Abstract Book

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Adolescent medicine

A STAKEHOLDER ANALYSIS OF AN ADOLESCENT HEALTH SURVEILLANCE SYSTEM IN GUATEMALA

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Background: In Guatemala, adolescent health indicators are collected using Sistema Informático del Adolescente (SIA), a survey developed by the Pan-American Health Organization. Recent analysis of measures revealed significant gaps in data, limiting the ability of clinicians and policy makers to effectively address health disparities. Our objective was to qualitatively explore adolescent health stakeholders' perceptions of the SIA system.

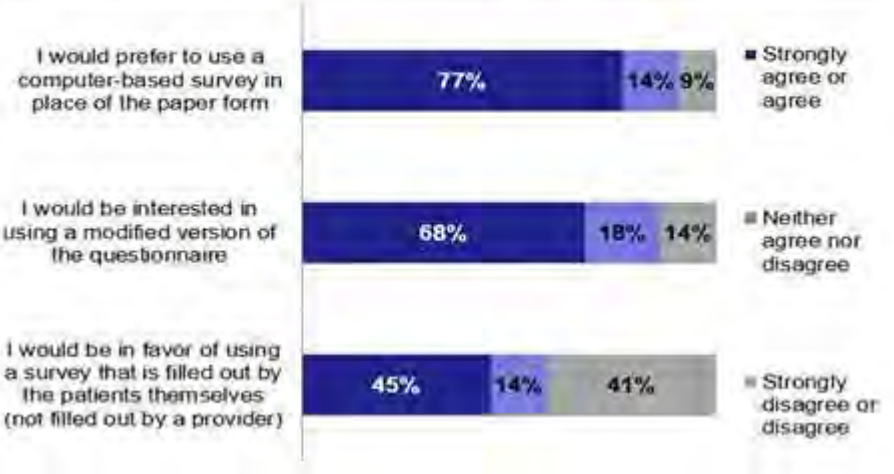
Methods: We conducted semi-structured interviews with clinic personnel involved in SIA questionnaire implementation. Twenty-two participants were recruited by purposeful sampling from six adolescent health clinics throughout Guatemala. Stakeholders included multi-disciplinary providers, and key database personnel involved in system oversight. Interviews were conducted in Spanish, recorded, and transcribed; a coding scheme was developed using grounded, inductive technique. Dedoose was used for analysis.

Results: Five major themes emerged. (1) Collecting baseline adolescent health data was perceived to be of value; this was deemed useful for prevention, diagnosis, and treatment of adolescent health issues. (2) Participants cited many strengths of the SIA questionnaire; these include its ability to comprehensively guide providers through standardized data collection, and informing clinical and psychosocial needs. (3) Several limitations of the questionnaire exist; it is time intensive, repetitive, and often problematic with data input and extraction. (4) Multiple challenges in data collection result in unanswered survey items; examples include patient or provider discomfort discussing sensitive topics, language barriers, and confidentiality. (5) Participants felt there was potential to improve the current system for future use; shortening and condensing forms, simplifying diagnostic coding, and using validated adolescent health screens were suggestions. Figure 1 shows results of a likert-scale assessment of stakeholder preferences.

Conclusions: Despite use of a standardized system, multiple barriers contribute to gaps in comprehensive, accurate adolescent health data collection in Guatemala. Efforts to refine the system may enhance health surveillance leading to improved quality of care in this vulnerable population.

Keywords:
Adolescent Health, Guatemala, health surveillance.

Figure 1: Likert scale assessment of stakeholder preferences (%)



ASSESSING FAMILY PLANNING NEEDS AMONG PEDIATRIC PATIENTS WITH REPAIRED CONGENITAL HEART DISEASE IN GHANA, WEST AFRICA

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Background: Congenital Heart Disease (CHD), the most common congenital disease, is often fatal without surgical correction. Furthermore, patients who undergo surgical correction of CHD in childhood have a number of disease-specific medical needs as they transition into adulthood, including family planning. Since 2007 a team from Boston Children's Hospital has conducted annual surgical missions to correct CHD in patients at Komfo Anokye Teaching Hospital in Kumasi, Ghana through Hearts and Minds of Ghana (HMG). As part of the provision of long-term post-operative care for this cohort we aimed to assess knowledge of family planning methods and provide counseling for female patients of childbearing age.

Methods: We developed and piloted a novel survey tool to assess knowledge of family planning methods. The final version of the survey was administered by HMG staff in the local language during a routine follow-up clinic in April 2016. Eligible participants were women above the age of 12 who previously underwent corrective surgery for CHD. Additionally, these patients received tailored family planning counseling based on WHO Risk of Pregnancy with Cardiovascular disease.

Findings: A total of 95 patients who had undergone corrective surgery were screened for inclusion at the April 2016 clinic. All 9 patients who qualified for inclusion completed the survey. Of those patients, 7 (77.8%) understood pregnancy risks associated with their repaired CHD and would consider family planning services if available.

Interpretation: Patients who undergo corrective cardiac repair have unique follow-up needs, often with complex social determinants in the setting of limited resources. Although most patients demonstrated good baseline knowledge of family planning, we identified 2 patients whose limited knowledge placed them at risk of potential life-threatening complications. This highlights the importance of identifying and providing interventions for transition needs in this setting. This is a need will increase over time in similar cohorts.

Keywords:
Family Planning, Transition, Global Surgery, Congenital Heart Disease, Adolescent Medicine

CHALLENGES OF THE CARE OF HIV POSITIVE ADOLESCENTS IN JOS, NIGERIA

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Background and Aims: The adolescents and young people are a special group to consider in HIV control programmes because of the high disease burden among them, their tendency for a care-free attitude, ignorance and high risk behavior. HIV positive adolescents on care face challenges which bother on disclosure, adherence, psycho-social issues, reproductive health and stigma/discrimination among others. Therefore, this study aims at finding the challenges of HIV positive adolescents attending the Paediatric and Adult ART program in JUTH.

Methods: This study was a cross sectional descriptive study of all adolescents on routine regular follow up at the Paediatric and adult HIV Clinic of JUTH. A written informed consent was obtained from the parents/guardians and assent from the eligible adolescent. Ethical approval was obtained from AIDS Prevention Initiative in Nigeria (APIN) authority and Health Research Ethical Committee (HREC) of Jos University Teaching Hospital, (JUTH). The data was entered into Epi Info version 7.2 and analyzed.

Results: Among the 147 subjects, 56 (38%) were males, while females were 91(62%) M: F ratio of 1: 1.6. Of this most were single (99%). Among the subjects, 81 (55%) were orphans, of which 65% (53) were single orphan. Majority live with one or both parents (68%), while 26% stay with relatives and 5% live in orphanages. Most were in school 137(96%) and 85 (59%) knew their diagnosis. Discrimination was reported among 19 (13%) subjects by pupils/students, teachers, friends and or family members, 31 (21%) thought of suicide while 9 (6%) were sexually active. Among the subject 100 (70%) have considered stopping medication.

Conclusion: HIV positive adolescents in our study suffer many challenges medications, discrimination, suicidal tendencies and majority are orphans. Improvement in counselling and orphans and vulnerable children (OVC) services to these HIV adolescents will help improve their quality of life.

Keywords:
HIV, Adolescents, Challenges.

DETERMINANTS OF ANTIRETROVIRAL THERAPY ADHERENCE AMONG HIV-INFECTED ADOLESCENTS ATTENDING A TERTIARY HEALTH FACILITY IN ABUJA, NIGERIA

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Background and Aims: An adherence level of ≥ 95% is required for success of antiretroviral (ARV) therapy. The aim of the study was to determine the percentage of HIV-infected adolescents adherent to ARVs using self-report, dose timing, pill count, CD4 count and viral load, and to identify barriers to adherence.

Methods: A prospective, cohort, study carried out at University of Abuja Teaching Hospital, Nigeria. Adolescents aged 10-19 years were assessed every 2 months for 6 months. Data collection lasted one year.

Results: 135 results from 145 participants were analysed. Loss to follow up was 6.9%. The mean age was 13.15years SD ± 2.436. Adherence percentage using self-report, dose-timing and pill count were 88.9%, 94.1% and 66.7% respectively. Adolescent social class and religion, and primary caregiver level of education were associated with adherence using self-report. Adherence was more likely if middle class (p= 0.006, OR=1.69 CI 0.23 – 19.4), Muslims (p= 0.0196 OR= 3.51 CI 1.12-14.48) and had primary caregivers with tertiary level of education (p= 0.039 OR= 0.145 CI 0.014-2.15). With dose timing, adherence was only associated with the age of the adolescent. Adolescents less than 15 years were more likely to be adherent (p= 0.043 OR= 4.08 CI 0.69-23.2). No associations were seen with pill count and the different variables assessed. The commonest barrier to adherence was forgetting (n=57; 42.22%) with the second and third being the adolescent running out of medications from missed clinic appointments (n= 17; 12.59%) and refusal to take medications (n=5; 3.7%), respectively.

Conclusion: Adherence percentage was highest with self-reports. It is recommended that adherence be assessed at every clinic appointment using more than one method and more studies undertaken to determine factors that reduce forgetfulness, failure to keep clinic appointments and refusal to take ARV drugs to avoid the dire consequences.

Keywords:
Adherence, adolescent, antiretroviral, HIV.

DEVELOPING A SUSTAINABLE PROGRAM TO SUPPORT LIBERIAN TEEN MOTHERS AND THEIR INFANTS

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Background and Aims: In Liberia, 1/3 of infants have teen mothers where maternal mortality rates are 1,072 maternal deaths/100,000 births. About 10% of these deaths are teenagers. Many infants hospitalized with severe malnutrition in urban areas have young teen mothers. A program was started in 2013 with funding from the AAP I-Catch program at the central teaching hospital to address these issues. It provides intensive health education, doctor clinic visits, and nurse home visits to teen families. In Nov, 2017, the program was expanded to a second government hospital, included prenatal care to young teen mothers, as well as continuing care for both mother and child for 2 years and was set up to have funding by the hospital.

Methods: Chart reviews were done on mother/infant pairs enrolled in the new program for the first 9 months. Outcomes were compared to national data.

Results: Presentations to hospital administration created good support. The new program is staffed exclusively by 2 nurses and a midwife on the regular hospital payroll that focus on teens 2 days/week. Physician consults are available but nurses are trained to do exams, screening and treatment. The program enrolled 109 pregnant teens ≤16yrs and 70 have delivered. Two hospital deliveries were by C-section. Two infants died but no mothers died. Most infants followed have been exclusively breastfed during the first 6 months. High rates of loss to follow-up (LTFU) for ≥ 6 months were experienced with 62 of the 109 (57%) LTFU. A similar rate of 66% occurred at the original site.

Conclusions: Programs of clinic visits and home visits to high-risk pregnant teens and infants can be established in low resource settings with minimal additional funding. They improve outcomes to families remaining in the program but social instability of teen families results in high rates of LTFU.

Keywords:
Adolescent pregnancy, maternal mortality, sustainability

DISCLOSURE OF STATUS AMONG HIV-INFECTED ADOLESCENTS AT A TERTIARY HOSPITAL IN ABUJA, NIGERIA

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[1]*University Of Abuja/university Of Abuja Teaching Hospital, Abuja, Nigeria*

Background and Aims: When, how and where to disclose to an HIV- infected child pose major challenges to caregivers for various reasons. This study aims to determine the prevalence, pattern and effect of disclosure among HIV- infected adolescents attending a tertiary hospital in Nigeria.

Methods: A cross-sectional, hospital-based study among HIV-infected adolescents aged 10 to 19 years attending the HIV Paediatric clinic at the University of Abuja Teaching Hospital, Gwagwalada. A pretested structured questionnaire was administered after age-appropriate consent and assent had been obtained from the adolescents or adolescent/caregiver pairs. Blood was also drawn for CD4 count and viral load assay.

Results: One hundred and forty-five adolescents participated in the study. Eighty (55.2%) were males, 78(53.8%) aged 10-13 years, 91(62.7%) had secondary level of education and 61(42.1%) middle socio-economic class. The mean age of the adolescents was 13.26 SD ± 2.43 and mean ARV treatment duration was 7.85 years SD ± 3.27. Only, 59 (40.7%) adolescents had been disclosed to. The mean age of disclosure was 14.59 ±SD 2.182. Disclosure was mostly by mothers (n=32; 22.1%), at home (n= 43; 29.7%) and their status revealed by 14 (23.7%) of the adolescents to mainly their siblings (n= 10; 6.9%). At disclosure, 19 (13.1%) felt bad/sad; 18 (12.4%) indifferent and 9 (6.2%) gave no response. The preferred age for disclosure was 14 – 16 years (n=33; 22.8%). There was a statistically significant relationship between disclosure and; adolescents' age (p= <0.001), mean age of disclosure (p= <0.001); social class (p= 0.046); caregivers' educational level (p= < 0.01) and CD4 count (p=0.003) but none for gender (p = 0.59), type of ARV medication (p = 0.519), self-reported adherence (p= 0.476) and Viral load (p= 0.729).

Conclusion: Disclosure prevalence was low. Caregivers should be better counseled and encouraged on the importance of early disclosure.

Keywords:
Disclosure; HIV; Adolescents; Caregivers; Abuja

DO ROMANIAN TEENS (MIS)MATCH WITH THEIR PARENTS REGARDING HEALTH EDUCATION AND CONTRACEPTION?

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Introduction: In Romania, health education in school is still a debatable issue, even if our country holds the second position in teenage births among the European Union.

Material and method: After signing an informed consent, mother-daughter questionnaires were applied in a tertiary pediatric hospital from North-Eastern Romania addressing main issues such as socioeconomic and educational level, family background, knowledges about contraception, attitudes regarding health education, teen pregnancy and birth.

Results: Valid questionnaires were collected from 137 mothers and 140 female teenagers, 62% of them originating from rural area, 93% orthodox and 97% Romanian ethnics. Monoparental family were reported in 23% of cases. 49% mothers are employed compared to 68% of the fathers. Only 13% graduated an university. Monthly incomes of the families were under 350€ in 54% of the cases. Alcohol consumption was reported in 19% of households. 53% of teenagers started their sexual life between 13 and 16 years while 52% of mothers started between 18 and 20 years. 78 % of mothers admitted they talk to their daughters about contraception. Only a small percentage of 6% of teenagers reported that information about reproductive health were provided by school teachers (6%). A high percentage of 19% of teenagers had no idea about contraception. The teenagers were more interested in having sexual education in schools (93%) then their mothers (78%).

Discussions: Our study showed a positive attitude of parents and teens regarding sexual education in schools; a lower socioeconomic status, single parents, alcohol consumption in the family, unemployment and low educational level of mothers were associated with limited knowledges about contraception in teens. Romanian teenagers started their sexual life earlier than their mothers.

Conclusions: The introduction of sexual education in Romanian schools, as the first step in prevention of teen pregnancy and teen birth is a national health priority.

Keywords:
teenagers, contraception, sexual education;

E-COACHING TO SUPPORT CHRONICALLI ILL ADOLESCENTS DURING TRANSITION OF CARE: A SYSTEMATIC REVIEW ON RCT:S

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Aim: The aim of this systematic review on digital RCTs for chronically ill adolescents is twofold
a) to define the e-coaching elements of digital interventions with focus on positive outcomes on self-management, treatment adherence, care motivation and self-efficacy in the care of chronically ill adolescents.
b) to describe and compare the outcomes of digital services designed for chronically ill adolescents.

Background: The rapid increase of the use of Internet in health care is changing health care relations and provides a great opportunity to develop new effective ways to deliver easily accessible and patient centred care. Since the adolescents are active users of the Internet and mobile services, digital services may give an advantage in providing adolescent-friendly, individualized health care and fortifying communication between healthcare providers and adolescents.

The transition of care from children's hospitals to adult sites is a vulnerable time in the chronically ill adolescents' life. This study aims to fill the existing gap in knowledge around educational content and needs of chronically ill adolescents during transition of care. There needs to be a better understanding of programmes that promotes self- management and efficacy, treatment adherence and care motivation for adolescents, to reach better preparedness for transition of care.

Design: Quantitative Systematic review on RCTs on current literature.

Review methods: A literature search was done during spring of 2018 using MEDLINE/ Ovid, Pub Med, Scopus, CINAHL, from 2008 to 2018. The selected 20 articles have been quality assessed using JBI quality assessment tool for RCTs and the articles have been assessed using the cochrane tool for bias on RCTs.

Results: The use of digitalisation in the care of chronically ill adolescents facilitates and promotes through e-coaching communication and easy access to health care providers. Results will be complemented by December 2018

Conclusions: Will be complemented by December 2018

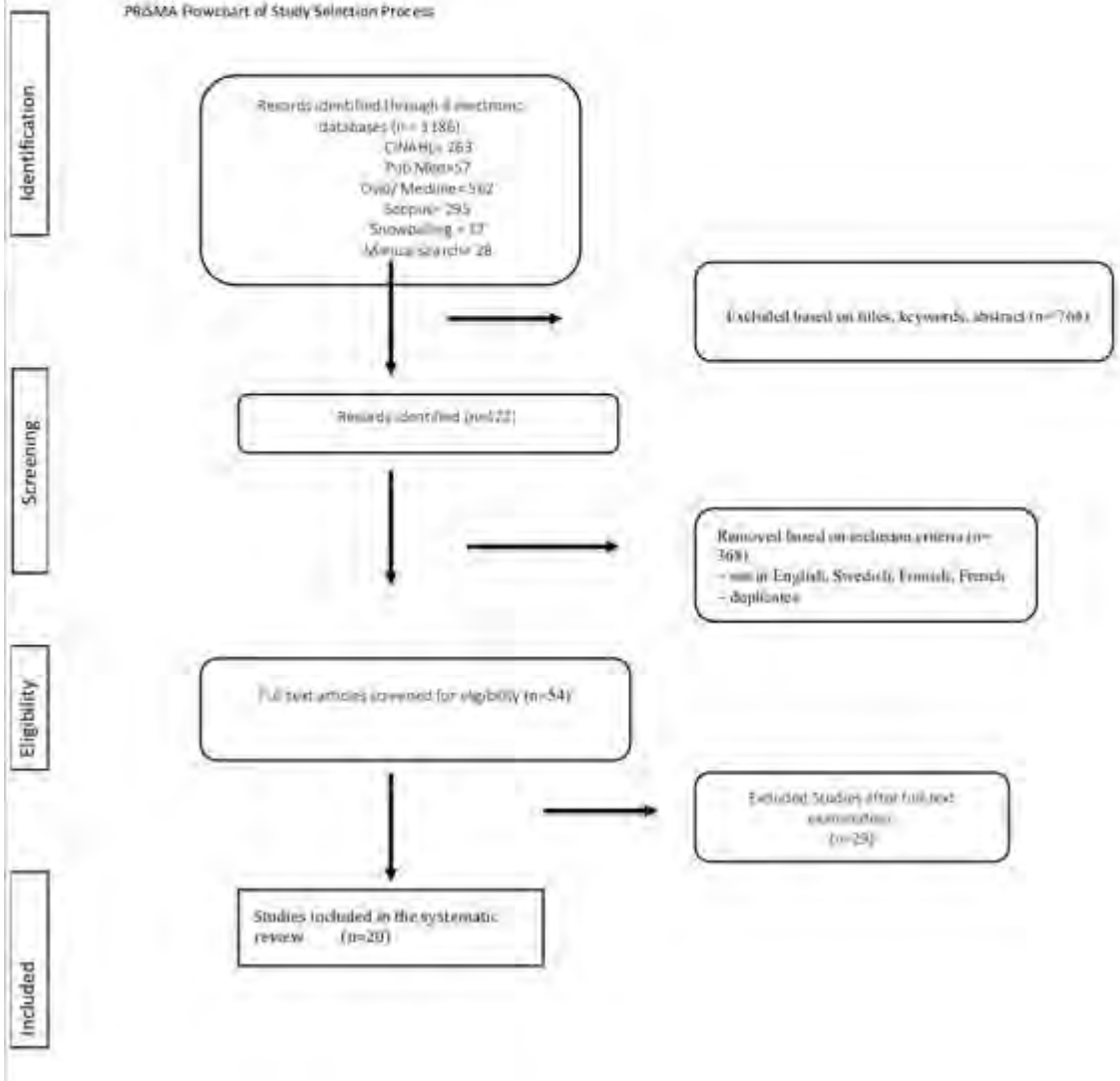
Keywords:
Chronically ill adolescents or young adults, e-coaching, health coaching, transition

ABSTRACT, ADOLESCENT MEDECINE, ORAL PRESENTATION

E-COACHING TO SUPPORT CHRONICALLI ILL ADOLESCENTS DURING TRANSITION OF CARE: A SYSTEMATIC REVIEW ON RCT:S

PRESENTING AUTHOR ANNA TORNIVUORI,

PRISMA Flowchart of Study Selection Process



	Author and year																		
Yes/ No/ Unclear/ NA	Whittemore et al. 2016	Whittemor e et al. 2012	Wagner et al. 2013	Voerman 2015	Stinson 20	Stinson et al. 2010	Salemink et al. 2015	Rikkers-Mulsaerts et al. 2012	Raiff 201	Palermo et al 2016	Newcom be et al 2012	Law et al 2012	Kunin-Batson et al. 2016	Joseph et al 2013	Huang et al. - 2014	Harris 201	Hanberger et al 2013	Grey et al 2014	Breakey et al 2014	Bonnert et al 2017
Was true randomization used for assignment of participants to treatment group	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	**YES**	YES	YES	YES	YES	YES
Was allocation to treatment groups concealed?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	**YES**	UN	YES	NO	UN	NA	UN	YES	YES
Were treatment groups similar at the **baseline?** Sisäänottokriteerit tarkat.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
.Were participants blind to treatment assignment?	YES	YES	NA	NA	NA	NA	YES	NA	NA	YES	NO	NA	NA	NA	NO	NA	NA	**UN**	NO	NA
Were those delivering treatment blind to treatment assignment?	YES	YES	NA	YES	NA	NA	NO	NA	NA	NA	**NO**	NA	**UN**	YES	YES	NA	YES	**UN**	UN	NA
Were outcomes assessors blind to treatment assignment?	UN	YES	UN	UN	UN	YES	UN	**UN**	**UN**	YES	UN	YES	YES	YES	YES	**YES**	**YES**	UN	UN	UN
Were treatment groups treated identically other than the intervention of interest	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	**YES**	YES	YES	YES	UN	YES	YES	YES	YES	YES
Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Were participants analyzed in the groups to which they were randomized? ITT	YES	YES	YES	NO	YES	YES	UN	YES	NO	UN	YES	YES	NO	YES	YES	YES	YES	YES	YES	**YES**
Were outcomes measured in the same way for treatment groups?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Were outcomes measured in a reliable ways	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
was appropriate statistical analysis used?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES

KNOWLEDGE AND ATTITUDE TOWARD HUMAN IMMUNODEFICIENCY VIRUS INFECTION AMONG ADOLESCENTS 15-18 YEARS OF AGE IN PUBLIC AND PRIVATE SCHOOLS IN MANILA, PHILIPPINES

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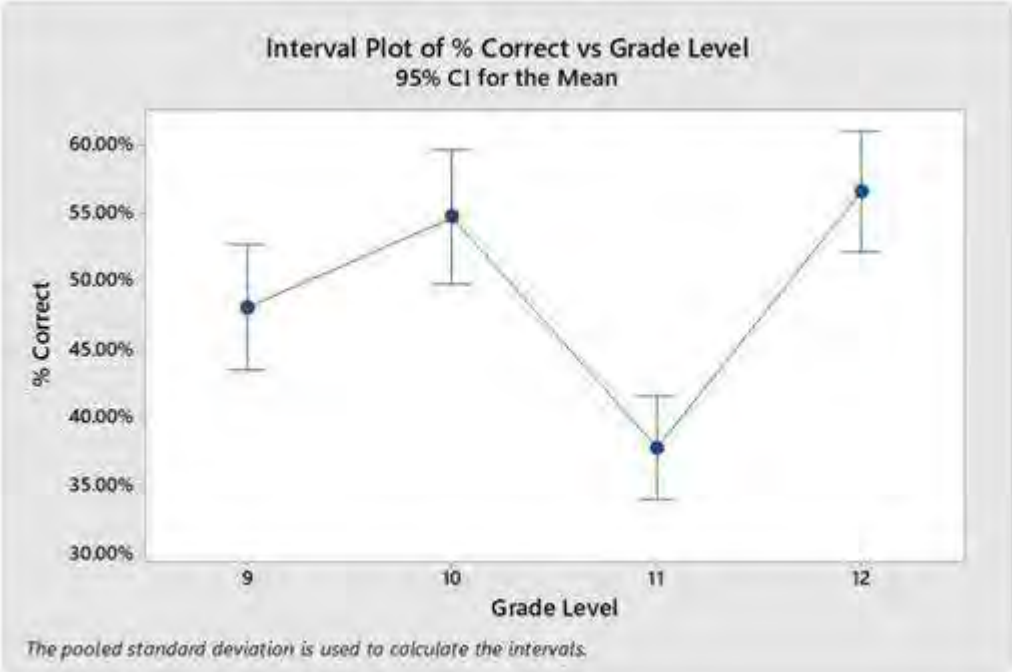
Background/aims: Reported cases of Human Immunodeficiency Virus infection are increasing in adolescent age groups who are known to engage in risky sexual activity. Even though sex education is being taught in K12 program as mandated by Department of Education, not all schools strictly implement this and sometimes only incorporate HIV topics on certain health education lessons. Through this study, the knowledge of adolescents regarding HIV recognition, transmission, and prevention together with their attitude towards the disease may be assessed and improved by focusing on the incorrect answers and including them in the students' lessons regularly.

Methods: Both questionnaires on knowledge and attitude were obtained from related literature and were validated by experts. Pre-testing on the attitude questionnaire was done with cognitive debriefing and serial refinement.

Results: In this descriptive study, the knowledge of the respondents regarding Human Immunodeficiency Virus (HIV) vary per type of school and grade level. When the questionnaire was categorized to three main points--- transmission, prevention and recognition of HIV, each has a significant rate of incorrect answer. Data gathered suggests that majority of the respondents are not knowledgeable on prevention of HIV, with 7 out of 8 questions answered incorrectly by majority of students. In assessing the attitudes, majority of the respondents have a positive attitude in taking care of relatives with HIV, continuing friendships with HIV-positive friends and sustaining relationships with co-students and teachers positive with HIV, but with a negative attitude on buying food from shopkeepers or foodsellers who are HIV-positive.

Conclusion: The results shows that adolescents have an idea on HIV however still lacks knowledge on prevention, transmission and recognition, particularly on the prevention part. Although there is a positive attitude on HIV-positive people whom they may encounter in their daily lives, most still have a negative attitude on HIV-positive shopkeepers or foodseller.

Keywords:
Human Immunodeficiency Virus, HIV, Private Schools, Public Schools, Adolescents, Knowledge, Attitude


Interval Plot of % Correct vs Grade Level
95% CI for the Mean
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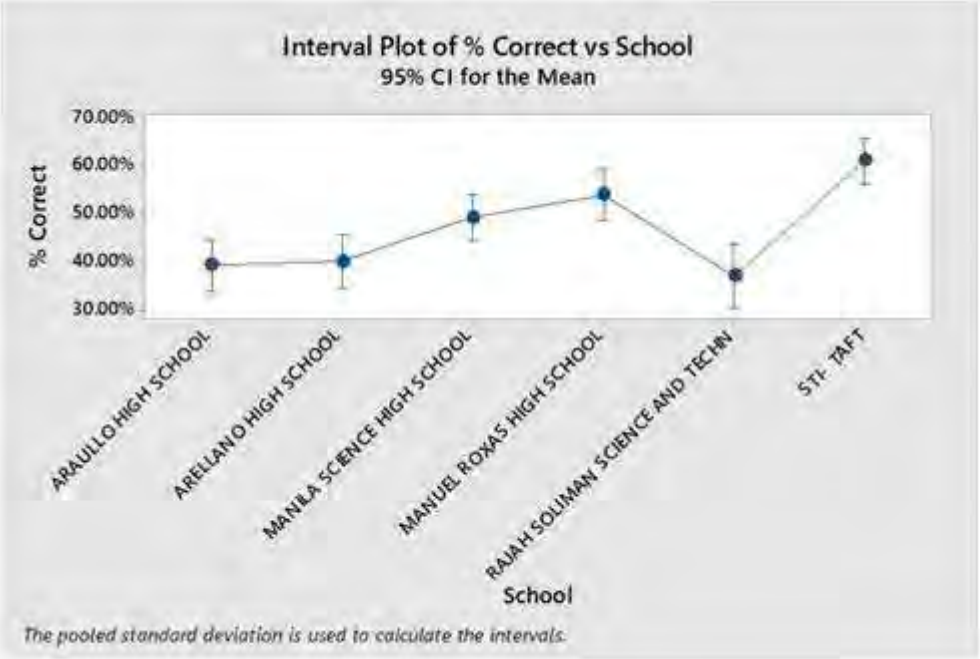
55.00%
50.00%
45.00%
40.00%
35.00%
30.00%
% Correct
9
10
11
12
Grade Level
The pooled standard deviation is used to calculate the intervals.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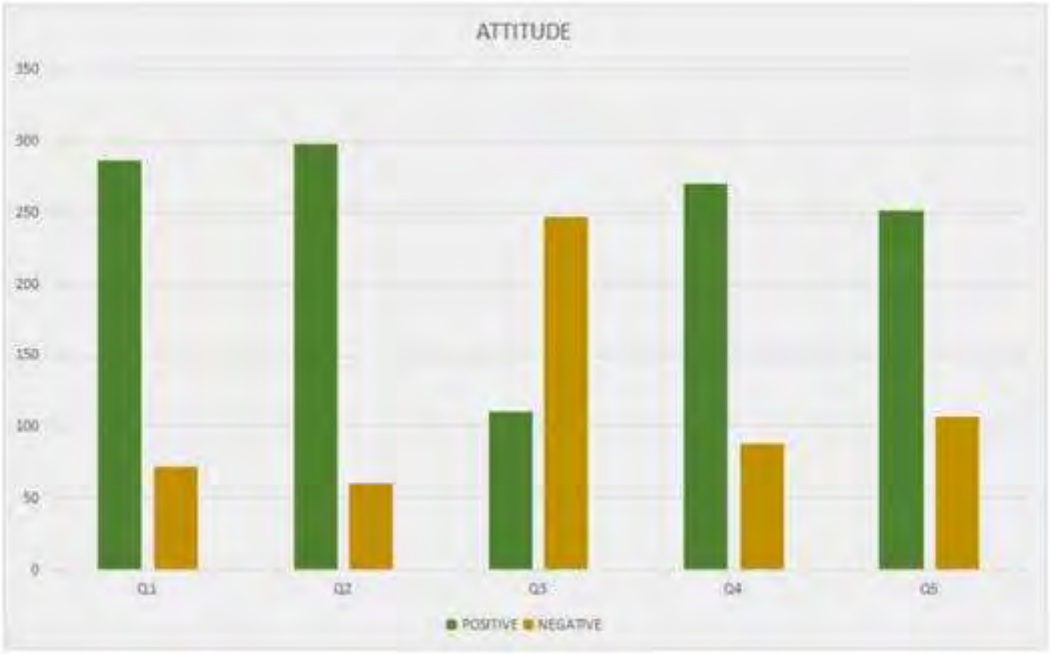
95% CI for the Mean
70.00%
60.00%
50.00%
40.00%
30.00%
% Correct
ARAULLO HIGH SCHOOL
ARELLANO HIGH SCHOOL
MANILA SCIENCE HIGH SCHOOL
MANUEL ROXAS HIGH SCHOOL
RAJAH SOLIMAN SCIENCE AND TECHN
STI- TAFT
School
The pooled standard deviation is used to calculate the intervals.


ATTITUDE
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300
250
200
150
100
50
0
Q1
Q2
Q3
Q4
Q5
POSITIVE
NEGATIVE

NECK CIRCUMFERENCE AS A SCREENING INSTRUMENT FOR OVERWEIGHT AND OBESITY IN NIGERIAN SECONDARY SCHOOL ADOLESCENTS IN AN URBAN AREA

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Background and Aims: Overweight and obesity are on the increase worldwide. The adolescent population is of special concern because the risks of these phenomena are higher when developed during this period. Methods of assessing overweight and obesity are being explored but neck circumference (NC) has not been widely investigated in adolescents. The aim of this study was to determine the usefulness of NC as a screening tool for overweight and obesity among Nigerian adolescents.

Methods: A cross sectional survey was conducted among 897 adolescents aged 10-19 years in urban Lagos, using a stratified, multistage sampling method. Overweight and obesity were defined using the criteria by the United States Center for Disease Control. Student t test was used for comparing mean body mass index (BMI) and NC while Pearson correlation coefficient was for exploring the relationship between NC and other variables. Receiver operating characteristic analysis was used to evaluate optimal NC cutoffs for overweight or obesity.

Results: 64 adolescents (7.1%) were overweight while those with obesity were 33 (3.7%). NC was positively correlated with age and BMI. There were significant differences in the NC of those that were overweight or with obesity compared to those with normal weight. The cutoff ranges for overweight/obesity per adolescent period were 33.95 to 36.95 cm in males and 31.05 to 33.40 cm in females. Sensitivities were 70 - 96.6% while specificities were 60.2 - 87.7%.

Conclusions: NC is significantly correlated with BMI. It is a simple, quick and reliable tool which could be used to screen for overweight and obesity among adolescents in Nigerian communities.

Keywords:
Adolescent, Body mass index, Neck circumference, Obesity, Overweight

SOCIAL, CULTURAL, AND STRUCTURAL GATEKEEPERS OF PRE-EXPOSURE PROPHYLAXIS (PREP) UPTAKE AMONG BLACK AND LATINO ADOLESCENTS WHO ATTEND AN ADOLESCENT MEDICINE CLINIC IN A HIGH RISK URBAN SETTING

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Background: In the United States, Black and Latino adolescents remain disproportionately affected by HIV. The biomedical intervention pre-exposure prophylaxis (PrEP) has been approved for use among adolescents, but little is known about the complexities of PrEP access. From a socioecological perspective, we examine multilevel gatekeepers of PrEP, pediatricians and parents, which act as determinants of accessibility for high-risk adolescents.

Methods: Who's on Board is a New York City community-based study to determine strategies for implementing PrEP among Black and Latino adolescents. Focus groups were conducted with 26 pediatricians and 25 parents to assess PrEP awareness and receptivity to use among adolescents. NVivo qualitative software was used to analyze focus group data using grounded theory.

Results: Pediatricians. Most were unfamiliar with clinical guidelines, especially in determining candidates for PrEP, dosage, and follow-up procedures. Some believed that primary care and infectious disease providers should be primary prescribers. They were morally conflicted about prescribing PrEP. The uncertainties about insurance coverage and ongoing medical follow-up were deterrents for prescribing. Overall, pediatricians had low intentions to prescribe PrEP. Parents. Parents were skeptical about the efficacy and effectiveness of PrEP. Believed that parental consent should be required for PrEP. They were reluctant about PrEP because of the unknown side-effects. Parents expressed medical distrust of the health care system because of historical unethical medical practices against minority populations and consequently, refuse to allow their children to be "guinea pigs" for the medicine. Both pediatricians and parents were concerned about potential low medication adherence.

Conclusions: Initiating oral PrEP has the potential to have a significant impact on adolescent HIV incidence. Findings offer insight into the multilevel gatekeepers of PrEP for adolescent populations, particularly among Blacks and Latinos. Strategies that will address the social, cultural, and structural impact on biomedical HIV prevention among adolescents is required for PrEP uptake.

SUMMATIVE CONTENT ANALYSIS FOR UNDERSTANDING OF ROMANTIC RELATIONSHIP AMONG RURAL MEXICAN-AMERICAN ADOLESCENT FEMALES

Dr. Jane Champion[1]

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Background and Aims: An understanding of romantic relationships among rural adolescent Mexican-American females is lacking yet needed to provide culturally specific care. Although explored among other populations, romantic relationships among ethnic minorities in rural settings is under-studied.

Methods: 82 rural Mexican-American adolescent females aged 14-18 years, recruited via convenience sampling at a rural health clinic completed open-ended individual interviews describing romantic relationships. Responses to open-ended questions were analyzed using summative content analysis.

Results: 62.2% reported sexual activity of which 23.5% had been pregnant. Summative content analyses identified personal characteristics and relationship characteristics as main categories with eight additional subcategories from responses. Sex was reported as what men wanted from women while physical attractiveness was perceived as important for both genders in development of romantic relationships. Females prioritized other relational and personal characteristic such as integrity, and partner treatment of self and others. More obesity was present among those in romantic relationships. Description of parental roles as a component of romantic relationships was not present.

Conclusions: Addressing adolescent romantic relationships with an emphasis on what male and female adolescents want or perceive as expected from relationships, long-term outcomes of relationships and on parental roles may enhance sexual health among rural Mexican-American adolescent populations. Practice implications of this study include the following. This study addresses a gap in the literature by describing romantic relationships for rural Mexican American female adolescents. This description of romantic relationships informs sexual health interventions provided in rural primary care based settings.

