

Pedia Companion Newsletter Vol 1 | Issue 4 | 2022

Dear Doctor,
Greetings from Micro Labs Limited. We are happy to bring you "PEDIA COMPANION" which contain latest and interesting news in the field of Paediatrics.

This issue contain:

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2. ASSOCIATIONS BETWEEN ADOLESCENT ASTHMA AND PHYSICAL CONDITION WITH LUNG FUNCTION.
3. THE PROGNOSIS OF PAEDIATRIC PATIENTS WITH EARLY-ONSET CHRONIC LIVER DISEASE
4. A CASE REPORT ON CONGENITAL SYPHILIS AND THE PROZONE PHENOMENON

Should you require any specific article or medical information, please feel free to contact us at medicalsolutions@microlabs.in

Looking forward to your valuable feedback

Best Regards,
Medical Team, Micro Labs Limited

1. QUALITY OF LIFE IN RELATION TO HEALTH AND RELATED FACTORS AMONG CHILDREN AND ADOLESCENTS WITH TYPE 1 DIABETES MELLITUS.

Introduction:

Type 1 Diabetes is an autoimmune disease. It causes the destruction of pancreatic beta cells, which in turn results in inadequate insulin production and hyperglycemia. Diabetes type 1 is a chronic condition that need insulin replacement.¹ One of the most common chronic disorders in children and adolescents is type 1 diabetes mellitus (T1DM). It has an impact on the physical and emotional growth of the child and adolescent while presenting a risk to health and life.² The purpose of this study was to evaluate the health-related quality of life (HRQoL) and the factor affecting it in children and adolescents with T1DM.

Reduced HRQoL scores were related to older age, having diabetes for a longer period of time, and taking insulin three times per day.

Methods:

A total of 379 randomly chosen children and adolescents, aged 5 to 18, with T1DM who were being followed up at endocrine clinics were the subjects of this hospital-based cross-sectional research. The data was collected using Pediatric Quality-of-Life inventory (PedsQL™) 4.0 generic core scales. Comparisons between children's and adolescents' self-reports and caregiver reports were made using a paired sample t-test. Bi-variate and multivariate linear regression were employed to investigate and find important predictors of HRQoL.

Results:

According to the children and adolescents and their primary caretakers, the overall mean HRQoL score was 88.42 ± 10.82 . Age ($\beta = 0.197$, $p = 0.028$), mothers' educational status ($\beta = 0.242$, $p < 0.001$), fathers' educational status ($\beta = 0.259$, $p < 0.001$), fathers' profession ($\beta = 0.170$, $p = 0.038$), frequency of insulin administration ($\beta = 0.132$, $p = 0.007$), diabetes duration ($\beta = 0.101$, $p = 0.050$), and frequency of blood glucose monitoring ($\beta = 0.165$, $p = 0.006$) were all statistically significant predictors of HRQoL, estimating 21.6 % change in the overall HRQoL values of children and adolescents ($R^2 = 0.216$, $F(21, 357) = 5.968$, $p < 0.001$).

Discussion:

For diabetic patients and medical professionals, health-related quality of life is crucial in many ways. This study assessed the quality of life among children and adolescents with T1DM who were being monitored at public endocrine clinics, as well as the contributing factors to their

quality of life.² The findings of this study showed that children and adolescents had lower mean scores in the HRQoL subdomains of emotional and academic function with a similar pattern in both self-reports and parent proxy reports of HRQoL, but they had higher scores in the subdomain of social function. These findings concur with those of Addis Ababa-based study conducted by Girma et al.³

PedsQL™ GCS	Number of Items	Children's Report	Children's Parents Report	Adolescents' Report	Adolescents' Parents Report	Children and Adolescents Report	Children and Adolescents' Parents Report
Physical functioning	8	90.31±13.85	87.36±16.05	88.21±14.09	79.46±19.12	89.36 ±13.98	83.80±17.92
Emotional functioning	5	89.88±13.34	76.11±18.87	81.37±20.07	70.06±21.20	86.04 ±17.22	73.38 ±20.15
Social functioning	5	95.14±9.01	95.02±11.02	94.62±11.29	91.20±15.57	94.91 ±10.09	93.30 ±13.38
School functioning	5	84.98±15.69	81.43±15.10	80.06±18.41	71.91±21.15	82.74 ±17.13	77.10 ±18.59
Psychosocial function	15	90.02±10.31	85.31±11.16	85.36±12.52	78.34±13.34	87.92±11.58	81.30±12.60
Total	23	90.11±9.98	87.36±10.91	86.36±11.47	79.46±13.57	88.42±10.82	82.17±12.65

