respiratory infections. These findings underscore the need for early diagnosis, effective management, and further research into the genetic and environmental factors influencing childhood asthma. Overall, bronchial asthma in children remains a critical public health issue, necessitating continued research, comprehensive education, and a multifaceted approach to management that empowers both children and their families.

LITERATURE

1. Weijun Zhou & Jia Tang: Prevalence and risk factors for childhood asthma: a systematic review. – 2025. – № 50. – P. 1–9.

2. Aynaz Lotfata, Mohammad Moosazadeh, Marco Helbich & Benyamin Hoseini, Socioeconomic and environmental determinants of asthma prevalence. – 2023. – Vol. 22, № 18. – P. 1–16.

3. Mayo Clinic : Childhood asthma – Symptoms & causes : https://www.mayoclinic.org/diseases-conditions/childhood-asthma/symptoms-causes/syc-20351507 – Rochester, 2023. – URL: https://www.mayoclinic.org/diseases-conditions/childhood-asthma/symptoms-causes/syc-20351507 (date of access: 10.03.2025).

4. World Health Organization (WHO) : Asthma : https://www.who.int/news-room/fact-sheets/detail/asthma –2023. – URL: https://www.who.int/news-room/fact-sheets/detail/asthma (date of access: 10.03.2025).

5. Syed Shahzad Mustafa // Asthma in Children. – URL: https://www.medicinenet.com/asthma_in_children/article.htm (date of access: 10.03.2025).

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TYPE 1 DIABETES MELLITUS AND ITS COMPLICATIONS IN CHILDREN: A STUDY FROM PUNJAB, PAKISTAN

Introduction

Diabetes in children is an important health issue globally, including in Pakistan. Type 1 diabetes is particularly common among children and is characterized by the body's inability to produce insulin, requiring lifelong management with insulin therapy. Type 1 diabetes mellitus (T1DM) is a long-lasting autoimmune disease primarily seen in children and adolescents. It is characterized by the destruction of insulin-producing beta cells in the pancreas, leading to hyperglycemia and a range of acute and chronic complications. The prevalence of T1DM has seen an alarming rise in recent years, particularly in developing countries like Pakistan. This increase is often attributed to genetic predisposition, environmental factors, and a lack of awareness about the disease. The complications associated with T1DM can lead to significant morbidity and mortality, particularly in pediatric populations [1] [4]. In recent years, Pakistan has seen a rise in the incidence of childhood diabetes. The reasons for this increase include genetic predisposition, environmental factors, and changes in lifestyle. Urbanization and dietary changes are contributing to the rise in obesity rates, which is a significant risk factor for type 2 diabetes, even among younger populations [2]. Efforts to address childhood diabetes in Pakistan include awareness campaigns, education for parents and children about managing the condition, and improving access to insulin and healthcare services. Organizations like the Changing Diabetes in Children partnership are working to provide support and resources to children living with diabetes in the country [3].

Goal

The goal of this study is to assess the frequency and severity of diabetic complications in children under the age of 18 years diagnosed with T1DM in Punjab, Pakistan. This study

seeks to identify the demographic and clinical characteristics of these patients, with a focus on understanding the impact of delayed diagnosis and inadequate healthcare access on disease outcomes.

Material and methods of research

The study was conducted over four years (2019–2022) in three districts of Punjab: Dera Ghazi Khan, Sahiwal, and Gujranwala. Data were collected from pediatric diabetes clinics, which included both newly diagnosed and previously diagnosed patients. Statistical analysis was performed using Statistics version 8.1. Chi-squared tests were applied to examine relationships between variables, with a significance level set at $p<0.05$.

The results of research and their discussion

The study examined 310 children aged ≤18 years for Type 1 Diabetes Mellitus (T1DM), confirmed by clinical assessments of fasting plasma glucose (FPG), random plasma glucose (RPG), HbA1c, and GAD-65 autoantibodies. The mean age at diagnosis was 13.22±3.1 years, with a higher prevalence in males (54.2%). Among the diagnosed, 68.7% were newly diagnosed (Group I), while 31.3% had been diagnosed for over a year (Group II). The data revealed that 30% were underweight, while 47.4% had a normal BMI. Notably, poor glycemic control was observed, with DKA present in 50.27% of patients. Complications such as neuropathy (37.84%), nephropathy (47.56%), and retinopathy (49.23%) were prevalent, particularly in Group II, which showed significantly higher rates of DKA (82.5%) and other complications compared to Group I.

