مرکز طبی کودکان

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سی و هفتمین همایش بیماری های کودکان

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بیست و سومین همایش پرستاری کودکان

کتابچه خلاصه مقالات بخش محققین جوان

Abstracts Book

پیـــام رئیس همایش

اساتید ارجمند، همکاران گرامی، یاران گران‌مایه

با افتخار، **سی و هفتمین همایش سالانه بین‌المللی بیماری‌های کودکان** در دانشگاه علوم پزشکی تهران، به عنوان کهن‌ترین و پیشروترین مرکز آموزشی طب کودکان در کشور، برگزار می‌شود. این همایش، همچون سال‌های گذشته، فرصتی بی‌نظیر برای گردهمایی متخصصان و فوق تخصص‌های اطفال، پزشکان عمومی، جراحان اطفال، رادیولوژیست‌ها، محققان علوم پایه (ژنتیک، بیوشیمی، ایمونولوژی، سلول‌های بنیادی و...) و فعالان حوزه پزشکی اجتماعی و سلامت کودک فراهم می‌آورد.

تجربه موفق برگزاری ۳۶ دوره پیشین، این کنگره را به یکی از ارکان کلیدی ارتقاء علمی کشور در حوزه سلامت کودکان تبدیل کرده است.

تمرکز همایش در سال‌های اخیر بر محورهای مهمی همچون کاهش مرگ‌ومیر کودکان، کنترل بیماری‌های تنفسی و گوارشی، ارتقاء سلامت جامعه کودک و به‌ویژه توجه به چالش جوانی جمعیت بوده است.

در راستای تعامل بین‌رشته‌ای و باور به هم‌افزایی دانش، این رویداد به‌صورت دو بخش مجزای پزشکی و پرستاری برگزار می‌شود تا همکاران پرستار نیز از فرصت بازآموزی و تبادل تجربیات علمی با پزشکان بهره‌مند گردند.

همچنین برای شانزدهمین سال پیاپی، بخش ویژه‌ای به محققان جوان و دانشجویان علوم پزشکی اختصاص یافته است. این بخش با همکاری کانون استعدادهای درخشان و مرکز پژوهش‌های دانشجویی دانشگاه علوم پزشکی تهران، بستری ارزشمند برای ورود نسل جوان به حوزه پژوهش‌های بالینی و بنیادی در طب اطفال ایجاد کرده است. مقالات برگزیده این بخش، در قالب ارائه سخنرانی و پوستر علمی مورد تقدیر قرار خواهند گرفت.

در همایش امسال، توجه ویژه‌ای به نقش فناوری‌های نوین، از جمله هوش مصنوعی، سلول‌درمانی و پزشکی دقیق در سلامت جنین، کودکان و نوجوانان معطوف شده است. این نگاه آینده‌نگر، نشان از تلاش کنگره برای پیوند میان علم روز، درمان مؤثر و ارتقاء سلامت جامعه دارد.

پیام کمیته علمی و اجرایی سی و هفتمین همایش بیماری‌های کودکان

گذر زمان، بار دیگر این افتخار را نصیب گروه کودکان دانشگاه علوم پزشکی تهران و مرکز طبی کودکان به‌عنوان قطب علمی اطفال کشور کرده است تا میزبان سی‌وششمین همایش سالانه بیماری‌های کودکان باشیم. این رویداد علمی به مدت چهار روز از تاریخ۱۷ تا ۲۰ مهرماه ۱٤۰٤ در مرکز همایش‌های بین‌المللی نورالرضا (ایران) برگزار خواهد شد و فرصتی ارزشمند برای خدمت به جامعه پزشکی کودکان ایران فراهم می‌سازد.

ارتقاء کیفیت علمی همایش همواره یکی از اهداف اصلی برگزارکنندگان بوده است و در این مسیر، نظرات اساتید، متخصصان و فراگیران طب کودکان نقش مهمی ایفا کرده‌اند.

در همایش امسال، ۲۱ دوره آموزشی (Teaching Course) دو ساعته طراحی شده است تا به بررسی چالش‌ها و موضوعات رایج در طب کودکان بپردازد. این جلسات با حضور اساتید برجسته برگزار می‌شوند و هدف آن‌ها ارائه راهکارهای کاربردی برای شرکت‌کنندگان است.

همچنین، ۱۹ پانل تخصصی به مدت ٦۰ تا ۱۲۰ دقیقه با محوریت روش‌های نوین تشخیص و درمان، دستاوردهای علمی جدید و همکاری‌های میان‌رشته‌ای از جمله جراحی، رادیولوژی و آزمایشگاه برنامه‌ریزی شده‌اند.

با استقبال چشم‌گیر از پانل محققین جوان در سال گذشته، امسال نیز دو پانل اختصاصی برای محققان جوان و دانشجویان پزشکی برگزار خواهد شد. هدف از این برنامه، تقویت حضور پژوهشگران جوان در عرصه تحقیقات بالینی و بنیادی کودکان است.

فراخوان ارسال مقالات علمی از ویژگی‌های برجسته این دوره است که منجر به انتخاب ۳۰ مقاله برای ارائه شفاهی شده و سایر مقالات نیز در قالب پوستر علمی در ایام همایش ارائه خواهند شد.

هر روز از ساعت ۸:۰۰ تا ۸:۳۰ صبح، سخنرانی‌های کلیدی با محوریت کاربرد هوش مصنوعی در آموزش، پژوهش و درمان در طب کودکان در سالن اصلی برگزار خواهد شد.