Keywords:
sexual health interventions, primary care-based interventions, rural health, adolescents

THE BILAL COLONY CHILDHOOD TO ADULTHOOD LONGITUDINAL STUDY: FACTORS THAT IMPACT AGE AT MENARCHE IN AN URBAN SLUM

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Background and Aims: Nutrition requirement increase during puberty to support rapid growth. In developing countries where malnutrition and micronutrient deficiencies are more prevalent, their impact on the timing of menarche remains unknown. The aim of this study is to assess the factors that impact the age at menarche (AAM) among girls in an urban slum in Karachi, Pakistan.

Methods: A cohort of girls (n = 1,005) between eight and ten years were assessed every six months from 2006 to 2010 for height, weight, mid-upper arm circumference, Tanner Staging as well as hemoglobin, serum ferritin, retinol, and zinc concentrations. Participant data was linked with household and parental information.

Results: The prevalence of stunting was 16.2% and thinness was 19.6%. Very few girls (n=14) were overweight and only one girl was obese. Anemia prevalence was 52.1%, vitamin A deficiency (VAD) was 50.7%, depleted serum ferritin was 36.5%, iron deficient anemia (IDA) was 24.1% and zinc deficiency was 23.8%. Median AAM and hazard ratios (HR) were calculated using Kaplan-Meier curves and Cox regression. Only 17.4% of girls with a median age of 11.98 years (IQR: 9.98, 13.51) achieved menarche during the study. Mild stunting (HR 0.39; 95%CI 0.28-0.55); stunting (HR 0.12; 95% CI 0.12-0.36); thinness (HR 0.64; 95% CI 0.43-0.95) were inversely associated with achieving menarche.

Conclusions: While stunting and thinness were significantly associated with later menarche, we found no evidence of an independent role of anemia or other micronutrient deficiencies in determining the timing of the first menarche.

Keywords:
Menarche, onset, BMI, height, micronutrients, anemia

THE MALE ADOLESCENT AND HIS RISKS

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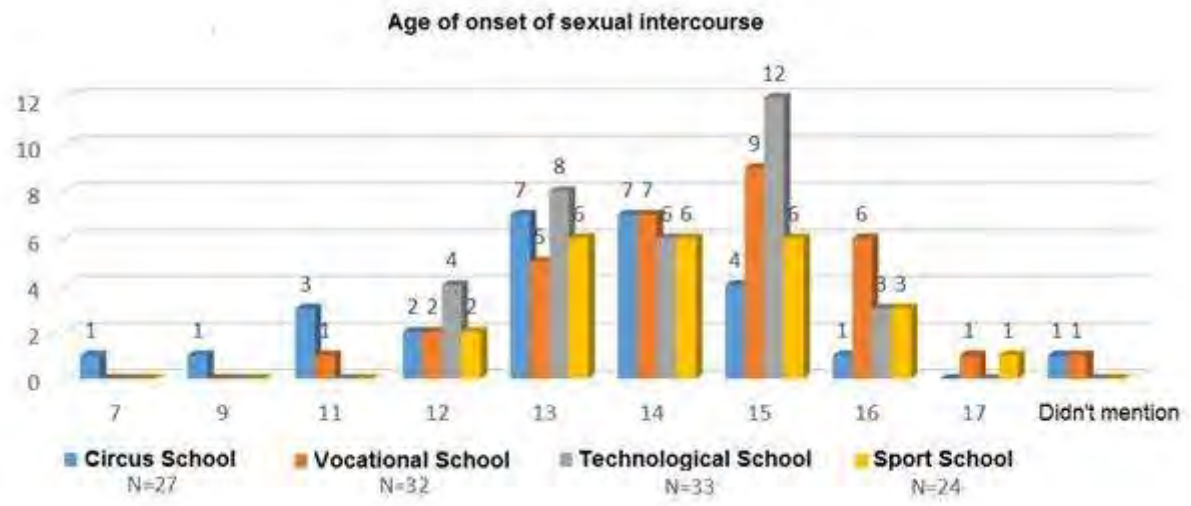
Background and Aims: Adolescence is a vital and growing force influenced by family, community, school, and society as a whole. Adolescent males, enjoy a good physical and intellectual development, nevertheless face difficulties that are related to gender and probably not taken into account. Based on the above, the objective was to analyze the risks in sexual behavior in adolescent males.

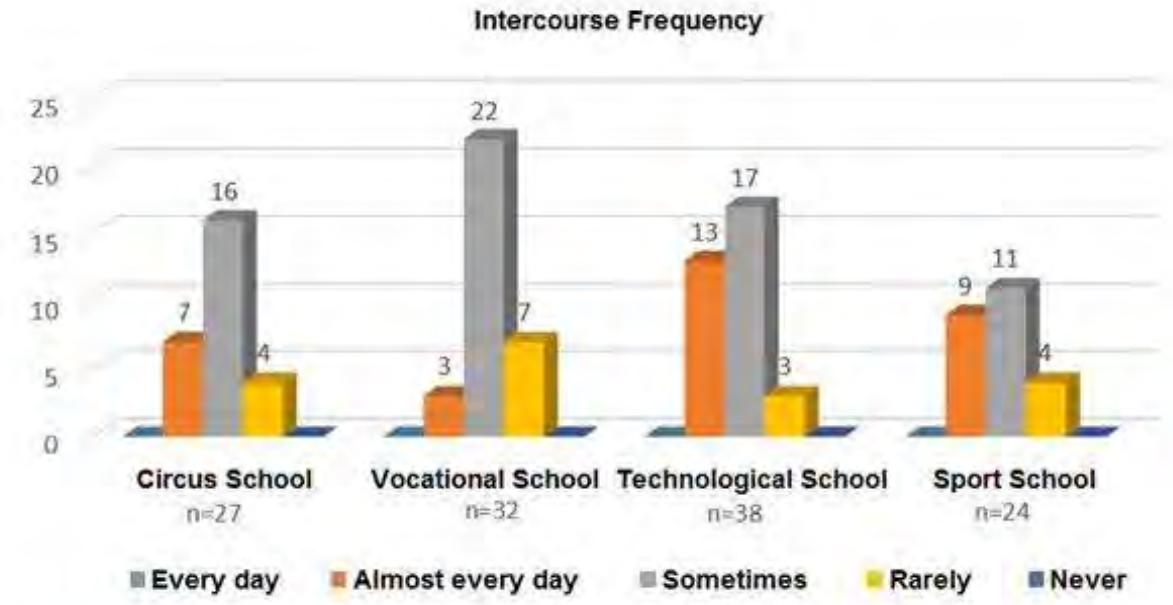
Methods: A descriptive, qualitative, and intentional selection was carried out, with the sample consisting of 144 adolescent male students between 15 and 18 years of age, 39 from an average technical level, 51 from a vocational school, 28 from the circus school and 26 of a sports school, the qualitative study was done with focus groups and the quantitative one taking the data from the application of a survey.

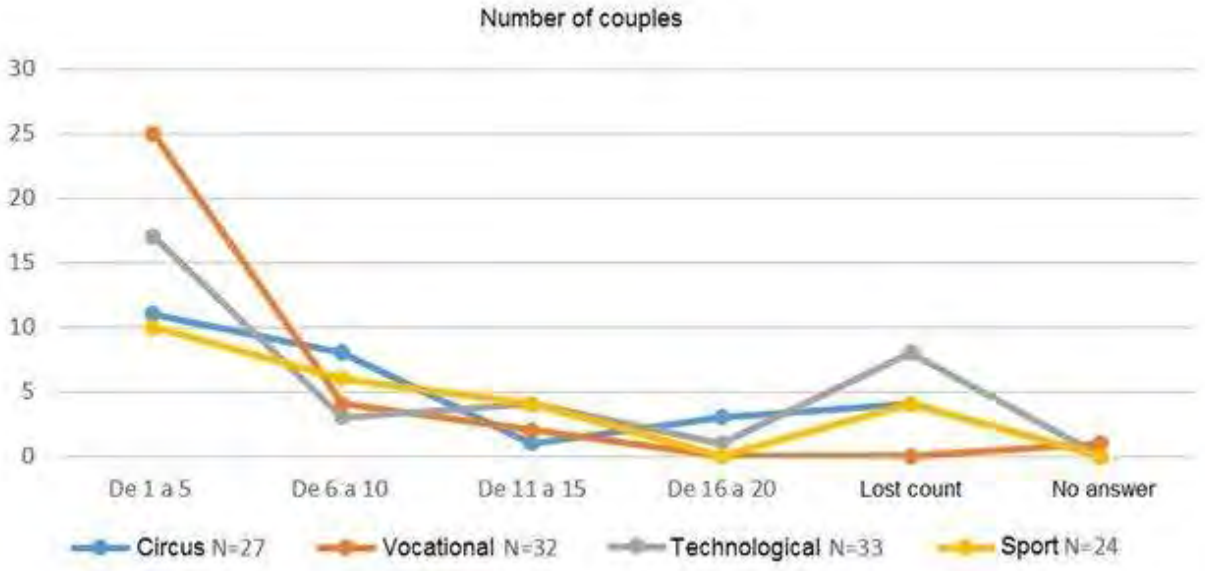
Results: The average age of onset of sexual intercourse was 13.67 years, the first person who spoke of sex education was the mother, the frequency of sexual intercourse was daily, the number of couples more than five and 80% reported having used a condom, however when they worked with the focus groups, they denied it. Those coming from the sports school denied the use of alcohol or other substances during their sexual relations. All, except those of the circus school, were responsible for the pregnancy of the couple.

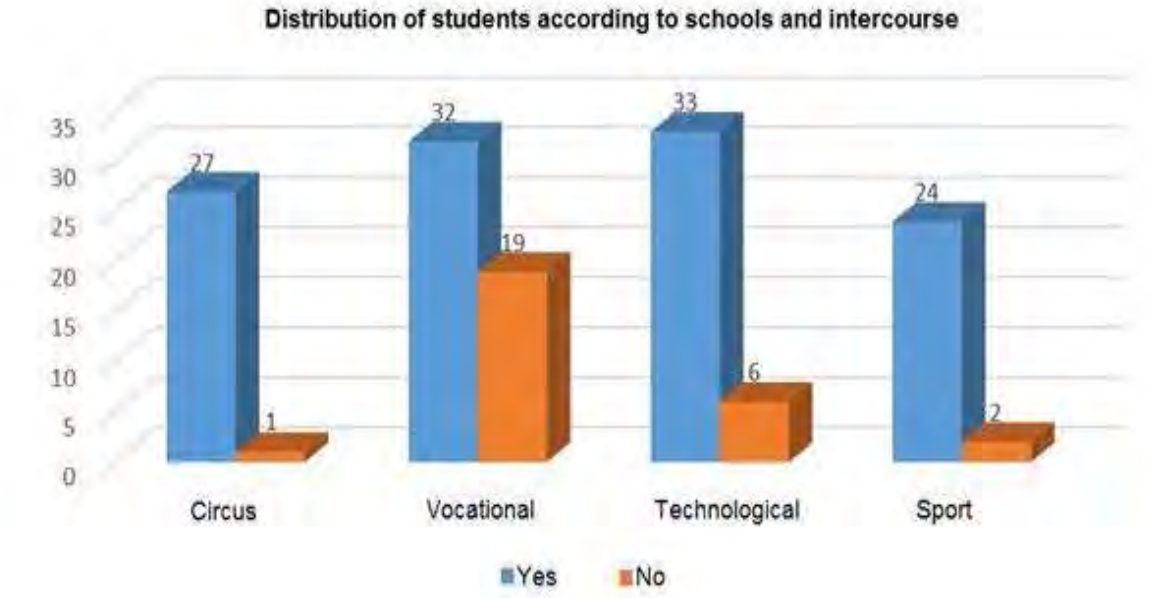
Conclusions: The most frequent risks were related to: low age at the beginning of their sexual relations, large number of couples, no protection, use of alcohol or other substances, doubts in the risk that accompany their sexual relations, which made it necessary to propose an intervention strategy to apply in the male adolescent.

Keywords:
Male, adolescent, risks




Intercourse Frequency
25
20
15
10
5
0
7
16
4
3
22
7
13
17
3
9
11
4
Circus School
n=27
Vocational School
n=32
Technological School
n=38
Sport School
n=24
Every day
Almost every day
Sometimes
Rarely
Never


Number of couples
30
25
20
15
10
5
0
De 1 a 5
De 6 a 10
De 11 a 15
De 16 a 20
Lost count
No answer
Circus N=27
Vocational N=32
Technological N=33
Sport N=24


Distribution of students according to schools and intercourse
35
30
25
20
15
10
5
0
27
1
32
19
33
6
24
2
Circus
Vocational
Technological
Sport
Yes
No

ANALYSIS OF NUTRIENT COMPOSITION OF BREAST MILK WITH THE ALLERGIC SEVERITY IN INFANTILE ATOPIC DERMATITIS

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Background and Aims: Atoptic dermatitis (AD) is a chronic allergic skin disease. We aim to determine the differences of nutrient components in the breast milk between atopic dermatitis and healthy infants.

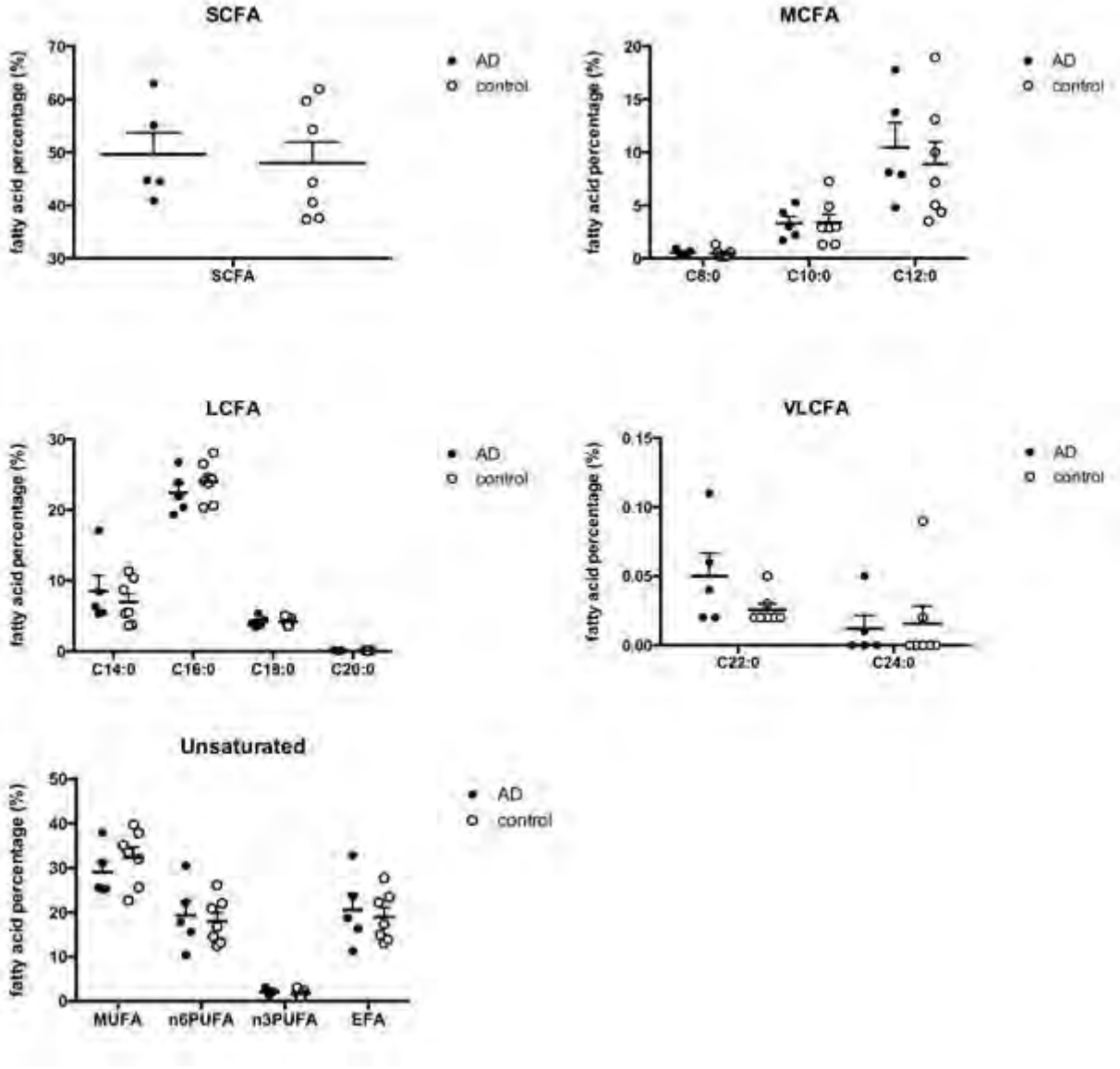
Methods: We conducted a prospective study to determine the differences of components (Microbiota, Vitamin A, Vitamin D and fatty acid), in the breast milk, between infantile AD and healthy infants. We collected breast milk at 2 and 6 month postpartum and the mothers are interviewed by the dietician for the diet questionnaireat at the same time.

Results: We enrolled 87 infants in our prospective study, of which 52 infants with infantile atopic dermatitis and 35 of them was healthy infants. Infants with infantile atopic dermatitis might have a tendency of having parental history of atopic dermatitis (N=35, 81.4%, P value=0.27) than that of healty infants (N=16, 69.6%, P value=0.27). The fatty acids analysis of breast milk at 2-month post-partum showed that no significant difference between two groups. However, Vitamin D level in the breast milk for healthy infants was higher then those for infants with atopic dermatitis (P value < 0.01).

Conclusion: It is suggested that dietary factors might play a critical role in immune modulation and disease severity of allergic diseases.

Keywords:
Allergic disorders,Atopic dermatitis,.Nutrients,Breast milk

Figure 8. The fatty acids analysis of breast milk at 2-month post-partum.



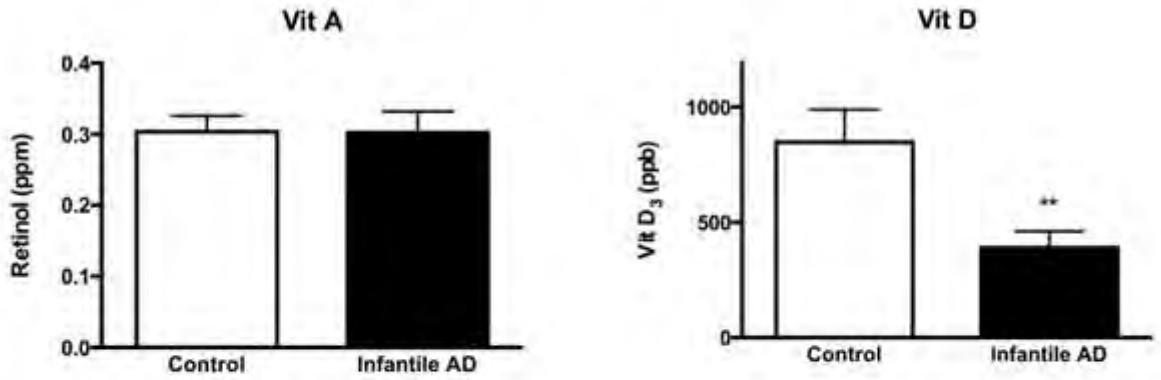


Figure 5. The Vit. A and Vit. D levels in the breast milk for healthy controls and infantile AD patients. Lipid layer of breast milk was extracted and analyzed by liquid chromatography for Vit. A and Vit. D. **, $p<0.01$.

ASSESSMENT OF CAREGIVERS' KNOWLEDGE AND ATTITUDE AND THE PREVALENCE OF ADVERSE EFFECTS FOLLOWING IMMUNIZATION IN INFANTS ATTENDING IMMUNIZATION CLINICS IN PUBLIC SECONDARY HEALTH FACILITIES IN BENIN CITY, EDO STATE, NIGERIA

Dr Anthony Atimati[1], Dr Vincent Adam[1]
[1]*University Of Benin Teaching Hospital, Benin City, Nigeria*

Background: Immunization is among the most successful and cost-effective public health interventions. Adverse effects following immunization may lead to caregivers' refusal to bring their wards for immunization if not properly managed.

Aim: To assess the prevalence of adverse effect following immunization in infants, the commonly associated vaccines and caregivers' knowledge and attitude towards the adverse effects.

Method: This is a descriptive cross-sectional study involving caregivers and their infants. Respondents were selected by systematic sampling technique. Data was collected using an interviewer administered semi-structured questionnaire. Test of associations using chi square was made and a p-value of 0.05 was accepted as significant.

Results: A total of 404 mother-child pairs were recruited for the study. Almost all (99.5%) the respondents were aware of adverse effects following immunization (AEFI). The main adverse effects were fever and pain at injection site which were reported by 385 (95.8%) and 302 (74.1%) caregivers respectively. Only 37 (9.2%) caregivers have ever reported an AEFI despite the feeling of majority (94.3%) of caregivers that it is important to report an adverse effect. The vaccines responsible for most of the adverse effects were BCG, OPV and PENTA vaccines. Caregiver's educational status was significantly associated with knowledge and positive attitude towards AEFI.

Conclusion: Most caregivers had a fair knowledge and good attitude towards adverse effects following immunization. The most reported adverse reactions were associated with BCG, OPV and PENTA vaccines. Health education during immunization clinics will strengthen the caregivers towards taking appropriate actions in the occurrence of adverse effects following immunization and dispel rumours.

Keywords:
AEFI (Adverse events following immunization), Immunization, Vaccines, Prevalence,

CLINICAL PROFILE AND OUTCOME OF CHILDHOOD URTICARIA & URTICARIA VASCULITIS: A STUDY FROM EASTERN INDIA

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Background and Aim: Urticaria is a type III hypersensitive reaction usually triggered by infection, and hypersensitivity to medications or food items. It usually subsides <24 hrs without any residual lesion, and doesn't have any systemic manifestation. However, those persisting >24 hrs commonly have systemic manifestations and may need aggressive treatment. We aimed at describing the clinical profile and outcome of childhood urticarial vasculitis cases.

Methods: This retrospective study was conducted in a tertiary care teaching institute in Eastern India over 2 and ½ years period. Children presenting with urticaria lesions for > 24 hrs that did not get subside either spontaneously or with antihistamines were admitted for further work up and management.

Results: During the study period a total of 20 children with urticaria needed admission for symptom control and further work up. There were 16 boys and 4 girls. The mean (SD) age of presentation was 6.5 yrs (±2.4). Besides urticaria, pain abdomen was present in 13 (65%), and fever in 6 (30%) children. Only one child had arthritis. Skin biopsy required in 7 children was suggestive of leukocytoclastic vasculitis. One child has ANA positive with low C3 level. All but 3 children required systemic steroid for symptom control along with other medications. None had suffered any complications.

Conclusions: Urticaria vasculitis remains under diagnosed because of the strict biopsy criteria which may not be always there in every case as shown by the present study. Though antihistamines remain the main stay of treatment, adding short course oral steroid shortens the course once infection is ruled out.

Keywords:
Urticaria, vasculitis, hypersensitive reaction, steroid, pediatrics

THE EFFECT OF RGC-32 DEFICIENCY ON PERIPHERAL BLOOD T CELL SUBGROUP AND PLATELET

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[1]Shanghai Children's Hospita, Shanghai, China

Aims: The objectives of this study are to explore the effect of response gene to complement 32 (RGC-32) on peripheral blood T cell subgroup and platelet.

Methods and results: RGC-32-deficient (RGC-32-/-) mice were generated from C57BL/6 embryonic stem cells with deletion of exon 2 and 3 of the RGC-32 gene. RGC-32-/- mice developed normally and did not spontaneously develop overt tumors. However, their weight were lighter compared with their wild-type (RGC-32+/+) littermates before six weeks of age. At the age of six weeks, the weight of RGC-32-/- mice was indiscriminate comparing with the RGC-32+/+ mice. To assess the effect of RGC-32 deficiency on the morphological structure of adult mice organs, we examined the morphological structure of the heart, liver, spleen and kidney using immunohistochemical method.

The morphological structure of adult RGC-32-/- mice organs were similar with their wild-type littermates. The number of RGC-32-/- mice WBC(10^9/L), RBC(10^12/L), PLT(10^9/L), HGB(g/L) were 5.93±1.23, 9.49±0.16, 1155.50±200.35, 140.00±3.77 respectively; The number of RGC-32+/+ mice WBC(10^9/L), RBC(10^12/L), PLT(10^9/L), HGB(g/L) were 7.06±1.92, 9.22±0.86, 892.13±203.24, 138.60±4.57 respectively. The number of RGC-32-/- mice platelet was significantly more than RGC-32+/+ mice. The percent of RGC-32-/- mice CD3+, CD4+, CD8+ T cell were 21.74±2.32,10.91±1.73,10.54±1.16; the percent of RGC-32+/+mice CD3+, CD4+, CD8+ T cell were 21.35±2.92, 11.76±1.54, 11.85±1.69. The percent of RGC-32-/- mice CD8+ T cell was lower than RGC-32+/+ mice.

Conclusion: it suggested that RGC-32 affected the peripheral blood T cell subgroup and platelets.

Keywords:
RGC-32, T cell subgroup, platelet, knockout mice

THE EFFICACY AND SAFETY OF "REAL-LIFE" LONG-TERM OMALIZUMAB THERAPY IN CHILDREN WITH SEVERE PERSISTENT UNCONTROLLED ASTHMA: THE PEDIATRIC HOSPITAL REGISTRY (RUSSIAN EXPERIENCE)

PhD, professor Leila Namazova-Baranova[1,2], PhD Elena Vishneva[1], PhD Elena Dobrynina[1], PhD Anna Alekseeva[1], PhD Julia Levina[1], PhD Kamilla Efendieva[1], MD Vera Kalugina[1], PhD Lilia Selimzyanova[1], MD Daria Chemakina[1]

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Asthma is one of the most common chronic diseases of childhood. Omalizumab is one of the most long used biologic therapies, which approved for the treatment uncontrolled severe persistent asthma in children. Analysis of available literature showed that the pediatric data on real-life outcomes for more than two years of Omalizumab treatment were limited.

Methods: To analyze the efficacy and safety of the long-term therapy with Omalizumab (more than 4 years) according to pediatric patient registry.

Results: Pediatric patient registry with uncontrolled severe persistent asthma included data of 108 children (30.55% girls) from 6 y to 17 y 11 mo (average age 13.4 y). The duration of therapy with Omalizumab was from 3 to 91 mo, Me 31.6 mo, doses were from 75 to 600 mg, Me 300 (225; 375) mg.
26 children received long-term treatment (more than 4 years). Asthma control test before the Omalizumab therapy was 14 points (Me 14 [12; 17,5], in 48 mo — 21 points (Me 22 [20; 24]; p=0,0017). The median dose of the ICS (fluticasone) was 575 mcg/day (Me 500 [437,5; 750]) before the start of the treatment, in 48 mo — 492 mcg/day (Me 500 [250; 562,5]; p=0,066). The number of exacerbations and requirement of quick-relief medications have been reduced: from 12 (Me 10,5 [9,75; 13,25]) to 0,8 times/month (Me [1; 0;1]) after 4 years of treatment (p=0,000).
There was no severe exacerbation requiring emergency admissions.
The severe adverse events were not registered. The local adverse events were observed rarely and stopped in their own or after taking second-generation antihistamines in age dose.

Conclusions: The registry of patients with severe persistent asthma can be used as a tool for long-term monitoring. Long-term therapy with Omalizumab is efficacy and safety treatment in addition to basic therapy in children with severe persistent asthma

Keywords:
severe persistent asthma, children, Omalizumab, long-term therapy, biologic therapy, long-term monitoring, pediatric patient registry

THE GENETICS OF POLLINOSIS IN RUSSIAN CHILDREN. CASE-CONTROL STUDY

Dr Julia Levina[1], Dr Kirill Savost'yanov[1], Dr Alexander Pushkov[1], Dr Alexey Burdennyy[1], **Prof Leila Namazova-Baranova[1]**, Dr Anna Alekseeva[1], Dr Elena Vishneva[1], Dr Kamilla Efendieva[1]

[1]FGAU "National Medical Research Center for Children's Health" of the Russian Federation Ministry of Health, Moscow, Russian Federation

Background and Aims: Pollinosis is seasonal allergic disease that can manifested with symptoms of allergic rhinitis, conjunctivitis, atopic dermatitis and asthma in atopic patients. In Russia the common reason for pollinosis is a birch or grass pollen. Since pollinosis is a multifactorial disease, the aim of this study was to investigate the association of polymorphic markers of candidate genes with the development of this disease.

Methods: The genotypes of polymorphic markers of genes-candidates (IL4, IL4R, IL13, IL33, IL6, TLR4, MMP9) were examined by Real-time PCR in group of 131 children 5-17 years of age with pollinosis and in control group of healthy children (n=78). The most of children were with the family history of allergy. The diagnosis of pollinosis was confirmed by skin prick tests or by determination in blood of specific IgE to tree or grass pollen.

Results: We reveal a statistically significant association the rs1805010 of IL4R gene with pollinosis. The children with GG genotype of rs1805010 had increased risk of pollinosis compared with healthy controls (P = 0.010; OR = 3.73; 95% CI, 1.24 – 11.28). Moreover, we have a tendency to increase the allele C frequency of the rs1805015 of the IL4R gene in children with pollinosis (OR=1,81, p=0,040). No significant association was found with other polymorphisms

Conclusion: The results of the present study revealed an association of cytokine gene polymorphism IL4R rs1805010 with pollinosis. Our results indicate a high predictive value of this polymorphic marker for the development of pollinosis in Russian pediatric population

Keywords:
pollinosis, children, genetics, IL4R gene

Antibiotics

INNOVATIVE TREATMENTS IN PNEUMONIA (ITIP): METHODS OF CLINICAL TRIALS AMONG CHILDREN 2-59 MONTHS OF AGE WITH FAST BREATHING AND CHEST INDRAWING PNEUMONIA IN LILONGWE, MALAWI

Dr Amy Sarah Ginsburg[1], Dr. Susanne May[2], Ms. Gwen Ambler[3], Ms. Evangelyn Nkwopara[1], Dr. Eric McCollum[4], Dr. Tisu Mvalo[5], Dr. Ajib Phiri[6], Mr. Norman Lufesi[7], Dr. Salim Sadruddin[8]

[1]Save The Children, Seattle, United States, [2]University of Washington, Seattle, USA, [3]PATH, Seattle, USA, [4]Johns Hopkins School of Medicine, Baltimore, USA, [5]University of North Carolina Project Lilongwe Trust, Lilongwe, Malawi, [6]Malawi College of Medicine, Lilongwe, Malawi, [7]Malawi Ministry of Health, Lilongwe, Malawi, [8]World Health Organization, Geneva, Switzerland

Background: Pneumonia is the leading infectious cause of mortality in children under five. World Health Organization's Integrated Management of Childhood Illnesses guidelines recommend three days of twice-daily oral amoxicillin for children with fast breathing pneumonia and five days for chest-indrawing pneumonia. However, it is unclear if shorter duration treatment could be effective.

Methods: We are conducting double-blind randomized non-inferiority trials among HIV-uninfected and -unexposed children 2-59 months old to compare the effectiveness of placebo vs three days of amoxicillin dispersible tablets (DT) for fast breathing pneumonia (ITIP1), and three vs five days of amoxicillin DT for chest indrawing pneumonia (ITIP2). Children will be recruited as outpatients to enroll 2,000 children in each trial, and if fast breathing, randomized to receive placebo or three days of amoxicillin DT and if chest indrawing, three or five days of amoxicillin DT. Treatment failure will be assessed at completion of treatment. Children will be followed for 14 days with regular study visits.

Results: Primary outcomes will be treatment failure on Day 4 (ITIP1) and Day 6 (ITIP2). Secondary outcomes include clinical relapse until Day 14, combined treatment failure and clinical relapse, adverse events and serious adverse events. We are assuming a treatment failure rate of 8% in the control groups and a relative 1.5 non-inferiority margin.

Conclusions: Given the paucity of data from Africa, African-based research is necessary to establish optimal treatment regimens for childhood pneumonia in the region. The goal of this project is to build evidence regarding the ideal duration of treatment with amoxicillin DT for non-severe childhood pneumonia in malaria endemic settings in Africa.
Clinical Trial Registrations: NCT02678195 and NCT02760420.

Keywords:
pneumonia, treatment, Africa

Breast feeding

ASSOCIATION BETWEEN BODY IMAGE PERCEPTION AND THE INITIATION OF BREASTFEEDING IN ADOLESCENT MOTHERS

Ph.D. Erika Del Carmen Ochoa-Correa[1], MD Rosalaura Virginia Villarreal-González[1], MD Norma Olivia de la O-Escamilla[1], MD Laura Paola Escamilla-Luna[1], MD, PhD Isaías Rodríguez-Valderrama[1], MD, PhD Manuel Enrique de la O-Cavazos[1]

[1]*Department of Pediatrics, "Dr. José Eleuterio González" University Hospital and Medical School, Monterrey, Mexico*

Background and Objectives: Breastfeeding is the mainstay of the newborn's diet. Adolescent mothers are less likely to initiate and continue breastfeeding, as well as being more vulnerable to developing a negative body image compared to adult mothers. Our objective was to determine the association between body image perception of adolescent mothers and the initiation of breastfeeding.

Methods: A case-control study, with puerperal patients hospitalized for birth care and their children in rooming-in care. The sample was divided into two groups, adolescent mothers and adult mothers. We analyzed demographic variables, somatometry (mother-child dyad) and the type of feeding of the newborn during their hospital stay. A body image examination questionnaire was used during pregnancy, with 13 items. Table 1. It was classified into 4 degrees of involvement: absent, mild, moderate and severe.

Results: 190 mothers, 95 adolescents and 95 adults were included. 62.5% of the adolescents and 69.4% of the adults presented some degree of alteration in the perception of their body image during pregnancy (p = 0.82). Table 2. No significant difference was found when associating the initial type of feeding of the neonates with an alteration in body image perception in adolescent mothers (p = 0.34) or in adult mothers (p = 0.80). Table 3. When comparing the initial type of feeding against the scale of the body perception questionnaire, a p = 0.94 was obtained. The majority of the neonates were fed with breast milk (91.5% adolescents and 84% adults), during their hospital stay.

Conclusions: Most adolescents offer breastfeeding to their babies. No association was found between maternal body perception (adolescents and adults) and the initiation of breastfeeding in this population.

Keywords:
Breastfeeding, adolescents, newborn

Pregnancy body image
Pregnancy makes me feel less attractive
I worry that my partner finds me unattractive during pregnancy
I am worried about the effect of pregnancy on the appearance of my breasts
I compare my body negatively to other pregnant women
I feel that I am gaining/or have gained too much weight
I worry about losing the weight after pregnancy
I worry about stretch marks
Prospective postnatal body image
I worry what my body will look like after pregnancy
I worry that my partner will find me unattractive after pregnancy
I worry what my breasts will look like after pregnancy
Dieting during pregnancy
I have dieted during pregnancy to avoid gaining too much weight
I have tried to limit my weight gain during pregnancy
Other people's comments about my pregnant body have upset me

Table 1. Questionnaire from Brown, A., J. Rance, and L. Warren, *Body image concerns during pregnancy are associated with a shorter breast feeding duration.* Midwifery, 2015. **31**(1): p. 80-9.

Questionnaire	Adolescentes (%)	Adults (%)
Absent	33 (34.8)	29 (30.5)
Mild	54 (56.8)	51 (53.7)
Moderate	8 (8.4)	14 (14.7)
Severe	0	1 (1.1)
Total	95 (100)	0

Table 2. Questionnaire vs Age of majority. $P = 0.395$.

	Adolescentes				Adults			
Questionnaire	Breastfeeding (%)	Formula Feeding (%)	Mixed Feeding (%)	*P= 0.661*	Breastfeeding (%)	Formula Feeding (%)	Mixed Feeding (%)	*P=0.885*
Absent	30 (35.7)	1 (25)	2 (28.6)		28 (32.2)	0	1 (14.3)	
Mild	47 (56)	2 (50)	5 (71.4)		46 (52.9)	1 (100)	4 (57.1)	
Moderate	7 (8.3)	1 (25)	0		12 (13.8)	0	2 (28.6)	
Severe	0	0	0		1 (1.1)	0	0	
Total	84 (100)	4 (100)	7 (100)		87 (100)	1 (100)	7 (100)	

Table 3. Type of feeding vs Questionnaire divided by ages.

BEYOND THE NURSERY: IMPROVING PEDIATRIC RESIDENTS' CONFIDENCE WITH RECOGNIZING AND COUNSELING BREASTFEEDING CONCERNS IN THE OUTPATIENT SETTING

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It has long been acknowledged that breast milk is the optimum form of nutrition for infants and that breastfeeding carries many benefits to both infant and mother. Unfortunately, support and guidance for mothers regarding this very important infant care issue is often not ideal. Training regarding breastfeeding counseling varies greatly among pediatric residencies with time spent in breastfeeding education ranging from 0.5 hours to 86 hours according to a study by Osband et al. This study was designed to identify the comfort level of pediatric residents at the University of Louisville School of Medicine, Louisville, KY with screening for, identifying and counseling regarding common breastfeeding concerns in the outpatient setting.

