertension (OR 1.77, 95% CI 0.88–3.54).The study was concluded that US adolescents with prediabetes are more likely to have obesity, low HDL-cholesterol, high triglycerides and elevated liver transaminase than adolescents with normal glucose [20].

Diabetes around the world in the 2021:

- 537 million adults (20-79 years) are living with diabetes - 1 in 10. This number is predicted to rise to 643 million by 2030 and 783 million by 2045.
- Diabetes is responsible for 6.7 million deaths in 2021 - 1 every 5 seconds.\
- Diabetes caused at least USD 966 billion dollars in health expenditure – a 316% increase over the last 15 years.
- 541 million adults have Impaired Glucose Tolerance (IGT), which places them at high risk of type 2 diabetes.

Africa

1 in 22 adults (24 million) adults are living with diabetes. Diabetes is responsible for 416,000 deaths in 2021.

1 in 8 live births are affected by hyperglycaemia in pregnancy.

Europe

1 in 11 adults (61 million) are living with diabetes. USD 189 billion spent on diabetes in 2021.

1.1 million deaths due to diabetes in 2021.

Middle-East and North Africa
1 in 6 adults (73 million) are living with diabetes. 796,000 deaths caused by diabetes in 2021.
1 in 7 live births affected by hyperglycaemia in pregnancy.
South and Central America
1 in 11 (32 million) adults are living with diabetes. 410,000 deaths caused by diabetes in 2021.
USD 65 billion spent on diabetes in 2021 [21].
415 million people live with diabetes worldwide, and an estimated 193 million people have undiagnosed diabetes. Type 2 diabetes accounts for more than 90% of patients with diabetes and leads to microvascular and macrovascular complications that cause profound psychological and physical distress to both patients and carers and put a huge burden on health-care systems. Despite increasing knowledge regarding risk factors for type 2 diabetes and evidence for successful prevention programmes, the incidence and prevalence of the disease continues to rise globally [22].
Environmental factors play an important role in the pathogenesis of type 1 diabetes mellitus, many of these factors have been uncovered despite much research. A case- control study was carried out to determine the potential maternal, neonatal and early childhood risk factors for type 1 diabetes mellitus in children and adolescents in Basrah. A total of 96 children and adolescents with type 1 diabetes and 299 non- diabetic children were included in this study. The study concluded that Exposure to environmental risk factors during pregnancy (tea drinking, pre-eclampsia, and infectious diseases), neonatal period (respiratory distress, jaundice and infections) and early infancy are thought to play an important role in triggering the immune process leading to B-cell destruction and the development of type 1 diabetes mellitus [23].

DISCUSSION

The prevalence of type1and type 2 diabetes in adolescents and young people is dramatically increasing. Similar to older-onset type 2 diabetes, the major predisposing risk factors are obesity, family history, and sedentary lifestyle. Onset of diabetes at a younger age (defined here as up to age 40 years) is associated with longer disease exposure and increased risk for chronic complications. Young-onset type 2 diabetes also affects more individuals of working age, accentuating the adverse societal effects of the disease. Furthermore, evidence is accumulating that young-onset type 1 and type 2 diabetes has a more aggressive disease phenotype, leading to premature development of complications, with adverse effects on quality of life and unfavourable effects on long-term outcomes, raising the possibility of a future public health catastrophe.

CONCLUSION

It could be concluded that we should control early onset diabetes more strictly to prevent its complication because early onset diabetic patients represented more severe hyperglycemia and had more prevalent microalbuminuria. Similarly for depression and anxiety, the greater the perceived impact of diabetes on daily life, the more depression and anxiety participants reported.