Table 1 – Clinical and demographic characteristics of patients with type-1 diabetes

Parameter	Group I (Newly Diagnosed)	Group II (Previously Diagnosed)	Total
Number of Patients (n)	213	97	310
Mean Age (years)	12.1 ±3.1	15.75 ±1.9	13.22 ±3.1
Age Range (years)	6–15	10–18	5–18
Gender – Boy – Girl	118 (55.4%) 95 (44.6%)	50 (51.6%) 47 (48.4%)	168 (54.2%)
BMI – Underweight – Normal – Overweight	88 (41.3%) 114 (53.5%) 11 (5.16%)	5 (5.15%) 33 (34.0%) 57 (58.76%)	93 (30.0%) 147 (47.4%) 68 (21.9%)
FPG (mg/dl)	191.5±9.6	162.8±21.9	180.9±12.2
RPG (mg/dl)	255.6±19.6	185.7±13.6	219.5±17.8
Diabetic Ketoacidosis (DKA)	32.5%	82.0%	48.94%
Neuropathy	26.6%	56%	39.01%
Nephropathy	32.3%	62.8%	45.37%
Retinopathy	29.0%	90.0%	50.42%

The findings highlight the concerning prevalence of T1DM complications among children in Punjab, Pakistan. The peak age of onset aligns with global trends, particularly between 10–15 years. The study underscores the higher incidence of classical symptoms such as polyuria and polydipsia, common in T1DM, and a significant prevalence of DKA, especially in previously diagnosed patients. The elevated GAD-65 autoantibody levels in Group II suggest

a correlation with disease duration and severity, indicating that longer duration leads to more severe complications. The socioeconomic challenges faced by patients in rural areas contribute to delayed diagnoses and inadequate management, exacerbating glycemic control issues and leading to severe complications. The COVID-19 pandemic further complicated access to medical care, emphasizing the urgent need for improved healthcare facilities and awareness in underprivileged regions [2].

Conclusion

This study highlights the critical need for improved healthcare access, education, and disease management strategies for children with T1DM in Punjab, Pakistan. A significant number of patients presented with life-threatening complications due to delayed diagnosis and poor glycemic control. The study highlights the urgent need for improved healthcare access, better awareness, and education regarding T1DM to mitigate its complications. Enhanced screening programs and accessibility to diabetes care are essential for managing T1DM effectively, especially in underprivileged regions. By focusing on early diagnosis, effective treatment plans, and patient education, healthcare providers can significantly reduce the incidence of severe complications associated with this chronic condition. Enhanced awareness campaigns and support systems are essential to improve the quality of life for children living with T1DM. Further research is needed across different regions to provide a comprehensive understanding of T1DM and develop targeted interventions.

LITERATURE

1. *Gowa, M.* Disease Spectrum and Frequency of Illness in Pediatric Emergency: A Retrospective Analysis From Karachi, Pakistan. Ochsner J. / Gowa M., Habib I., Tahir A., Yaqoob U., Junejo S. – 2019. – Vol. 4, № 19. – P. 340–346.

2. Type 1 diabetes mellitus and its complications in children aged ≤20 years from Punjab, Pakistan / KS Ahmed, N Roohi [et al.] // Russian Open Medical Journal. – 2024. – Vol. 13, № 1. – P. 1–7.

3. Optimized health care for subjects with type 1 diabetes in a resource constraint society: A three-year follow-up study from Pakistan / MY Ahmedani, A Fawwad [et al.] // World J Diabetes. – 2019. – Vol. 10, № 3. – P. 224–233.

4. Trends of type 1 diabetes in Karachi, Pakistan / AS Shera, Z Miyan [et al.] // Pediatr Diabetes. – 2008. – Vol. 4, № 2. – P. 401–406.

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VACCINATION UPTAKE AND HESITANCY: ANALYZING FACTORS INFLUENCING VACCINATION RATES AMONG CHILDREN AND STRATEGIES TO IMPROVE COMPLIANCE

Introduction

Vaccination plays a critical role in preventing childhood diseases, reducing mortality rates, and ensuring public health safety. It has been one of the most successful medical interventionsin history, eliminating deadly diseases like small pox and significant lyreducing the prevalence of polio, measles, and pertussis. Despite these achievements, vaccine hesitancy remains a significant public health challenge. Many parents hesitate or refuse to vaccinate their children due to misinformation, cultural beliefs, and distrust in healthcare systems. The ongoing debate about vaccine safety, effectiveness, and necessity has led to fluctuating immunization rates, increasing