برنامه‌های علمی همایش به‌صورت هم‌زمان در سه سالن اصلی برگزار می‌شوند و در برخی روزها با توجه به برگزاری کارگاه‌های آموزشی از جمله کارگاه تکامل، از چهار سالن استفاده خواهد شد.

حضور پررنگ بیش از ۳۰۰ استاد و عضو هیئت علمی از دانشگاه‌های علوم پزشکی سراسر کشور، شامل فوق تخصص‌های اطفال و اساتید علوم پایه، یکی از افتخارات این همایش است.

کلیه مطالب علمی پذیرفته‌شده در قالب یک کتابچه دیجیتال در پایان همایش منتشر و در اختیار شرکت‌کنندگان قرار خواهد گرفت.

امید است که تغییر زمان برگزاری همایش امسال نسبت به سال گذشته، به‌دلیل هم‌پوشانی با برخی برنامه‌های آموزشی و پژوهشی، شرایط را برای حضور حداکثری اساتید، متخصصان و فراگیران فراهم آورد.

حضور فعال شما در بزرگ‌ترین رویداد علمی کودکان کشور، علاوه بر بهره‌گیری از جدیدترین مباحث علمی و بالینی، فرصتی برای دیدار دوباره همکاران در فضایی صمیمانه و گامی مؤثر در ارتقاء سلامت نسل آینده ایران خواهد بود.

کمیته علمی و اجرایی همایش، از همراهی و حضور شما گرامی‌ترین میهمانان، صمیمانه استقبال می‌کند.

پیـــام دبیر اجرایی همایش

به سی و هفتمین همایش بیماری‌های کودکان و بیست و سومین همایش پرستاری کودکان خوش آمدید!

با افتخار، میزبان یکی از بزرگ‌ترین و مهم‌ترین رویدادهای علمی کشور در حوزه مراقبت‌های بهداشتی کودکان هستیم. این همایش معتبر که با میزبانی مرکز طبی کودکان، قطب علمی اطفال ایران، برگزار می‌شود، نقطه اتصال دانش، تجربه و نوآوری در درمان کودکان است.

بیش از ۲۰۰۰ شرکت‌کننده از سراسر کشور و جهان در این رویداد گرد هم آمده‌اند؛ از متخصصان مغز و اعصاب، قلب و عروق، گوارش و ریه گرفته تا متخصصان بیماری‌های عفونی، آسم و آلرژی، روماتولوژی، اورولوژی، نفرولوژی، غدد و جراحی کودکان و نوجوانان.

علاوه بر پزشکان، پرستاران، مراقبان ویژه نوزادان، فعالان حوزه مراقبت‌های تسکینی و اخلاق حرفه‌ای نیز در این رویداد حضور دارند و فرصتی استثنایی برای یادگیری و تبادل نظر فراهم شده است. سخنرانان برجسته داخلی و بین‌المللی، چه به‌صورت حضوری و چه آنلاین، در این رویداد حضور دارند تا آخرین یافته‌ها، پیشرفت‌ها و تجربیات خود را در زمینه سلامت کودک ارائه دهند.

تاریخ برگزاری: ۱۷ تا ۲۰ مهر ۱۴۰۴

محل برگزاری: مرکز همایش‌های بین‌المللی ایران، تهران

برگزاری همزمان به‌صورت حضوری و آنلاین در چهار سالن مجهز، با ظرفیت بیش از ۲۰۰۰ نفربا ما همراه باشید تا در فضایی علمی و الهام‌بخش، گامی مؤثر در ارتقاء سلامت و کیفیت زندگی کودکان برداریم.

همایش امسال، پلی است به سوی آینده‌ای روشن‌تر در مراقبت‌های کودکان.

فهرست مقالات

بررسی انواع گونه‌های میکروبیوتای روده در کودکان مبتلا به اختلال کم توجهی_بیش فعالی

الناز سپهری اردکانی[1]، طیبه شجاع الدینی اردکانی[2]، یاسمین کشاورزی پور[1]، پرنیا السادات محمودیان[1]

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زمینه و هدف: ADHD یکی از پیچیده‌ترین چالش‌های سلامت کودکان محسوب می‌شود که از تعامل چند عاملی میان عوامل ژنتیکی،محیطی و زیستی ناشی می‌شود.تغییر در ترکیب میکروبی روده می‌تواند با تاثیرگذاری بر مسیرهای عصبی،ایمنی و متابولیکی، موجب تغییر در رشد مغزی، انتقال دهنده‌های عصبی، تغییرات رفتاری و تنظیم هیجانی شود.لذا این مطالعه مروری با هدف تعیین انواع گونه‌های میکروبیوتای روده در کودکان مبتلا بهADHD انجام گرفته است.

مواد و روش‌ها :این مطالعه مروری با استناد به پایگاه‌های علوم پزشکی نظیر SID، MagIran، PubMed، Google Scholar، Scopus، Web of Science، Uptodate و با بررسی ۳۵ مقاله که از بین آنها ٦ مقاله مروری سیستماتیک، ۱ مقاله مروری سیستماتیک متاآنالیز، ۲ مقاله متاآنالیز و ۱ مقاله کوهورت مورد بررسی و تحلیل قرار گرفت.