Comparison of Children and Adolescents' Self-Reports and Parent Proxy Reports of Quality-of-Life Among Children and Adolescents with Type 1 Diabetes Mellitus on Follow-Up at Selected Public Hospitals in study conducted by Girma et al

Conclusion:

The children and adolescents had high levels of social functioning, but their levels of emotional and academic functioning were somewhat lower. The quality of life of children and adolescents was positively correlated with the educational status of mothers and fathers, the profession of fathers, the length of diabetes, the administration of insulin three times per day, and the monitoring of blood glucose at least once or twice per week. After a diabetes diagnosis, a QoL assessment can be used to identify and address any issues that children and adolescents may have. In addition, diabetes care procedures should involve evaluating children with diabetes to find any issues that might impact their HRQoL.

References:

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2. ASSOCIATIONS BETWEEN ADOLESCENT ASTHMA AND PHYSICAL CONDITION WITH LUNG FUNCTION

Introduction:

Due to the high incidence between 5 and 10 %, chronic nature, potentially serious symptoms, and significant cost on health services, asthma is considered as a prevalent condition in children and adolescents.¹ Since over 80% of adolescents do not engage in enough physical activity, physical condition is a significant modifiable factor of overall health. More physical activity has been linked to asthma patients' having better condition management. On the connections of physical activity with lung function and asthma in adolescents from the general population, however, mixed findings have been found.² The purpose of this study was to investigate the relationships between screen time with lung function, asthma and physical conditions such as cardiorespiratory fitness & physical activity

Adolescents with less cardiorespiratory fitness had lower lung function and were more likely to develop asthma.

Methods:

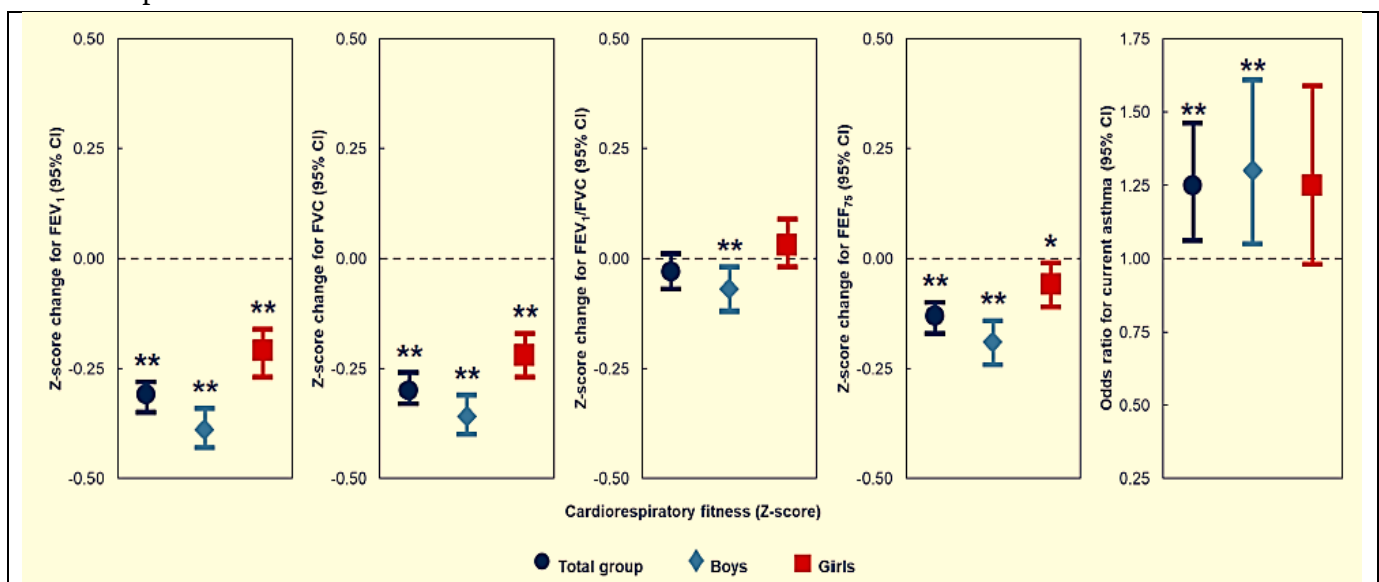
Researchers used the peak work rate determined by the steep ramp test to evaluate cardiorespiratory fitness in this population-based prospective cohort study on 4854 13-year-old children. Using self-reported questionnaires, data on screen time and physical activity was gathered. Spirometry was used to evaluate lung function, and a questionnaire given to parents was used to estimate the severity of asthma. Researchers constructed sex-specific Z-scores to compare physical activity and screen time. Using Mann-Whitney U tests, t-tests, and chi-square tests, researchers compared the characteristics of participants with non-participants. The relationships of physical condition with lung function and asthma at the age of 13 were investigated using linear and logistic regression models.