A pre-survey was distributed to identify current breastfeeding counseling practices of pediatric residents as well as their comfort level with breastfeeding concerns and knowledge of common breastfeeding issues encountered in the outpatient setting. The initial intervention involved distribution of a validated tool to screen for breastfeeding issues among infants less than 1 week of age. Residents were asked to review the screens and either provide direct counseling or refer to a local lactation specialist for all positive screens. The second intervention involved a live lecture, which was also available as a recording, directed at specific breastfeeding issues identified in the original survey as scoring the lowest for comfort level, knowledge or practices. Residents then completed a post-survey to determine the effect of the interventions. A chart review was also conducted.

From this study we concluded that the use of didactic sessions targeted toward specific breastfeeding issues and interventions encountered in the outpatient setting can improve resident confidence level and knowledge base and that validated screening tools for breastfeeding issues can be used in the outpatient setting by residents to improve practice and documentation of breastfeeding counseling.

Keywords:
Breast, milk, breastfeeding, breastfed, infant, newborn, nutrition, education

Table 1: *Comfort Levels and Current Practices*

	Training Level	Pre-Survey Average	Post-Survey Average
Current Practice	Pediatrics PGY 1 and Medicine/Pediatrics PGY 1	3.60	3.73
	Pediatrics PGY 2 and Medicine/Pediatrics PGY 2,3	3.93	3.96
	Pediatrics PGY 3and Medicine/Pediatrics PGY 4	4.20	4.30
Comfort Level	Pediatrics PGY 1 and Medicine/Pediatrics PGY 1	4.03	4.39
	Pediatrics PGY 2 and Medicine/Pediatrics PGY 2,3	4.31	4.40
	Pediatrics PGY 3and Medicine/Pediatrics PGY 4	4.52	4.67

Table 2: *Knowledge Assessment Scores*

Training Level	Pre-Survey Average (%)	Post-Survey Average (%)	Percent (%) Difference
Pediatrics PGY 1 and Medicine/Pediatrics PGY 1	51.43%	91.43%	40.00%
Pediatrics PGY 2 and Medicine/Pediatrics PGY 2,3	48.75%	NA*	NA*
Pediatrics PGY 3and Medicine/Pediatrics PGY 4	71.81%	55.00%	-16.81%

DETERMINING THE NEED FOR A HUMAN MILK BANK IN PUERTO RICO

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Background and Aims: The benefits of exclusive breastfeeding in premature and sick newborns has been clearly demonstrated and supported by the American Association of Pediatrics and the World Health Organization. In Puerto Rico, a jurisdiction of the United States, has the highest rate of prematurity but lacks a certified breast milk bank.

Aims:

1) Determine the use and source of donated breast milk in hospitalized newborns in Puerto Rico;

2) Assess the willingness of healthcare providers in Puerto Rico to support the establishment of a breast milk bank in the Island.

Methods: An anonymous survey was administered to a sample of healthcare providers, including physicians and nurses. The instrument was designed for local use and administered via email using email listings of participants from previous lactation promotional activities, email contact list of professional organizations, and email contact information from in-person contact made during lactation seminars.

Results: A total of 66 individuals responded to the survey; the majority identified themselves as physicians (56.9%) following by nurses (27.7%). Almost 16% of participants (15.8%) reported using donated breast milk, while only 1.7 % reported having pre-established arrangements with certified breast milk banks. An overwhelming majority (84.5%) responded they would support the establishment of a breast milk bank in Puerto Rico.

Conclusions: Given the alarmingly high rate of premature births in Puerto Rico, the responding sample of neonatal and pediatric healthcare providers in Puerto Rico report a lack in the the capacity to provide human milk as the sole source of nutrition to these at-risk infants. However, there is support the establishment of a local breast milk bank.

Keywords:

premature, infant, breastfeeding, breast milk bank

EVALUATION OF THE PERCEPTION OF HEALTHCARE WORKERS ON THE USE OF BANKED HUMAN MILK FOR INFANT FEEDING

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Background and Aims: Breast milk provides nutritional, protective, and economic benefits to babies, mothers, family and society. If maternal breast milk is unavailable in sufficient quantities, the feeding choice becomes a challenge to the healthcare worker (HCW) especially in busy neonatal units. Feeding of preterm babies is even more challenging more so in low-resource settings (LRS), in the absence of donor breast milk (DBM) and TPN solutions. We sought to evaluate the acceptability of DBM in Nigeria among HCW.

Methods: A structured researcher-administered questionnaire was administered for this descriptive and cross-sectional study to doctors, nurses and midwifes from the Well Baby/Immunization & antenatal clinic, labour, neonatal. Paediatric and maternity wards of a tertiary hospital, in southern Nigeria between September to December 2015.

Results: A total of 86 HCW respondents, 10 (11.6%) doctors & 76 (88.4%) nurses. Six (60%) resident doctors, 3 (30%) house officer and 1 (10%) consultant. Up to 52 (60.5%) of the HCW agreed with DBM use. Reasons for refusal include the fear of infections (HIV, Hepatitis B) 13 (38.2%), sociocultural unacceptable 4 (11.8), Infant formula preference 2 (5.9%) others 15 (44.1%). Most 78 (93%) respondents reported that DBM was superior to infant formula. The obstacle envisaged in implementing DBM use are donor scarcity 16 (21.6%), poor preservation 4 (5.4%), cultural beliefs 24 (32.4%), infection risk/contamination 15 (20.3%), lack of storage facilities 3 (3.5%) poor power supply 4 (5.4%) others 8 (10.8%). Eligibility criteria for donors to milk bank included screened healthy lactating mothers 69/69 (100%), More respondents 46/76 (60.5%) think that DBM was not feasible in LRS.

Conclusion: It's imperative that one of the reasons for limited access to DBM is the HCW attitude; a bias for sociocultural perception instead of scientific information.

Keywords:
Donor breast milk, healthcare workers, perception

EXPLORING ENABLING FACTORS FOR INFANT EXCLUSIVE BREASTFEEDING AMONG NURSING MOTHERS IN IBADAN, NIGERIA: A QUALITATIVE STUDY

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Background and Aims: The benefits of exclusively breast feeding have been identified and taught over the years through different channels but the proportion of exclusively breast fed infants in Nigeria has remained abysmally low. Several studies have described various factors which contributed to inability to practice exclusive breast feeding but literature about how mothers were able to practice exclusive breastfeeding is scarce. This study explored the enabling factors for infant exclusive breast feeding among nursing mothers in selected immunization clinics in Ibadan, Nigeria.

Methods: In-depth interviews were conducted among 20 mothers who breast fed their infants exclusively for 6 months. Digitally recorded interviews were transcribed and analyzed using thematic analysis.

Results: The mean age of the participants was 31.7±5.3 years. Their sources of information about infant feeding were online searches, antenatal, as well as immunization clinics. All the mothers took the decision to do exclusive breast feeding before the delivery of their babies. The enabling factors for exclusively breast feeding their infants were support from family members, support at work place and other public places, not working outside the home and having facilities to store expressed breast milk. Other supporting factors were being healthy, having domestic helps and crèche in work places.

Conclusions: Nursing mothers in this study took prior decisions to breast feed their infants exclusively and they had good social and physical supports which helped them to achieve this. Actively helping mothers to decide to practice exclusive breast feeding during pregnancy and provision of the necessary supports can encourage exclusive breast feeding of infants in Nigeria.

Keywords:
Exclusive breast feeding, nursing mothers, infant feeding

HOW BABY-FRIENDLY ARE NEONATAL UNITS IN QUEBEC, CANADA? FINDINGS FROM AN INTERNATIONAL SURVEY OF COMPLIANCE WITH THE BABY-FRIENDLY HOSPITAL INITIATIVE FOR NEONATAL WARDS (NEO-BFHI)

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Background: Breastmilk is critical for the health and development of preterm infants. The Baby-friendly Hospital Initiative for Neonatal Wards (Neo-BFHI) provides evidence-based guidelines for optimizing breastfeeding support for preterm and ill infants. Based on the WHO/UNICEF's original program to protect, promote and support breastfeeding, the Neo-BFHI includes Ten Steps to Successful Breastfeeding and Three Guiding Principles (GPs) for neonatal care. This presentation describes Baby-friendly care implementation in level 2 and 3 neonatal units in Quebec, Canada's largest province.

Methods: In 2017, 917 neonatal units from 36 countries participated in an international survey of compliance with the Neo-BFHI, including 133 neonatal units across Canada. All level 2 (N=13) and level 3 (N=6) neonatal units in Quebec, Canada completed the Neo-BFHI's self-assessment survey. Answers were summarized into compliance scores ranging from 0 to 100 at the unit, country and international levels.

Results: The median overall compliance score was 74/100 for level 2 and 56/100 for level 3 units in Quebec. Overall scores were also higher in level 2 vs. level 3 units across Canada (77 vs. 72) and internationally (76 vs. 70). Scores varied considerably across the individual units in Quebec. Lowest scores were for Step 3 (inform pregnant women about breastfeeding) for level 2 units and Step 1 (have a breastfeeding policy) for level 3 units. Highest scores were for Step 7 (rooming-in) for level 2 units and GP 2 (family-centered care) for level 3 units Level 3 units scored lower than level 2 units on all indicators except for Step 3, and Step 6 (give infants nothing but breastmilk).

Conclusions: Identification of barriers and facilitators to implementing Baby-friendly neonatal care practices is needed, particularly in level 3 NICUs. The Neo-BFHI offers a comprehensive program for self-monitoring and bench-marking of recommended practices to protect, promote and support breastfeeding in neonatal units.

Keywords:
Baby-friendly Hospital Initiative, breastfeeding, preterm, compliance, lactation, monitoring, neonatal

IMPACT OF ANTENATAL HEALTH EDUCATION ON BREASTFEEDING TECHNIQUES OF MOTHERS IN NORTH CENTRAL NIGERIA

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Background: The advantages of exclusive breastfeeding cannot be overemphasized. Mothers' knowledge and skills in positioning and attachment are key to successful breastfeeding. The timing of health talks may play significant role in mothers' choices and practices. Thus this study looked at timing of breastfeeding information and its influence on breastfeeding pattern and techniques among mothers in Jos, Nigeria.

Method: Five hundred mothers who attended antenatal clinics and delivered in health facilities were interviewed. Their recall of health talks particularly on topics concerning the benefits and management of breastfeeding received during antenatal clinics, post delivery period in hospitals, post-natal follow up clinics and immunization clinics were noted. Positioning and attachment of child during breastfeeding sessions were observed for correctness of techniques including breastfeeding pattern. Data collected was analyzed using SPSS version 21.

Result: Mothers' age ranged from 16 to 45 years (mean 27±4). Only 42.4% practiced Exclusive Breastfeeding. 78.8% and 39.8% received talk on breastfeeding in Antenatal Clinics and postnatal period respectively. Only 29.3% was assisted to initiate breastfeeding at delivery. Correct mothers positioning and babies' attachment was observed in 72.8% and 71.2% respectively. However 35.4% of mothers did not position their children correctly. Breastfeeding education during Antenatal care was associated with higher rate of Exclusive Breastfeeding, correct positioning and attachment of child (p-0.02, 0.013, 0.001 respectively). Assisting a mother to initiate breastfeeding at delivery was only associated with correct attachment of child to breast (0.047). Information on breastfeeding immediately after delivery had no influence on breastfeeding pattern nor positioning and attachment.

Conclusion: Breastfeeding information should be reinforced particularly during antenatal care when it is likely to have the greatest impact on the practice and technique of breastfeeding.

Keywords:
Antenatal Information, Technique, Practice, Breastfeeding.

Cardiology

ATRIAL SEPTAL DEFECT WITH EXTERNAL COMPRESSION OF RIGHT VENTRICLE DUE TO RIGHT ANTERIOR DIAPHRAGMATIC HERNIA MIMICS A CONGENITAL CYANOTIC CARDIAC DISEASE

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Diaphragmatic hernias without previous trauma are a rare occurrence, the most common type occurring in the posterolateral portion of the diaphragm.

We present the case of a 20 days old cyanotic neonate. The patient presented with respiratory distress, decreased peripheral circulation, suspected pneumonia, had polydactyly and was saturating 80 to low 90%. Prior perinatal findings suggested a ventricular septal defect and a foramen ovale. So, was consulted to pediatric cardiology. Multiple echocardiograms suggested only mild tricuspid and aortic regurgitations, moderate enlargement of the left ventricle, and a secundum atrial septal defect (ASD). Chest X ray revealed an elevation of the right hemidiaphragm. To rule out a tracheoesophageal fistula, due to cyanotic episodes during feeding, too, a barium swallow was performed revealing no hiatal hernia and presence of gastroesophageal reflux. The patient was transferred to our institution with a high flow nasal cannula for an interventional cardiology evaluation. Initial echocardiogram showed a diaphragmatic eventration, but was later confirmed to be a right diaphragmatic hernia. The subject was found to have an ASD and an anterior right diaphragmatic hernia, which is considered even more uncommon due to the extra support provided by the liver. ASD's usually present as a non-cyanotic lesion, but the right sided hernia caused the liver to protrude, compressing the right ventricle (RV) resulting in an augmented right to left shunt across the ASD. After stabilization, patient was scheduled for laparoscopic surgical repair of the hernia.

This case highlights the possibility of an ASD behaving like a cyanotic lesion, due to external constriction of the enlarged liver over the RV, rendering it unable to handle right atrial flow. This resulting in the uncommon occurrence of a bilateral atrial shunting, but increased right to left, causing cyanosis.

RARE DUPLICATION 16P11.2 IN CHILD WITH MENTAL RETARDATION AND CONGENITAL MALFORMATIONS

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Clinical report.

Duplication 16p11.2 have been associated with mental retardation and psychiatric disorders. Some children 16p11.2 duplication have heart defects, cleft lip and palate and urinary tract abnormalities/
Boy was born at 40 weeks gestational age via augmented vaginal delivery with a birth weight at the 40th centile (3.4 kg). His parents and two sisters are healthy.
At third day of life the boy was operated on esophageal atresia, at 18 days – on heart malformation: double vessels discharge of right ventricles, functioning open ductus arteriosus, right-lying aortic arch, crossing the branches of the pulmonary artery.

At 23 months of age, his weight was 12,1 kg, length – 86 cm and head circumference were 46,5 cm. Craniofacial dysmorphisms: flat face, full lower lip, short philtrum, downturned corners of the mouth, pectus excavatum, abnormal dermatoglyphics. Boy was mentally retarded, has development and speech delay, mild hyperactivity and increased motor activity in sleep.

Results: DNA was isolated from blood samples using a standard, semi-automated method. Array CGH was proved in Affymetrix CytoScan 750K. Analysis showed a 557 kb gain of genomic material at 16p11.2, which contains 19 known genes: SPN (182160), QPRT (606248), KIF22 (603213), MAZ (600999), PRRT2 (614386), PAGR1 (612033), MVP (605088), CDIPT (605893), KCTD13 (608947), TAOK2 (613199), HIRIP3 (603365), DOC2A (604567), FAM57B (615175), ALDOA (103850), PPP4C (602035), TBX6 (602427), YPEL3 (609724), MAPK3 (601795).

Conclusion: Developmental delay and intellectual problems can occur in people with a 16p11.2 duplication. Esophageal atresia, heart defects, and skeletal anomaly - rare symptoms combination was diagnosed in our patient.

Keywords:
Duplication 16p11.2, Developmental delay, heart defects

SYSTEMIC BLOOD PRESSURE PROFILE OF CHILDREN WITH STRUCTURAL HEART DISEASES IN ENUGU, SOUTH EAST NIGERIA

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Background: Blood pressure changes may be the first manifestation in children with structural heart disease. Its monitoring is often neglected in the management of these children.

Objective: To determine the blood pressure profile of children with structural heart diseases in Enugu.

Method: Children with congenital heart diseases who presented for cardiac surgery over six months period were enrolled. 2-Dimensional echocardiography was done to confirm their diagnoses. Information on biodata, anthropomethry, medical history and oxygen saturation was recorded. Blood pressures were measured three times using OMICRON VISION (RB) multi parameter non-invasive blood pressure monitor. Data was analysed using SPSS version 20.

Result: A total of 101 patients aged 2 months-18 years consisting 48 males and 53 females were studied. Ninety-nine patients had congenital (43 cyanotic and 56 acyanotic) defects while two had acquired type. The mean weight was 17.88 ± 13.94kg, while the mean oxygen saturation for cyanotic and acyanotic heart defects were 82.6 ± 9% and 96.1 ± 7.1% respectively. ($p<0.01$)The mean systolic (SBP) and diastolic (DBP) blood pressures were 103.2 ± 1.68mmHg and 62.75 ± 1.49mmHg respectively while mean arterial blood pressure was 81.42 ± 1.56mmHg.The mean SBP of cyanotic, acyanotic, and acquired heart diseases were 105.15 ± 1.75mmHg, 102.2 ± 1.65mmHg, and 93.5 ± 4.9mmHg respectively, ($P=0.67$) while the DBP of cyanotic, acyanotic and acquired heart diseases were 67.38±1.75mmHg, 59.54±1.179mmHg and 54.5.65±5.65mmHg respectively. ($P<0.05$) Elevated BP was noted in 13(12.9%) of the patients with 18 (17.8%) having stage 1 and 9(9%) stage 2. Age and anthropometric variables correlated positively with both SBP and DBP but gender did not significantly affect the mean SBP, DBP and MAP.

Conclusion: The blood pressures of studied children were affected by type of structural heart defects. BP monitoring and follow up is mandatory as they may improve medical and surgical outcomes.

Keywords:
Blood pressure profile, Structural heart defects, Children, Enugu.

THE V SIGN AND PERSISTENCE OF THE LEFT SUPERIOR VENA CAVA

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Background and Aims: Incidental puncture of the subclavian artery when performing a puncture of the subclavian vein using anatomic landmarks is reported in 3.1 to 4.9% of cases. This can be immediately recognized on the chest x-ray film with the catheter or guidewire descending on the left side of the spine.

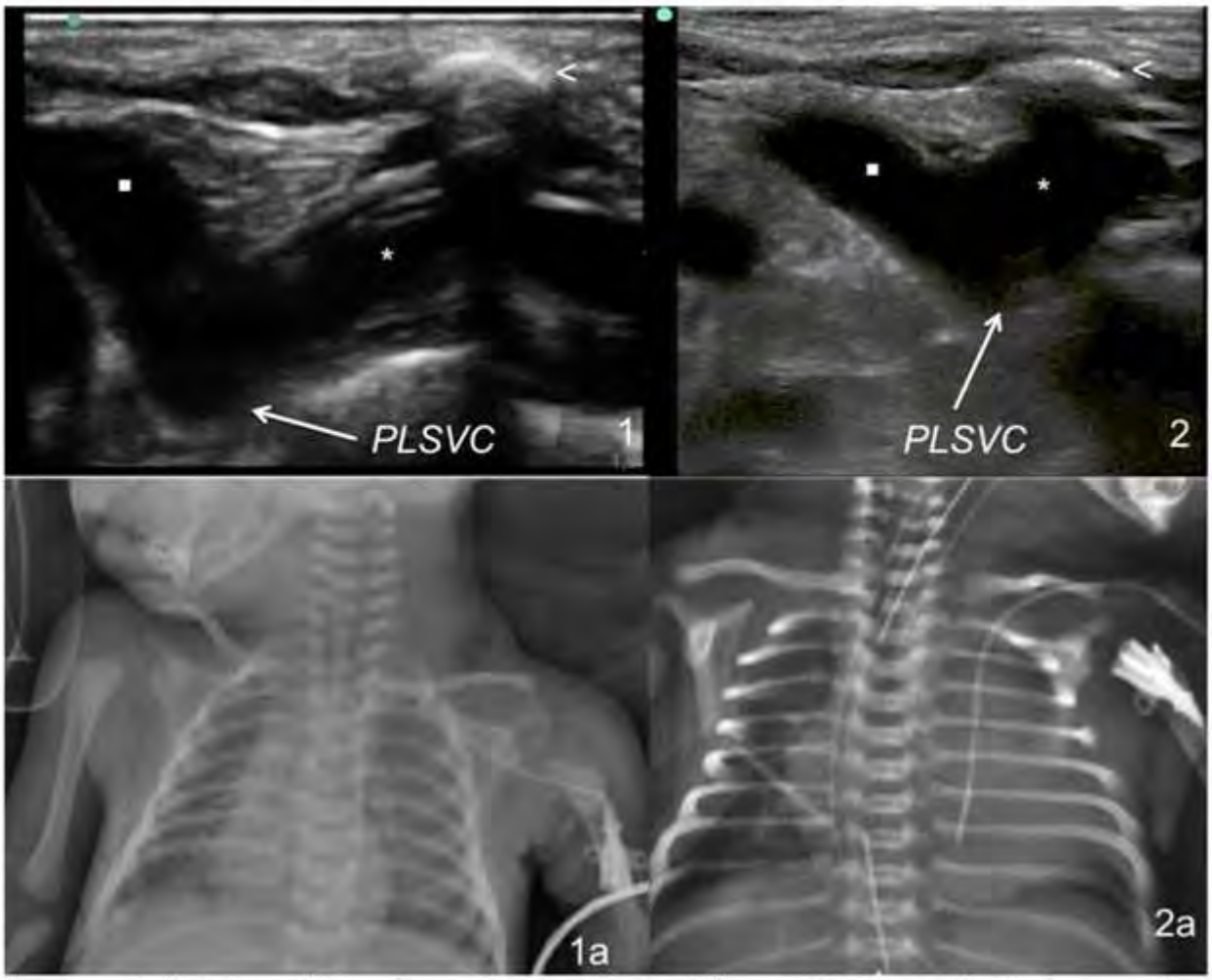
Methods:
Case 1:
A male term newborn of 3200 grams of weight is admitted to the neonatal intensive care unit with a diagnosis of polycythemia. A central 2-lumen, 13-cm, 4 Fr catheter is placed in the left subclavian vein guided by ultrasound.

Case 2:
A male term newborn with 2900 grams of weight is admitted to the neonatal intensive care unit with a diagnosis of respiratory distress. A central 2-lumen, 13-cm, 4 Fr catheter is placed in the left subclavian vein guided by ultrasound.

Results: In both cases, an EDGE (SonoSite FujiFilm Inc., Bothell, WA, USA) portable ultrasound was used. A subclavian vein is visualized that merges with the left internal jugular vein forming a "V"; and in the confluence of these two veins a venous vessel descends in the left thorax (Figures 1 and 2). Likewise, there is no visible left innominate vein that continues to the subclavian vein. A subclavian vein puncture was performed on long axis with a short 22 Ga venous catheter, and a catheter was inserted. X-ray, confirmed the paravertebral location of the catheter, consistent with a diagnosis of persistent left superior vena cava (PLSVC) (Figures 1a and 2a).

Conclusions: We describe the "V" which is the confluence of the left internal jugular vein and the left subclavian vein draining into the PLSVC. Finding the "V" sign in the long-axis pre-puncture evaluation of the left subclavian vein should lead us to infer that the patient has a persistence of the superior left vena cava.

Keywords:
Newborn, ultrasound, heart, subclavian



Square: left internal jugular vein; asterisk: left subclavian vein in long axis; arrowhead: left clavicle; PLSVC: Persistent Left Superior Vena Cava.

TREATMENT OF RENAL ARTERY STENOSIS WITH A BIORESORBABLE STENT IN A PEDIATRIC PATIENT

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Renal artery stenosis is an atypical cause of hypertension in children. Diagnosing and treating hypertension should be a priority to prevent it from progressing to more serious complications.

A 3-year-old male was noted to have an elevated blood pressure (EBP) when he presented to the emergency department with respiratory distress. The hypertension was considered a side effect of his asthma medications. Following resolution of symptoms, the patient was referred to a pediatric cardiologist due to a persistently EBP.

The cardiologist found him to have a severely EBP (145/90 mmHg). Physical exam and blood studies were normal, except for elevated epinephrine and norepinephrine levels. Renal ultrasound showed that the right kidney was smaller than the left kidney, but both fell within normal range. No findings suggested renal artery narrowing. The patient was placed on hydralazine, and later switched to atenolol.

The patient again presented with an EBP (160/120mmHg) and was placed on amlodipine, atenolol, and hydralazine. Studies failed to reveal abnormal findings.

A renal arteriogram, performed as last resort, revealed a totally occluded right renal artery. A bioresorbable stent was implanted. The patient was placed on lisinopril, amlodipine, aspirin, and clopidogrel, and eventually left on lisinopril and amlodipine. Blood pressure readings have remained normal during a 10-month follow-up period.

In children with fibromuscular dysplasia, medical therapy is combined with revascularization methods, most commonly percutaneous transluminal angioplasty. Implantation of bare metal and drug eluting stents represent a temporary solution since they can only be redilated to certain extent, eventually progressing to a fixed stenosis requiring removal. This case illustrates a novel approach to treating renal artery stenosis in children with a bioresorbable scaffold. Bioresorbable stents have been shown to maintain structural integrity, before being fully resorbed once the healing process is complete, avoiding local irritation and minimizing interference with normal arterial growth.

Keywords:
Bioresorbable stent, renal artery stenosis, hypertension

Child Health and Survival

ASSESSING THE DETERMINANTS OF CHILDHOOD STUNTING REDUCTION IN LOW AND MIDDLE INCOME COUNTRIES: A GLOBAL SYSTEMATIC REVIEW AND IN-DEPTH COUNTRY CASE STUDIES

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Background: Linear growth faltering or stunting, defined as having a height-for-age z-score <2 standard deviations below the mean, is associated with high mortality, morbidity and suboptimal cognitive and motor development. Stunting is highly prevalent in low and middle income countries (LMICs), however several countries and regions have had dramatic reductions in the chronic condition over the past 15 years. As a major underlying determinant of the burden of disease and mortality among children under age 5 years in LMICs, further efforts to address stunting are paramount for sustaining and scaling up health and survival goals in the Sustainable Development Goal (SDG) agenda. To this end, a thorough understanding of current burden/trends, determinants and success factors/barriers of reducing stunting is needed to effectively target this global public health crisis.

Objectives and brief methods: to undertake in-depth evaluations of policies, programs and determinant factors in a set of countries that have had dramatic reductions in stunting (coined “exemplar nations”) from 2000-2018 to understand major contributors and success factors. The country case studies were conducted in 5 geographically dispersed countries that have performed appreciably in reducing stunting beyond what their economic growth trajectories would predict. These include: Ethiopia, Senegal, Peru, Nepal, and Kyrgyzstan. A mixed-methods approach was used that included an in-depth systematic review of published and grey literature, advanced quantitative analysis (linear mixed-effect regression, Oaxaca-Blinder decomposition), qualitative data collection (expert stakeholder interviews, focus groups with mothers in communities), and a systematic program/policy analysis.

Results: This poster will present early cross-country findings across the 5 exemplar countries. Key findings suggest that determinants of stunting reduction are multifactorial and include investments in and country prioritization of scaling up primary health care, improving maternal and newborn health care, improving access to good and nutritious food, gains in household disposable income/maternal education, among others.

Conclusions: Findings have policy and programmatic implications for similar contexts across diverse geographies and for targeting poverty, nutrition and related SDGs.

FROM INVISIBILITY TO VALUE: IMPROVING QUALITY OF CARE FOR SMALL AND SICK NEWBORNS IN MALAWI

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Background: Due to the country's high burden of preterm births, the Government of Malawi has prioritized the establishment and improvement of sick newborn care units in all district facilities. With support from Save the Children, Ministry of Health implemented a district-led, multi-faceted quality improvement initiative in Thyolo district with the aim of improving hospital-based quality of care provided for newborns.

Methods: From February 2014 to July 2017, we designed and implemented a quality improvement effort that included district ownership and buy-in, introduced evidence-based guidelines and standard monitoring forms for newborn care, and identified a focal person. Dedicated staff and space for newborn care were designated, capacity of nursing and clinical staff were strengthened through mentorship, monthly neonatal death audits were introduced, and newborn medical equipment and supplies were provided. The Plan-Do-Study-Act cycle was applied to engage hospital management in addressing gaps in quality.

Results: The number of beds in the newborn care unit grew from 3 in 2014 to 40 in 2016. Designed staff went from 0 to 6, who became equipped and empowered to manage cases which they previously found difficult to manage. In-patient neonatal deaths reduced from 15.5% in 2015 to 9.5% in 2016. Data capture and use on management of small and sick newborns and health outcomes improved following implementation of monthly death audits. Data reported on initiation of low birth weight babies on KMC to the national health management information system increased from 24% in 2014 to 64% in 2016, in expected cases.

Conclusion: A multi-faceted quality improvement initiative that includes district ownership, dedicated staff and space for newborns, participatory learning through mentorship and audits, quality improvement leader and mentor are key in improving neonatal health outcomes.

Keywords:
Quality Improvement, Mentorship, Small and Sick Newborns

NURTURING CARE FOR EARLY CHILDHOOD DEVELOPMENT. A FRAMEWORK FOR HELPING CHILDREN SURVIVE AND THRIVE TO TRANSFORM HEALTH AND HUMAN POTENTIAL

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There is a growing recognition that protecting, promoting and supporting early childhood development (ECD) is essential for the transformation that the world seeks to achieve in the next 15 years guided by the Sustainable Development Goals (SDGs).

The inclusion of a specific SDG target 4.2 to 'ensure that all girls and boys have access to good-quality early childhood development' and the 'Survive, Thrive, and Transform' objectives of the Global Strategy for Women's, Children's and Adolescents' Health provide the impetus to governments and all concerned stakeholders to act.

WHO, UNICEF and the World Bank Group in collaboration with partners in the Partnership for Maternal, Newborn, Child and Adolescent Health (PMNCH) and the ECD Action Network have developed a Nurturing Care Framework in order to provide a roadmap for action and results. The Framework takes forward the key messages of the Lancet series: Advancing early childhood development: from science to scale (2016). The Framework was launched at the time of the 71st World Health Assembly in May 2018.

The document accompanied by country profiles and a select number of country case reports can be accessed at www.nurturing-care.org

Keywords:
health, nutrition, security and safety, responsive caregiving, opportunities for early learning, nurturing care, family-centred care, whole-of-society approach,

PATTERN OF INTESTINAL HELMINTHIC INFESTATION AMONG SCHOOL CHILDREN IN ABUJA, NIGERIA

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Introduction: Intestinal helminthiasis is a global health problem commonly seen among school age children especially in the poor and developing countries. Those of great public health importance include nematodes (roundworms) such as A. lumbricoides, T. trichchiura, hookworms (Ancylostoma duodenale and Necator americanus) and S.stercoialis, trematodes (flukes) such as schistosomes, Clonorchis sinensis, Opisthorchis viverrini and Fasciola spp. (F. hepatica and F. gigantica) and cestodes (tapeworms) such as Taenia solium, T. saginata, Diphyllobothrium latum, H. nana and E. vernicularis. These cause major morbidity and mortality in the children. This study is aimed at determining the pattern of intestinal helminthic infestations among primary school children in Abuja Municipal Area council, Nigeria.

Method: Nine hundred eligible primary school pupils aged 5 to 15 years were selected through multistage stratified random sampling from urban and rural primary schools in Abuja. Socio-demographic variables, the species and intensity of infestations were determined. Three stool samples per subjects were analyzed using Kato-Katz thick smear technique. In addition, single anal swab was done for all the subjects to search for Enterobius ova.

Result: The overall prevalence rate of intestinal helminthic infestations among primary school children in Abuja Municipal Area council, Nigeria was 26.1%. Six intestinal helminthes were identified and included Ascaris lumbricoides (11.0%), Necator americanus and Ancylostoma duodenale (7.9%), Enterobius vermicularis (2.7%), Taenia species (1.8%), Trichuris trichiura (1.7%) and Schistosoma mansoni (1%). More children in the rural areas, 138 (17.8%) were infected with intestinal helminthes than those in the urban areas 64 (8.3%) and this was statistically significant ($p<0.01$). Single intestinal helminthic infestation was found in 189(93.6%) subjects while 13(6.4%) had double infestations ($p<0.01$).

Conclusion: Intestinal helminthic infestation remains a common health problem among school children. Frequent screening of school children alongside termly distribution of free antihelminthic drugs should be incorporated as part of school health program.

Keywords:
Pattern, intestinal helminth, Kato-Katz, school children, Abuja, Nigeria

PROMOTION OF CHILD HEALTH IN A PRIMARY SCHOOL IN KHULNA CITY, BANGLADESH

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Background and Aims: Around 60-70% children in slum areas of Bangladesh suffer from some degree of malnutrition. The school children in these areas are particularly deficient in essential micronutrients (Iron, Zinc, Vitamins). We undertook this project to improve the physical growth, functional development and general health of school children living in the slum area of Khulna, supported by an ICATCH grant from the American Academy of Pediatrics.

Methods: The target public school is located in the outskirt of Khulna city with an approximate population density of 10,000/Sq Km and a family income of two dollars per day. The community service for two years (March 2012 - February 2014) was planned in four stages. i) Baseline assessment of nutritional status, ii) Training of mothers and teachers on the role of food, nutrition and sanitation iii) Supplementation of micro-nutrients to children, iv) Assessment of growth and development including school performance.

Results: Baseline assessment (Height, Weight, MUAC- WHO growth chart) showed, 64% children were malnourished among which 38% were stunted. Functionally, half of them were less attentive and timid in class. Haemoglobin estimation revealed adequate haemoglobin (>12gm/dl) only in 21%. All the children were fed with anthelmintics, vitamin A and minerals (Iron+Zinc) according to the action plan. The measure of growth and development was repeated every 3 months. Cumulative results after two years showed, mean weight gain (range) was 4.2 Kg/child (0.5-14 Kg), mean height gain (range) was 4.3 cm/child (0-15 cm) and mean haemoglobin rise (range) was 0.8 gm/dl/child (0-3.2 gm). Physical activity increased from 52% to 81% children and school performance increased from 48% to 80% children.

Conclusion: Improvement in growth and performance of school children with micro-nutrients and health education was quite satisfactory. This low cost highly effective intervention could be a model for the resource-poor countries of the world.

Keywords:
Child Health, Promotion, Primary School, Bangladesh

REFERRAL PRACTICES FOR SICK NEWBORNS WITH POSSIBLE SERIOUS BACTERIAL INFECTION IN ETHIOPIA: LESSONS FOR PROGRAM IMPROVEMENT

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Background: Ethiopia's Community-Based Newborn Care (CBNC) program seeks to serve most vulnerable populations, in part through early identification and timely, appropriate management of young infants with possible serious bacterial infection (PSBI). Through CBNC, up to 80% of PSBI cases could be managed by health extension workers at health posts (HP), when referral is not possible. Yet for the remaining cases not manageable at lower levels, the referral system relies on being well-functioning as well as referral adherence.

Methods: Study subjects were sick young infants (0-2 months) classified with PSBI, whose caretakers sought care from a health post (HP) in the previous 12 months. We used an observational, cross-sectional study and purposefully selected 33 health centres (HCs), 46 HPs, and 20 Woreda Health Offices (WrHOs). Methods included clinical record reviews, surveys of referred caretakers and health worker interviews. The study received ethics approvals from the Ethiopian Science and Technology Ministry's Institutional Review Board and Save the Children US.

Results: HP register review identified 209 young infants with PSBI referred to higher facilities, or 27% of cases. HPs most commonly referred to government HCs (71%); health providers reported not universally offering referrals for PSBI cases. Existing referral system and referral practices deviate from the national protocol. HP register review found only 64% of cases were given pre-referral gentamicin and 23% did not get the pre-referral gentamycin; data were missing for 13% of cases. Half of cases were treated with recommended treatment regimens (47% at HPs; 57% at HCs). Inter-facility communication was poor, with limited use of referral slips, duplication in records and little feedback to the referring facility.

Conclusion: Strong functional referral systems are an essential part of the health system. Referral practices needing attention include universal offer of referral, use of referral slips and pre-referral treatment according to national guidelines.

Keywords:
newborn, referral, community, Ethiopia, young infants with possible serious bacterial infection (PSBI)

RSV GOLD: CLINICAL CHARACTERISTICS AND AGE DISTRIBUTION OF RSV-RELATED MORTALITY IN CHILDREN GLOBALLY

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Background and Aims: Respiratory syncytial virus (RSV) is the number one cause of acute lower respiratory infection (ALRI) and the second cause of death in children under 1 year of age. Two possible strategies to protect young children from life threatening infections are maternal and paediatric vaccination. The aim of this study is to understand the potential impact of maternal vaccination on RSV-related mortality by characterizing the age distribution of children dying with RSV.

Methods: In this retrospective case series, researchers and physicians worldwide contributed individual patient level data for children who died with community-acquired or nosocomial RSV in-hospital or in the community. As part of the RSV GOLD project data was collected by collaborating with authors from RSV-related literature, researchers from existing respiratory networks and by cold calls to hospitals or research institutes.

Results: We studied 734 RSV-related mortality cases from 43 different countries in 6 continents. The median age at death in months for RSV was 5.0 months (IQR 2.0-12.0). More than half of the children, 56.8% (417/734), died under the age of 6 months. In high-income countries (HIC) a high proportion, 84.3% (204/242), of children who died had comorbidities compared to 50.2% (138/275) in upper-middle income countries (UMIC) and 56.7% (80/141) in low/lower-middle income countries (LIC/LMIC).