یافته‌ها:نتایج مطالعات نشان داد که ارتباط دوطرفه بین میکروبیوم روده و سیستم عصبی مرکزی در محور روده_مغز وجود دارد و در ADHD که یک بیماری عصبی_رشدی با شروع زودرس است ترکیب میکروبیوم روده تغییر می‌کند بنابراین تغییر در انتقال‌دهنده‌های عصبی نیز رخ خواهد داد که در این میان، اختلال در سیستم سروتونین، نورآدرنالین و دوپامین به عنوان اتیولوژی ADHD شناخته شده است.گونه‌های باکتریایی روده که درADHD دستخوش تغییر کاهشی میشوند شامل فکالی‌باکتریوم، Coprocola، بازیدیومایکوتا، باکتریوئید اواتوس، فیرمیکوت‌ها، اکتینومایسس و کورینه‌باکتریوم می باشد.باکتری هایی که در افراد مبتلا به ADHD تغییر افزایشی خواهند داشت نیز شامل اسکومایکوتا،انتروکوک ها، کاندیدا،کوپروکوکوس،آلیستیپس، کولسینلا، کلوستریدیالیس Fusobacteroum, Veillonella, Parvula, Odoribacter, Eggerthela, Firmicutes, Actinobacteria, Ralstonia, AFipia, Dialisterspp می باشد.در ارتباط با بیفیدوباکتریوم از شاخه اکتینوباکتریا و باکتری‌های خانواده پورفیرومونا‌داسه در ADHD نتایج مطالعات ضدونقیض بوده و برخی تغییر کاهشی و برخی؛ دیگر تغییر افزایشی میزان آن را در کودکان ADHD گزارش کرده‌اند. نوع میکروبیوتای غالب روده که در نوجوانان مبتلا به ADHD گزارش شده است، از جنس Neisseria ازخانواده Neisseriaceae می باشد.

نتیجه‌گیری: نتایج مطالعات نشان می‌دهد که اگرچه گونه‌های غالب در کودکان مبتلا به ADHD مشخص هستند اما شیوع برخی از گونه‌های میکروبی؛ نیاز به بررسی بیش تر دارند ؛تغییر میکروبیوم در طول دوره کودکی و نوجوانی نیز دیده می شود که می‌تواند یک چالش جدی در درمان این بیماران باشد.

واژگان کلیدی: ADHD،میکروبیوتای روده،گونه‌های میکروبی،اختلال کم‌توجهی_بیش‌فعالی

Next-Generation CAR T-Cell Therapy for Pediatric Patients with Acute Lymphoblastic Leukemia

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Background: Acute lymphoblastic leukemia (ALL) is the most common malignancy among the pediatric population, and about 2-3% of patients experience refractory disease after chemotherapy, and also 10-15% will relapse. Considering the challenging treatment of hematological malignancies like ALL, new immunotherapies such as chimeric antigen receptor (CAR) T-cell therapy have revolutionized pediatric treatment. The T-cells that are genetically modified express CARs to CD19 and lead to better remission outcomes in pediatric patients with ALL.

Material and Methods: The literature review was conducted using databases such as PubMed, Scopus, Google Scholar, and Embase. Data extraction was done focusing on methodology and outcomes.

Results: Despite all the considerable outcomes of CAR T-cell therapy in the treatment of pediatric cancer, there are some challenges, including relapse, resistance to CAR cells, and loss of long-term persistence. For instance, 80% of patients will have initial remission, but only 40-50% of them experience long-lasting remission without relapse or minimal residual disease (MRD). Moreover, with the growing clinical application of 2nd-generation CAR T-cell strategies, new strategies are required to overcome the limitations of common methods. Additionally, some adverse effects may occur, such as cytokine release syndrome (CRS) and neurotoxicity. However, to avoid the limitations of 2nd generation CAR T-cell therapy, next-generation CARs have been designed. The 3rd generation CAR T-cells have an additional co-stimulatory domain that leads to more efficacy, better safety, immune-checkpoint modification, and fewer side effects for children with ALL.

Conclusion: Recent progress in CAR T-cell therapy has improved the immunotherapy for pediatric patients with ALL. 3rd generation CAR T-cells with more durability enhance the persistence of engineered T-cells. Furthermore, armored CAR T-cells with a specific structure have a greater ability to activate cytokine secretion mechanisms and lead to better immune responses. Some leukemia-associated markers are responsible for antigen escape, and next-generation CAR T-cells with dual targeting features mitigate such mechanisms. Therefore, comparing current immunotherapies, next-generation CAR T cells with more cost-effectiveness have revolutionized the therapeutic plan for the pediatric population with ALL. However, 3rd-generation CAR T-cells have some disadvantages, similar to those of 2nd-generation CAR T-cells, such as a toxicity risk due to inadequate long-term effects. To overcome the limitations, 4th and 5th generation CAR T-cells with more domains and more efficacy are designed in vivo, and some of them have been used in clinical practice in vitro.

Keywords: Acute lymphoblastic leukemia, ALL, CAR T-cell, Chimeric antigen receptor, Pediatrics.

The Potency of CAR-Macrophage Therapy for Tumor Microenvironment Modification in Pediatrics with Solid Tumors

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Background: Chimeric antigen receptor macrophage (CAR-M) therapy is a new immunotherapy in the field of pediatric solid tumors. The most considerable barrier of CAR-M therapy for solid tumors is the immunosuppressive mechanisms and especially the tumor microenvironment (TME) that is responsible for decreasing the anti-tumor efficacy of treatment. TME contains cellular parts, including macrophages, suppressor cells, and regulatory T-cells (Tregs), and also acellular components. Tumor-associated macrophages (TAMs) activities lead to tumor immune escape and result in tumor progression. TAMs secrete some chemicals that are responsible for tumor proliferation and migration, metastasis, angiogenesis, and therapeutic resistance.

Materials and Methods: Using PubMed, Scopus, and Google Scholar databases, relevant studies were reviewed based on keywords about CAR-Macrophage therapy and TME.