Results:

Considering sociodemographic, lifestyle, and growth-related confounders and performing multiple hypothesis testing, it was discovered that a 1 SD decrease in cardiorespiratory fitness was linked to lower Forced Expiratory Flow in 1 s (FEV1), Forced Vital Capacity(FVC), and Forced Expiratory Flow after exhaling 75% of FVC (FEF75) as well as a higher risk of developing asthma (odds ratio [95 % confidence interval]: 1.25 (1.06, 1.46)). A lower FVC was linked to a 1 SD increase in screen time (Z-score difference (95 percent CI): 0.06 (0.10, 0.03)). Asthma was independent to screen time or physical exercise. After further adjustments for respiratory outcomes at an early age, the results did not significantly change.

Discussion:

According to the findings of this population-based study, adolescents who had lower cardiorespiratory fitness had lower FEV₁, FVC, and FEF₇₅ values as well as a greater chance of developing asthma. The results of the current study, which showed that lower cardiorespiratory fitness was linked to poorer FEV₁, FVC, and FEF₇₅, were consistent with those of a prior investigation that made use of information from two population-based cohorts. These discovered that while the FEV₁/FVC ratio was independent to physical fitness, it was linked with a lower percentage of predicted FEV₁ and FVC in children and adolescents.³ The results of the current and other research on the relationships between cardiorespiratory fitness and asthma in childhood and adolescence are conflicting. Differences in results might be brought about by the use of various tests to measure cardiorespiratory fitness or by the small sample numbers in earlier research.⁴



Associations of cardiorespiratory fitness with lung function and asthma at the age of 13 years. Values are derived from linear or logistic regression models and reflect changes in Z-scores or odds ratios (OR) (respectively) with a 95% confidence interval (95% CI) per SD decrease in cardiorespiratory fitness in the total group, and in boys and girls separately

Conclusion:

Reduced lung function and a higher risk of asthma are linked in adolescents with lower cardiorespiratory fitness. A lower FVC is associated with more screen time. Future intervention studies should look at whether increasing cardiorespiratory fitness or decreasing adolescent screen usage has a positive long-term impact on respiratory outcomes.

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3.THE PROGNOSIS OF PAEDIATRIC PATIENTS WITH EARLY-ONSET CHRONIC LIVER DISEASE

Introduction

chronic liver disease (CLD) is one of the major factors contributing to morbidity and mortality in children. Children with CLD have a wide range of disorders that are different from adults in terms of their aetiology, including infections, developmental abnormalities (such as biliary atresia, which if untreated can result in biliary cirrhosis), metabolic disorders, and neoplastic diseases that can cause hepatic failure).¹ Patients with chronic hepatobiliary diseases that first manifested in childhood are now living longer and surviving into adulthood because to advancements in paediatric hepatology. Data on the outcomes of this diverse group of patients are scarce, and the current transition models might not be enough.² This retrospective regional cohort research looked at the outcomes of these individuals when they were transferred to adult services after receiving care in a paediatric gastrointestinal centre.

Although overall mortality was low, patients with paediatric-onset chronic liver disease had a substantial healthcare burden.

Methods:

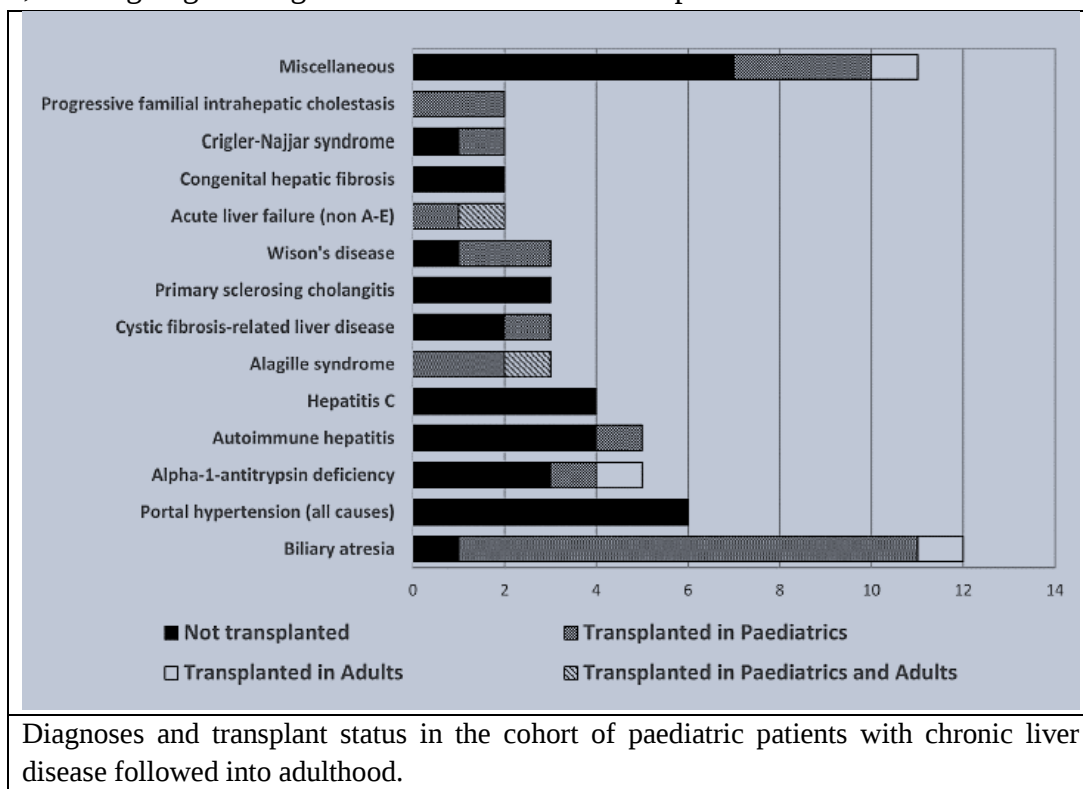
A prospective database of paediatric liver disease patients was used to identify those who had previously been transferred to adult treatments. After excluding patients, medical records were reviewed, and health information was collected, including initial diagnosis, transplant eligibility, fertility, and death. Follow-up information and transplant-free survival were calculated using descriptive statistics (TFS).

Results:

In all, 63 patients (52% male) with a median follow-up of 27.5 years joined the final analysis. Biliary atresia was the most prevalent diagnosis (19 %); there were 27 different diagnoses in the sample, emphasising the variability within a single centre. Adult transfers had a transplant prevalence of 41%; 14% of patients, including 10% of transplant patients, were lost to follow-up. After 37.4 years of follow-up, the TFS for biliary atresia was 17 %, while the TFS for the entire cohort was 54 percent. There were seven confirmed pregnancies, and 44% of them had some sort of psychological or psychiatric intervention. In 38% of patients, there were transplant-related complications; two cancer diagnoses and two deaths after the transfer.

Discussion:

Researchers have illustrated the significant health-care use that these patients encounter in early adulthood in this varied but representative population-based regional cohort study of patients with paediatric-onset liver disease. In patients with chronic diseases, structured transition to adult services is increasingly recognised as a critical step and the normal level of care, despite the fact that guidelines for chronic liver disease have only recently been established.² The field is now establishing best practises, and it is becoming clear that successful transitions depend on Multidisciplinary teams support that is consistent, the identification of disease-specific issues, good communication between paediatric and adult teams, and ongoing training and education of healthcare professionals.³



Conclusion:

Researchers have shown the varied nature of paediatric-onset chronic liver disease and health-care concerns experienced after transfer to adult services using a population-based cohort research design. To confirm that a more individualised transition programme could be implemented to enhance long-term follow-up and lower morbidity and mortality, further population-based longitudinal cohort studies are needed to examine this group of patients.

References:

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4. A CASE REPORT ON CONGENITAL SYPHILIS AND THE PROZONE PHENOMENON.

Introduction:

The transmission of the spirochete *Treponema pallidum* from the mother to the foetus is what causes congenital syphilis (CS), which can manifest clinically ranging from an asymptomatic, preterm delivery to a wide range of clinical signs and symptoms to stillbirth.¹ This case study describes a 3-month-old baby who has congenital syphilis and has had chronic rhinorrhea and recurring exanths since birth.² Due to a false negative result from prenatal screening brought on by the prozone phenomenon and inaccurate early diagnoses, his diagnosis was delayed.