Conclusions: This study is the largest global study on RSV-related mortality in children under the age of 5 years. Comorbidities were present in many children, with high proportions in HIC. The majority of children died under the age of 6 months indicating that maternal vaccination may have a substantial impact on RSV-related mortality in children.

Keywords:
RSV, respiratory syncytial virus, childhood mortality, maternal vaccination

Child Public Health, Health Systems

A SURVEY OF PARENTAL KNOWLEDGE OF THEIR OWN AND THEIR SPOUSES' GENOTYPE IN A PERIURBAN AREA IN LAGOS STATE, NIGERIA

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Background and Aims: Sickle cell anaemia is the commonest genetic disorder affecting Nigerian children. Inheritance is autosomal recessive. One in four Nigerian is said to carry the sickle cell trait. Each year, >50% of all children delivered globally with SCD are born in Nigeria.
The aim of this study is to determine the number of people who actually know their genotype status and that of their spouses in a Peri urban area of the megacity of Lagos, Nigeria.

Methods: A prospective cross sectional study was done using a structured validated questionnaire which was administered to parents attending the Pediatric Outpatient unit of Ikorodu General Hospital with their wards after an informed consent was obtained. The results were entered into an excel spreadsheet and analysed.

Results: A total of 200 responders were analysed. 94.5%of the responders were females. A total of fifty responders (25%) were unaware of their genotype while a further 22(11%) made a mistake and confused genotype with blood group status. 67(34.5%) of the responders were aware of both theirs and their spouses' genotype before getting married. 39(10.5%) were not aware of their genotype until after marriage. The genotype discovery was in the course of routine ANC tests in twenty of this subset of responders. 10 (5%) of the responders are parents to children with sickle cell disease. A large proportion of our respondents want genotype screening to be a part of primary school entry requirement in Nigeria.

Conclusion: Sickle cell disease remains a significant cause of pediatric morbidity in Nigeria. In the absence of newborn screening, the genotype test should be a mandatory requirement for primary school entry in Nigeria.

A TRANSACTION MODEL BETWEEN HOME ENVIRONMENT AND INFANT LANGUAGE DEVELOPMENT

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Objective: The aims of this study were to examine whether levels of language development at 9 months were predictive of levels of language development at 18 months, and further explore bidirectional associations between infant language development and home environment in a Chinese sample.

Methods: The sample, including 635 infants in Hebei province of China, was part of a cooperative project between China and America (NIH R01HD052069). Home environment was assessed by mother report using the modified Infant-Toddler Home Observation for Measurement of the Environment (IT-HOME) at 9 months (T1) and again 18 months (T2). Language development was measured by mother report at T1 and T2, using the Mandarin edition of MacArthur Communication Development Inventory (CDI). Two time-point cross-lag models were conducted in Mplus Version 7.4, controlling for infant's gender and age.

Results: Word comprehension at T1 was positively associated with word comprehension at T2. Word production at T1 was also positively associated with word production at T2. Word comprehension at T1 predicted word production at T2 . As for the link between home environment and infant language development, cross-lag models indicated that total score of HOME at T1 predicted increase in later word comprehension at T2. Also, word comprehension at T1 positively predicted total score of HOME (see Figure 1). Neither the path from total score of HOME at T1 to word production at T2 nor the path from word production at T1 to total score of HOME at T2 was significant.

Conclusion: Early language development at 9 months predicts later language development at 18 months. There are bidirectional associations between home environment and infant word comprehension. The transaction model between home environment and infant language development suggests importance of home environment investigation in the understanding of infant language development.

Keywords:
Home environment, language development, transaction model

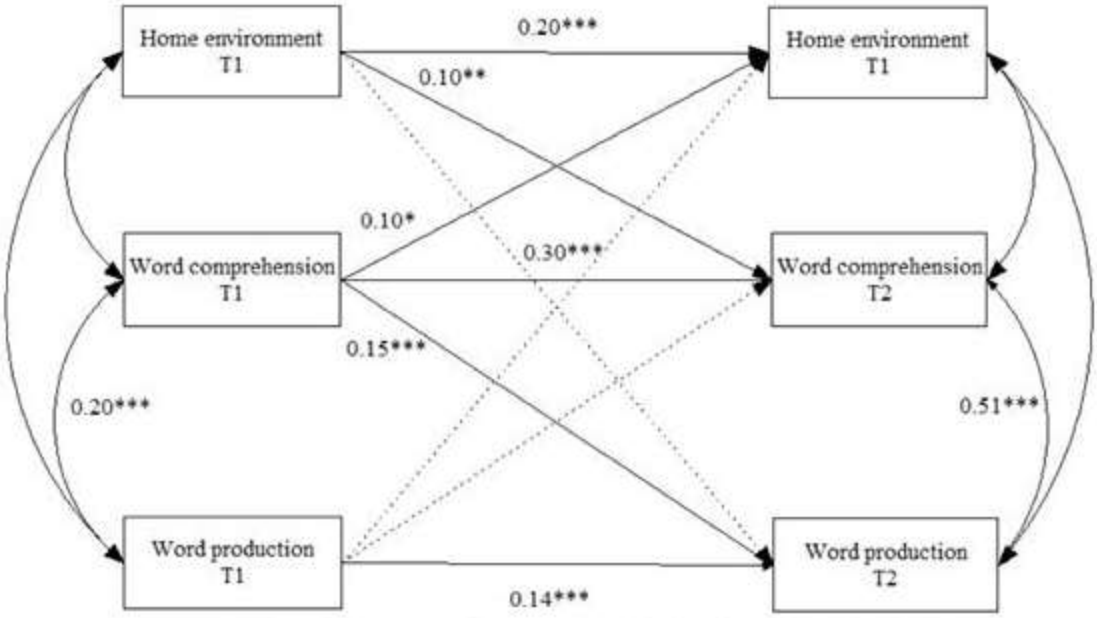

Figure 1 Results of bidirectional association (maximum likelihood estimation using standardized coefficients) evaluating the reciprocal effects among home environment ,word comprehension and word production. *Note*. $P<0.5^{*}$, $p<01^{**}$; T1:9 months; T2: 18 months;

ASSOCIATIONS BETWEEN TV IN BEDROOM WITH OUTDOOR PLAY TIME AMONG PRESCHOOL GIRLS

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Background and Aims: Time in which children is engaged in screen time such as TV viewing is a serious health problem and might reduce the use of the time for other potential activities such as play outside or being engaged in physical activity. In addition, it was suggested that children's screen time increases with age and patterns begin in preschool years. Therefore, the aim of the present study was to explore the association between obesity status and weight-related room environment (TV at room) and play outside in preschool girls.

Materials and method: This study included 120 preschool girls (4-6 years-old). Data were collected through parents' questionnaire about (yes /no) children have TV in bedroom and the perception of playing outside. Multivariate regression was used to determine the association between BMI and play outside with TV in the bedroom

Results: Girls either classified as overweight (OR: 2.6; CI: 1.1-6.0; p<.034) or obese (OR: 4.0; CI: 1.2-13.2; p≤0.02) were more likely to have TV in room compared to their lean peers. Girls whose parents reported less outdoor play (P<50) were almost twice as much (OR: 1.9) more likely to have TV in bedroom although this association has been only marginally significant (p=0.08)

Conclusions: Our data suggested that having TV in bed room is associated with increased level of obesity even in pre-school girls as well as showed a marginal association with playing outside.

Keywords:
TV viewing, weight status, outdoor playtime

COMMUNITY CHILD AND ADOLESCENT HEATH FOR PAEDIATRICIANS IN THAILAND

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Background and Aims: Guided by personal experiences in the United Kingdom and Ireland since 1974, Community Child and Adolescent Health in Thailand, starting from one medical school in the paediatric resident programme, is entering a new dimension over the last decade and a half (2003-2018). Networking with other institutes, other departments and external organizations while following on with graduated trainees nationwide, combined with continuing care of the patients, many of whom are now adolescent, provide the foundation of this evolving learning and services pathway.

Methods: Door-to-Door visit, telephone and social media communication allow access for education and health care provision.

Results: Increased awareness and satisfaction both for health providers and patients and their families, together with a clearer vision for creative learning between hospital and community.

Conclusions: Listening to patients, reaching out for their needs, working with local health services, resulting in improved plan formulation for the trainees and base institute have proven to be most useful.

DIGITAL DECISION-SUPPORT TOOLS TO IMPROVE THE MANAGEMENT OF CHILDHOOD ILLNESSES IN RURAL PRIMARY HEALTHCARE FACILITIES: EVIDENCE FROM THE INTEGRATED E-DIAGNOSTIC APPROACH (IEDA) PROJECT IN BURKINA FASO

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Background and Aims: Despite the potential of digital health to improve primary healthcare through decision-support tools, there is a dearth of evidence on the implementation of these tools in low income countries. Our aim is to demonstrate the feasibility of deploying at large scale a digital decision-support tool in rural, low-resource primary healthcare (PHC) facilities; and its effectiveness in improving healthcare worker adherence to clinical protocols for the management of childhood illness.

Methods: Developing a mobile application to guide nurses using the Integrated Management of Childhood Illness (IMCI) protocol in Burkina Faso, using the CommCare platform. Each PHC facility was equipped with one tablet device with mobile connectivity. A mobile application for formative supervision including monthly facility data dashboards, was provided. A stepped-wedge trial was conducted from 2014 to 2018 to evaluate the effect of the intervention. In addition, economic and realistic evaluations were performed.

Results: Since 2014, 620 primary healthcare facilities have been equipped with the digital tool and accompanying interventions (~30% public clinics use IeDA). Over 4,500 healthcare workers have used the electronic IMCI application to perform 2.5+ million consultations to over 1.4+ million children under-five. On average, from April 2016 to March 2017, the monthly rate of use of the decision-support system by healthcare workers was 78%. Preliminary analyses of the trial data shows an increase in the use of the IMCI protocol, and adherence to protocol steps.

Conclusions: The Ministry of Health and Terre des hommes have achieved, to our knowledge, the largest deployment of a digital decision-support tool for patient care in health facilities in rural Africa, with high adoption by healthcare workers. The increased quality of care achieved, and the wealth of frontline health data obtained, shows the potential of digital health to improve child survival.

Keywords:
IMCI, mHealth, Public Health, ICT, Digitalisation, LMICs, Africa

DISCHARGING HEALTHY NEWBORNS IN LESS THAN 24 HOURS. IS IT SAFE?

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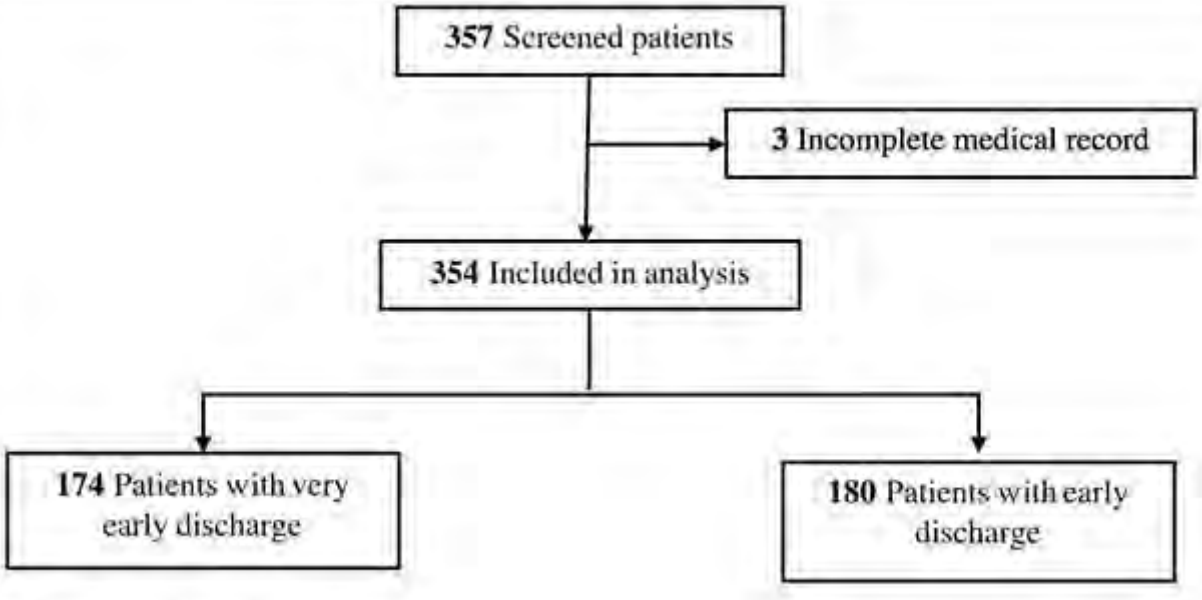
Background and Aims: Very early postnatal discharge is defined as a hospital stay of the mother-child dyad of less than 24 hours. It is carried out in public institutions of some countries with high birth rate; however, this could increase the risk of hospital readmission. The objective of this study was to compare hospital readmission in newborns with very early and early discharge.

Methods: We carried out a prospective, longitudinal, observational, and no controlled study with healthy, term infants born in a hospital in Mexico from December 2015 to November 2016. For 80% power and an alpha level set at 0.05, the recommended sample size was 143 patients per group. The maternal, prenatal and perinatal history were analyzed. Infants were followed by an analysis of medical records during the first 28 days of extrauterine life. The mean of hospital readmissions was analyzed.

Results: A total of 354 patients born vaginally were included. Of the newborns, 174 (49.2%) and 180 (50.8%) were discharged very early or early, respectively. Graph 1. In the group with very early discharge, there were more cases of gestational diabetes and hypertensive disease associated with pregnancy when compared with the control group. Table 1. During the follow-up, there were nine readmissions, four (2.2%) newborns with a very early discharge and five (2.8%) with an early discharge (p=0.77). Graph 2. In the multivariate analysis, only greater gestational age by Capurro was associated with a reduction in the risk of readmission (p=0.05, HR 0.47 95% CI 0.22-0.98). Table 2.

Conclusions: Very early discharge is a viable alternative if adequate screening is performed at discharge and it is not associated with a greater number of readmissions or emergency care in a healthy mother-child dyad. A higher gestational age is associated with a reduction in the risk of readmission.

Keywords:
Newborn, Discharge, Screening



Graph 1. Study Population.

	Total N=354	Very early discharge n=174	Early discharge n=180	p
Maternal age, years	22 (19-26)	22 (19-26)	23 (20-27)	0.11
Paternal age, years	25 (21-30)	25 (21-29)	26 (22-30)	0.12
Mother's marital status				
Single	52 (14.7)	23 (13.2)	29 (16.1)	
Married	72 (20.3)	35 (20.1)	37 (20.6)	0.43
Common law marriage	228 (64.4)	116 (66.7)	112 (62.2)	
Divorced/separated	2 (0.6)	0 (0)	2 (1.1)	
Mother's occupation				
Home	232 (91.5)	161 (92.5)	62 (90.5)	0.78
Employed	27 (7.6)	12 (6.9)	15 (8.4)	
Mother's education level				
Basic [a]	340 (96.6)	169 (97.7)	172 (96)	1
Superior	11 (3.1)	4 (2.3)	7 (3.9)	
Maternal pathologies				
Diabetes	1 (0.3)	1 (0.6)	0 (0)	
Hypertension	1 (0.3)	0 (0)	1 (0.6)	0.42
Others [b]	11 (3.1)	3 (1.7)	8 (4.5)	
Primiparous	114 (32.2)	59 (33.9)	55 (30.5)	
Secundigravida	111 (31.4)	58 (33.3)	53 (29.4)	0.37
Multiparous	129 (36.4)	57 (32.8)	72 (40)	
Regular prenatal care	260 (73.4)	130 (74.7)	130 (72.2)	0.78
Prenatal complications				
Gestational diabetes	12 (3.4)	12 (6.9)	0 (0)	
Pregnancy hypertensive disease	10 (2.8)	4 (2.3)	6 (3.3)	<0.01
Infections	119 (33.6)	71 (40.8)	48 (26.7)	
Others [c]	20 (5.6)	8 (4.6)	12 (6.7)	
Meconium stained amniotic fluid	24 (6.8)	12 (6.9)	12 (6.7)	0.65
PRM >18 hours [d]	9 (2.5)	4 (2.3)	5 (2.8)	0.78
Instrumented vaginal delivery	18 (5.1)	11 (6.3)	7 (3.9)	0.34
Apgar score at 1 minute	8 (8-8)	8 (8-8)	8 (8-8)	0.78
Apgar score at 5 minutes	9 (9-9)	9 (9-9)	9 (9-9)	0.5
Silverman-Anderson score	0 (0)	0 (0)	0 (0)	0.97
Gestational age, weeks	39 (38.1-40)	39.1 (38.1-40)	39 (38.2-40)	0.98
Birth weight, g	3192 ± 388	3179 ± 391	3207 ± 386	0.5
Height, cm	50 (49-51)	50 (49-51)	50 (49-51)	0.27
Cephalic perimeter, cm	34 (33-35)	34 (33-35)	34 (33-35)	0.3
Systolic murmur	5 (1.4)	3 (1.7)	2 (1.1)	0.62
Hours of life at discharge	24 (18-29)	18 (14-21)	29 (27-34)	<0.01

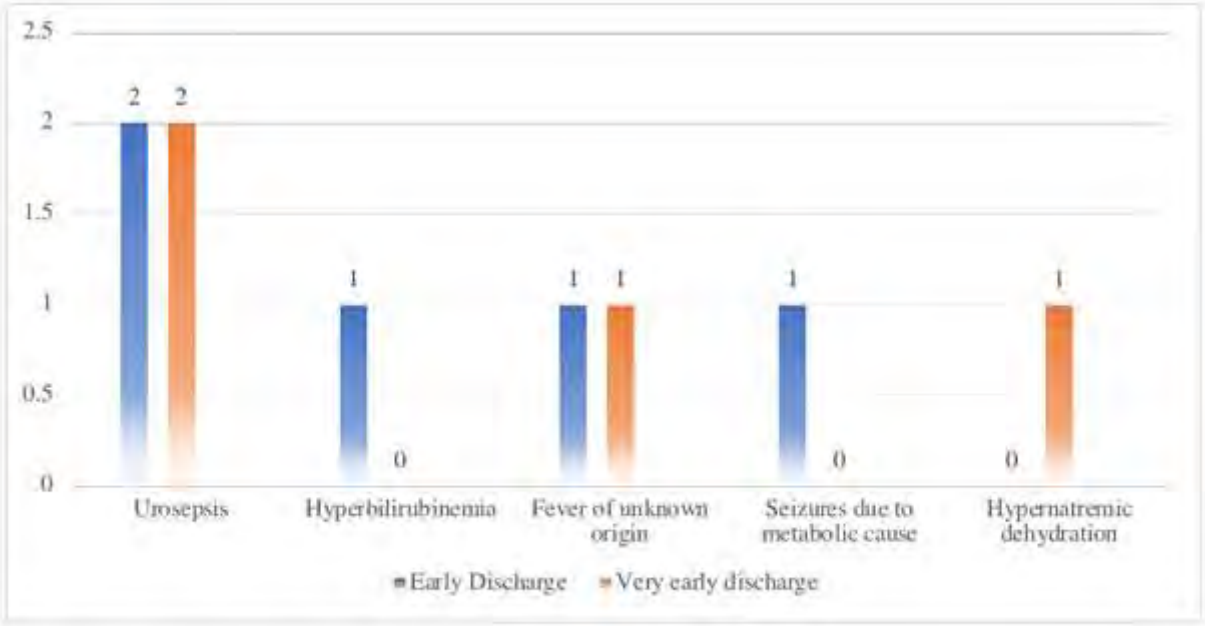
Values are presented as frequencies (%), medians (IQR) or means ± SD according to the type of variable and distribution. The *p* value is calculated with Ji^2, Fisher's exact test, the Mann-Whitney U test or Student's t-test.

a. Includes primary, secondary and preparatory studies according to the Public Education program in Mexico.

b. Other diagnoses include hypothyroidism, bipolarity, dyspepsia, and chronic cholelithiasis.

c. Other prenatal complications include vaginal bleeding and anemia.

d. PRM, premature rupture of membranes for more than 18 hours.



Graph 2. Causes for readmission.

Table 2. Multivariate analysis of factors associated to readmission.

Factor	Logistic regression				Cox regression			
	B	P	RR	95% CI	B	P	HR	95% CI
Very early discharge	-0.28	0.67	0.75	0.19-2.9	-0.12	0.89	0.85	0.21-3.5
Gestational age	-0.70	0.06	0.49	0.24-1.02	-0.75	0.05	0.47	0.22-0.98

B, regression coefficient; P, P value; RR, relative risk; 95% CI, 95% confidence interval.

EARLY DETECTION OF DEVELOPMENTAL DELAYS IN VULNERABLE CHILDREN BY COMMUNITY CARE WORKERS USING AN MHEALTH TOOL

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Background and Aims: Developmental delays are increasing worldwide, as a result of exposure to environmental risk factors, such as poverty. Early detection services are often inaccessible in low- and middle-income countries (LMIC) due to limited human resources and a lack of knowledge regarding development. This study investigated an mHealth screening programme with community care workers (CCWs) facilitating early detection of developmental delays in children from underserved communities.

Method: An exploratory research design that was both qualitative and quantitative in nature was applied. CCWs, employed by a community-based non-governmental organisation (NGO), were trained to administer the Parents' Evaluation of Developmental Status (PEDS) smartphone application as part of home-based services offered to families affected by HIV/AIDS. After the training, they screened 138 children (mean=19.2 months, SD=11.1) in the community. Children who failed the screen were rescreened, and depending the outcome, were referred for diagnostic assessment. CCWs completed a questionnaire regarding their perceptions and experiences of community-based mHealth-assisted screening.

Results: The results indicated an overall referral rate of 49%. Older children (19-38 months old) had a significantly higher ($p<0.05$; Chi-Square) referral rate (57%; n=39) compared to those aged 0-18 months (40%; n=24). The high referral rate may be attributed to the at-risk population sampled. Average screening time was 12.5 minutes and on average ten children were screened per day. CCWs perceived mHealth screening as valuable in terms of utility, outcomes and contribution to developmental knowledge for community members and CCWs. CCWs indicated that they were motivated to promote increased developmental surveillance in their community.

Conclusion: Community-based services are a promising platform for the implementation of mHealth-assisted early developmental screening programmes for improved access to early detection and surveillance for vulnerable children and their families.

Keywords:
Development, screening, community care workers, mHealth

SPATIAL DISTRIBUTION OF FOOD OUTLETS AND ITS RELATIONSHIP WITH CHILDHOOD OBESITY IN A NORTHEASTERN MEXICO POPULATION

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Introduction: Childhood obesity is a public health problem worldwide and urbanization has been recognized as an influence for the development of obesity. The food environment plays a major role in eating patterns in various regions, directly influencing the choice of foods eaten.

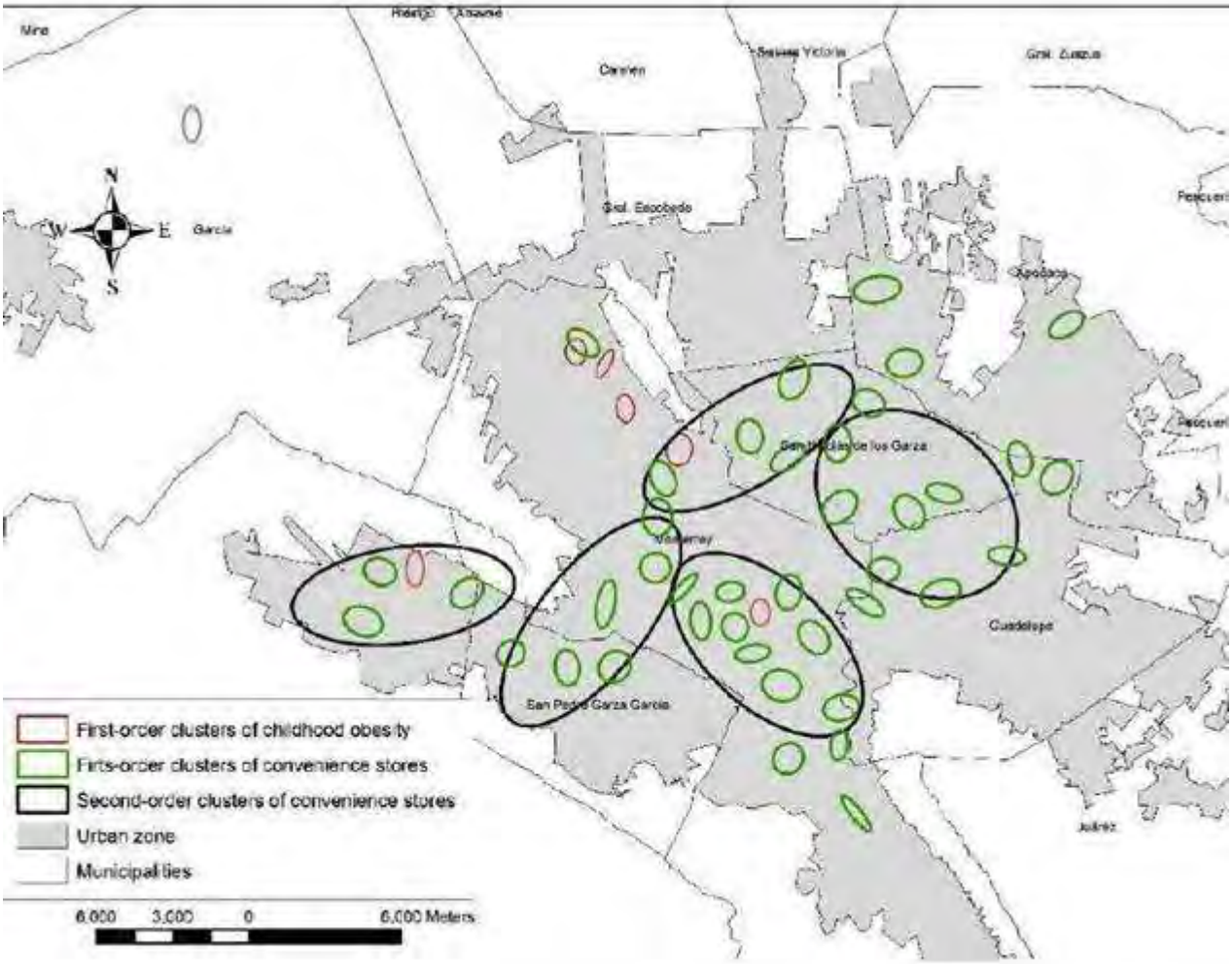
Objetive: To analyze the association between the development of obesity in a child population and the proximity geographic with unhealthy food establishments in a city in northeastern Mexico

Material and Methods: Observational and descriptive study. We evaluated 475 overweight and obese children in a city in northeastern Mexico. We explored the relationship between the spatial distribution of 14,644 food outlets and the addresses of the children evaluated. The latitude and longitude of the children's addresses and the food outlets were determined using Google Maps, and CrimeStat 3.0 and ArcGIS 10.4.1 software were used to pinpoint the exact locations. With this software analyzed techniques of distance, nearest neighbor index (NNI, nearest neighbor index).

Results: The nearest-neighbor index showed there was a higher concentration of food outlets in areas where there was a higher density of overweight and obese children. Distance analysis showed that 96% of the evaluated children lived an average of 400 m (less than 5 minutes' walk) from a dispenser of unhealthy food and 55.5% lived within 100 m. Convenience stores were the most common establishments.

Conclusion: Easy access to certain foods can influence the quality of food consumed and may be a cause of childhood obesity.

Keywords:
Obesity, spatial association, food


Mina
Carmen
Gral. Escobedo
Apodaca
Guadalupe
San Pedro Garza Garcia
Juárez
N
W
E
S
First-order clusters of childhood obesity
First-order clusters of convenience stores
Second-order clusters of convenience stores
Urban zone
Municipalities
6,000 3,000 0 6,000 Meters

EVALUATING ARTS EDUCATION WHERE IT IS NEEDED MOST: A QUALITATIVE STUDY OF COMMUNITY-BASED MUSIC PROGRAMS IN INNER-CITY NEIGHBOURHOODS AND THEIR IMPACT ON CHILD HEALTH

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Background and Aims: Music education is known to be beneficial for child development, but unfortunately is often a privilege reserved for families who can afford it. Literature about the benefits of music education primarily focuses on middle-class children in school or conservatory settings. Little is known about the impact of community-based music programs (CBMP) for vulnerable children, particularly those facing homelessness. This study aimed to investigate the experiences of community centre affiliates (CCAs) and parents of students about their perceptions of program quality and impact on children participating in CMBPs run by a national not-for-profit organization.

Methods: This was a qualitative program evaluation, which performed in-depth interviews (IDIs) and focus group discussions (FGDs) with parents and CCAs of a CMBP in a large, urban city in Canada. Data were recorded, transcribed and coded using deductive and inductive coding by two independent coders, with inter-rater reliability confirmed by pooled Cohen's kappa coefficient. Codes were analyzed within code groups for themes, supported by group discussion and analytic memos.

Results: A total of 4 IDIs and 5 FGDs were performed across both stakeholder groups. Inter-rater reliability was confirmed by Cohen's kappa coefficient of 0.825. All stakeholders reflected that programming improved children's intrapersonal development, literacy, and kinaesthetic skills. Parents expressed that music classes promoted mother-child attachment in shelter environments where children are facing adverse childhood experiences (ACEs). CCAs expressed that current barriers to participation in CBMPs include lack of financial support from the community centers and limited parental support of their child's music education.

Conclusion: This study suggests that CBMPs may promote resilience and healthy attachment in vulnerable children facing ACEs. Increased financial support for CBMPs is key to promote optimal youth engagement in CBMPs.

Keywords:
adverse childhood experiences, music education, community-based

INTERTEMPORAL ANALYSIS OF CHILD MISTREATMENT IN COLOMBIA

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Background and Aims: The area of social pediatrics and public health deals with the child and adolescent, healthy and sick, in their individual interactions and with the community in the physical and human environment in which it develops. This research analyzes the behavior of child maltreatment in Colombia during the years 2013 to 2018 in order to propose statistical models that explain it and make reliable predictions of great utility as a basis for the state's health plans.

Methods: The work is developed from the databases of the National Institute of Legal Medicine and Forensic Sciences, the Child Welfare Observatory of the Colombian Family Welfare Institute and the Integral Information System, for the variables: intrafamily violence, interpersonal violence and sexual crimes, disaggregated by age cohorts from 0 to 4, 5 to 9, 10 to 14 and 15 to 17 years. The corresponding ARIMA model is estimated in each case.

Results: Of the cases that occur monthly, on average, 27% correspond to intrafamily violence that occur more frequently in children under 9 years of age; 47% to interpersonal violence that occur more frequently in children over 9 years old; 8% to sexual offense that occur more frequently in children under 15 years and 18% in others. Graphs 1, 2 and 3 show their intertemporal behavior for each age cohort. Graph 4 presents the estimates of the corresponding ARIMA models.

Conclusions: An increase is observed over time in cases of domestic violence and sexual offense, while there is a decrease in interpersonal violence. As of January 2016, there is a decrease in the variability of information. The estimated models satisfy criteria of specificity and validity, and then they can be used for the realization of reliable short-term forecasts, useful in national planning and preparation of health proposals.

Keywords:
Child abuse, Social Pediatrics, Model ARIMA


Intrafamily Violence - 0 to 4 years
Intrafamily Violence - 5 to 9 years
Intrafamily Violence - 10 to 14 years
Intrafamily violence - 15 to 17 years
Interpersonal Violence 0 to 4 years
Interpersonal Violence 5 to 9 years
Interpersonal Violence 10 to 14 years
Interpersonal Violence 15 to 17 years
Number of cases

Intrafamily Violence - Intertemporal Model	
Cohort	**ARIMA model**
0 to 4 years	$Z_t = 0,9 + 0,3 * Z_{t-1} + 0,7 * Z_{t-2} + 0,2 * Z_{t-12} - 0,2 * Z_{t-13} + a_t$
5 to 9 years	$Z_t = 1,1 + 0,2 * Z_{t-1} + 0,6 * Z_{t-2} - 0,2 * Z_{t-3} + a_t$
10 to 14 years	$Z_t = 0,6 + Z_{t-1} - 0,5 * Z_{t-2} + a_t$
15 to 17 years	$Z_t = 0,5 + 0,85 * Z_{t-1} - 0,15 * Z_{t-2} + a_t - 0,89 * a_{t-1}$
Interpersonal violence - Intertemporal model	
Cohort	**ARIMA model**
0 to 4 years	$Z_t = -0,6 + 0,4 * Z_{t-1} - 0,6 * Z_{t-2} + a_t$
5 to 9 years	$Z_t = -0,5 + 0,6 * Z_{t-1} - 0,6 * Z_{t-2} + 0,2 * Z_{t-12} - 0,2 * Z_{t-13} + a_t$
10 to 14 years	$Z_t = -0,7 + 0,6 * Z_{t-1} - 0,4 * Z_{t-2} + 0,3 * Z_{t-12} - 0,3 * Z_{t-13} + a_t$
15 to 17 years	$Z_t = -5,5 + 0,6 * Z_{t-1} - 0,5 * Z_{t-2} + 0,1 * Z_{t-3} + a_t$
Legal Medical Examination for Alleged Sexual Offense - Intertemporal Model	
Cohort	**ARIMA model**
0 to 4 years	$Z_t = 1,3 + 0,4 * Z_{t-1} - 0,6 * Z_{t-2} + a_t$
5 to 9 years	$Z_t = 2,5 + 0,5 * Z_{t-1} - 0,5 * Z_{t-2} + a_t$
10 to 14 years	$Z_t = 4,4 + 0,4 * Z_{t-1} + 0,6 * Z_{t-2} + 0,2 * Z_{t-12} - 0,2 * Z_{t-13} + a_t$
15 to 17 years	$Z_t = 0,9 + 0,44 * Z_{t-1} + 0,56 * Z_{t-2} + a_t$

NATIONAL NEEDS ASSESSMENT FOR A PEDIATRIC TRAUMA TOOLKIT: GENERAL REQUIREMENTS FOR MODERATE AND HIGH-VOLUME HOSPITALS

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Background: Pediatric traumatic injury is the leading cause of death and disability in children in the US. Hospitals that are not pediatric trauma centers may benefit from additional training and resources to treat severely injured children. The goal of this study was to identify common pediatric specific treatment guidelines for standardization into an online pediatric trauma toolkit by conducting a national needs assessment survey.

Methods: Information about existing guidelines was comprehensively reviewed. An online survey was developed to identify if each guideline was accessible and whether it was helpful to include that guideline in an online toolkit. The email survey was distributed by three national organizations to their respective memberships. Data on access and need were compared by hospital trauma verification level (I,II,III) using a chi-square test at the $p<0.05$ level.

Results: Of the 303 respondents, over half worked at a pediatric trauma center. There was good representation of trauma center level, hospital size, patient volume and geography. Level I center respondents reported pediatric specific activation criteria, pre-arrival checklists, and massive transfusion protocols as having the highest perceived value compared to lower rates of access. Levels II and III center respondents identified pre-arrival checklists, massive transfusion protocols, thoracic and abdominal injury management, process improvement, circulation and hemorrhage control, traumatic brain injury, dosing for blood transfusions, IV fluid administration, cervical spine management, and treating concussions as having the highest perceived value and lowest rate of access. The Level III centers reported the largest gaps in need. They also identified radiology/imaging, alert activation criteria, warming devices, lab tests and child abuse care and high in need and low in access.

Conclusions: The results suggest value in creating a pediatric trauma toolkit. There was variability in the reported access to the guidelines indicating a significant need for the toolkit development and distribution.

Keywords:
Pediatric Trauma, Needs Assessment, Guidelines

PAEDIATRIC SLEEP RESOURCES IN THE ASIA PACIFIC REGION: AN OVERVIEW OF FACILITIES, EXPERTISE AND TRAINING PROGRAMMES

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Sleep is an essential part of the health of every child. Sleep problems are common in the young and if left undiagnosed and not optimally managed, can lead to long-term consequences in health, growth and development. Paediatric Sleep is a relatively young specialty in the Asian region; previous studies have documented a deficiency in curriculum time in undergraduate and postgraduate training in childhood sleep in many countries in the region.

This study set out to evaluate the paediatric sleep facilities, expertise and training in the Asia Pacific region.

Data from individual countries was collected by country representatives of the Asia Pacific Paediatric Sleep Alliance in 2017. Data include the availability of paediatric polysomnography (PSG) beds, presence of dedicated paediatric sleep laboratories, paediatric sleep as an accredited specialty, availability of paediatric sleep training/fellowship programmes and availability of local data on obstructive sleep apnoea prevalence. Quantitative data on the number of paediatric PSG beds in the country, approximate wait time for a paediatric PSG and number of paediatric sleep specialists in each country were collected.

Significant variations in sleep facilities, expertise and training programmes is evident across the countries within Asia Pacific region, with no correlation to their GPP. This ranges from countries without paediatric sleep facilities to others with well-developed facilities and programmes. There appears to be little correlation between the number of paediatric PSG beds and the waiting time for a study, probably reflecting the different levels of demand in each country.