Results: In the TME, expression of inhibitory signals reduces the phagocytosis activity of TAMs. The macrophages' polarization changes, converting into anti-inflammatory macrophages that help tumor development. Although TME has immunosuppressive effects, some CAR-M therapy methods significantly modify the TME. Moreover, in the field of pediatric cancer, some approaches like immune checkpoint therapies control the cell cycle regulation of TAM and tumor cells, and the integration of such methods with CAR-Ms reduces tumor progression. Considering therapeutic methods for children with solid tumors, utilizing some agents such as nanoparticles facilitates the differentiation of M2 macrophages into the M1 phenotype and increases the immunological outcomes of CAR-Ms. In TME, macrophages have double-edged roles; TAMs have tumoral effects, while CAR-Ms have an anti-cancer role.

Conclusion: Second-generation CAR-M cells that are derived from pluripotent stem cells have great potency for tumor infiltration and phagocytosis in TME. For instance, M2 macrophages have anti-inflammatory effects and result in immunosuppression, while M1 macrophages have anti-tumor functions. Therefore, CAR-M therapy with both immunosuppression inhibition and immunostimulatory reactions is an effective method for pediatric solid tumors and can enhance the pediatric patients' quality of life.

Keywords: CAR-Macrophage, Tumor Microenvironment, Pediatrics, Solid Tumors

Title: Impact of IBD Medications During Pregnancy on Maternal and Child Health: A Systematic Review and Meta-Analysis

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Abstract

Backgrounds: Inflammatory bowel disease (IBD) impacts pregnant women, raising concerns about medication safety. This systematic review and meta-analysis evaluated association of IBD medications with pregnancy and neonatal outcomes.

Methods: Major databases were searched up to June 9, 2025, for eligible cross-sectional, case-control, and cohort studies comparing pregnant IBD patients receiving IBD-related drugs with unexposed controls. Subgroup analyses were conducted by drug categories (biologics, immunomodulators, corticosteroids, 5-aminosalicylic acid (5-ASA), and a combination of biologics and immunomodulators).

Results: Thirty-three studies were included. Biologics increased risks of spontaneous abortion (OR = 1.59, 95% CI [1.07, 2.36]), preterm birth (OR = 1.23, [1.03, 1.48]), hypertension (OR = 1.91, [1.15, 3.17]), low birth weight (LBW) (OR = 1.32, [1.01, 1.74]), while reducing gestational diabetes (GD) (OR = 0.79, [0.67,0.94]). Immunomodulators raised stillbirth risk (OR = 1.84, [1.26, 2.69]), while lowering GD (0.85, [0.74,0.99]). Combination therapy increased preterm birth (OR = 1.46, [1.11, 1.91]) and congenital malformations (CMs) (OR = 1.57, [1.01, 2.43]). Corticosteroids raised preterm birth (1.76, [1.30, 2.37]) and LBW (OR = 1.93, [1.33, 2.81]), while reducing CMs (OR = 0.62, [0.42,0.80]). 5-ASA increased stillbirth (OR = 5.26, [2.29, 12.05]). Overall, these medication groups increased preterm birth risk (OR = 1.29, [1.15, 1.45]). No significant relationship was found with small for gestational age (SGA), low Apgar score, newborn infections, antibiotic use, NICU admission, and hospitalization.

Conclusion: IBD medications in pregnancy are associated with varied perinatal outcomes depending on drug class. These findings highlight the importance of personalized treatments, balancing disease control and pregnancy safety.

Key words: Inflammatory bowel disease; IBD Medications; Biologic; Neonatal outcome; Pregnancy outcome

نیازهای توانبخشی در کودکان مبتلا به سندرم ویلیامز (Syndrome Williams) : یک مرور روایتی

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سابقه و هدف: سندرم ویلیامز (Williams Syndrome) یک اختلال ژنتیکی نادر است که حدود ۱/۱۰۰۰۰ نفر را تحت تأثیر قرار میدهد. علت این سندرم ریزحذف ۱.۸–۱.۵ مگابایت در کروموزوم q11.23۷ میباشد، این اختلال سیستمهای متعددی را تحت تأثیر قرار میدهد. توانبخشی به عنوان یک رویکرد مؤثر برای بهبود کیفیت زندگی و عملکرد این بیماران عمل

میکند. هدف از انجام این پژوهش بررسی نیازهای توانبخشی کودکان مبتلا به سندرم ویلیامز (WS) میباشد.

مواد و روش: این مطالعه به صورت مرور روایتی انجام شد. در مطالعه حاضر مقالات در پایگاه های اطلاعاتی مانند SID

، Noormags، Magiran، Scholar Google، PubMed با کلید واژه های سندرم ویلیامز، توانبخشی، کودکان از سال

۲۰۱۵ تا ۲۰۲۵ جستجو شد. در نهایت مطالعاتی که به بررسی نیازهای توانبخشی بیماران سندرم ویلیامز پرداخته اند طی دو مرحله بازبینی شدند که در مرحله اول عنوان و چکیده و در مرحله دوم کل مقاله مورد بررسی قرار گرفت، با اعمال معیار های ورود و خروج و حذف موارد تکراری تعداد ۱۸ مقاله وارد مطالعه شد.

یافته ها: مطابق بررسی های صورت گرفته مهم ترین نیاز های توانبخشی کودکان مبتلا به سندرم ویلیامز شامل: توانبخشی شناختی، آموزش مهارت های ارتباطاتی و اجتماعی، ارزیابی حسی)تکمیل پروفایل حسی(، توانبخشی حرکتی)حرکات درشت و ظریف(، ارزیابی اختلالات شنوایی، مشاوره روانشناسی، آموزش به والدین و مراقبین و رویکرد تیمی چند رشته ای میباشد. همچنین استفاده از فناوری واقعیت مجازی و بازی درمانی در توانبخشی این کودکان میتواند در بهبود توانایی های ذهنی) حافظه و ادراک(مفید باشد.