Congenital syphilis's diagnosis may be delayed due to the disease's multiple clinical symptoms, rising syphilis incidence, insufficient prenatal care, and false-negative test results brought on by the prozone phenomenon.

Case Presentation:

The paediatrician examined a 1-month-old male newborn with chronic nasal congestion, intermittent emesis, fever, and exanthem as well as ulcers on the arms, face, scalp, and mouth. He was his mother's first pregnancy at the age of 17. Gestational diabetes and pre-eclampsia affected her pregnancy. Her prenatal treatment revealed that she tested negative for group B streptococcus, hepatitis B, rapid plasma reagin (RPR), and human immunodeficiency virus (HIV). After an 18-hour labour, the baby was delivered normal vaginal; there were no further complications noted except newborn jaundice that required phototherapy. This episode of newborn jaundice may be believed to be physiologic since data from the nursery weren't recorded, yet it could possibly be an early indicator of syphilis. After an upper respiratory tract infection was identified in the patient, amoxicillin was recommended. Exanthem persisted even after the fever subsided. The exanthem resolved after a course of topical silver nitrate cream was also recommended. However, when he was 2 months old, the same exanthem returned. He was sent to Dermatology, where a congenital syphilis diagnosis was made based on clinical evidence. This was confirmed by a positive RPR test and a skin biopsy that showed spirochetes were present. Patient received treatment at Children's Hospital. When he was admitted, he was restless but afebrile. He was found to be physically normal in terms of weight and height but had a head circumference that was microcephalic (fourth percentile). On his chest, upper back, neck, palms, and soles, he developed an exanthem that was widespread, maculopapular



Generalized maculopapular annular and erythematous rash on admission (left), with almost complete resolution 4 days after discharge (right).

annular and erythematous rash on admission (left), with almost complete resolution 4 days after discharge (right).

annular, and erythematous . He also showed occipital and cervical adenopathy, serous nasal discharge, white plaques in the buccal mucosa, desquamation of the skin in the perioral region and scalp with hair loss, and hepatomegaly. His platelet count was 608,000 th/L, his C-reactive protein was 5.3 mg/dL, his Hgb was 8 gr/dL, his mean corpuscular volume was 81.5 fL, and his white blood cell count was 11.6 th/L. The reactive fluorescent treponemal antibody (FTA) IgG and IgM validated his RPR result of 1:128. 5 white blood cells, 0 red blood cells, 55 mg/dL of glucose, 41 mg/dL of protein, and a negative Venereal Disease Research Laboratory test result were found in the spinal fluid. During the hospital stay, tests for bacterial or viral infection using cytomegalovirus urine polymerase chain reaction, blood culture, urine culture, cerebrospinal fluid culture, HIV testing, and more all came back negative. He had unremarkable electrolytes, liver function, and renal function. Bilateral tibial Wimberger's sign was visible on the radiograph. Penicillin G IV was started immediately after admission (50,000 U/kg every 6 hours for 10 days). His mother first tested negative on the prenatal syphilis screening, but she later tested positive with a Venereal Disease Research Laboratory titer of 1:16 and reactive FTA IgG and IgM. This confirmed the diagnosis of congenital syphilis. There was also an RPR, which started out badly. RPR was positive after asking the lab to dilute the sample. Doxycycline was given to her to treat secondary syphilis. The exanthem had improved significantly after the 10-day antibiotic therapy, therefore he was discharged. When checked four days after being discharged , he had nearly fully recovered from the rash and rhinorrhea, had no mucosal lesions, and only very minor erythema .

Discussion:

A significant medical and public health issue, congenital syphilis is described in this case report as well as the issue of the rise in syphilis cases. Congenital syphilis is typically caused by inadequate prenatal care and syphilis therapy before or during pregnancy.² The main and secondary phases of maternal syphilis infection have the highest transmission rates (between 40% and 90%).³ Congenital syphilis cases are on the rise, and infant mortality is rising along with the striking increase in primary and secondary syphilis infections among women of reproductive age.⁴ Pediatricians should be knowledgeable with the incidence of syphilis in their area, the many clinical signs of congenital syphilis, and the false negative results brought on by the prozone phenomenon in order to accurately diagnose and treat congenital syphilis.²

Conclusion:

Due to a variety of causes, congenital syphilis still poses a serious threat to public health. The diagnosis of congenital syphilis may be delayed due to the variety of clinical symptoms, rising syphilis rate, insufficient prenatal care, and false negative results brought on by the prozone phenomenon. This case report reviews the clinical presentation and therapy for congenital syphilis and raises awareness of the challenges in making the diagnosis.

References:

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