There is a lot of room for further development of paediatric sleep in the region and the countries which have more resources can probably contribute to the others to assist in levelling up the sleep resources across the region.

These findings give a broad overview of the current state of paediatric sleep services and facilities across the region.

Fig 1: Availability of the sleep services, resources & data

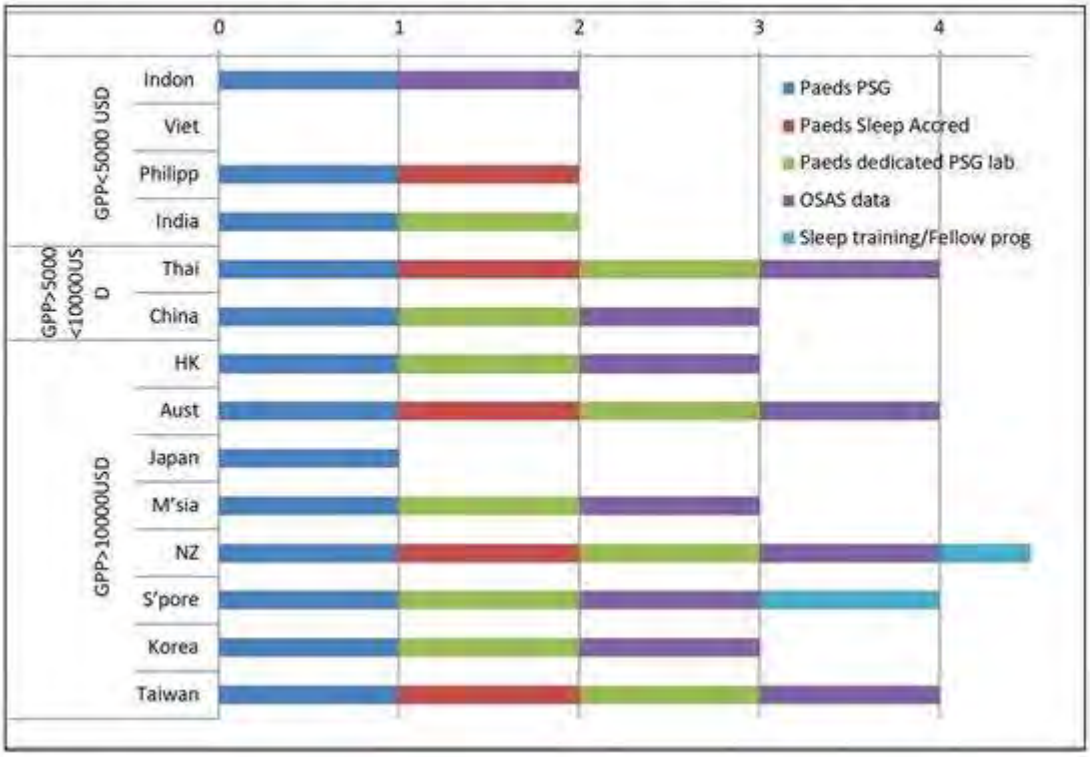
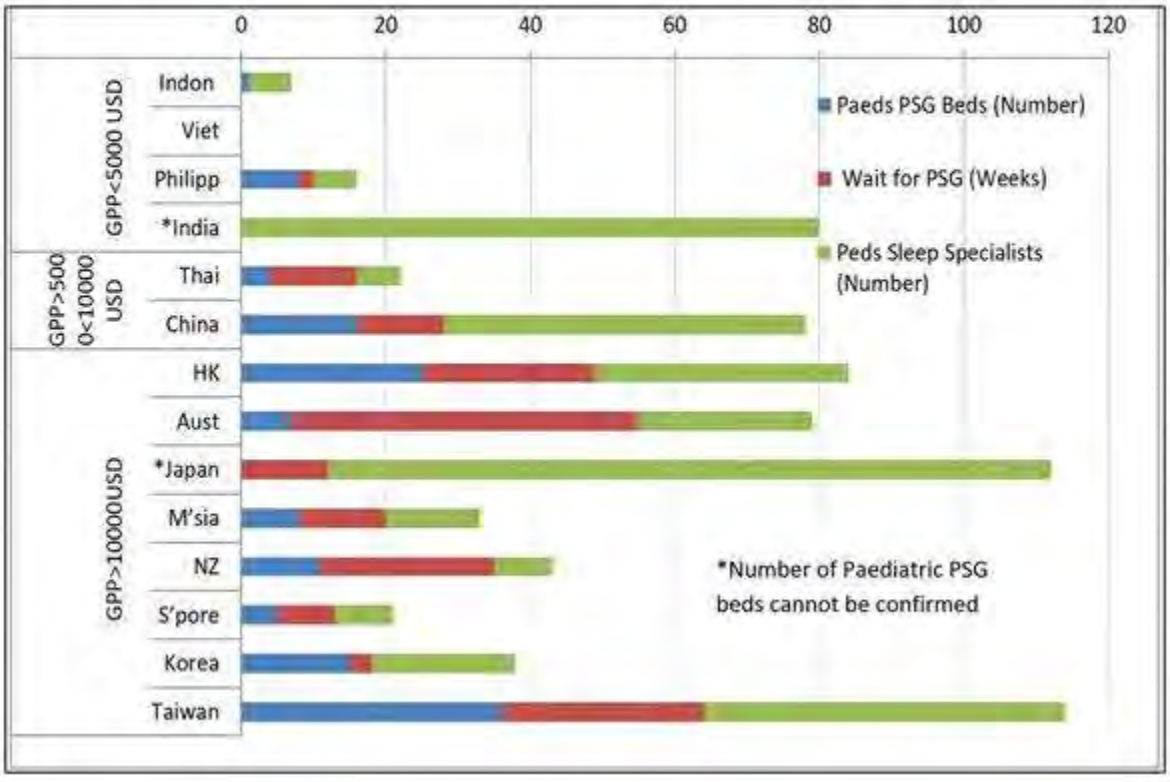


Fig 2: Sleep services, waiting time for PSG & paediatric sleep specialists



PARENTING INTERVENTIONS FOR REFUGEE FAMILIES: A SYSTEMATIC SCOPING REVIEW

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Background: Children of refugee or asylum-seeking background have multiple, complex needs that place them at an increased risk for developing learning problems. Families encounter challenges accessing support during resettlement processes. Providing appropriate support services and resources that address the concerns of refugee parents, will alleviate these challenges, allowing for better developmental outcomes for children. This study aims to identify the characteristics of effective parenting interventions that address the unique needs of refugee families.

Methods: English-language articles published from 1997 onwards were included if they described or evaluated programmes or interventions for parents of refugee or asylum-seeking background. Data were extracted and analyzed according to Arksey and O'Malley's descriptive analytic model for scoping reviews.

Results: Seven studies met criteria and were included, primarily studying families settled in high-income countries. Refugee parents identified parenting to be a major concern, citing they experienced: alienation/unwelcoming services, language barriers, and lack of familiarity with school and early years services. Services that focused on building the resilience of parents, parent education, or provided services in the family's native language, and offered safe spaces to promote positive parent-child interactions were most successful. Home-visit and family-centered programs showed particular success, minimizing barriers such as transportation, while allowing caregivers to receive feedback from facilitators. The vast majority of studies evaluated programs implementing existing curricula and frameworks. Interventions were designed in a prescriptive manner, without direct participation by family members. The studies also did not employ evaluation measures of parenting practices or the caregiving environment, or child development outcomes, primarily focusing on parental perceptions.

Conclusion: There is scarce literature describing parenting interventions for refugee families. Further studies are required that include participatory approaches to program design to tailor content and accessibility, while employing parenting, developmental, behavioural and environmental outcome measures.

Keywords:
asylum-seekers, developmental paediatrics, parenting interventions, refugee families

PERIODONTAL DISEASE IN PREGNANT WOMEN AND THEIR REPERCUSSIONS TO PREGNANT AND NEWBORN

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The Periodontal Disease on pregnancy triggers an intense immunological response with high levels of local and systemic oxidative concentration of stress biomarkers.

Objective: To investigate the repercussion of periodontal disease (PD) on the pregnant woman and complications during pregnancy and delivery as well, negative outcomes for the newborn (infection, hospitalization, prematurity, low weight, growth restriction).

Method: The Retrospective cohort study, based on records of medical records of 142 pregnant women attended at prenatal service at usual risk between 2012-2014, with odontological evaluation for PD. Gestational maternal, labor and newborn variables were analyzed. The newborns were stratified into two groups: children of mothers with PD (subdivided for severe periodontal disease - SPD) and children of mothers without PD. Each outcome was adjusted by a multiple logistic regression model, with significance if $p < 0.05$, considering all potential confounders.

Results: The odds ratio for the urinary infection, vulvovaginitis and premature rupture of membrane (PRM) were found among women exposed the PD and if the pregnant was SPD the odds of vulvovaginitis was 3.45 times higher (OR = 3.45; 0.93 – 12.79; p=0.050) and of PMR was 5.59 times higher (OR=5.59; 1.36-22.92; p=0.017). In the newborn of mothers exposed the PD, the chance for some negative events were always higher and they were intensified when pregnant woman had SPD. The increase in odds of the newborn growth restriction was 11.53 times higher in the pregnant woman with SPD (OR=11.53; 1.10–120.26; p= 0.041).

Conclusion: Periodontal disease increased the chance for negative outcomes neonatal and maternal, especially for the newborn with growth restriction and to the pregnant woman present vulvovaginitis and premature rupture of the membrane when in the presence of Severe Periodontal Disease.

Keywords:
Infant,Newborn, Pregnant Women, Periodontal Diseases

SCREENING FOR ADVERSE CHILDHOOD EXPERIENCES IN PEDIATRIC PRIMARY CARE SETTING: PROVIDERS' KNOWLEDGE, ATTITUDE AND SKILLS

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Background and Aims: screening for adverse childhood experiences (ACEs) such as abuse, neglect, and household dysfunction in pediatric primary care has been identified as a step to addressing toxic stress. The sensitivity of the matter and the multiple demands on primary care providers are often reported as potential challenges in screening implementation. This study aimed to increase understanding of primary care providers' knowledge, skills and attitude toward screening for ACEs, and to identify barriers and facilitators to screening implementation.

Methods: we conducted qualitative interviews among providers and staff members, ranging from administrative clerks to the director, in an urban pediatric primary care clinic to assess their knowledge, skills and attitudes toward ACEs screening. Responses were transcribed and analyzed using the Capability, Opportunity, Motivation, and Behavior (COM-B) framework.

Results: Interviews of providers and staff members revealed that all were familiar with ACEs and their negative impacts on children's health. While all agreed that primary care is the ideal setting for ACEs screening, only providers believed it is their job to screen for ACEs. While all providers felt comfortable and skilled with screening for ACEs, and some even reported screening for ACEs and other social determinants of health as part of their practice, a few expressed the need for additional training. All respondents stated the need for a team-based approach, with support from social workers, and an adequate structure. All expressed limited visit time as a constraint to implementation.

Conclusions: Even though providers and staff members recognized the importance of screening for ACEs within pediatric primary care as a first step in identifying and intervening with exposed children, they noted a better structure and support system as prerequisites to wide implementation.

Keywords:
Adverse Childhood Experiences (ACEs), screening, primary care

THE ADVERSE CHILDHOOD EXPERIENCES (ACE) CHECKLIST: CAN IT SERVE AS A CLINICAL AND QUALITY INDICATOR?

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Objectives: Adverse childhood experiences (ACEs) are associated with poor short and long-term health outcomes. South Western Sydney (SWS) has a large culturally diverse population, including many disadvantaged population groups. We have trialled using a modified ACE checklist in SWS Community Paediatric (CP) clinics. We wanted to design a checklist for clinicians, to serve as both clinical and quality indicator, in order to facilitate timely support and intervention for vulnerable children and youth.

Methods: We trialled two versions of the ACE checklist completed by clinicians in CP clinics, including child development (CD) clinics and vulnerable child (VC) clinics, in 2012 (V1) and in 2017 (V2). We analysed clinical data and correlated developmental health with ACE scores. We used a structured questionnaire to assess clinicians' impressions about the use of the ACE checklist.

Results: In phase 1, a version of the ACE checklist (V1) was trialled in CD clinics only; 77 children were assessed, 38 children (49%) had ACE score of ≥1, eight (10%) had a score of ≥ 4. Based on clinician responses, another version (V2) was trialled in both CD and VC clinics. In phase 2, of 279 children assessed, 178 (64%) had ACE ≥1, 78 (28%) had ACE ≥4. There were differences in ACE scores depending on clinic type, ethnicity and age. Clinicians found the checklist simple to use, reported that it enabled identification of especially vulnerable children and suggested changes. The final version of the ACE checklist (V3) based on clinicians' feedback includes ethnicity and refugee status fields.

Conclusions: The ACE checklist helps clinicians identify the burden of exposure to trauma and neglect of children and youth attending clinics. The checklist also helps clinicians identify children in need of enhanced support. The current checklist serves as clinical and quality indicator in our context; and may have wider relevance.

Keywords:
adverse childhood experiences, quality improvement, health services, early intervention, community child health

TREATMENT PROCEDURES CARRIED OUT IN HYPOMINERALISATION/ HYPOPLASIA AFFECTED TEETH AMONG CHILDREN AND ADOLESCENTS IN PUBLIC SERVICE IN HELSINKI

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[1]University Central Hospital, Finland, [2]Univeristy of Helsinki, Finland, [3]Nordic Institute of Dental Materials, Norway, [4]City of Helsinki, Finland, [5]Ministry of Social Affairs and Health, Finland

Aim: Determine magnitude of hypomineralisation/ hypoplasia affected teeth among children and adolescents and explore treatment procedures for such teeth in Helsinki.

Methods: This retrospective 15-year follow-up study was based on electronic health records of Oral Health Care of the City of Helsinki; 5- to 18-year-olds who attended public oral health services during 2002-2016 were eligible. All permanent teeth with hypomineralisation/ hypoplasia, except third molars, were included, and treatment procedures carried out in the selected teeth were registered. Anterior teeth referred to incisors and canines, and posteriors premolars and molars. Chi-square and paired samples T-test were used for statistical analyses.

Results: In total 14 175 children had at least one hypomineralisation/ hypoplasia affected tooth in need of treatment procedure; with equal distribution between genders. Of all 20 858 affected teeth in need of the procedures, 10% were anterior and 90% posterior teeth. Most commonly affected teeth were first maxillary (21%) and mandibular molars (14%), followed by second maxillary (14%) and mandibular molars (4%), and maxillary central incisors (3%). In total, 37 989 procedures were carried out in these teeth during the follow-up. The most common procedures were fillings (59%) and fissure sealants (25%), followed by root canal treatment (4%) and extractions (1%). Of restorations, 51% of anterior teeth fillings and 40% of posteriors were primary fillings. Comparisons of primary fillings and their first renewals showed that size of the restorations extended in surface in posterior teeth ($p<0.001$) but remained the same in anteriors ($p=0.096$) after renewals.

Conclusion: When allocating resources for treating hypomineralisation/ hypoplasia presenting teeth at population level, it is worth exploring the magnitude of affected teeth rather than the prevalence of the molar-incisor-hypomineralisation entity. Developing current care guideline of hypomineralisation/ hypoplasia affected teeth would be of help to general practitioners in long-term management of such cases.

Keywords:
children's oral health, public health, health system,

VARICELLA HEALTHCARE RESOURCE UTILIZATION IN MIDDLE INCOME COUNTRIES: A POOLED ANALYSIS OF THE MULTI-COUNTRY MARVEL STUDY IN LATIN AMERICAN & EUROPE

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Background and Aims: Varicella is usually a mild and self-limited illness in children, but can result in significant healthcare resource utilization (HCRU). The study objective was to quantify and contrast HCRU associated with varicella in five middle-income countries where universal varicella vaccination had not been implemented.

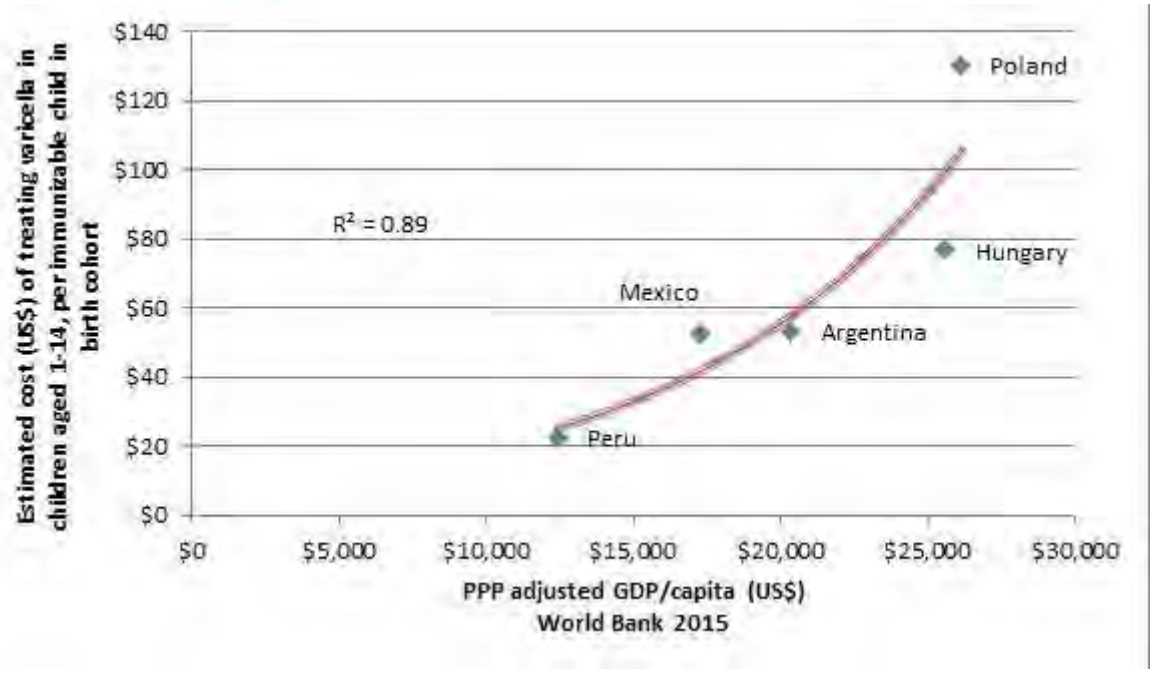
Methods: Retrospective chart reviews were conducted in Hungary, Poland, Argentina, Mexico, and Peru. Data obtained on management of primary varicella patients aged 1-14 years between 2009-2016 included outpatient visits, allied healthcare contacts, tests performed, prescription and over-the-counter (OTC) medications, and hospital/intensive care unit stays. These results are contrasted across countries, and a regression model is fit to extrapolated country-level costs.

Results: Data was obtained on 787 patients (401 outpatients, 386 inpatients). Significant differences between countries were observed in disease severity (using ≥250 lesions as a proxy) among outpatients, ranging from 5.3% (Mexico) to 25.3% (Argentina). Among inpatients, 37.3% met this threshold and results were less variable.

The average number of ambulatory medical visits ranged from 1.1 to 2.2. Average duration of hospital stay ranged from 3.6 (Hungary) to 6.8 days (Mexico, Peru). Use of tests/procedures was infrequent in outpatients except in Argentina (13.3%); among inpatients, a test/procedure was ordered for 81.3% of patients, without regional variation. Prescription medications were administered in 44.4% of outpatients (range 9.3% -80%), and in 86% of inpatients (range 70.4%-94.9%). Total estimated spending on varicella treatment in the absence of vaccination was predicted as an exponential function of gross domestic product (R2=0.89; Figure).

Conclusions: Differences observed between countries possibly reflect variation in treatment guidelines, healthcare resource availabilities and physician practices. This study demonstrates that substantial HCRU is associated with varicella resulting in significant public health burden, that the cost of treating varicella in middle-income countries is strongly correlated with GDP, and is higher than the likely cost of 1-dose varicella vaccination.

Keywords:
varicella, healthcare resource utilization, pediatric infectious diseases, middle-income countries, vaccination, economics


Estimated cost (US$) of treating varicella in children aged 1-14, per immunizable child in birth cohort
$140
$120
$100
$80
$60
$40
$20
$0
$0
$5,000
$10,000
$15,000
$20,000
$25,000
$30,000
PPP adjusted GDP/capita (US$)
World Bank 2015
R² = 0.89
Poland
Hungary
Mexico
Argentina
Peru

Dermatology

ARE HENNA TATTOOS HARMLESS?: REPORT OF CLINICAL CASES.

Doctor M.D. Monica Davalos Tanaka[2], Doctor M.D. Barbara Rivera Fernandez Galan[3], Doctor M.D. Laura Isabel Ramos Gomez[1]

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Henna is the primary ingredient in temporary tatoos. It is obtained from the leaves and flowers of Lawsonia alba and Lawsonia inermis with low allergic potential, however the commercially used henna has an added ingredient called para-phenylenediamine (PPD) that makes the ink last longer. This PPD increases the alergic potency of the henna and to blacken the ink.
The henna tattoos have become very popular in the last few years in the pediatric population in our country, that is why we consider these case reports important.

We will be presenting three cases of pediatric patients with henna tattoos, a 10 and 12 year old male and a 14 year old female all of them got henna tattoos in touristic sites. They all started with deramtosis after 2 weeks. They were treated with topical steroids for 3 - 4 weeks with resolution and without any sequels.

There are a lot of temporary tattoo stands in Mexico, where there are no sanitary regulations, that attract the attention of children and adolescents. There is no henna ink that is naturally black, the traditional henna ink has a brown-red color. The commercially used black henna ink has an ingredient called para-phenylenediamine (PPD), this helps it look more like a permanent tattoo and makes it lasts longer. The problem with this PPD is that it is highly allergic. Usually the initial manifestations ocurre after 1 week and the dermatitis is limited to the applied site. The treatment is usually topical steroids unless there are systemic manifestations.

It is important to know the allergic reactions that commercially used henna tattoos can cause since the popular belief is that they are harmless. We consider that the general population should have access to this information and education from their physician to avoid preventable complications.

Keywords:
Henna ink, Henna Tattoos, para-phenylenediamine, Allergic reactions

ICHTHYOSIFORM ERYTHRODERMA, A MULTIFACETED SYNDROMIC ENTITY

MD Luis Fernando Sánchez Espino[1], MD Claudia I. Gil Téllez[2], MD Consuelo Cantú Reyna[2], MD César A. Martínez Longoria[2]

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Background: KID (keratitis-ichthyosis-deafness) syndrome, is an extremely rare disorder (less than 100 cases reported) characterized for causing skin, eye and hearing abnormalities. Presented mostly as a sporadic manifestation; however autosomal dominant inheritance has been reported. It is expressed by mutation in the GJB2 gene localized in the 13 chromosome (13q11-q12).

KID syndrome is one of the multiple known erytrokeratodermias variants associated with deafness, is now known that it more an ectodermal cornification disorder rather than a true ichthyosis, even thou the latest forms part of its triad and definition.

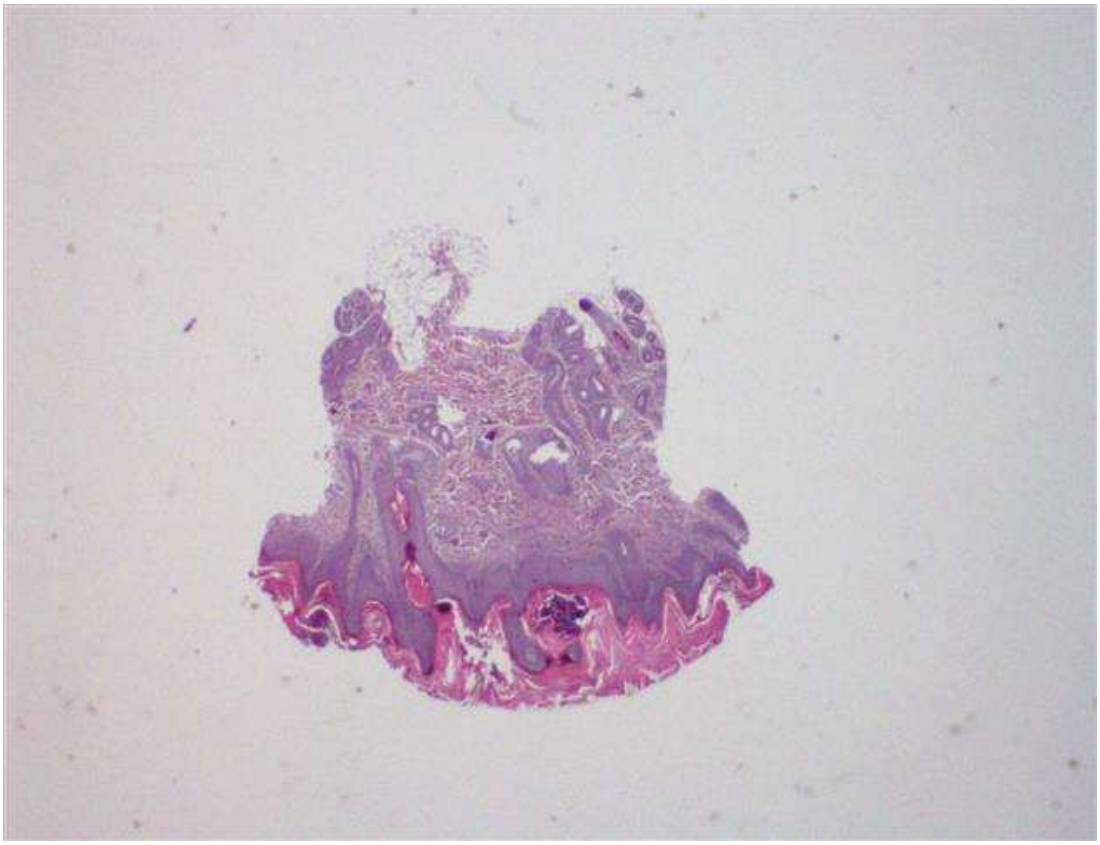
This entity can present at any point during the first years of life, and the typical initial skin findings are erythroderma and scaling. Other cutaneous findings include extensive hyperkeratosis, keratotic plaques, palmoplantar keratoderma, angular cheilitis, alopecia, nail dystrophy, among the most common. Extensive skin involvement is frequent and places the patient at high risk for cutaneous colonization and superinfections and mucocutaneuos candidemia.

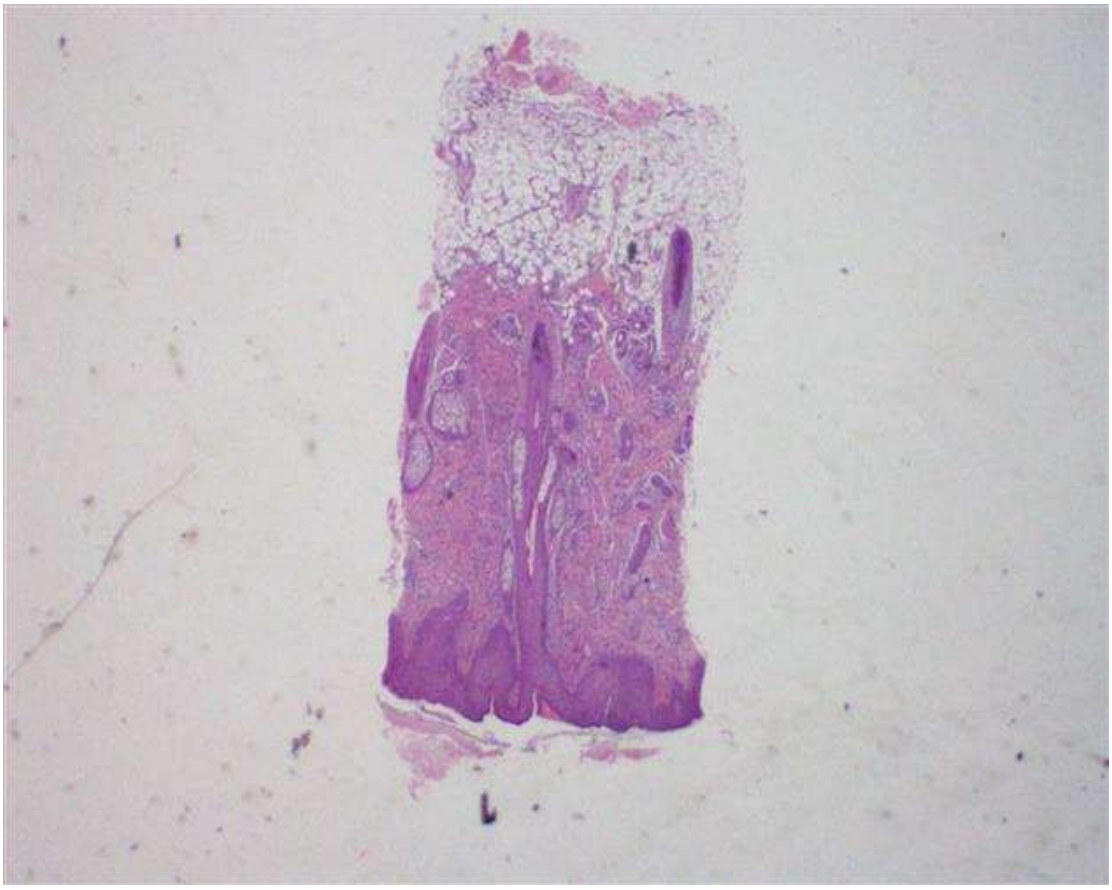
Methods: We present a case of a 7-month-old male from Monterrey, Mexico. His parents were concerned for an extensive exanthema (scaling and erythema) presented afterbirth, with a progressive dissemination through the entire body.

Results: An abnormal hearing screening test raised suspicion for a syndromic erythroderma presentation. Genetic testing was made, exome sequencing was done and a heterozygous variant in the GBJ2 gene was detected: c.42>Gp.(Asn12Lys);Chr13(GRCh37):g.20763679G>C (mutation de novo). KID syndrome diagnosis was made.

Conclusions: Screening hearing loss in the newborn period is part of a complete diagnostic evaluation for several genetic anomalies and syndromic diseases such as KID syndrome. Rapid confirmation of deafness is essential for prompt evaluation, intervention and implementation of confirmatory genetic testing for further strategy planning. This will ensure complete diagnostic workup and accelerate treatment and care planning with referral, multidisciplinary treatment and follow up.

Keywords:
KID Syndrome, keratitis, ichthyosis, deafness, erytrokeratodermia, hyperkeratosis, GJB2





Development, Neuro-Developmental Disability

AUTISM: A DISORDER RELATED TO THE CAPACITY TO LOVE

Dr Amalia Megremi[1]

[1]*Ilion Socio-Medical Center, Athens, Greece*

Background and Aims: Autism's etiopathogenesis is unidentifiable and it is essential for new aspects to emerge.

Methods: Literature review.

Results: It was Kanner first who observed that all the autistic children had come of highly intelligent parents and there were very few really warmhearted fathers and mothers in the whole group, in his 1943 paper "Autistic Disturbances of Affective Contact" in journal Nervous Child.
Contemporary studies show that oxytocin levels are decreased in autism. Numerous clinical trials of oxytocin in autism therapy are ongoing today, as it has been shown that use of oxytocin in autism results in encouraging improvements in social cognition and attachment. But, oxytocin is "the peptide that binds": it has been recognized as implicated in social development and bonds, affiliative behaviors, and promotes parental nurturing and increases the salience of social stimuli.
Testosterone exhibits opposite effects from oxytocin on deverse aspects of cognition and behavior. Autism is related to increased testosterone also (males are affected more frequently, testosterone-related medical conditions and pranatal androgen exposure contributes to the development of autism).
Studies show lack of mirror neuron activity in several regions of autistic brain. Mirror neurons are involved in social interaction and empathy. Autistics have great difficulty attributing wants and needs to others, or what others are thinking and feeling (theory of mind deficit). But, love and empathy are unbreakable related to each other.

Conclusions: It is possible that autism constitutes the nosological equibalent of love and compassion deficiency (including lack of self-love) and aggression predominance (including self-destructive vehaviors) in contemporary world. So, it is essential for families, who intend to be parents, especially mothers-to-be, to live in an environment full of love, sympathy, compassion and decreased prenatal stress, in addition, WHO declares that love is the most important thing to nurture healthy children.

Keywords:
autism, love, empathy, oxytocin, testosteron, mirror neurons

BASIC PRINCIPLES RIGHTFULLY GOVERNING THE DESIGN OF TOOLS IN AUTISM: A PHYSICIAN'S PERSPECTIVE

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[1]*University Of The Aegean, Syros, Greece,* [2]*University of York, York, United Kingdom*

Background and Aims: Effective therapy of autism does not exits. Formulation of principles that govern the design of tools (that could contribute to functional autonomy of autistics) are disussed.

Methods: Literature review.

Results: Individualization: There are autistics who get easily bored, so the stimulation must be high in order to maintain their attention, and others who are disturbed by the simultaneous presence of different stimuli. Therefore, tools must be dynamic in order to compensate for changing patterns of autistics. Complexity: Autistics have lost their complexity and behave in a uniform, predictable, stereotypic manner. The aim is to learn the concept of accepting the unpredictable governing the real world. Gradation: The complexity that will be provided for learning should be gradually enriched, so that it can be accepted by the autistics. Controlled felxibility: The tool should give the complexity of the situation to be learned the possibility either to increase (if the procedure learning progresses) or decrease (if it does not progress). Familiarity: Autistics have excellent resistance to unfamiliar experiences. So, tools must include activities familiar to them. Repeatability: The tool must provide the possibility of repetition (autistics learn better in a ritually stereotyped manner). Generalization: Generalization (in autism lacks-deficit in theory of mind) is the capacity to enable the newly-acquired abilities in the real world. Self-control: The tool must enable individuals to watch themselves performing tasks in which they have been trained (activation of mirror neurons, whose defectiveness in autism is significant). Human factor: The human factor when using tools to acquire skills (trainer's voice, gestures, presence of peers) is necessary so that the "autistic individual does not become more autistic".

Conclusions: Maintenance of these principles could contribute to the effectiveness of tools for autistics and to the achievement of functional autonomy of the latter.

Keywords:
autism, principles, tools, design

CONCURRENT VALIDITY BETWEEN PEABODY DEVELOPMENTAL MOTOR SCALE AND GESELL DEVELOPMENTAL SCALE

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[1]Peking University First Hospital, Beijing, China, [2]Zhengzhou University First Hospital, Zhengzhou, China

Purpose: Both Peabody developmental motor scales-2 (PDMS-2) and Gesell developmental scale (GDS) are both commonly used in the diagnosis of motor developmental delay. Our aim in this study is to compare their agreement in the motor developmental diagnosis in infancy.

Methods: A combined assessment of PDMS-2 and motor subscales of GDS were developed. One hundred and five infants at 3 to 12 months of age were recruited and have the both tests at the same time. Both correlation coefficient and diagnostic agreement between the two scales were calculated accordingly.

Results: The correlation coefficients between the two scales were high in terms of the age equivalent scores (for gross motor, r=0.808; for fine motor, r=0.809). The correlation coefficients were also good in terms of the development quotients (for gross motor, r=0.845; for fine motor, r=0.824). The agreement in developmental diagnosis between two tests was quite poor (for gross motor, kappa=0.083; for fine motor, kappa=0.306).

Conclusions: Correlation between PDMS-2 and Motor subscales of GDS is relatively good. But their diagnostic agreement is quite poor. A good correlation between different developmental scales does not secure the agreement in developmental diagnosis

Keywords:
Developmental scales, validity

TAKING CARE OF ASIAN INDIAN SPECIAL NEEDS CHILDREN

Dr. Naveen Mehrotra[1]

[1]*Shri Krishna Nidhi Foundation, Hillsborough, United States*

Background: Children with special health care needs of diverse minority backgrounds often experience barriers to receiving optimal care. This population may include new immigrants, non–English speakers, and racial and ethnic minorities.

Aims: Disparities in access to care, service utilization, quality, and health outcomes have been documented among South Asian children (Health of South Asians in the United States- A Brown Paper, South Asian Public Health Association, 2002). Additionally, studies have found that parents of children with special health care needs who have a primary language at home other than English are less likely to report receiving family centered care. Raising awareness about these issues and providing practical strategies for health care providers can help lead to improved health outcomes for these children and reduce health care disparities.

•Describe the acceptance of diagnosis and stigma surrounding disabilities in the Asian Indian population.

• Identify barriers related to the diagnosis of disabilities in diverse populations. Discuss cultural beliefs and its impact on Early Intervention & disability care in the Asian Indian population including culturally based concepts of child development and disability associated with a special needs child.

• Recognize how cultural beliefs, practices, and experiences impact Early Intervention & disability care. Review culturally effective and family centered care strategies that help improve care and patient compliance.

Conclusions: Health care disparities among children with special health care needs and dissemination of best practices and strategies for providing care to diverse populations will be discussed. Faculty will address how to provide family centered care strategies for diverse children with special health care needs, manage culturally based concepts of child development, disability and stigma, and understand unique strengths and resilience factors of diverse children and families. The program will draw upon data, practice experience, and community work with the Asian Indian population.