نتیجه گیری: در توانبخشی کودکان مبتلا سندرم ویلیامز باید ابعاد مختلف فردی و اجتماعی را در نظر گرفت، همچنین تاکید بر رویکرد تیمی چند رشته ای و مداخلات زودهنگام در برنامه درمانی این بیماران ضروری است. اعضای تیم توانبخشی لازم است به جنبه های اشاره شده در توانبخشی این کودکان توجه ویژه ای داشته باشند.

کلید واژه ها به فارسی: سندرم ویلیامز، توانبخشی، کودکان

Key Words: Williams Syndrome, Rehabilitation, Children

A Putative *HACE1* Founder Mutation in Iranian Patients with Spastic Paraplegia and Psychomotor Retardation with or Without Seizures: Five Cases and Literature Review

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Background: Biallelic pathogenic variants in the *HACE1* gene are responsible for the ultra-rare neurodevelopmental disorder Spastic Paraplegia and Psychomotor Retardation with or without Seizures (SPPRS). This study investigates the genetic basis of SPPRS in patients from two unrelated Iranian families and provides a comprehensive review of all reported cases harboring *HACE1* variants.

Methods: We performed whole exome sequencing (WES) on the probands of the two families, each from a consanguineous marriage. The identified variant was validated, and its co-segregation was confirmed using Sanger sequencing. To investigate a common ancestral origin, we subsequently conducted haplotype analysis, runs of homozygosity (ROH) mapping and mutation age estimation.

Results: WES identified the same homozygous nonsense variant *HACE1*:c.1396C>T (p.Gln466Ter) in both probands as the underlying cause. Sanger sequencing confirmed that this variant co-segregated with the disease in both families. Subsequent analyses revealed a shared ancestral haplotype within a ~6.6 Mb run of homozygosity (ROH) containing the *HACE1* gene, confirming a common origin for the mutation, which was estimated to have arisen approximately 10.3 generations ago (roughly 250 years). Furthermore, a comprehensive review of all reported cases identified delayed psychomotor development, intellectual disability, hypotonia, spasticity, structural brain abnormalities, motor disorders and speech impairment as the most prevalent clinical features of this syndrome.

Conclusion: Our findings suggest that the *HACE1*:c.1396C>T variant is a founder mutation within the Iranian population, representing the first report of SPPRS-causing variants in this population and the first founder mutation for this gene reported worldwide. This study expands the known genetic and clinical spectrum of the disorder and highlights phenotypic heterogeneity, even among patients sharing the same genotype. This discovery has crucial clinical implications, enabling the development of targeted screening strategies and improving genotype-phenotype correlations, thereby facilitating more accurate genetic counseling for at-risk families.

Keywords: *HACE1*, Spastic paraplegia and psychomotor retardation with or without seizures (SPPRS), spasticity, founder mutation, genotype–phenotype correlation, Iran

Association of neurodegeneration, cognitive impairment, and short stature in Down syndrome; Could proinflammatory cytokines be the common factor?

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ABSTRACT : Down syndrome (DS), caused by an extra copy of chromosome 21, is the most prevalent chromosomal disorder. It leads to various complications including, cardiac and endocrine dysfunctions, impairment of the immune system, growth retardation, and certain neurological conditions. Stunted growth in this population might be linked to an increased risk of a variety of co-occurring conditions, particularly neurological disorders. Studies indicate that the levels of neurodegeneration and neuroinflammation markers are higher in shorter children with DS. The disruption of insulin-like growth factor 1 (IGF1) signalling pathway due to the overexpression of proinflammatory cytokine genes could help establish a connection between short stature and neurodegeneration in DS. These cytokines disrupt the production of IGF1 in the liver, thereby inhibiting IGF1 from promoting bone and brain growth. Additionally, elevated cytokines levels impair the production of sex hormones by affecting the gonadal axis, further exacerbating the aforementioned conditions. The group of GnRH neurons responsible for cognitive functions is also impaired in DS, and treatment with GnRH agonists has demonstrated improvements in cognition. Although GnRH agonists can delay the fusion of growth plates by inhibiting pulsatile GnRH secretion, they may also lead to cognitive impairments. Hypothyroidism, the most prevalent endocrine complication of DS, can also contribute to both cognitive impairment and short stature. In conclusion, the increase of proinflammatory cytokines, through various mechanisms, can play a significant role in the development of both cognitive impairments and short stature in DS.

Probiotics and Rotavirus Vaccine Immunogenicity in Infants and Children: A Systematic Review

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Background: Rotavirus is a leading cause of severe gastroenteritis in infants, resulting in significant global morbidity and mortality. Oral rotavirus vaccines have reduced hospitalizations and deaths, yet their efficacy varies, particularly in high-mortality regions. Immunogenicity, the ability of a vaccine to elicit an immune response, is influenced by modulator factors like Probiotics, live microorganisms that confer health benefits. This study explores the interplay between probiotics and rotavirus vaccine immunogenicity to identify strategies to enhance vaccine effectiveness in vulnerable populations.

Method: This systematic review was conducted based on the PICO criteria and following PRISMA guidelines. A comprehensive search was performed in PubMed, Scopus, Web of Science, and Cochrane Library for studies published between 2015 and 2025. Keywords included "probiotics," "vaccine," "infants," “rotavirus,” and related terms. The inclusion criteria were randomized or controlled clinical trials in infants that assessed probiotic supplementation and vaccine immune responses. Exclusion criteria included animal studies, narrative reviews, and insufficient data. Study quality was assessed using the Cochrane Risk of Bias 2 (RoB 2) tool. The found articles were screened by two researchers separately.