REFERENCES

1. Xplore. (n.d.). Lee Haney quotes. BrainyQuote. from https://www.brainyquote.com /quotes/lee_haney_295609
2. American Psychological Association. (n.d.). Apa PsycNet. American Psychological Association.from https://psycnet.apa.org/record/2005-16166-002
3. Diabetes Control and Complications Trial Research Group, Nathan DM, Genuth S, Lachin J, Cleary P, Crofford O, Davis M, Rand L, Siebert C. The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. N Engl J Med. 1993 Sep 30;329(14):977-86. doi: 10.1056/NEJM199309303291401. PMID: 8366922.
4. National Collaborating Centre for Women's and Children's Health (UK). Diabetes (Type 1 and Type 2) in Children and Young People: Diagnosis and Management. National Institute for Health and Care Excellence (UK), August 2015.
5. Owen P, Beskine D. (2008). Factors affecting transition of young people with diabetes. paediatric nursing. 1;20(7).
6. Matsuda, Erin, and Patricia Brennan. "The effectiveness of continuous subcutaneous insulin pumps with continuous glucose monitoring in outpatient adolescents with type 1 diabetes: A systematic review." JBI library of systematic reviews vol. 10,42 Suppl (2012): 1-10. doi:10.11124/jbisrir-2012-170
7. Hamilton H, Knudsen G, Vaina CL, Smith M, Paul SP. Children and young people with diabetes: recognition and management. British journal of nursing. 2017 Mar 23;26(6):340-7.
8. Soedamah-Muthu SS, Fuller JH, Mulnier HE, Raleigh VS, Lawrenson RA, Colhoun HM. (2006). High risk of cardiovascular disease in patients with type 1 diabetes in the UK: a cohort study using the general practice research database. Diabetes care. 1;29(4):798-804.
9. Court JM, Cameron FJ, Berg-Kelly K, Swift PG. (2009). Diabetes in adolescence. Pediatric diabetes.10:185-94.
10. Werther GA, editor. (1998). Diabetes and the Adolescent. Blackwell Publishers;76

11. Ng SM, Corbett T, Doble E, Brooks A, Kar P. (2022). Managing the psychosocial impact of type 1 diabetes in young people. BMJ; 4;377.
12. Lascar N, Brown J, Pattison H, Barnett AH, Bailey CJ, Bellary S. (2018). Type 2 diabetes in adolescents and young adults. The lancet Diabetes & Endocrinology. 1;6(1):69-80.
13. One in every four of India's youth suffer from deadlier type 2 diabetes (2002). Hindustan Tim Available from: https://www.hindustantimes.com/health /world-diabetes-day-one-in-every-four-of-india-s-youth-suffer-from-the-deadlier-type-2/story- LP4ug RJ5qqLNITYg 24xCbO.html
14. Scottish Intercollegiate Guidelines Network. (2001). Guidelines on management of diabetes http://www.sign.ac.uk/pdf/sign116.pdf
15. Satin W, La Greca AM, Zigo MA, Skyler JS. (1989). Diabetes in adolescence: effects of multifamily group intervention and parent simulation of diabetes. Journal of Pediatric Psychology. 1;14(2):259-75.
16. Sauder KA, Stafford JM, Mayer-Davis EJ, Jensen ET, Saydah S, Mottl A, Dolan LM, Hamman RF, Lawrence JM, Pihoker C, Marcovina S. (2019). Co-occurrence of early diabetes-related complications in adolescents and young adults with type 1 diabetes: an observational cohort study. The Lancet Child & Adolescent Health. 1;3(1):35-43.
17. Twig G, Zucker I, Afek A, Cukierman-Yaffe T, Bendor CD, Derazne E, Lutski M, Shohat T, Mosenzon O, Tzur D, Pinhas-Hamiel O. (2020). Adolescent obesity and early-onset type 2 diabetes. Diabetes care. 1;43(7):1487-95.
18. Magliano DJ, Sacre JW, Harding JL, Gregg EW, Zimmet PZ, Shaw JE.(2020). Young- onset type 2 diabetes mellitus—Implications for morbidity and mortality. Nature Reviews Endocrinology. 16(6):321-31.
19. Bernstein CM, Stockwell MS, Gallagher MP, Rosenthal SL, Soren K. (2013). Mental health issues in adolescents and young adults with type 1 diabetes: prevalence and impact on glycemic control. Clinical pediatrics. Jan;52(1):10-5.
20. Casagrande SS, Menke A, Linder B, Osganian SK, Cowie CC. (2019). Cardiovascular risk factors in adolescents with prediabetes. Diabetic Medicine. ;35(9):1202
21. Tenth edition [Internet]. IDF Diabetes Atlas. [cited 2022May23]. Available from: https://diabetesatlas.org/
22. Chatterjee S, Khunti K, Davies MJ. (2009). Type 2 diabetes. The lancet. 2017 Jun 3;389(10085):2239-51.
23. Majeed AA, Mea KH. (2011). Risk factors for type 1 diabetes mellitus among children and adolescents in Basrah. Oman medical journal. ;26(3):189.

CITATION OF THIS ARTICLE

Sonal P, Vijoy K S. Diabetes in adolescents and young people. Bull. Env.Pharmacol. Life Sci., Vol 11 [11] October 2022 :23**5**-23**8**