Keywords:
Special Needs, Asian Indian, Health Disparities

Education and Training

ABBREVIATED HIGH INTENSITY TRAINING IMPROVES KNOWLEDGE OF HEALTHCARE PROVIDERS TO CARE FOR SERIOUSLY ILL CHILDREN IN BOTSWANA

Dr Hannah Smith[2], Dr Christine Joyce[3], Mr Segolame Setlhare[4], Dr Kathryn Taubert[4], Dr Jose Ferrer[4], Dr Janell Mensinger[5], Miss Bingqing Zhang[5], Dr Kitenge Kalenga[8], Dr David Kloeck[10], Mrs Thandie Kgosiesiele[6], Dr Haruna Jibril[6], Professor Loeto Mazhani[7], Dr Allan de Caen[11], Dr Andrew Steenhoff[9], Dr Peter Meaney[1]

[1]Stanford University School of Medicine, Palo Alto, United States, [2]Children's Hospital of Philadelphia, Philadelphia, United States, [3]Weill Cornell School of Medicine, New York, United States, [4]American Heart Association, Dallas, United States, [5]Drexel University, Philadelphia, United States, [6]Ministry of Health, Gaborone, Botswana, [7]University of Botswana, Gaborone, Botswana, [8]District Health Management Team, Molepolole, Botswana, [9]Perlman School of Medicine, University of Pennsylvania, Philadelphia, United States, [10]The University of the Witwatersrand, Johannesburg, South Africa, [11]University of Alberta, Edmonton, Canada

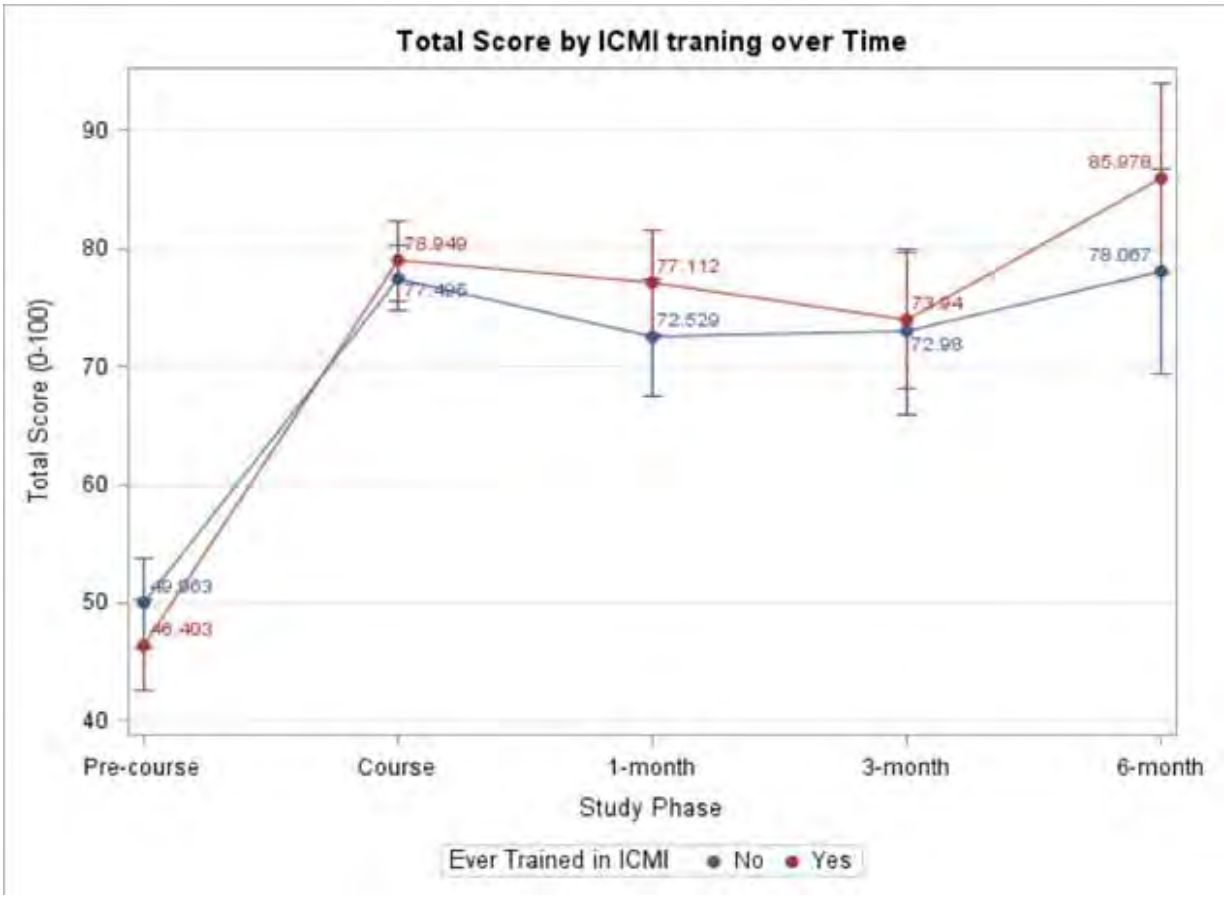
Background and Aims: Millions of children under 5 years die every year, primarily from preventable causes such as pneumonia and diarrhea. Saving Children's Lives (SCL) is a multiple implementation strategy program that utilizes a contextualized version of the American Heart Association's Pediatric Emergency Assessment Recognition and Stabilization course for its initial training. The objective of this study was to examine the impact of abbreviated high intensity training on knowledge acquisition and retention by healthcare providers (HCP) in Botswana in both recognition and stabilization of pneumonia and diarrhea

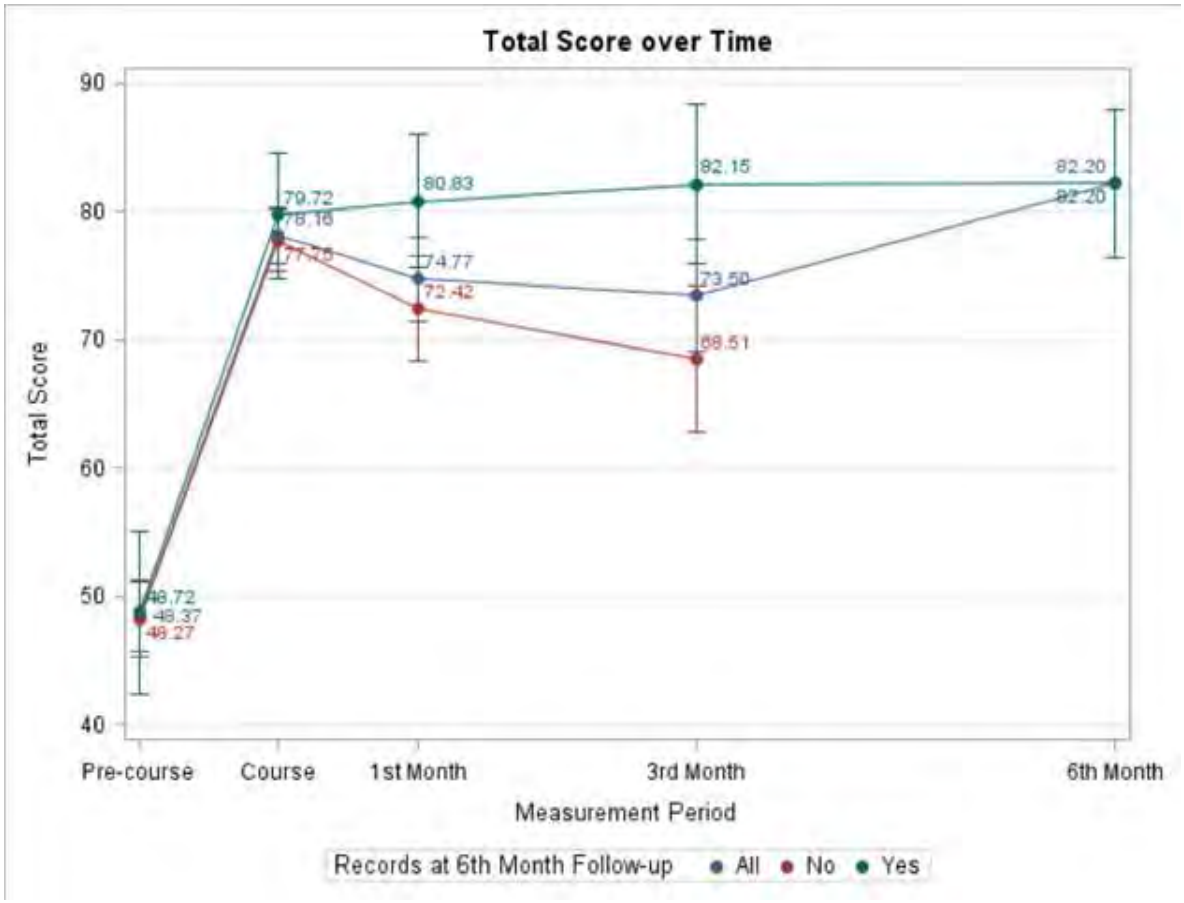
Methods: Retrospective, cohort of HCP in Kweneng Health District, Botswana. Demographics and course characteristics were obtained. Knowledge surveys were conducted at baseline, immediately post-training, and at 1, 3 and 6 months. Descriptive and univariate analyses were conducted. IRB approved this study.

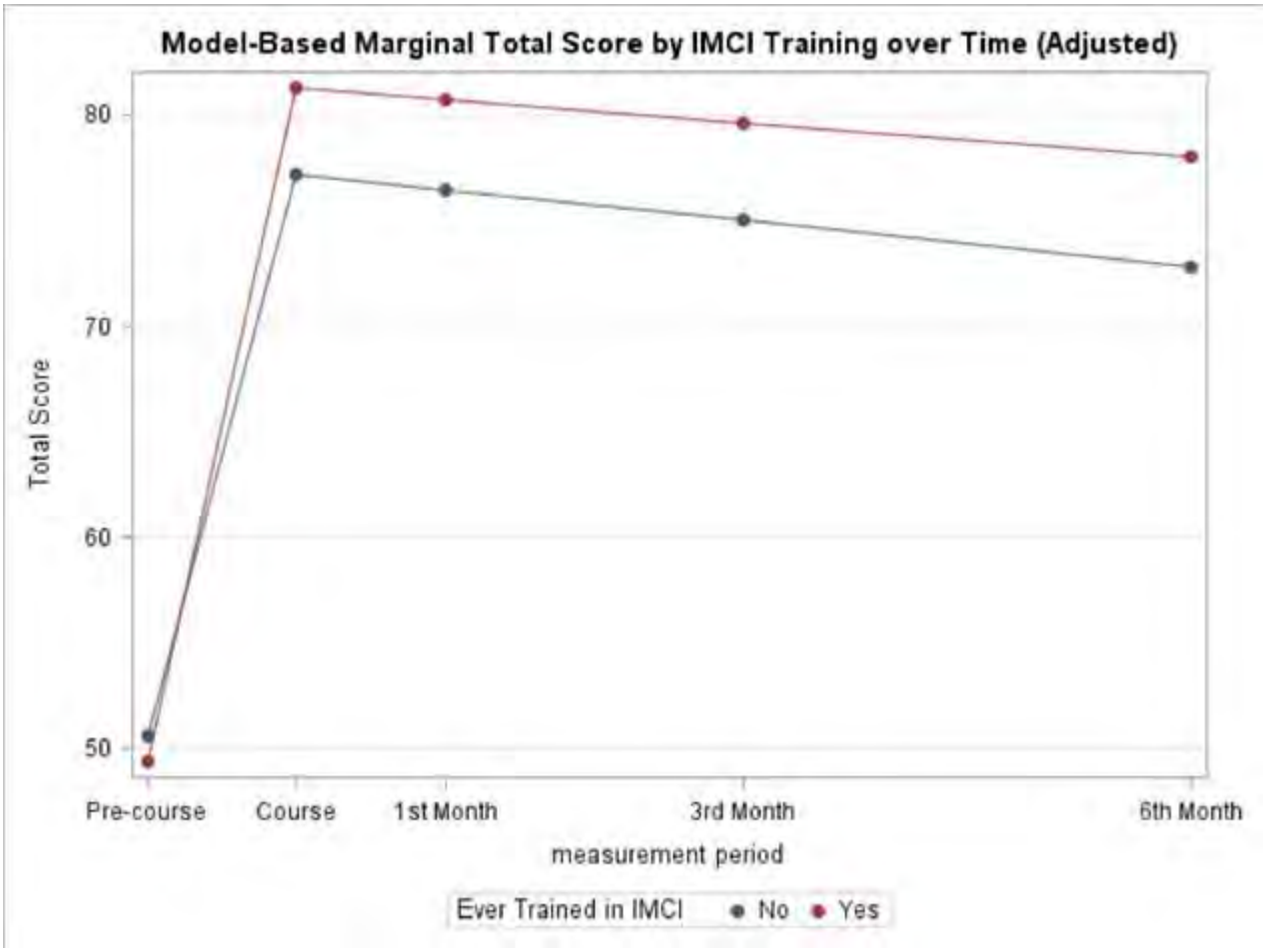
Results: Between January 2014 and December 2016, 499 providers were trained and 217 had data available for analysis. 90% (187) were nurses, and of 179 reporting work location, 71% (127) were clinic/health post based and 25% (44) district hospital based. 45% (95) had previous Integrated Management of Childhood Illness (IMCI)training. There was significant increase in overall knowledge score (48 vs 78%, p <0.0001), as well as sub scores of: dehydration treatment (43% v 80%, p < 0.0001), pneumonia recognition (47% v 93%, p < 0.0001), and pneumonia treatment (55% vs 68%, p=0.0001) between baseline and course assessment. Total score decreased 5.4 +/- 2.9, p 0.07 for each assessment after the course, but this was not statistically significant. Previous IMCI training or instructor type did not significantly impact acquisition (79% vs 77%, p 0.5).

Conclusions: Abbreviated high intensity training of HCP for pediatric serious illness is associated with significantly increased knowledge acquisition and retention up to 6 months. Previous IMCI training does not impact knowledge acquisition or retention significantly.

Keywords:
Serious Illness, Pediatrics, community, health care provider, developing country, training


Total Score by ICMI traning over Time
Total Score (0-100)
90
80
70
60
50
40
85.978
78.949
77.112
78.067
77.496
73.94
72.529
72.98
49.863
46.493
Pre-course
Course
1-month
3-month
6-month
Study Phase
Ever Trained in ICMI
No
Yes


Total Score over Time
Total Score
90
80
70
60
50
40
82.15
82.20
82.20
80.83
79.72
78.16
77.75
74.77
73.59
72.42
68.51
48.72
48.37
48.27
Pre-course
Course
1st Month
3rd Month
6th Month
Measurement Period
Records at 6th Month Follow-up
All
No
Yes


Model-Based Marginal Total Score by IMCI Training over Time (Adjusted)
Total Score
80
70
60
50
Pre-course
Course
1st Month
3rd Month
6th Month
measurement period
Ever Trained in IMCI
No
Yes

AN EDUCATIONAL INTERVENTION TO IMPLEMENT SKIN-TO-SKIN CONTACT IN A RURAL HOSPITAL IN MEXICO

MD Luis Fernando Sanchez-Espino[1], MD, MSH Gregorio Zuñiga-Villanueva[2], MD, MSC, PhD Jose Luis Ramirez-Garcialuna[3]

[1]Institute of Technology and Higher Education, Monterrey, Mexico, [2]Hospital of Sick Kids, Toronto, Canada, [3]McGill University Health Centre, Montreal, Canada

Objective: To implement early skin-to-skin contact in a rural hospital in Mexico through an educational intervention.

Introduction: Despite the known benefits that early skin-to-skin contact, this practice is not included within the standard practice of care in the Mexican health care system.

Materials and Methods: An educational intervention was performed with the labor/delivery staff and all the pregnant mothers in prenatal control (> 36.0 weeks) in the benefits, implication and realization of early skin-to-skin contact. Following intervention, all deliveries in the following 3-month period were registered. The time of onset of the skin-to-skin contact, its duration and the time of initiation of breastfeeding were recorded and analyzed. A transversal cutoff analysis per birth was made. ANOVA tests with Tukey post hoc were made for multiple comparisons and confused analysis.

Results: 158 vaginal births were registered, 109 received early skin-to-skin contact (69%). The average time of initiation of skin-to-skin contact in the first, second and third month of the study were 18.5 (± 2.2), 14.2 (± 5.4) and 9.6 (± 2.2) minutes of life, respectively, with significant difference among all groups ($p < 0.001$). The mean time of initiation of skin-to-skin contact was reduced throughout the study and the average of its duration increased with a statistical difference comparing the first and third months ($p < 0.001$) and the second and third months ($p = 0.005$), ($p = < 0.001$) respectively.

Conclusion: An educational intervention can accomplish the inclusion of early skin-to-skin contact as a standard of care.

Keywords:
skin-to-skin contact, breastfeeding, nursing, educational intervention, health care, primary care, pediatrics

Variable	*n* (%)
Age (yeas)	22.1 ± 5.3
Number of pregnancy	
1	53 (49%)
2	26 (24%)
3	20 (18%)
>3	10 (9%)
Weeks of gestation	39.1 ± 1.4

Table 1. Demographic characteristics of patients who received skin-to-skin contact.

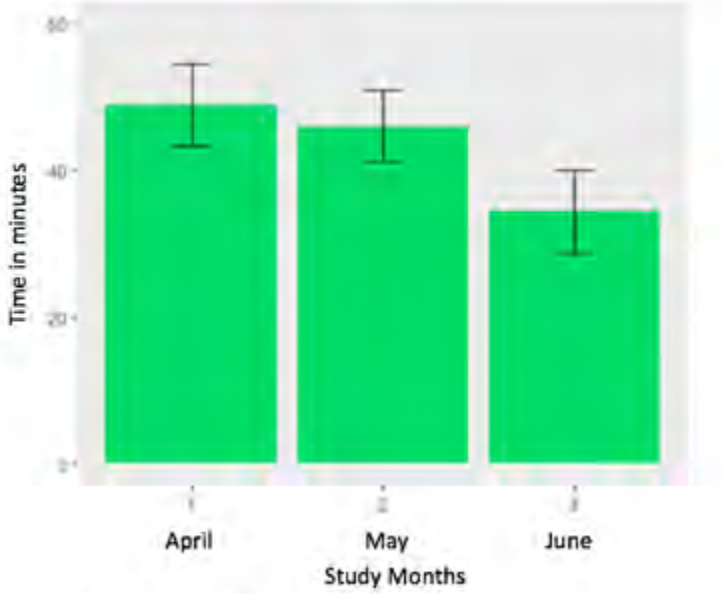


Figure 3. Time of onset for lactation initiation.

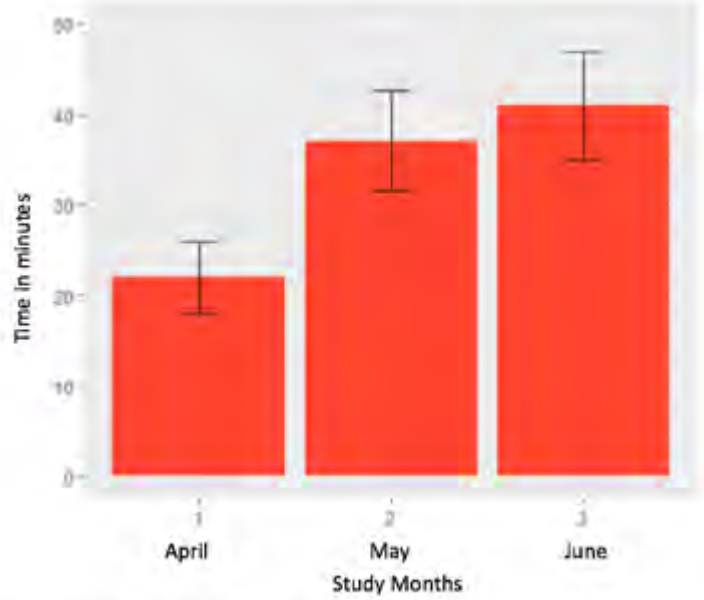


Figure 2. Duration of skin-to-skin contact.

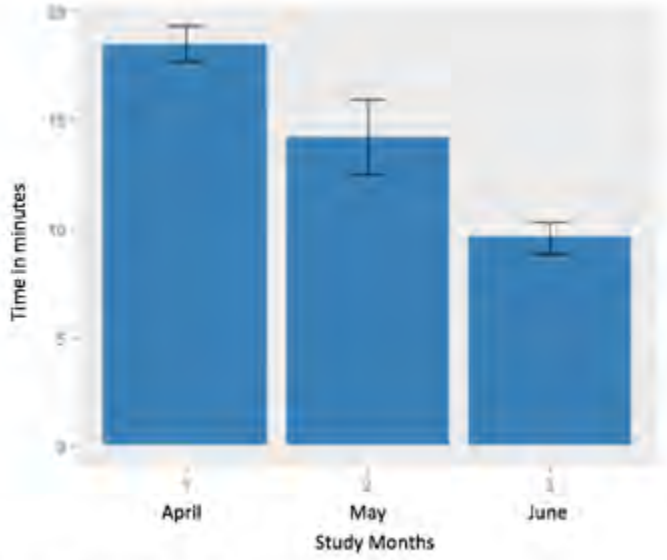


Figure 1. Start time of skin-to-skin care.

FACULTY DEVELOPMENT TO INCENTIVIZE TEACHING IN CHINA

Dr. Christiana Russ[1,2], Dr. Shu Zhang[3,4], Dr. Wenkai Li[4], Dr. Judith Palfrey[1,2]

[1]Boston Children's Hospital, Boston, United States, [2]Harvard Medical School, Boston, United States, [3]Peking Union Medical College Hospital, Peking, China, [4]China Medical Board, Beijing, China

Background: As China's economy grows, there has been an increasing demand for health services and a resulting rising need for a well-trained and larger healthcare work force particularly in Pediatrics. In 2014 the Central Government called for a Standardized Residency Training, which is currently being developed. The China Medical Board (CMB) has been collaborating with the China Consortium of Elite Teaching Hospitals for Residency Education, which identified faculty development as an area of specific need for improving graduate medical education (GME) in China.

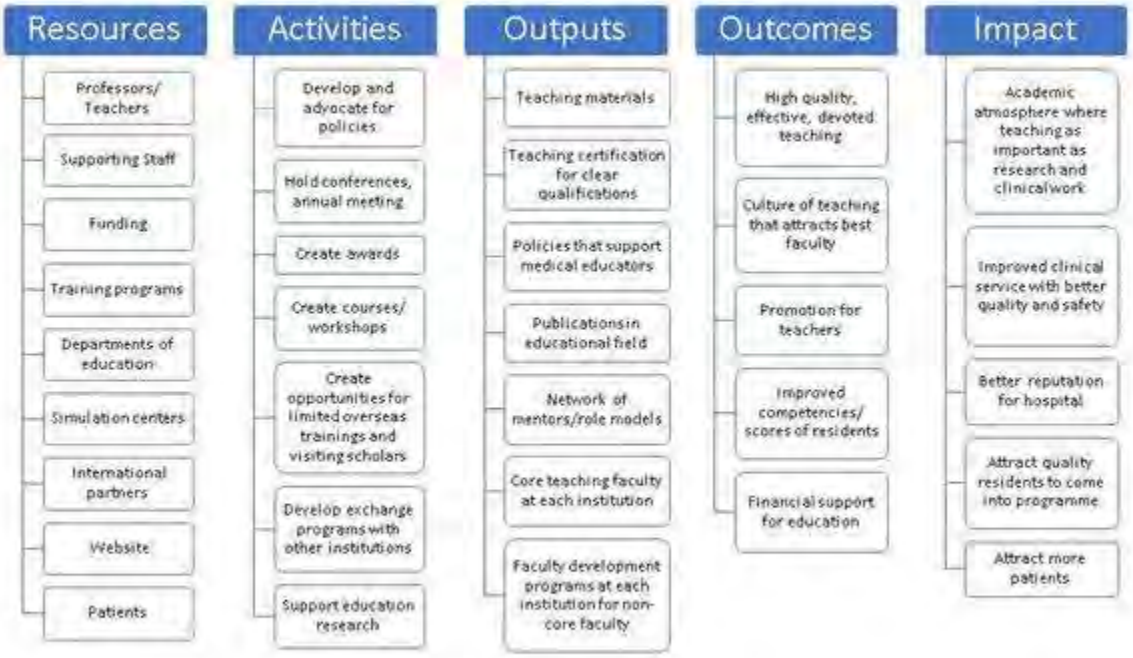
Methods: CMB sponsored faculty from Boston Children's Hospital to provide workshops to education leaders from the Consortium Hospitals in April 2018 in Changsha, China. Workshop goals were (1) To explore systems level issues in developing and sustaining the involvement of highly motivated teaching faculty, (2) To discuss ways that faculty development in competency-based education can translate into improved patient care, and (3) To develop a logic model for faculty development that is applicable to Consortium institutions.

Results: Workshop participants identified several challenges in faculty motivation to teach, including undervaluing of education as compared to research and clinical care, sometimes with a direct economic disincentive to teaching. Many faculty had no protected time or opportunity for promotion for teaching and education leadership. Quality of teaching in outpatient settings was a specific need. The group devised a logic model as a model of faculty development program that may address many of these challenges (Figure 1) with a focus on investing in and rewarding core teaching faculty, creating collaborations to share best practices, and advocating for policy changes to support successful careers in medical education.

Conclusions: Improving residency training in pediatrics and other disciplines requires investing in faculty who can focus their careers on improving medical education. In China this will require development of new structures to support teaching faculty.

Keywords:
Faculty Development, Residency training

Figure 1. Logic Model for Consortium Faculty Development Program



Developed at Consortium Workshop on Faculty Development, Changsha China, April 19-20, 2018

INTER-RATER RELIABILITY AND VALIDITY EVIDENCE FOR A SCORING INSTRUMENT TO ASSESS SIMULATED CLINICAL PERFORMANCE DURING STABILIZATION OF A SERIOUSLY ILL CHILD IN THE COMMUNITY CLINIC SETTING IN BOTSWANA

Ms. Katherine Smith[1], Mr. Segolame Setlhare[2], Dr. Allan DeCaen[3], Dr. Aaron Donoghue[4], Dr. Janell Mensinger[5], Ms. Binqing Zhang[5], Mr. Brennan Snow[6], Mr. Dikai Zambo[7], Mr. Kagiso Ndlovu[8], Mr. Ryan Littman-Quinn[7], Dr. Farhan Bhanji[9], Dr. Peter Meaney[10]

[1]Children's Hospital of Philadelphia, Philadelphia, United States, [2]American Heart Association, Gaborone, Botswana, [3]University of Alberta, Alberta, Canada, [4]Perelman School of Medicine, University of Pennsylvania, Philadelphia, United States, [5]Drexel University, Philadelphia, United States, [6]B-Line Medical Charitable Fund, Washington, D.C., United States, [7]Botswana-UPenn Partnership, Gaborone, Botswana, [8]University of Botswana, Gaborone, Botswana, [9]McGill Department of Pediatrics, Montreal, Canada, [10]Stanford University School of Medicine, Stanford, United States

Background: Inappropriate recognition and initial treatment of shock and respiratory failure by clinic-based personnel are major modifiable factors contributing to child mortality in Botswana. Better assessment of practitioners' psychomotor skills and feedback on performance is required to improve care. Current tools to assess psychomotor skills have not been validated in low and middle income countries.

Aim: To establish validity evidence for a set of scoring instruments designed to measure clinical performance during simulated resuscitations of seriously ill children in resource-limited settings through assessment of reliability and feasibility, and to compare evaluations by local and international raters.

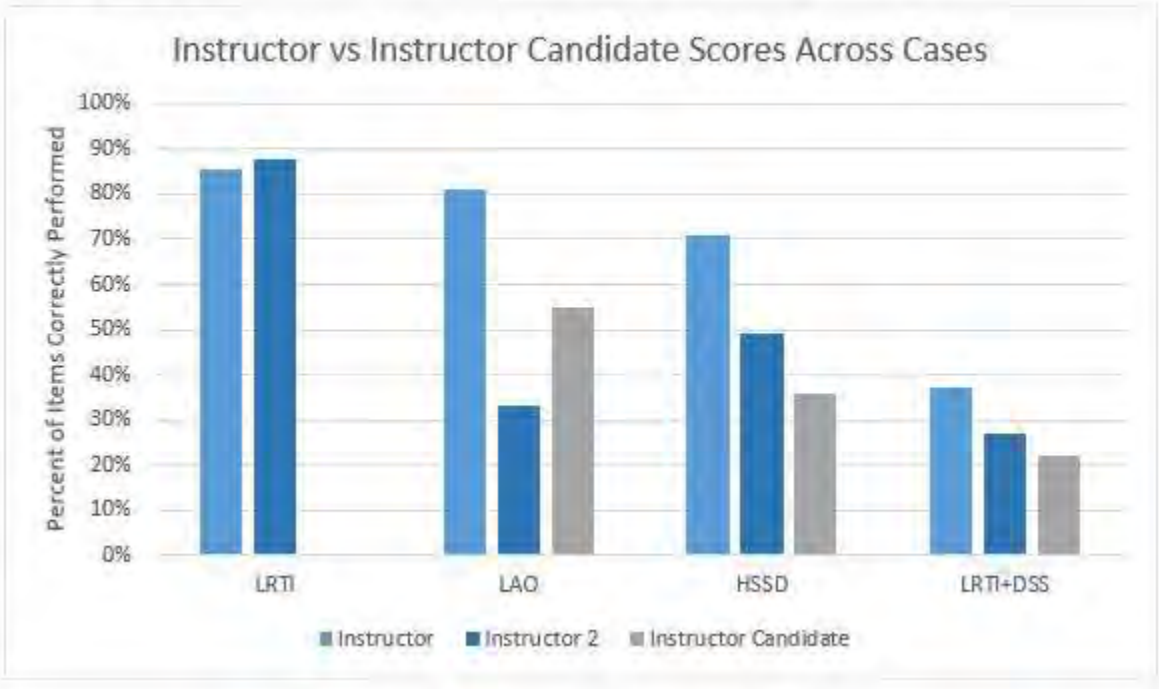
Methods: Saving Children's Lives instructors and candidates participated in one of four scenarios: Lower Respiratory Tract Infection (LRTI), Lower Airway Obstruction (LAO), Hypovolemic Shock from Severe Dehydration (HSSD), and LRTI + Distributive Shock from Sepsis (LRTI+DSS). Video-recorded sessions were independently reviewed and scored by one local and four international raters using assessment tools designed to measure performance in terms of timing, sequence, and quality.

Results: Eleven subjects participated. LAO and HSSD produced excellent intra-class correlation (ICC) among raters, with ICCs of 0.917 (95% CI 0.633, 0.998) and 0.884 (95% CI 0.513, 0.997) respectively. The ICCs were not significantly different without the local rater. Tasks demonstrating substantial reliability through Fleiss Kappa included oxygen therapy administration (0.707), arranging transport (0.706), and fluid bolus administration (0.701).

Conclusions: This study provides the first validity evidence of a structured scoring assessment of provider skills to care for seriously ill children in the clinic environment in low and middle income countries. Remote simulation skills assessment of clinic-based providers in Botswana is feasible, and local and international raters score similarly for all cases. Future studies should include more participants, more local raters, and be completed in a new setting with raters unfamiliar with the assessment tool.

Keywords:
Education, Child Mortality, Global Health, Assessment Tool, Serious Illness

Figure 1:


Instructor vs Instructor Candidate Scores Across Cases
Percent of Items Correctly Performed
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
LRTI
LAO
HSSD
LRTI+DSS
Instructor
Instructor 2
Instructor Candidate

THE CORRECT POSITIONING OF CENTRAL VENOUS CATHETERS IN PEDIATRICS – ARE CURRENT FORMULAS REALLY USEFUL?

Mr. Corvin Cleff[1], Dr. Marc Bönsch[1], Dr. Frank Eifinger[2], Prof. Dr. Jochen Hinkelbein[1]

[1]*Department Of Anesthesiology and Operative Intensivcare, Universty Hospital Cologne, Cologne, Germany,*
[2]*Department of Pediatric Medicine, Universty Hospital Cologne, Colgone, Germany*

Background: Correct positioning of a central venous catheter tip in children is very important. Malposition may lead to direct complications, like arrhythmia, and increase the risk of thrombosis, infections, valve failures or pericardial tamponade.

Objective: Aim of this review is to identify and sum up published formulae for the correct positioning of the central venous catheter tip in children and to discuss the benefit of these formulas for the daily work.

Material and Methods: A systematic and standardized search in Medline and PubMed was performed to identify published formulas. Formulae for insertion depth of the CVC tip over the right internal jugular vein were discussed. The keywords “pediatric“ or “pediatric“, “children“, “central venous catheter“, “CVC“, “central venous“, “length“, “insertion“, “optimal“, “formula“, “depth“, “correct position“ und “right position“, “internal jugular vein” were used to identify the formulae.

Results: A total of 854 publications were found. 127 publications of them were analyzed. The publications were subsequently assessed and classified independently by a specialist in anesthesiology and a specialist in pediatrics. A total of 6 publications described varying particular body-height-based formulae for calculation of a CVC insertion depth. No prospective evaluation of these formulas were ever performed to show if it is possible to place a CVC tip at the optimal position.

Conclusion: The benefit for daily practice is very limited, due to the problem of choosing the right insertion point. The recommended insertion depth should be considered as an indicator and a verification of the CVC-tip position should be done by using an imaging technic.

Keywords:
pediatric“ or “pediatric“, “children“, “central venous catheter“, “CVC“, “central venous“, “length“, “insertion“, “optimal“, “formula“, “depth“, “correct position“ und “right position“, “internal jugular vein”

"CHILD ABUSE CHECKLIST" IS USEFUL FOR SCREENING CHILD ABUSE IN EMERGENCY ROOM

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Background and Aims: Children come to our hospital with trauma are often examined by surgeons, not by pediatricians. For these doctors, we have been using "Child Abuse Checklist" for screening child abuse in the emergency room since 2012. Target patients are those who are less than three years of age and come to the emergency room with head trauma and burn injury, and those whom medical staffs regard as high risk for abuse. The medical staffs fill in the checklist during examination, and all patients applicable to the checklist are discussed in the CPT (Child Protection Team) meeting. Cases with suspected abuse are reported to local governments (children's welfare centers).

Objectives: To assess the usability of "Child Abuse Checklist".

Methods: Patients with checklist between January 2012 and August 2017 were enrolled to this study. We examined the cases which were discussed in the CPT meeting and the cases which were reported to local governments. Then we compared the cases listed by pediatricians and non-pediatricians.
Results: 2,253 patients were enrolled in this study. 212 out of 2,253 patients (9.4%) matched at least one of the check items, and were discussed in the CPT meeting. Among them, 68 patients (32%) were reported to local governments. 46 out of 68 patients (68%) had already been supported by local governments in the past, or had been started regular support by them after the reports. Among the cases applicable to checklist, 24% of the patients examined by pediatricians had regular support, whereas 17% of those who were seen by non-pediatricians did (p=0.48).

Conclusions: With regard to the support by local governments, there was no significant statistical difference between pediatricians and non-pediatricians. "Child Abuse Checklist" is useful for screening child abuse in the emergency room even if the medical providers do not engage in pediatric medicine.

Keywords:
Child Abuse, Checklist, Child Protection Team, Pediatric Emergency

Endocrinology, Diabetes, Obesity

A NOVEL MATHEMATICAL APPROACH TO COMPREHENSIVE PEDIATRIC OBESITY EDUCATION UTILIZING GOAL WEIGHT CALCULATION, INCREMENTAL BODY MASS INDEX ASSESSMENT, AND DIETARY MODIFICATION

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Background and Aims: Pediatric obesity remains one of the most common, stigmatizing, and challenging problems managed by pediatricians in developed countries. Aggregate medical research doesn't always identify strategies relevant to an individual patient. The author wishes to share several mathematically-based interventions which have been successful in longitudinally managing obesity and maintaining motivation over time.

Methods: Patients are screened for body mass index (BMI) at each visit. At least a brief introduction to weight assessment is included even at sick visits. Patient BMI is discussed, as well as previous trend, if available. Excess weight gain/year is calculated by extrapolating from normal or normalizing BMI trend. Parent and/or child is given a goal weight for patient at 18 years of age calculated from goal BMI and projected height. Talking points are summarized in Fig. 1. Parents are educated regarding "100 cal/day= pounds/year rule," and instructed that long term weight management is likely more responsive to disciplined dietary modification vs. increasing activity (particularly for developmentally or motor impaired children). Parents are educated to scrutinize excess "white" carbohydrate intake (Fig 2). Comprehensive motivational interviewing is utilized and goal caloric restriction is individualized to the relative weight gain evident in the patient. Parents of limited means are encouraged to think of a food "budget," as they are familiar budgeting monetary resources. Followup visit is scheduled for 4-6 weeks, where interim weight gain and intervention results are assessed and shared with parent, allowing parent/child to continue to adjust lifestyle. Expectations for dietary modification are adjusted depending on the developmental age of the child.

Results: Fig. 3 illustrates impact of initial assessment and subsequent relapse with non-compliant parent. Fig. 4 illustrates several other actual patient BMI trajectories.