Result: Following inclusion and exclusion criteria, 13 relevant studies were selected from an initial pool of 143 articles. The clinical outcomes indicate a variation in vaccine efficacy, ranging from 85% to 97% in low-mortality regions, compared to just 35% to 58% in high-mortality areas. This discrepancy is attributed to factors such as malnutrition, pathogen exposure, and imbalances in microbiota. Probiotics, including *Lactobacillus rhamnosus* GG and *Bifidobacterium lactis*, have been shown to enrich infant microbiota, inhibiting pathogenic organisms, strengthening mucosal barriers, increasing their production, and modulating innate immunity to reduce inflammation. When administered alongside rotavirus vaccines, these probiotics function as adjuvants by shifting immune responses toward Th1 and activating regulatory T-cells, reducing the duration of rotavirus diarrhea by approximately 1-3 days and increasing IgA/IgG titers by 18% to 22%, as well as enhancing IFN-γ+ cells by 30% to 40%. Additionally, they boost overall vaccine uptake by 15% to 18%. However, some studies paradoxically report a transient decrease in IgA seroconversion ranging from 20% to 37%, indicating that further extensive research is required to draw definitive conclusions.

Conclusion: With consideration of strains, dosages, and the duration of supplementation, probiotics emerge as an effective adjunct in the treatment of rotavirus diarrhea by modulating both the immune system and intestinal microbiota. However, the current evidence remains inconclusive, highlighting the need for more studies to establish their efficacy.

The Role of Fasting Diet in Polycystic Ovary Syndrome (PCOS)

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Abstract: Polycystic ovary syndrome (PCOS) is one of the most common syndromes during women's reproductive years, affecting about 19.5% of Iranian women. PCOS is considered a multifactorial disorder. Its complications include menstrual irregularities, infertility, ovarian cysts, insulin resistance, hyperandrogenism, metabolic syndrome, and obesity. Therefore, this condition can be referred to as a collection of metabolic–endocrine disorders. Various treatment approaches have been suggested for PCOS, among which intermittent fasting is a practical and effective method for weight reduction that can be performed in different forms. Intermittent fasting refers to a style of eating where food intake is restricted for a specific period, while eating is allowed during the remaining hours of the day. In this review study, databases such as PubMed, Elsevier, and Google Scholar were searched using key terms like PCOS, obesity, intermittent fasting, diet therapy, low-glycemic-index diet, and Mediterranean diet. Findings indicate that intermittent fasting may improve hyperandrogenism, irregular menstruation, and metabolic disturbances in PCOS patients. The Mediterranean diet and low-glycemic-index diets are also recommended for these patients. Overall, intermittent fasting, along with dietary modifications, may reduce clinical symptoms of PCOS, improve ovulation and metabolic status, and ultimately help in weight reduction and enhancement of fertility outcomes. Thus, dietary interventions such as intermittent fasting can play an effective role in the management of PCOS.

AI-Powered Analysis of Cry Patterns for Neonatal Pain Management

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Introduction: Crying is the only way of infants' communication to express their needs and emotions to adults. Infants have different patterns of crying in situations of pain, discomfort, or severe health problems. Analyzing these patterns can help parents and doctors detect infants' discomfort or health problems and solve them more quickly. Today, due to developments in Artificial intelligence (AI), classification and analysis of infants' cries is possible and available. This inventive tool can express babies' problems and needs clearly to their parents and physicians so they are able to relieve babies from what suffers them.

Material and Methods: A systematic search was conducted on databases such as PubMed and Scopus, focused on various studies and their designs.

Findings: Recent research underscores the ability of AI to effectively manage pain in newborns, and AI technologies can analyze facial expressions, body movements, crying behaviors, and physiological data to anticipate potential pain episodes, which cause timely intervention in pain management. Research highlights AI's ability to detect and analyze facial expressions in newborns in response to varying stimulus intensities, also showing a correlation between AI arousal/valence measures and healthcare professionals' pain ratings. Another approach combines deep learning and machine learning to improve the efficiency of infant cry classification models, even when using small datasets. It has also been found that SVM-RBF yields the highest accuracy (88.89%) among kernel-based infant cry classification systems. Besides, it is demonstrated that a multimodal system integrating crying sounds, facial expressions, body motion, and vital signs can provide 96.6% accuracy, which leads to better neonatal pain management.

Conclusion: AI systems show promise in analyzing and classifying infant crying patterns. Such advancements deepen parents' and doctors' understanding of infants' needs and offer the potential for more compassionate and effective pain management in neonatal care.

Keywords: Artificial Intelligence, Crying Analysis, Infant Cry Classification, Neonatal Pain Management.

"Palliative Care in Children with Severe Neurological Disorders: A Supportive Approach to Improving Quality of Life"

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Introduction: Congenital and neurological disorders are among the most common underlying diagnoses in children with life-threatening conditions. These children have an urgent need for relief from distressing symptoms, including pain, swallowing and digestive difficulties, excessive secretion buildup, dyspnea, seizures, and sleep disturbances. Consequently, children with severe neurological disorders and their families face unique needs that are effectively addressed by palliative care teams. Therefore, this narrative review was designed with the aim of exploring palliative care in children with severe neurological disorders.

Materials and Methods: The present narrative review was conducted based on articles published between 2020 and 2025. The information sources included PubMed, Scopus, and the Google Scholar search engine. The initial search was performed using the keywords *children*, *palliative care*, and *severe neurological disorders*, yielding a total of 224 articles. After screening, 7 studies met the eligibility criteria for final inclusion. The process of study selection and screening was reported in accordance with the PRISMA flow chart.

Results: According to the principles of palliative care, it is essential not only to provide care and support for the child with a life-threatening condition but also to extend support and attention to the family. Thus, palliative care is both patient-centered and family-centered, aiming to improve quality of life throughout the course of illness. Comprehensive palliative care for these children encompasses symptom management, respite and supportive care, normalization, safety, empowerment, and coping with illness. Furthermore, establishing honest and empathetic communication in palliative care not only reduces parental fear and anxiety but also enables healthcare providers to better understand the child's unique behaviors and needs in a way similar to the parents—since these children are often unable to express their discomfort as healthy children do. Nevertheless, one of the major challenges faced by parents of children with severe neurological disorders is the acceptance of and adjustment to their child's condition. Receiving palliative care helps parents in this regard, allowing them to find ways to cope while still experiencing moments of joy in life.

Conclusion: Palliative care plays a vital role in addressing the complex and multifaceted needs of children with severe neurological disorders and their families. By focusing on symptom management, psychosocial support, effective communication, and family empowerment, palliative care not only improves the quality of life for these children but also provides parents and caregivers with the resources and resilience needed to cope with their child's condition.

Keywords: Palliative Care, Children, Severe Neurological Disorders

Probiotics: A protective shield from breast milk against necrotizing enterocolitis in the premature new borns.

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Introduction: Necrotizing enterocolitis (NEC) is a common and life-threatening disease in premature new borns. Identifying specific preventive strategies to reduce the incidence of this disease is of great importance. Among these strategies, the use of probiotics as a nutritional strategy has been considered. Accordingly, this study was designed to investigate the effect of probiotic-enriched breast milk in preventing NEC in premature new borns.

Methods: A recent review was conducted using Google Scholar, PubMed, Scopus, and Sid databases with the keywords probiotics, enterocolic necrosis, preterm new born and breast milk during the period 2017-2024. Initially, 20 studies were identified from the initial search. Articles were included only if they were published in Persian or English. After removing duplicates, 5 studies were selected for analysis. The selection, extraction, and analysis processes were performed with careful attention to minimizing bias.

Results: NEC is a severe gastrointestinal disease of premature new borns and is thought to be related to physiological immaturity of the intestine and altered levels of normal intestinal flora. The disease is very common and occurs in 5 to 10% of very low birth weight infants with necrosis of small and large intestinal tissues. Breastfeeding is known as a preventive, safe, and effective approach for NEC in premature new borns. Now, the role of other drugs or adjuncts is also significant. For example, probiotics, glutamine, arginine, etc. have been studied as a treatment to reduce NEC in premature new borns. Several studies show a reduction in the incidence and severity of NEC in new borns treated with probiotics. Probiotics are live microorganisms that, when administered in sufficient quantities, provide health benefits to the host. Research shows that probiotics have the greatest impact on reducing mortality in new borns with NEC and also shortening their length of hospital stay. Therefore, further research on this topic could pave the way for the recovery of more new borns with NEC.

Conclusion: Given the nature of NEC and the very serious complications that it can cause in premature new borns and even cause their death, preventive measures in this field can be very useful. Since new borns use breast milk for their growth and development, enriching this milk with probiotics through the mother's continuous use of foods containing probiotics is a very effective way to prevent this disease.

Keywords: Probiotics, enterocolic necrosis, Premature new born, Breast milk

Title: Prevalence and Diversity of Parasitic Infections Among Kindergarten Children: A Cross-Sectional Study

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Abstract: Introduction: Intestinal parasitic infections (IPIs) disproportionately affect children in low-resource settings, where poor sanitation and contaminated environments increase transmission risks. Kindergarten-aged children are particularly vulnerable, with IPIs contributing to malnutrition and developmental impairments. While school-aged populations have been well-studied, data on kindergarten children especially urban-rural disparities remain limited. This study assessed IPI prevalence, species distribution, and risk factors in this vulnerable group to inform targeted interventions like deworming and sanitation programs.

Methodology: This cross-sectional study assessed the prevalence and risk factors of intestinal parasitic infections (IPIs) among 10,237 kindergarten children (aged 3–6 years) in urban (n = 6,005) and rural (n = 4,232) settings. Stool samples were analyzed using direct wet mount microscopy (saline/iodine) and the Kato-Katz technique (WHO egg-count thresholds for Ascaris, Trichuris, hookworms). Quality control included re-examination of 10% of slides by an expert parasitologist and daily equipment calibration.

Statistical analysis (SPSS v25) employed chi-square tests and logistic regression, reporting adjusted odds ratios (AORs) with 95% confidence intervals (CIs; p 0.05). Ethical approval was obtained, with written parental consent and free treatment for infected children.

Results: The overall prevalence of IPIs was 9.026% (924/10,237), with rural areas exhibiting significantly higher rates (11.27%, 476/4,232) than urban areas (7.46%, 448/6,005; p 0.05). Blastocystis spp. (383 cases; 41.5%), Hymenolepis nana (243; 26.3%), and Enterobius vermicularis (164; 17.7%) were the most prevalent species, respectively. Notably, 8.0% of infected children (74 cases) had multi-infections. The diversity of parasites was higher in rural settings, reflecting potential differences in sanitation and access to healthcare.