Conclusions: Weight counseling for pediatric patients is simplified using non-stigmatizing mathematical models that parents understand regardless of socioeconomic level.

Keywords:
obesity, BMI trajectory

Fig. 1: BMI Trajectory Talking Points Summary

1. Parent/child is shown current BMI and compared to previous values. Patients are given an 18 year final "goal weight" even if their BMI is currently normal and becomes a "runway" they want to target. This helps parents to process how normal or abnormal a child's weight trajectory is.
2. If BMI is trending up, excess weight gain is calculated by extrapolating from ideal BMI value and converted to "excess" calories per day that parent needs to try to decrease by eliminating caloric beverages and high glycemic foods.
3. 100 cal/day=10 pounds a year. "Small changes either way make a big difference over time." It's NOT just their appearance; weight management converts to decreased diabetes risk and improved cardiovascular risk.
4. Good results are celebrated; excessive gain is simply converted to calories to eliminate or exercise. Most older kids figure out that they can't just burn off over eating. Frequently "inadequate" incremental improvements can be converted to more positive results by continuing to reinforce the "Look for what carbs you can eliminate" talk.
5. This process encourages parents to analyze their family lifestyle in a nonjudgmental way. I specifically encourage parents to have children "chew" instead of drinking their diet, and to research other noncustodial sources of food if they aren't seeing results.
6. "Who manages the finances in your family?" (usually mom!) Do you have a budget? This is a food budget and we will see what you can make work for you ☺

Fig. 2. Dietary Talking Points

- Beverages are potent sources of calories. "The bigger you are the more you need to drink, so if you are drinking calories, you will get bigger just getting hydrated. Stay away from Gatorade, juice, and sodas." Even milk and lower calorie beverages can be significant with the "100 cal/day=10 pounds per year rule. Avoid chocolate milk and generally try chewing sources of protein. "You are not a cow!" ☺
- If a child's weight gain is not normalizing, encourage parent to look at school, day care, and noncustodial relatives, particularly grandparents. A child can eat enough in a few hours to neutralize a very disciplined parent.
- "Beans instead of rice" as a starting point for parents of limited means.
- "I didn't ask you if you liked that food, I want you to think of how much better you will feel if you change what you chew."☺ Parents and children do respond to the humor!

Fig. 3: Patient #1 presented with stepmother at 2 years of age with concerns about her weight. Comprehensive education and ongoing surveillance produced a marked improvement in trajectory until visits with biological mother resumed one year ago. Father has not been able to get biological mother "on board" with controlling intake.

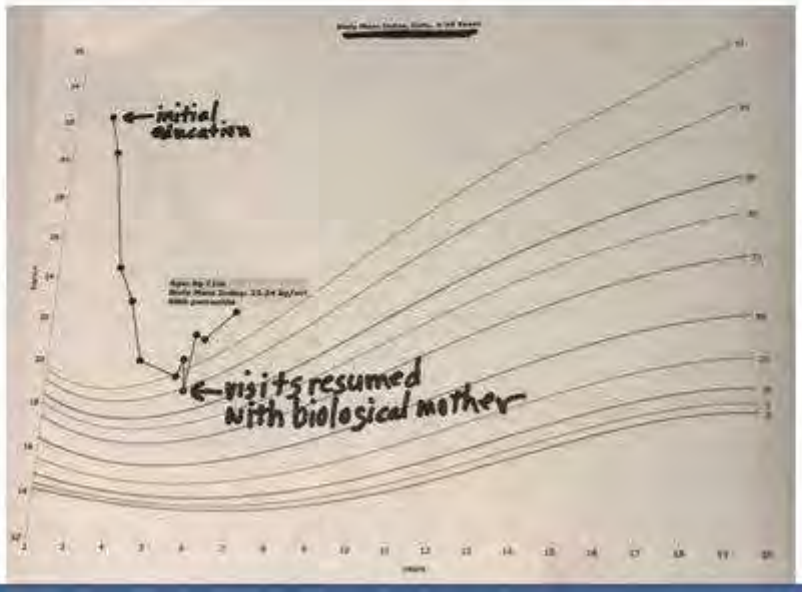
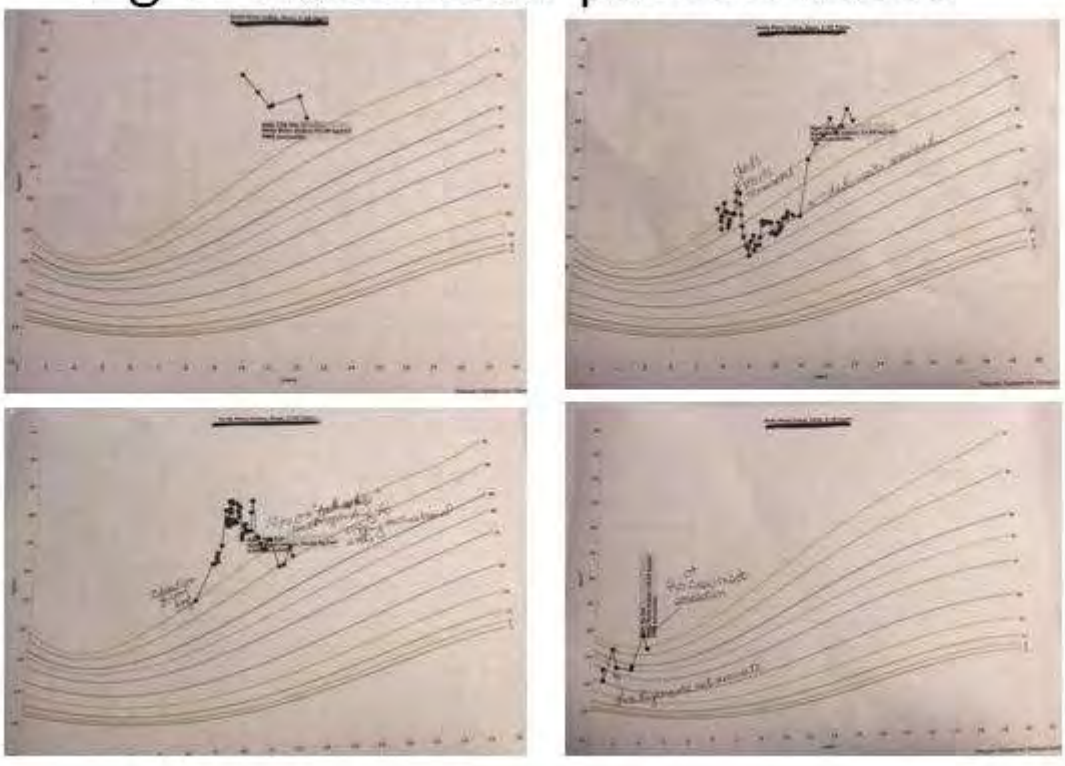


Fig 4. Additional patient cases



HEPATIC STEATOSIS: BEYOND OBESITY

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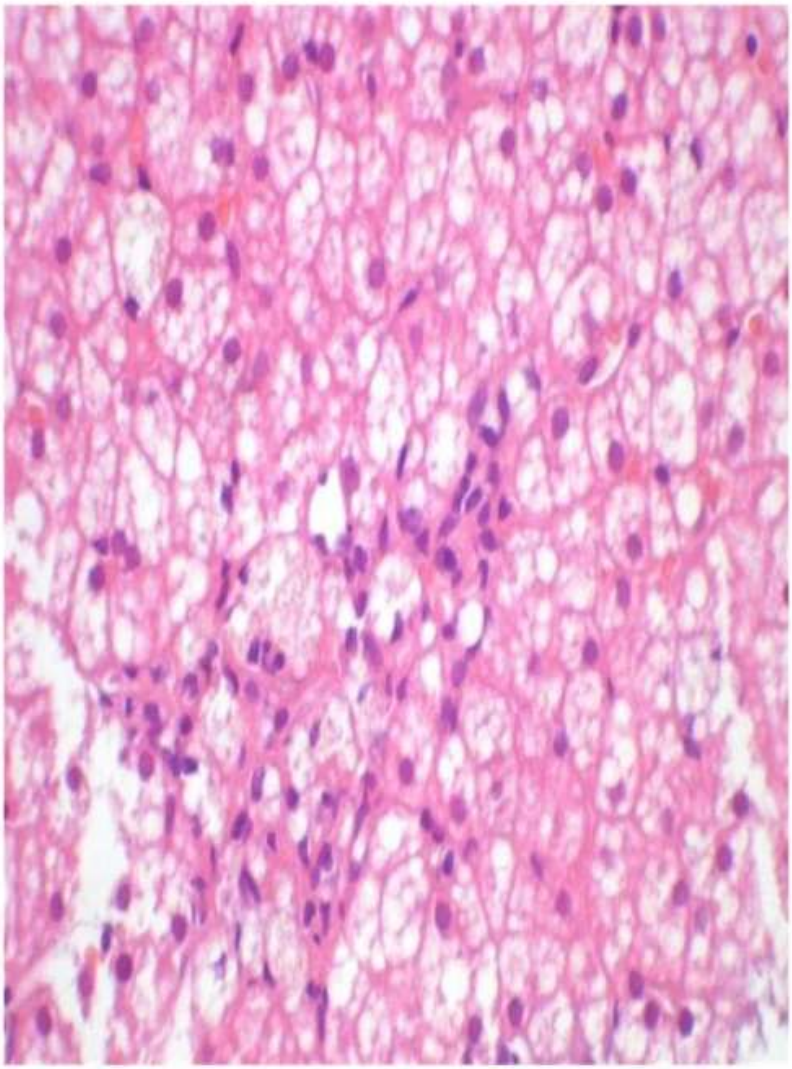
Background and Aims: Lysosomal Acid Lipase Deficiency (LAL-D) is an inherited metabolic disorder caused by mutations in LIPA gene, which reduces the activity of the lysosomal acid lipase enzyme (LAL), causing storage of cholesteryl esters and tryglicerides in liver, spleen, blood vessels and other. The result is hepatic injury (elevated transaminases, fibrosis) and dyslipidemia, leading to liver failure, accelerated atherosclerosis and death. Aim: to present a case of a rare disease characterized of steatosis in a non-obese patient.

Methods and Results: 5 yo boy referred to Endocrinology Clinic for failure to thrive/short stature. Born preterm 26 weeks. Pregnancy complicated by severe preeclampsia. Birth weight: 575g, birth length: 28cm; classified as SGA. Stay at Neonatology ward: 138 days; diagnosis: surfactant deficiency/apnea/pneumonia/pulmonary bronchodysplasia; sepsis; necrotizing enterocolitis; PDA; retinopathy of prematurity; nephrocalcinosis; anemia; bilateral hydrocele. Pathologic history: Pulmonary bronchodysplasia and Gastroesophageal reflux: released from follow up for both conditions since age 3. Surgeries: orchiopexy, strabismus correction, hepatic biopsy. Physical examination (relevant findings): triangular face, amputation of distal phalanx of 2nd-5th fingers of right hand (secondary to septic emboli in the neonatal period), soft abdominal distension, no visceromegaly, normal neurologic examination. Laboratories: hypertransaminasemia, total and LDL hypercholesterolemia. Normal abdominal echography. Liver biopsy: moderate microvesicular steatosis, about 100% of hepatocytes; lobular inflammation: less than two spots per HPF; portal inflammation, portal or lobular fibrosis: not identified. LAL quantification: 0,0 nmol/h/ml (RV ≥21). Sequencing of acid lipase gene (LIPA): two mutated alleles (one known as pathogenic for cholesterol ester storage disease). A diagnosis of LAL-D is made. Actuallly he is receiving treatment with cholestyramine, but with a low rate of positive response to the treatment, waiting for a replacement therapy with sebelipase alfa.

Conclusions: Microvesicular steatosis, hypertransaminasemia and dislipidemia should lead to suspiction of LAL-D.
This is the first case of LAL-D reported in our country.

Keywords:
Microvesicular steatosis, lysosomal acid lipase, hypertransaminasemia

Lab	3.5 years	4.5 years	5 years	RR
AST (U/L)	41	88	91	10-59
ALT (U/L)	49	103	118	6-34
Total chol (mg/dl)	249	349	325	<200
LDL-chol (mg/dl)	181	323	277	0-100
TG (mg/dl)	291	184	123	30-100



MOVE IT TO LOSE IT (MITLI) CHILDHOOD OBESITY PREVENTION

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Background: Research about after-school programs to reduce childhood obesity discusses the importance of establishing community based after school programs where children can enroll to help curb this epidemic.

Methods: MITLI is a 6 week physical activity and healthy living nutrition instruction intervention for school aged children 8 to 13 years developed in collaboration with a local dance school to teach high energy dance forms at an elementary school in their established after school setting along with concepts of healthy eating.

The pilot program consisted of one group of twenty children recruited from the school system to participate in a weekly class instruction consisting of a 30 minute high intensity dance class and thirty minutes of nutrition and healthy living instruction. Activities taught the children about the various food groups, the definition of calories, the food label, portion size and effective food choices. Information about smart media, screen time, and importance of physical activity was emphasized. The effectiveness of this program was evaluated by the enrollment, attendance, and retention of the children in the MITLI classes. A pre and post-test questionnaire was administered to evaluate the increase in knowledge of these children about obesity and the role of physical activity and nutrition in fighting this national epidemic.

Results:
1)Enrollment (n=19)
6 week Attendance 95% (n=19)
6 week Retention 95% (n=19)
Absence secondary to illness only

2) Qualitative analysis of CATCH questionnaire (n=16) indicates knowledge of healthy lifestyle practices was good; the data is being analyzed for post class information.

3) Self report of physical activity-3.6 days per week of 60 minutes per day. (n=11)

Conclusion: This pilot program is a community collaboration which can be utilized as a model for other organizations to partner with local resources to deliver an effective program to a captive audience.

Keywords:
Childhood Obesity, after school, dance

MUSCLE WEAKNESS: BEYOND THE OBVIOUS

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Pseudohypoparathyroidism is an infrequent and heterogeneous hereditary disease characterized by hypocalcemia, hyperphosphatemia due to parathyroid hormone resistance, without renal failure. We present 2 twins brothers who were born by C-section without complications. At the age of ten, they both develop a clinical picture characterized by progressive muscular weakness in lower limbs, with difficulty to raise stairs and walk, and muscle cramps; by age thirteen, there was involvement of upper limbs also, pain in extremities, and alteration in gait (wide base). The serum test present diminished calcium, increased phosphorus and increased PTH.

Introduction: The Pseudohypoparathyroidism (PHP), is characterized by hypocalcemia, hyperphosphatemia and elevated levels of parathyroid hormone (PTH). This table is due to the resistance of the target organs, bone and kidney to biological action of PTH. The clinical manifestations of hypocalcemia vary by patient age, cause and time of evolution of the same, fundamentally determine tetany crisis and a wide neuromuscular symptoms. Its intensity is variable and can be intermittent symptoms, which usually appear when the calcium ion is decreased. Treatment should restore the balance of calcium and minerals in the body, providing supplements of calcium carbonate and vitamin D. Complications may occur: stunted growth, malformed teeth, and slow mental development.

Results and Conclusions: The PHP type 1b is one of the least common forms of presentation of hypocalcemia by PHP. Since its clinical and phenotypic manifestations not always correspond to classical osteodystrophy Albright's hereditary (OHA) it has greater difficulty in diagnosis, so studies should be conducted calcium metabolism in all patients with muscle spasms and progressive loss of strength although no seizures especially if radiologic studies show progressive osteopenia. Substitution with oral Ca and vitamin D should get normal values and provide a recovery.

Keywords:
Pseudohypoparathyroidism, Hypocalcemia, Hyperphosphatemia, Parathyroid hormone.

OBESITY AND WEIGHT CONCERNS IN CHILDREN WITH SPECIAL NEEDS

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Background and Aim: The World Health Organisation (WHO) indicates that in the paediatric population, 41 million are overweight/obese. Center of Disease Control (CDC) data in 2008 showed that adults with disabilities were 58% more likely to be overweight or obese compared to non-disabled adults; in children, those with disabilities were 38% more likely to be overweight/obese.

In this study we investigated weight concerns in children with special needs.

Method: Data from an established patient database on Microsoft Excel for a local community paediatric service was analysed for September 2015 to August 2016.

Patient diagnoses were categorised as follows: Attention Deficit and Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), Learning difficulty (LD), Cerebral Palsy (CP), Global Developmental Delay (GDD), Trisomy 21, Other syndromes and > 2 of the above diagnoses.

The proportions of these children being overweight/obese, underweight, having eating problems, requiring dietitian services and having behavioural problems were recorded.

Results: 1017 patients attended the clinics.

15.4% of patients had weight concerns, with 9.3% being overweight or obese and 6.1% underweight. 5.1% of children experienced eating problems. 80 (7.9%) patients accessed the dietitian services and behavioural concerns were noted in 90 (8.8%) patients.

Regarding ASD, 3.7% were overweight or obese and 3.5% were underweight. For ADHD, 15% were overweight or obese and 4.7% were underweight. Among children with Learning Difficulty 17.5% were overweight or obese and 3.6% underweight.

14.9% and 12.3% of children with CP and GDD respectively were underweight. For Trisomy 21 and Other syndromes 18.2% and 16.7% respectively were overweight or obese.

Conclusion: International data indicates that persons with disability have high rates of overweight and obesity. This study also shows that a high proportion of children with special needs are overweight or obese. Strategies locally to address NCDs must give particular emphasis to children with special needs.

Keywords:
Obesity, Special Needs children

Environment Health

PREVALENCE OF CHEMICAL AND DRUG EXPOSURES IN THE PEDIATRIC POPULATION OF PUERTO RICO

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The pediatric population is exposed to chemicals and drugs almost daily which can prove to be harmful if not fatal, and predisposes development of serious complications later in life. In the United States, the Poison Control Center (PCC) reported that, in children under 6 years old, there was an average of 41.3 poisonings out of 1000.

The aim of this study is to asses these types of exposures in the pediatric population of Puerto Rico in order to raise awareness. This study identified the major agents that children were in contact with and divided them according to: timing of exposure and child developmental stage. Data was collected from the website toxiCALL, from the PCC in Puerto Rico.

Data was collected from calls received at the Puerto Rico PCC regarding pediatric patients (ages 0-21 years old), from 2010-2017. A total of 25,495 calls were evaluated, most in regards to drugs; chemical exposure was the next most common. Most occurred at the homes of the patients.

Regarding chemical exposure, a majority of the incidents fell into 4 groups: household cleaning substances, pesticides, cosmetic/care product, and foreign bodies. The most affected age group by chemicals were 1-2 year-olds, with more cases than the rest of the groups combined. Concerning drugs, 12-21 year-olds accounted for the most calls to the center. The prevalence of cases has been going down over the years, 4,099 cases in 2010 to 2,113 cases in 2017. Clinical symptoms were recorded, three major problems were identified (in order of prevalence): gastrointestinal, ocular and skin manifestations.

With the prevalence of exposures so high for such a small territory, raising public awareness for how regularly Puerto Rican children are exposed to these chemicals could dramatically decrease the number of hospitalizations or health complications due to toxic exposure, and ultimately save many lives.

Keywords:
Poison Control, pediatrics, Puerto Rico

General Pediatrics

BIOMECHANICS OF BABYWEARING: IMPLICATIONS FOR HIP JOINT DEVELOPMENT

Assistant Professor Victor Huayamave[1], PhD Student Nathan Stanton[1], Assistant Professor Erin Mannen[2], Post Doctoral Fellow Safeer Siddicky[2], Director of Pediatric Orthopaedic Education Charles Price[3]

[1]Embry-Riddle Aeronautical University, Daytona Beach, United States, [2]University of Arkansas for Medical Sciences, Little Rock, United States, [3]Orlando Health, Orlando, United States

Background and Aims: DDH describes general instability, or looseness of the hip joint. Due to the developmental nature of the condition, babywearing may influence joint morphogenesis. Babywearing often places infant hips in a flexed and abducted position (M-positioning) and it has been suggested that appropriate babywearing may prevent DDH. In addition, M-positioning may be similar to the position provided by devices used to treat DDH such as the Pavlik harness (PH). Our study aims to quantify the biomechanics and muscle activity of healthy infants in a babywearing device and a PH.

Methods: Our computational study used a multi-body OpenSim model to estimate joint reaction forces (JRF) within the acetabulum in various positions. In addition, a finite element model (FEM) using a configuration representative of the M-position at 110º flexion and 50º abduction was developed to investigate pressure distribution within the acetabulum. For our experimental study, electromyography (EMG) and marker-based motion-capture was used to evaluate the lower extremity of fourteen healthy infants in a PH and in an inward-facing, soft-structured, baby carrier with M-positioning.

Results: JRF were calculated with respect to hip flexion and abduction (Fig1). Preliminary results of the FEM show a pressure concentration on the posterior superior aspect of the acetabular cartilage (Fig2). Lower limb EMG muscle activity for the muscle groups studied was similar during babywearing in the Boba carrier, when compared to the Pavlik harness (Fig3).

Conclusions: Results suggest that there are no fully centralized JRF within the acetabulum. Pressure distributions in the acetabular cartilage may provide insight for proper hip joint development. Additionally, the similar muscle activity during babywearing with M-positioning, when compared to the PH, may indicate a more comfortable mechanism to promote healthy hip development.

Acknowledgements
The authors acknowledge the support from the International Hip Dysplasia Institute and Boba, Inc.

Keywords:
Developmental dysplasia of the hip, babywearing, Pavlik harness, biomechanics

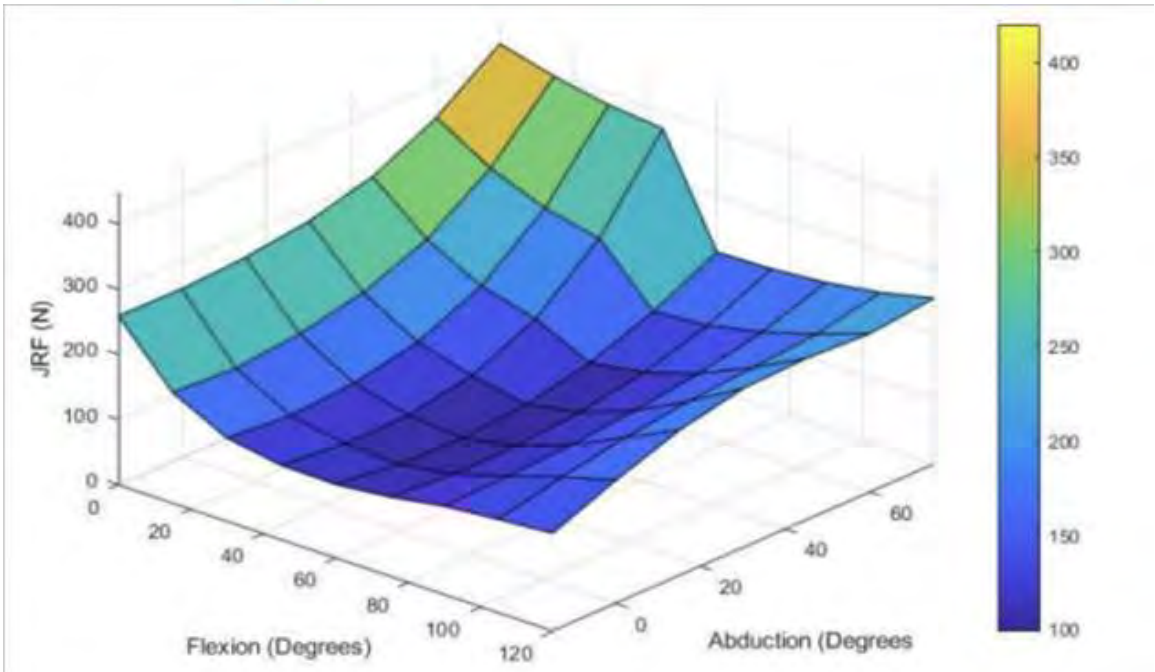

Figure 1. Surface plot of joint reaction forces with respect to hip flexion and abduction

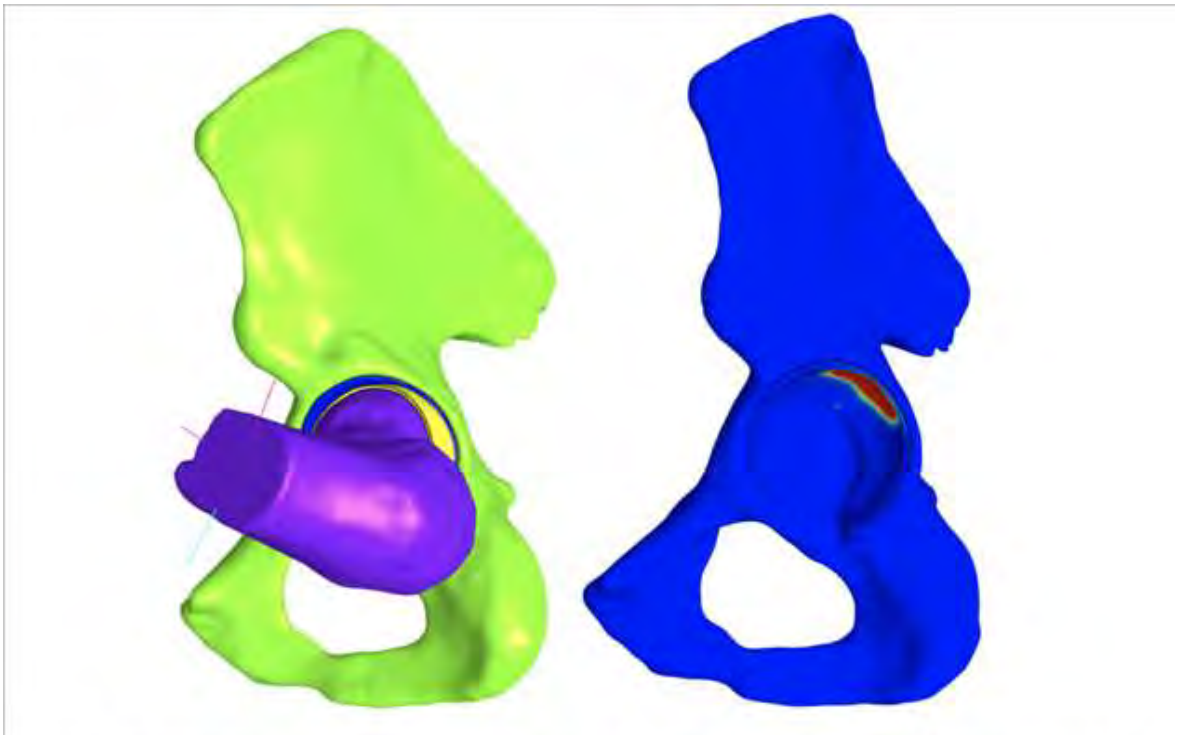

Figure 2. FEM using a configuration representative of the M-position at 110° flexion and 50° abduction (left), acetabular cartilage pressure distribution (right).

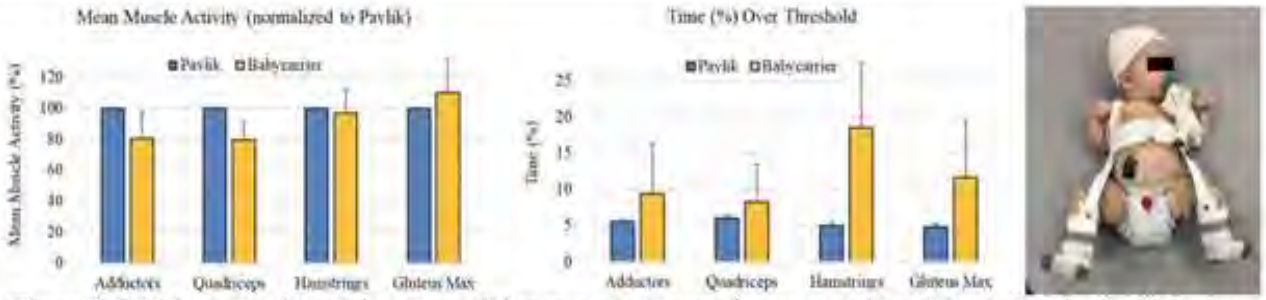

Figure 3. (L) Mean muscle activity per condition as a percentage of mean muscle activity during the Pavlik harness condition. (M) Percent time muscles were active above the mean + two standard deviations of the Pavlik harness condition. (R) Experimental setup showing motion capture markers and EMG sensors on the infant participant.

CHILD MALTREATMENT. SEXUAL ABUSE AND ITS IMPACT ON CHILDHOOD AND ADOLESCENCE

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Background and Aims: Child maltreatment covers all forms of physical abuse including sexual and emotional abuse, neglect or negligence and accidents when they are preventable. The objective of this study was to establish the presence of child maltreatment and its classification according to established norms.

Method: A prospective descriptive study of child maltreatment was made of five patients between 1 and 13 years of age, of both sexes, who were brought to the pediatric office by their parents or another family member, in the first quarter of 2018.

Results: All patients attended in the consultation were for indirect reasons to abuse, which were detected through the interrogation or physical examination. The male sex predominated (80%). There were three patients with intentional mistreatment (one old burn per plate, one violation with the acquisition of an STI and one by previous beating). One of undetermined cause with burn by iron and unintentional one for an infant's lip burn when giving him a hot spoon. Of the three intentional cases, only one could report to the authorities (sexual abuse) and in the other two, it was impossible because the parents had retracted and denied the true cause. In the case of the burn of undetermined cause, the patient was assisted in a specialized center and in the unintentional injury was explained to the mother the prevention of this injury and she was trained in this regard.

Conclusions: There were difficulties in the detection of child maltreatment, given, above all, by the denial of the relatives responsible for the care of the infants and only detected by the medical intervention, which could not be reported but classified.

Keywords:
Maltreatment, intentional and unintentional injuries, sexual abuse

INCOMPLETE KAWASAKI DISEASE IN AN INFANT OF SIX MONTHS: A CASE REPORT

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Background: Kawasaki disease (KD) is a multi-system vasculitis which usually occurs in children under 5 years of age. It is typically a self-limited condition, with fever and manifestations of acute inflammation. However, coronary artery (CA) aneurysms, depressed myocardial contractility and others heart complications may develop and lead to significant morbidity and mortality.
The characteristic clinical signs that are the basis for the diagnostic criteria for KD are: fever more than 7 days, bilateral nonexudative conjunctivitis, erythema of the lips and oral mucosa, rash, extremity changes, and cervical lymphadenopathy.
Children suspected of having KD who do not fulfill diagnostic criteria may have incomplete KD.

Case Presentation: A 6-month-old boy from Lima-Peru presented at our service with 11 days of fever and diarrhea. First, he was treated with azithromycin for 3 days, without any improvement, then a left cervical lymphadenopathy appeared, diagnosing cellulitis and receiving ceftriaxone and oxacillin. At that time he presented: conjunctival injection, lips cracked with strawberry tongue, edema of hands and feet, which gradually disappeared. He never presented rash. On physical examination, he continued with cervical lymphadenopathy and had BCGitis, body temperature was 38.5º. His laboratory tests: PCR: 19 mg / dL. Hemoglobin: 8.6 g / dL. White blood cell: 14150mm3 and the platelet count was 479,000 / mm3. All serological tests were negative. Due to the suspicion of KD, an echocardiogram showed a permeable foramen ovale and dilatation of the anterior descending coronary artery. He received intravenous immunoglobulins (2 G / K) only once and aspirin (100 mg / k / d) for 4 days and the response was good.

Conclusions: This case report reminds us that in infants below 6 months of age with prolonged fever should be suspected of KD either the incomplete form of the disease, because of the risk of developing CA dilation.

Keywords:
Kawasaki disease, fever, coronary artery

INFANTILE OSTEOPETROSIS A CASE REPORT: ABNORMAL GROWTH AND DEVELOPMENT IN THE DETECTION OF A POTENTIALLY FATAL DISEASE

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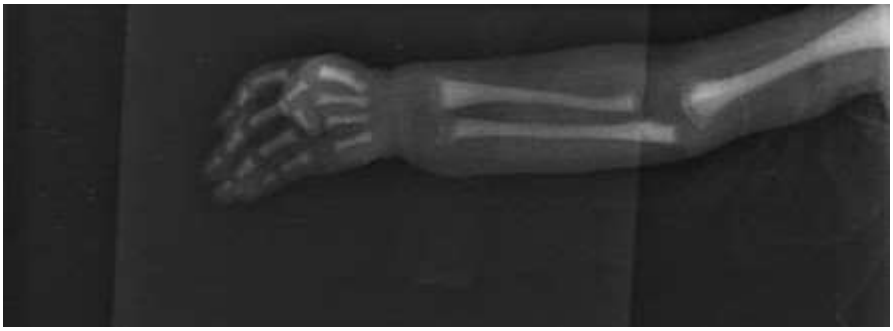
[1]*Hospital Infantil de México Federico Gómez, Mexico City, Mexico*

Background and Aims: Growth and development is an indicator of overall health and its alterations can help pediatricians detect chronic and potentially fatal diseases. Osteopetrosis (OP) is a rare hereditary metabolic bone disorder that includes a group of conditions that share increased bone density. The estimated incidence of autosomal recessive (AR) OP is 1 in 250 000 births. Alterations in osteoclast differentiation or function causes impaired bone resorption and endochondral formation increasing the risk for fractures due to bone fragility and hematological alterations due to replacement of the medullar cavity. Extramedullary hematopoiesis, susceptibility to infections, anemia and thrombocytopenia are secondary to decreased medullar space. The characteristic radiographic findings exhibit an increased bone density with a ''bone within bone'' appearance.
The aim of this poster is to present a case of AROP in a patient evaluated for failure to thrive with recurrent upper airway infections.

Methods: A 4 month old girl was referred by a pediatrician to our Institute for growth impairment and recurrent upper airway infections. Birth and family history were unremarkable. Clinical examination revealed chronic malnutrition, frontal bossing, delayed gross and fine motor milestones, right eye deviation as well as liver and spleen enlargement. Ophthalmology evaluation showed a pale optic disc. Generalized Increased bone density and harlequin eye deformity was observed in the radiographic evaluation. The blood workup revealed anemia and thrombocytopenia. The patient started a hematopoietic stem cell transplant protocol.

Conclusion: Growth evaluation in children is one of the most valuable tools we have for the detection of severe diseases and should be performed in every pediatric consultation.
OP is a rare disease and should be considered in a patient with growth impairment and increased bone density during radiographic evaluation. A prompt diagnosis is vital in order to determine if the patient can benefit from hematopoietic stem cell transplantation.

Keywords:
Osteopetrosis, malignant osteopetrosis, infantile osteopetrosis.



PARENT-REPORTED SLEEP PROBLEMS AND AREAS OF CHANGE FOR INFANTS AND TODDLERS

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Background and Aims: Few studies have evaluated the specifics of sleep problems and areas of change that parents have about their young child's sleep. Thus, the aim was to assess parent perceptions of their child's sleep and sleep-related areas of change, regardless of sleep quality.

Methods: Caregivers (97.6% mothers) of 807 infants and toddlers (birth to 37 mos; M = 16.5 months; 49.0% male) completed the Brief Infant Sleep Questionnaire, including information on child sleep patterns, parent-perceived problems, and potential sleep-related areas of change.

Results: 29.1% of caregivers reported a perceived sleep-problem, whereas 90.1% indicated an area of desired change. Parents most wanted their child to sleep for longer stretches overnight (19.4%), have an earlier bedtime or later waketime (14.1%), or their child to fall asleep independently (10.4%) or without a sleep aid (12.1%; e.g., pacifier, feeding). As expected, more parents wanted to change something about their child's sleep if they endorsed a sleep problem (99.5%) versus no sleep problem (87.1%), $p<.05$. Parents who noted a sleep problem primarily wanted to reduce night wakings (34.5%) and help their children learn to fall asleep independently (17.3%) or without nursing (9.3%). Parents who did not indicate a problem focused on sleep scheduling (e.g., earlier bedtimes, later wake times).

Conclusions: Although one-third of parents of young children indicate a perceived sleep problem, almost all parents wish to change something about their child's sleep. The most common areas of change relate to falling asleep independently, night wakings, and sleep schedules. Sleep education and assessment delivered by health care providers should focus not only on what families consider to be "problematic," but also what families would like to modify, or improve, about their child's sleep within a developmentally appropriate framework.

Funding: Johnson & Johnson Consumer Inc., Skillman, NJ, USA.

Keywords:
sleep, infants, toddlers, behavior

PREDICTORS OF INTESTINAL HELMINTHIC INFESTATIONS AMONG SCHOOL CHILDREN IN ABUJA, NIGERIA

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Background and Aims: School age children are at risk of infection with common intestinal helminths. They occur due to socioeconomic factors, cultural practices, poor sanitation, poor personal hygiene, lack of portable drinking water, inadequate healthcare and health education. Affected children may suffer from varieties of clinical problems like iron deficiency anaemia, malnutrition, impaired cognitive development and surgical complications like intestinal obstruction. This study is aimed at determining the predictors of intestinal helminthiasis among school children in Abuja. This will serve as base line data to help evaluate health promoting activities for the future thereby reducing morbidity and mortality.