Conclusion: This study highlights the substantial burden of IPIs in kindergarten populations, particularly in rural regions, driven by socioeconomic and hygiene-related factors. Targeted interventions, deworming programs, health education, and improved sanitation are urgently needed to reduce morbidity.

Ethics Approval: IR.MAZUMS.REC.1403.24271

Prenatal Exposure to Traffic-Related Polycyclic Aromatic Hydrocarbons and Neonatal Thyroid Function: A Cross-Sectional Study in Shiraz, Iran

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Introduction: Exposure to polycyclic aromatic hydrocarbons (PAHs), particularly those emitted from traffic sources, poses significant risks to fetal development and endocrine regulation. Despite increasing concern about urban air pollution, evidence on prenatal traffic-related PAH exposure and neonatal thyroid function is still limited—particularly in the Middle East. This study aimed to assess the association between prenatal exposure to traffic-related PAHs and thyroid-stimulating hormone (TSH) levels in neonates born in an urban setting in Iran.

Methodology: In this cross-sectional study, 195 pregnant women in their third trimester (7th month and end of 9th month) were randomly recruited from healthcare centers across Shiraz, Iran. Maternal blood samples were used to estimate fetal PAH exposure, based on placental transfer. Eight PAHs were quantified via GC–MS, including Benzo(a)pyrene, Benzo(b)fluoranthene, and Chrysene. Maternal interviews and questionnaires captured demographic and exposure data. Residential locations were geocoded, and traffic exposure was estimated using a 500-meter buffer of traffic density. Neonatal TSH was measured via heel-prick sampling during routine screening within 3–5 days of birth. Multivariable linear regression (R v4.0.2) assessed the association between maternal PAHs and neonatal TSH, adjusting for key confounders. The study received ethics approval from the local IRB (IR.QUMS.REC.1397.345).

Results: Phenanthrene and Fluoranthene were the most abundant PAHs in maternal serum, with mean concentrations of 31.5 and 28.7 ng/mL, respectively. Total PAH levels ranged from 28.4 to 184.7 ng/m³, with an average of 96.2 ng/m³. Traffic density within a 500-meter radius of maternal homes was strongly correlated with serum PAH levels ($r = 0.61$, $p < 0.001$), confirming traffic as the main exposure source. Newborns of mothers in the highest PAH exposure tertile had significantly elevated TSH levels (5.82 ± 1.21 mIU/L) compared to those in the lowest tertile (4.93 ± 1.09 mIU/L, $p < 0.01$). Regression analysis showed that every 10 ng/m³ increase in total PAH exposure was associated with a 0.18 mIU/L rise in neonatal TSH (95% CI: 0.07–0.29, $p = 0.002$). The association remained significant after adjusting for key confounders. No meaningful differences were observed in birth weight, length, or head circumference across exposure groups.

Conclusion: This study provides evidence that prenatal exposure to traffic-derived PAHs may disrupt neonatal thyroid function. Findings highlight fetal endocrine vulnerability to urban pollution and support targeted air quality policies in high-traffic areas.

Keywords: Polycyclic aromatic hydrocarbons, prenatal exposure, neonatal TSH, thyroid function, traffic emissions, urban air pollution

Climate Change and the Rise of Pediatric Respiratory Diseases: A Systematic Review of Regional Studies

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Introduction: Climate change is increasingly recognized as a major global health threat, particularly for vulnerable populations such as children. Children, especially those under 15 years old, are biologically more susceptible to these environmental stressors due to their underdeveloped lungs, higher respiratory rates, and still-maturing immune systems. This systematic review aimed to synthesize region-specific scientific evidence on the relationship between climatic variables (e.g., air pollution, temperature extremes, humidity levels, and particulate matter) and the incidence or severity of respiratory diseases in children.

Methodology: A comprehensive and systematic literature search was performed across four major scientific databases: PubMed, Scopus, Web of Science, and Google Scholar. The search covered publications from January 2013 to August 2025, using a combination of controlled vocabulary and free-text keywords such as "climate change", "respiratory diseases", "children", "air pollution", "PM2.5", and "dust storms". Studies were included if they used observational designs, focused on children under 15, were conducted at a regional or sub-national level, and reported quantitative links between environmental exposures (e.g., temperature, air pollution, humidity, extreme weather) and respiratory outcomes (e.g., asthma, bronchitis, or infections). Study screening followed PRISMA guidelines, and methodological quality was assessed using the AMSTAR 2 tool.

Results: Out of 2315 initial records, 32 studies met the inclusion criteria. Geographical distribution included Asia (10), Latin America (8), Africa (7), and the Middle East (4). The most commonly reported outcomes were **asthma exacerbations (22 studies)**, **lower respiratory tract infections (14)**, and **RSV-related illnesses (6)**. Overall, **91% of studies** reported a statistically significant association between at least one climate variable and an increase in respiratory illness among children. In areas with $PM_{2.5}$ levels exceeding **35 µg/m³**, hospitalization rates for pediatric asthma were reported to be up to **2.4 times higher** (95% CI: 1.9–2.9). In India, a 1°C increase in daily average temperature was associated with a **6.3% rise in respiratory infections**. In the Middle East, **dust storm events** were linked to spikes in emergency room visits for children, with an increase of up to **18% within 72 hours** following the event.

Conclusion: There is compelling regional evidence linking climate change and pediatric respiratory morbidity. These effects are particularly pronounced in low-resource settings, where exposure to environmental stressors is higher and health infrastructure is limited. Effective local policies—focusing on air quality control, climate early warning systems, and child-centered health planning—are urgently needed to mitigate these impacts.

Keywords: climate change, air pollution, children, respiratory diseases, asthma, $PM_{2.}$