Method: A cross sectional study involving nine hundred eligible primary school pupils aged 5 to 15 years from schools in Abuja Municipal Area council, Nigeria from September to November, 2012. The subjects' information such as socio-demographic characteristics, environmental attributes, level of hygiene, feeding habits, previous antihelminthic use and socioeconomic status were collected using a pretested structured questionnaire. Three stool samples per subjects were analyzed using Kato-Katz thick smear technique. In addition, single anal swab was done for all the subjects to search for Enterobius ova.

Results: Of the 900 selected subjects, 775 children participated in the study giving a total response rate of 86.1%.The overall prevalence rate of intestinal helminthic infestations among primary school children in this study was 26.1%. More children in the rural settlements, 138(17.8%), were infected with intestinal helminthes than those in the urban settlements 64(8.3%) ($p< 0.01$). Logistic regression analysis showed that significant independent predictors of intestinal helminthic infestations identified among the children were: living in rural settlements ($p<0.01$), not washing fruits before consumption ($p= 0.043$) and not washing hands regularly before eating ($p= 0.021$).

Conclusion: Living in the rural areas, not washing fruits before consumption and poor hand washing practice were the major predictors of intestinal helminthiasis.

Keywords:
Predictors, intestinal helminthiasis, infestation, school children, Abuja

THE GLOBAL PREVALENCE OF 'CATCH-UP' GROWTH IN CHILDREN BORN AT FULL-TERM AND SMALL FOR GESTATIONAL AGE: A SYSTEMATIC REVIEW

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Background and Aims: This is the first systematic review to examine the global prevalence of catch-up growth (CUG) in full-term and small for gestational age (SGA) infants. Size at birth and subsequent growth is an important indicator of neonatal and adult health. Globally 16% of infants are SGA at birth ranging from 7% in industrialized countries to 41.5% in South Asia. SGA infants are at increased risk for negative developmental and adult health outcomes. Some achieve CUG while others do not. Catch-up growth has immediate and late health implications especially in low and middle-income countries (LMIC). This systematic review sought to determine the global prevalence of CUG among FT-SGA infants.

Methods: We performed a literature search using MEDLINE, Pubmed, Embase, Web of Science, and Scopus as well as grey literature databases and identified 3,137 studies.

Results: The final analysis included 11 studies. The median prevalence of CUG was 87.4% across all definitions of SGA and CUG. However, multiple definitions were used to classify SGA and CUG. Nine unique reference populations were used to classify SGA, and six to approximate CUG. Due to this heterogeneity, a meta-analysis could not be conducted.

Conclusions: Program implementation for this vulnerable group of infants is dependent on proper classification. Given the wide range of definitions and reference standards used in the past, it is not possible to determine the global need for programs to address CUG for FT-SGA infants or to rationally plan any such programs. We highlight the need for standard definitions and reference standards for SGA and CUG.

Keywords:
Small for Gestational Age, Catch-up Growth, Systematic Review, Full-Term infants, Growth Standards

Genetics, Congenital Anomalies

CONTRAST ENHANCED 3D-WATSC FOR THE PREOPERATIVE EVALUATION OF CONGENITAL SYNDACTYLY MALFORMATION IN CHILDREN

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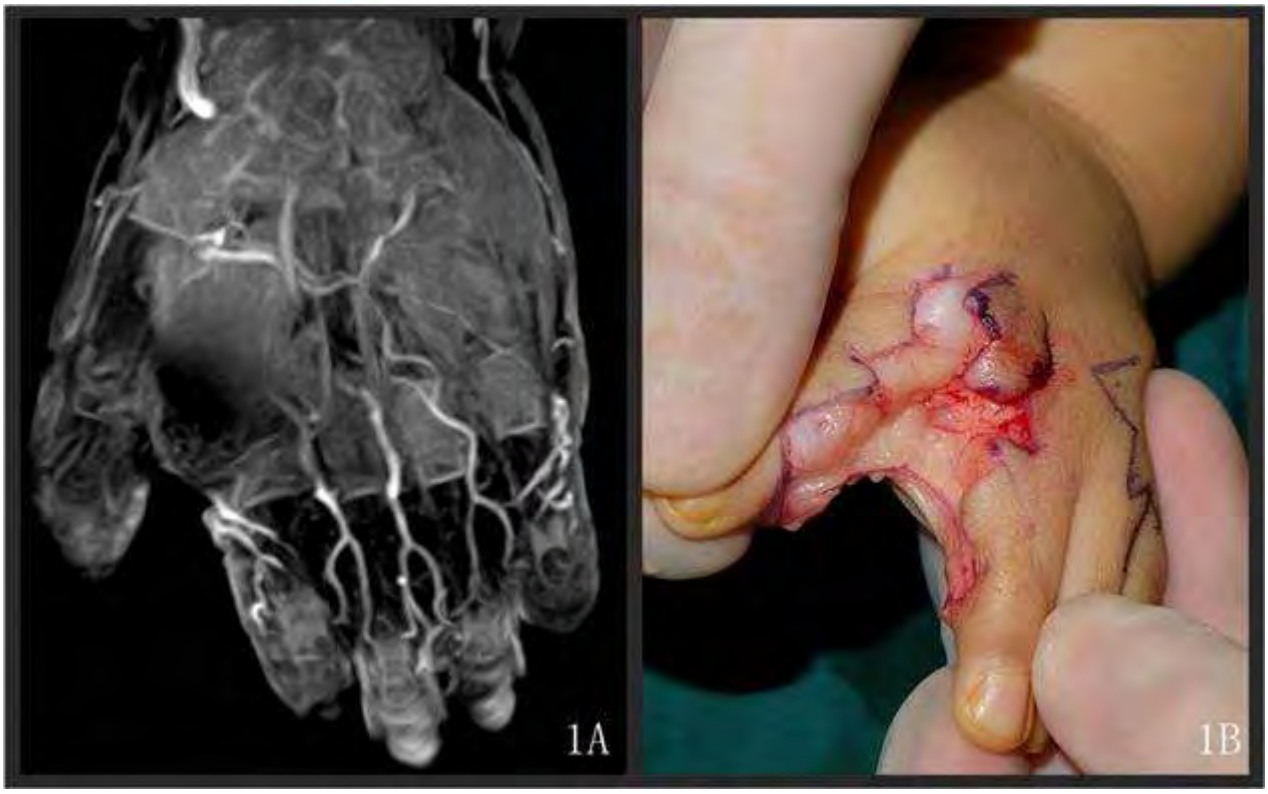
Background and Aims: Congenital syndactyly malformation(CSM) is an anomaly in which there is fusion of adjacent digits due to failure of separation of developing phalanges during organogenesis. Proper operation opportunity and methods are crucial for better prognosis, which need to identify the position and trend of the bifurcated blood vessels before surgery. To analyze the preoperative evaluation value of contrast enhanced three dimensional water selective cartilage scan (CE-3D-WATSc) for CSM in children.

Methods: 12 patients (10 male, 2 female; mean age, 28.9 months; age range, 6 months to 123 months) with clinical diagnosis of CSM underwent CE-3D-WATSc by a 3.0-T magnetic resonance imaging（MRI）unit between May 2014 and April 2017. CE-3D-WATSc was performed using a three dimensional spoiled gradient echo sequence with fat saturation. Subsequently the patients underwent operation according to the MRI manifestations. The findings of CE-3D-WATSc and operation consequences were compared and analyzed.

Results: In 12 cases the common palmar digital arteries of the CSM children were shown by CE-3D-WATSc, of which the bifurcated positions were normal in 10 cases and were slightly elevated in 2 cases (Fig.1). Meanwhile in 10 cases the proper palmar digital arteries were displayed, of which 9 were normal and one was small (Fig.2). They were certified by operation. But in 2 cases the proper palmar digital arteries were not shown by CE-3D-WATSc that presented as filamentous during operation.

Conclusion: CE-3D-WATSc has some evaluation value for CSM in children before operation because it can show the bifurcated blood vessels, however which need to be validated by a large sample of research.

Keywords:
Syndactyly malformation ; Magnetic resonance imaging ; Children


1A
1B


2A
2B

EVALUATION OF SERUM LEVEL OF ZINC IN CHILDREN AND ADOLESCENTS WITH DOWN SYNDROME

Ms Laura Lazarin[2], Master Student Natalia Domingues[1], Ms Cristina Bizzotto[1], Ms. Bruna Torres[2], Ms Amanda Daniel[2], Master Student Carlos Tiba[1], PhD Lidia Carvalho[2], PhD Valeria Sandrim[2], **PhD Cátia Fonseca[1]**

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Background and Aims: Zinc is an essential micronutrient for human nutrition and health. Zinc deficiency has been considered a public health problem in Brazil and in the world. It impairs child growth and development as well as promotes disease. Children and adolescents with Down Syndrome (DS) have a higher prevalence of this deficiency, with negative effects and repercussions on biochemical, immunological and clinical functions.The aim of this study was to evaluate the serum zinc level in children and adolescents with Down Syndrome.

Methods: Transversal clinical study approved by the Research Ethics Committee was conducted in a Outpatient Unit at University Hospital in Botucatu, São Paulo State, Brazil, 2017-18. We collected peripheral venous blood and performed subsequent analysis of serum zinc through atomic absorption spectrophotometry in children and adolescents with DS. According to the World Health Organization (WHO) and the Brazilian Society of Pediatrics (SBP), normal values were considered between 65 and 120 µg / dL.

Results: Were included 37 children and adolescents, 89.2% of whom presented serum zinc deficiency, with an average of 50.40 µg / dL, median of 49.24 µg / dL (standard deviation of 10.05 µg / dL). Only 5.4% of those included presented serum zinc values considered normal.

Conclusions: We found a high incidence of serum zinc deficiency in children and adolescents with DS as described in the literature. Since these children generally exhibit greater comorbidities and will require greater stimulation for their adequate growth and development, this deficit becomes even more worrying. Thus, the adequate monitoring and nutritional orientation is fundamental as well as the need of supplementation of this micronutrient, thus promoting nutritionally adequate food habit and the replacement of this deficit.

Keywords:
Down Syndrome, children and adolescents, serum zinc.

THE EXPERIENCE OF BEING AN INFORMAL CAREGIVER TO A CHILD WITH OSTEOGENESIS IMPERFECTA: AN INTEGRATIVE REVIEW

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Background and Aims: Osteogenesis imperfecta (OI) is a rare genetic condition that often causes debilitating bone fragility and other physical limitations. Informal caregivers (such as parents) play a critical role in helping children with OI live well at home. Yet, despite their important role, there is a paucity of knowledge concerning these caregivers' experiences. The objective of this review was to comprehensively review, appraise, and synthesize the research literature relating to the experiences of informal caregivers of children living with OI, to identify recurring themes and implications for research, policy, and practice.

Methods: Using an integrative review methodology, studies were accessed through database searching, assessed for eligibility, and appraised. Data from the included papers were thematically analyzed.

Results: 18 studies of various methodologies and quality met the inclusion criteria. The experiential themes identified corresponded with temporal caregiving phases. During the time of diagnosis, caregivers experienced suspicions of child abuse, challenges accessing resources, and mostly negative emotions. While providing care in the years following the diagnosis, caregivers' experiences related to: the energy expenses of caregiving, the family and social effects of OI care, the emotional "ups and downs," and coping strategies. These experiences depended on several factors, including social support and access to specialized OI care. Caregivers shared their concerns for their children's futures. Caregivers and authors made recommendations for practice, policy, and research for OI care: they advocated for improved communication by clinicians at the time of diagnosis, increased education regarding OI, and more community supports for families.

Conclusions: This review provides an enriched understanding of the experiences faced by OI caregivers over time. However, it also reveals that there is limited research of varying quality on this topic. More research is needed on the OI informal caregiving experience to learn how to support these caregivers better.

Keywords:
osteogenesis imperfecta, caregiving, families, parents, family caregivers, genetic disease, orphan disease, integrative review

Global Health

HEALTH VOLUNTEERS OVERSEAS: THE LONG-TERM IMPACT OF SHORT-TERM VOLUNTEERS

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Background and Aims: Approximately 5.6 million children under-5 died in 2016 – more than half from preventable or treatable conditions. 80% of under-5 child deaths occur in Sub-Saharan Africa and Southern Asia. Improving global child health and achieving the Sustainable Development Goals requires accelerating multi-sectoral and collaborative efforts to strengthen health systems and reduce inequities that limit access to quality care. Addressing the global health workforce shortage, currently estimated to be 12.9 million, is a critical component in these efforts.

Health Volunteers Overseas (HVO) is a US-based non-profit organization (www.hvousa.org) established in 1986 that collaborates with universities and health institutions in low resource settings to address the health workforce shortage and increase the availability and quality of pediatric care delivery. HVO collects programmatic data to monitor progress, strengthen implementation and assess impact on both care delivery and volunteers.

Methods: Since 2015, HVO has collected qualitative and quantitative data on pediatric program activities from both on-site personnel and volunteers through on-line surveys.

Results: From 2015-2017, HVO volunteers completed 68 overseas assignments in 7 countries, training an average of 200 pediatric care providers annually. Non-US volunteers completed 12 of 68 assignments. Assignment duration varied from 2 weeks to 5 months; approximately 40% of volunteers are repeat volunteers. (See Tables 1-4.)

Conclusions: Health Volunteers Overseas' (HVO) pediatric projects offer clinicians the opportunity to participate in improving pediatric care in low resource settings through the bidirectional exchange of professional skills and competencies. HVO's training model is based on mutually beneficial and equitable partnerships with host institutions and the contributions of highly qualified pediatric volunteers who teach, train and mentor students, residents and faculty at project sites. HVO volunteers build global pediatric health workforce capacity and improve the quality and availability of care.

Keywords:
pediatric care; global health workforce development; health systems strengthening; training; volunteers; partnerships; Sustainable Development Goals

Table 1: HVO Pediatric Program Activities: Bhutan; Cambodia; Indonesia; Laos; Nicaragua; St. Lucia; Uganda

Year	No. Volunteer Assignments	No. Pediatric Providers Trained
2015	29	210
2016	14	113
2017	25	277

Table 2: Aggregated institutional improvements due to HVO pediatric projects, as cited by On-Site Coordinators

88% reported significant or moderate improvement in: ✓ Staff clinical skills
82% reported significant or moderate improvement in: ✓ Staff attitudes
64% reported significant or moderate improvement in: ✓ Problem solving skills
57% reported significant or moderate improvement in: ✓ Patient outcomes
51% reported significant or moderate improvement in: ✓ Communication with patients/families
45% reported significant or moderate improvement in: ✓ Patient safety ✓ Documentation and recording process
Source: Averaged responses from 2016 & 2017 annual surveys. No 2015 data available.

Table 3: Observed improvements at selected HVO sites, as cited by HVO On-Site Coordinators, Project Directors and Volunteers

Project Site	Observed Improvements: Introduction or Reinforcement of New Clinical Skills & Practices
Bhutan	✓ Introduction of palliative care. ✓ Improved management of cardiac and nephrology patients. ✓ Education provided in research.
Cambodia	✓ Delivery of mechanical ventilation workshop for NICU and general staff. ✓ Introduction of new clinical practices - use of growth curves for decision-making. ✓ Training in ECG reading and reporting for medical staff.
Indonesia (site closed)	✓ Recognition of child growth problems/disorders for early diagnosis and treatment.
Uganda	✓ Introduction of: • Monitoring capability for oxygen saturation and heart rate. • Respiratory support with CPAP (Continuous Positive Airway Pressure). • Standardized medical record forms. • Exchange transfusion for severe neonatal jaundice.
Sources: Annual Surveys (2015-2017) from HVO On-Site Coordinators, Project Directors and Volunteers.	

Table 4: Impact of overseas assignments as reported by HVO volunteers

100% strongly agree or agree that their assignment with HVO: ✓ Enriched their commitment to global health and service ✓ Increased their cross-cultural competencies
93% strongly agree or agree that their assignment with HVO: ✓ Strengthened their professional networks
85% strongly agree or agree that their assignment with HVO: ✓ Broadened their professional perspectives
61% strongly agree or agree that their assignment with HVO: ✓ Enhanced their clinical confidence
Source: 2015-2017 Annual Volunteer Surveys

IMPACT OF ADVERSITY ON EARLY CHILDHOOD GROWTH & DEVELOPMENT IN RURAL INDIA: FINDINGS FROM THE SPRING CLUSTER-RANDOMISED CONTROLLED TRIAL

Dr Sunil Bhopal[1,2], Mr Reetabrata Roy[1,3], Dr Deepali Verma[3], Dr Seyi Soremekun[1], Dr Bushra Khan[4], Ms Divya Kumar[1,3], Dr Gauri Divan[3], Prof Betty Kirkwood[1]

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Background and Aims: Improving early childhood development globally will lead to improved health and wellbeing for all and is key to achieving the ambitious Sustainable Development Goals. Exposure to a cumulative burden of adversity is detrimental to child health & wellbeing across the lifecourse, but the relative importance of the very early years is less well known. We therefore examined the contribution of multiple adversities to impaired growth and development in young infants in rural India.

Methods: We enrolled pregnant women and newborns from all households across 120 villages in rural Haryana, India. At enrolment and when infants were 12 months old we assessed 22 adversities across four domains: socioeconomic, maternal stress, famiy-child relationship, and child. We measured child weight & length and did Bayley Scales of Infant Development-III (BSID-III) outcome assessments when they were 18 months old. We used multiple linear regression techniques to assess the relationship between cumulative adversity and outcomes.

Results: We assessed 1273 children. 42% had four or more adversities. We found consistent and strong negative relationships between adversity and growth & development outcomes. Decrease in BSID-III scores for each adversity was -1.1 (95% CI -1.3, -0.9) for motor, -0.8 (95 % CI -1.0, -0.6) for cognitive, -1.4 (95% CI -1.8, -1.1) for language scale. Similarly for height-for-age the decrease was -0.12 (95% CI -0.14, -0.09) and for weight-for-age -0.09 (95% CI -0.11, -0.06) z-scores (Figure 1). Change in the mean scores for zero versus 8+ adversities was 10.3 points for motor, 7.8 points for cognitive, 11.5 points for language, 1.12 z-scores for length & 0.95 z-scores for weight (Table 1).

Conclusions: Childhood adversity poses a considerable burden for lifelong health and wellbeing, even in the very youngest children. Urgent intervention is required to support families to allow children to reach their development potential.

Keywords:
early child development, childhood, infant, growth, nutrition, adversity, adverse childhood experiences

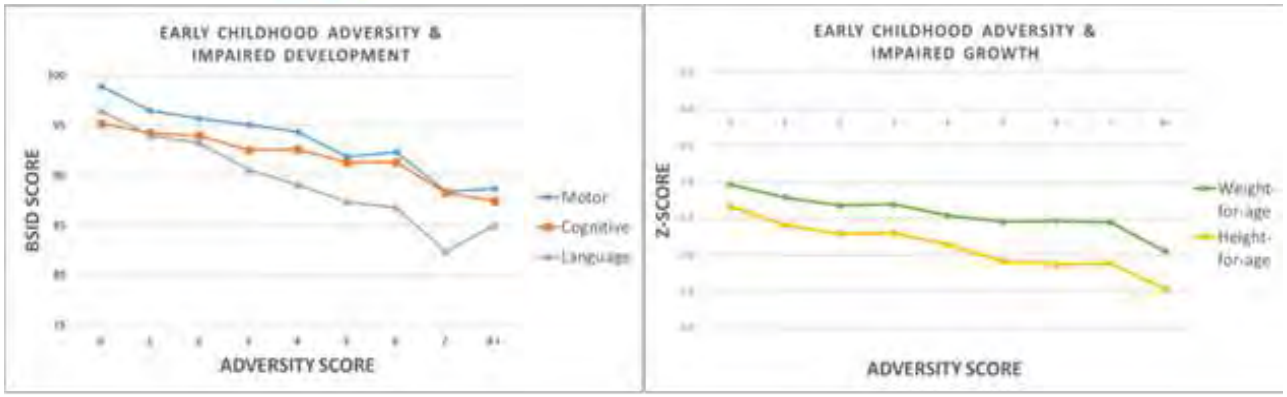

FIGURE 1: Association between early childhood adversity and growth & development

Total Adversity Score	Number of children	%	Mean Bayley Scales of Infant Development III scores*						Mean Anthopometric Measures*			
			Motor	95% CI	Cognitive	95% CI	Language	95% CI	Weight-for-age	95% CI	Height-for-age	95% CI
0	119	9.4%	98.9	(97.1, 100.7)	95.2	(93.0, 97.3)	96.5	(93.6, 99.4)	-1.04	(-1.22, -0.86)	-1.34	(-1.53, -1.14)
1	208	16.4%	96.5	(95.0, 97.9)	94.2	(92.5, 95.9)	93.9	(91.6, 96.3)	-1.21	(-1.35, -1.07)	-1.59	(-1.75, -1.44)
2	218	17.1%	95.7	(94.3, 97.1)	94.0	(92.3, 95.6)	93.3	(91.0, 95.5)	-1.32	(-1.46, -1.18)	-1.71	(-1.86, -1.56)
3	206	16.2%	95.1	(93.6, 96.6)	92.5	(90.8, 94.3)	90.6	(88.2, 92.9)	-1.31	(-1.45, -1.16)	-1.70	(-1.86, -1.55)
4	173	13.6%	94.3	(92.7, 95.9)	92.6	(90.8, 94.4)	89.0	(86.5, 91.5)	-1.46	(-1.62, -1.30)	-1.86	(-2.04, -1.69)
5	118	9.3%	91.9	(89.9, 93.8)	91.3	(89.1, 93.5)	87.4	(84.5, 90.3)	-1.54	(-1.74, -1.35)	-2.09	(-2.29, -1.88)
6	95	7.4%	92.3	(90.2, 94.4)	91.3	(89.0, 93.6)	86.8	(83.7, 89.9)	-1.54	(-1.75, -1.32)	-2.13	(-2.35, -1.91)
7	47	3.7%	88.4	(85.5, 91.3)	88.3	(85.1, 91.4)	82.4	(78.1, 86.6)	-1.56	(-1.86, -1.25)	-2.12	(-2.43, -1.81)
8+	89	7.0%	88.6	(86.6, 90.7)	87.4	(85.1, 89.7)	85.0	(81.9, 88.1)	-1.95	(-2.16, -1.74)	-2.46	(-2.68, -2.24)
Decrease per adversity (linear model)			-1.1	(-1.3, -0.9)	-0.8	(-1.0, -0.6)	-1.4	(-1.8, -1.1)	-0.09	(-0.11, -0.06)	-0.12	(-0.14, -0.09)
p-trend			<0.001		<0.001		<0.001		<0.001		<0.001	

Table 1: Association between early childhood adversity and growth & development. Total adversity score represents the summed score of 22 possible adversities.
*estimated mean value at each adversity level, using multiple-imputation

IMPACT ON MATERNAL AND CHILD DEATHS IN TANZANIAN HEALTH CENTRES OF A TRAINING AND POST-TRAINING MENTORSHIP PROGRAM FOCUSING ON COMPREHENSIVE EMERGENCY OBSTETRICAL AND NEWBORN CARE (CEMONC). MID-TERM RESULTS OF A 5-YEAR LONGITUDINAL STUDY

Dr. John Leblanc[1], Dr. Angelo Nyamtema[2], Dr. Godfrey Mtey[2], Dr. Janeth Bulelema[2], Dr. Ron George[1], Dr. Heather Scott[1], Mr. Zabron Abel[2], Dr. Marsha Campbell-Yeo[1], Dr. Doug MacMillan[1], Dr Elias Kweyamba[2], Dr. Omary Kilume[1], Ms. Shawna O'Hearn[1], Dr. Allan Shayo[2], Dr. Gail Tomblin-Murphy[1]

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Background and Aims: Tanzania is firmly committed to reducing maternal and newborn mortality by scaling up comprehensive emergency obstetrical and neonatal care (CEmONC) to 50% of its health centres (HCs) by 2020. CEmONC includes regional anaesthesia, C-sections and care of sick or premature newborns. This five-year implementation research project called “Accessing Safe Deliveries in Tanzania” (ASDIT) is assessing the structural and social barriers in selected HCs to this scale-up.

Methods: in 2016, five HCs in Morogoro region sent experienced nurse-midwives and non-physician clinicians to a 3-month CEmONC training program. After training, graduates practised these new skills in their HCs with support and supervision from mentors who visited regularly. This presentation focuses on changes in maternal and newborn deaths from 2016-2018 compared to 2014-2015.

Results: 18 of 20 clinicians who underwent the 3-month training program currently deliver CEmONC services in all 5 HCs. HCs were regularly out of stock of essential supplies but noted improvement in supply management in 2018. Deliveries rates doubled from pre-intervention 174/month in the five HCs to 349/month in 2018 while HC referral rates to district hospitals remained stable or dropped. Since training, 750 C-sections were done with no related maternal deaths. Newborn deaths cannot be accurately assessed due to inadequate recording.

Conclusions: 1. Initiating CEmONC services increases delivery rates at HCs and reduces referrals to district hospitals. 2. Non-physician clinicians can do C-sections safely, are accepted by their communities but require regular supportive supervision. 3. Challenges remain in supply management and data quality.

Keywords:
CEMONC, MENTORSHIP, MMR, Tanzania, Task shifting,

IMPROVING RURAL NEWBORN CARE IN HONDURAS: RESIDENCY PROGRAM AND HOST INSTITUTION COLLABORATE TO TEACH ESSENTIAL CARE FOR EVERY BABY

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Staff at the Dyer Rural Hospital (DRH) in Rio Viejo, Honduras requested that visiting faculty from Our Lady of the Lake help provide education to community health workers. Many women in the region come to the DRH for their prenatal care, but deliver at home with the assistance of traditional birth attendants who have little formal education and undocumented healthcare practices. Throughout the developing world, the risk of mortality is higher among those living in the most remote regions; the true burden is difficult to estimate, especially when birth and death certificate paperwork may be absent. Although regional reports of newborn mortality vary from 10.8-46.9/1000 births, the absolute burden among the people served by the DRH is unknown.

Methods: With the guidance of the hospital staff and government nurses who run regional clinics, a course was created that combined the beginning aspects of Helping Babies Breathe with Essential Care for Every Baby. This customized course provided the lay midwives with evidenced-based, low cost newborn care practices to improve outcomes of Honduran home births.

Results: This 5-hour-long course was attended by: the 3 regional government nurses, their supervising physician and nurse, and 12 midwives. Focus was given to introduce the following topics: hand washing, drying and warming the infant on the mother, cord care, lactation, and warning signs of serious illness.

Conclusions: Many of the learners were overcome with emotion and gratitude at receiving formalized education. The DRH staff was also grateful for the community outreach, stating “this (course) communicated to the village midwives that they belong in a network of care providers in the region; they are not alone.” There is insufficient data to assess the midwives’ comprehension and application of the material, with more training to be done; however, the framework has been laid to continue the collaboration.

Keywords:
rural medicine, midwives, newborn care, residency, Honduras,


Valentina

PARTNERSHIPS TO ENHANCE CHILDREN'S HEALTH: SICKKIDS-GHANA PAEDIATRIC NURSING EDUCATION PARTNERSHIP

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Background: 54,000 children under 5 die annually in Ghana from preventable causes. SickKids Centre for Global Child Health established the Paediatric Nursing Education Partnership (PNEP) with Ghana College of Nurses & Midwives and Ghana Ministry of Health to advance child health and paediatric nursing in Ghana. Prior to PNEP, there were very few paediatric nurses in Ghana, which hindered Ghana's ability to reduce child mortality.

Methods: PNEP partners integrated operations into the existing Ghanaian health system to enhance sustainable, comprehensive care for Ghanaian children. A 1-year competency-based program was collaboratively developed to train nurses in paediatrics and operates at three sites across Ghana supported by PNEP-trained faculty who enhance institutional capacity. Recruitment targets ensure at least 50% of recruits in the program come from underserved areas. Rigorous monitoring & evaluation tracks implementation and intervention effectiveness.

Results: PNEP developed a nationally-accredited, evidence-based curriculum for paediatric nursing, with 70% of learning occurring in a clinical setting supported by a mix of faculty roles. Best practices in classroom teaching and simulation, combined with supervised clinical learning have ensured nurses can effectively translate theory into practice with nurses showing statistically significant increases in paediatric knowledge and confidence. Over 400 nurses have been trained/enrolled from 115 unique healthcare facilities across Ghana with over half coming from underserved areas.

Conclusions: PNEP is enhancing access to qualified paediatric nurses who are crucial to improving children's health. PNEP partners work to ensure broad recruitment of nurses from across the country into the training program with appropriately trained faculty. Integration of graduates into the health system promotes local retention and long-term sustainability. Graduates are empowered to challenge social norms and gender stereotypes and have been catalysts for innovations that enhance children's health. PNEP's value proposition is a transformation of nursing education systems that improves child health in Ghana.

PROTECTIVE FACTORS FOR SOCIAL-EMOTIONAL WELLBEING OF REFUGEE CHILDREN IN THE FIRST YEARS OF SETTLEMENT IN AUSTRALIA

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Background and Aims: Refugee children are known to be highly resilient but have multiple risk and protective factors for social-emotional wellbeing. Social-emotional wellbeing over time and protective factors that predict it are seldom studied. This longitudinal study investigated protective factors for social-emotional wellbeing in newly arrived refugee children in Australia.

Methods: Newly arrived refugee children aged 4-17 years were recruited between 2009 and 2013 and assessments were conducted at two points, at years 2 and 3 post arrival. Social-emotional wellbeing was assessed using the Strengths and Difficulties Questionnaire (SDQ). Protective factors were assessed by structured interview and the Social Readjustment Rating Scale (SRRS); scores <150 reflect fewer stressful life events in the previous year.

Results: Forty-three eligible refugee children were recruited to the study. The SDQ was completed by parents in 90% and protective factor data in 80% at years 2 and 3 of follow-up. Protective factors for normal SDQ scores were: originating from Africa (p=0.01), father present on arrival (p=0.019) and family SRRS scores <150 at year 2 (p=0.045). The median number of protective factors was 4 (range 1-8). Better SDQ scores were associated with ≥4 protective factors (p<0.006). Furthermore more protective factors increased the child's likelihood of a stable or improved SDQ score over time (p<0.04). Modifiable protective factors likely to promote social-emotional wellbeing include stability in the child's school and residence, parental employment, financial and marital stability, proximity to one's own ethnic community and external community support.

Conclusions: Cumulative protective factors, some of which are potentially modifiable, can predict social-emotional wellbeing in newly arrived refugee children. Children with four or more protective factors are at low risk of poor social-emotional wellbeing.

Keywords:
Refugee child, risk factors, protective factors, social-emotional wellbeing, Strengths and Difficulties Questionnaire (SDQ), longitudinal cohort

QUALITY OF CARE FOR POSSIBLE SERIOUS BACTERIAL INFECTION AMONG NEWBORNS AND YOUNG INFANTS (0-2 MONTHS): FINDINGS FROM A NATIONALLY REPRESENTATIVE SURVEY OF PRIVATE PROVIDERS IN NEPAL

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Background: Possible serious bacterial infection (PSBI) remains a major cause of death for newborns in Nepal. Most cases of illness 0-2 months of age are managed in private medicine shops/clinics but little is known about appropriateness of care. Ministry of Health and Population (MoHP) and partners conducted a nationally representative survey to characterize private sector PSBI care to inform national strategies.

Methods: Private medicine shops and physician-run clinics were selected using multi-stage sampling. In the first stage, 25 districts representative of Nepal's three eco-regions were selected. Interviews were completed in 400 randomly selected shops and 82 clinics providing antibiotic treatment to sick young infants.

Results: Physician-run clinics predominated in urban and peri-urban areas, whilst medicine shops were more prevalent in rural settings. 45% of shops were unregistered with the Department of Drug Administration, although a high proportion were staffed by credentialed paramedics. Providers in 49% of clinics and 27% of shops reported receiving training on Integrated Management of Newborn and Childhood Illness. In the previous six months, almost all outlets provided some antibiotics for treatment of infants under two months of age (shops: oral 96%, injectable 17%; clinics: oral 92%, injectable 46%); few reported using steroids (11%). Incorrect dosing was common for both oral and injectable antibiotics. About half reported routinely giving pre-referral oral antibiotics for severe illness, while <5% reported giving injectable antibiotics. Only 53% reported checking on infants who failed to return for follow-up.

Conclusions: Incorrect dosing and non-adherence to injectable antibiotics pre-referral for severe cases within the private sector compromise the quality of care for sick infants 0-2 months. This study highlights the need for engagement between the MoHP and private sector to ensure use of standardized protocols and to link private providers in shops and clinics with hospital-based physicians for case-management support and referrals.

Keywords:
Possible Serious bacterial Infection, Private sector, Nepal

SAVING CHILDREN'S LIVES INCREASES SURVIVAL OF SERIOUSLY ILL CHILDREN ADMITTED TO A DISTRICT HOSPITAL IN BOTSWANA

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Background and Aims: In Botswana, under-5 mortality (U5M) remains high, and modifiable factors include timely recognition and initial treatment of shock and respiratory failure by clinic-based personnel. Saving Children's Lives (SCL) is a multi-intervention implementation program created to improve effectiveness of clinic and hospital-based personnel. The aim of this study was to examine its impact on patient outcomes.

Methodology: SCL was implemented in 2014 as an observational, single center intervention in Kweneng District, Botswana and 8 of 13 other district hospitals served as controls. 2013 data (pre-SCL) were compared to 2015 data (post-SCL). Primary outcome was infant (>1m-1y) mortality, with secondary outcomes of neonatal (0-1m), child (>1yr-5yr) and U5M. Pediatric ward outcomes of overall mortality, mortality with length of stay (LOS) < 48hrs, admission numbers, transfers to referral hospital and LOS were collected only for the SCL district hospital.

Results: Infant mortality decreased significantly in the SCL hospital from 7.6% (278 admissions, 21 deaths) to 3.3% (244 admissions, 8 deaths, $p < 0.01$) while control hospitals were unchanged from 3.5% (1279 admissions, 45 deaths) to 3.3% (1323 admissions, 44 deaths, $p= 0.1$). Neonatal (4.5% vs. 3.3%), child (2.0% vs. 0.8%), and U5M (4.2% vs. 2.4%) decreased in the SCL hospital compared to control facilities (neonatal: 0.9% vs. 0.9%, child (1.7% vs. 1.1%), U5M (1.5% vs. 1.2%). In the SCL hospital pediatric ward mortality (2.7% v 1.6%), admissions (82/month vs. 61/month), and transfers (6.8% vs. 5.2%) decreased, while LOS remained at 5.3% and deaths within the 1st 48hrs increased from 7 v 11 deaths).

Conclusions: Saving Children's Lives is associated with a 58% reduction in infant mortality compared to 6% reduction in controls. There were similar improvements in neonatal, child and U5M. Pediatric ward deaths, admissions and transfers decreased, while LOS did not change. Deaths within the 1st 48hrs increased.

Keywords:
infant mortality, neonatal mortality, under 5 mortality, health care worker effectiveness, implementation, serious illness

SCOPING REVIEW OF PEDIATRIC EARLY WARNING SYSTEMS (PEWS) IN RESOURCE-LIMITED & HUMANITARIAN SETTINGS

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Background and Aims: Pediatric Early Warning Systems (PEWS) aim to identify hospitalized children at increased risk of deterioration by assigning a score based on vital signs and clinical status and guiding interventions using a response algorithm to improve outcomes. These systems have been shown to be effective in high-resource settings and have the potential to improve the care of children in humanitarian and resource-limited settings (RLS). The purpose of this review is to summarize the current evidence for use of PEWS in humanitarian contexts and RLS and identify areas for further research.

Methods: A review of the current PEWS literature in RLS was performed using Web of Science, PubMed, Scopus, Cumulative Index of Nursing and Allied Health Literature (CINAHL), EMBASE, Portal Regional da BVS and TRIP Database.

Results: While there is limited research available on this topic, eight studies on the use of PEWS or a PEWS score in a pediatric population in low or middle income countries were identified. Two groups assessed the clinical effect of implementation of PEWS: one reported a reduction in clinical deterioration events, and the other a reduction in mortality. The remaining groups assessed the association of a PEWS score with signs of clinical deterioration or mortality without a response algorithm. We found no studies focused on PEWS validation or implementation in a humanitarian context.

Conclusions: Hospitals in humanitarian and RLS face additional challenges, making early identification of children at risk for a critical deterioration event more difficult. There is an urgent need for interventions to reduce inpatient mortality in these settings, and PEWS implementation may be one effective strategy.
Further research on the impact of PEWS implementation on inpatient care and outcomes in humanitarian contexts and RLS is needed.

Keywords:
Pediatric Early Warning System, Humanitarian Pediatrics, Resource-Limited Settings, Quality of Care, Hospital Mortality, Global Pediatrics

THE GLOBAL BURDEN OF PEDIATRIC INJURIES

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Background and Aims: Pediatric injury is a topic of global importance as injuries can cause death at a young age or lifelong disability. It is important to identify the injury types most commonly leading to health loss as well as regions experiencing high burden of injury. The Global Burden of Disease (GBD) 2016 study provides a comprehensive assessment of pediatric injuries in 195 countries from 1990 to 2016.

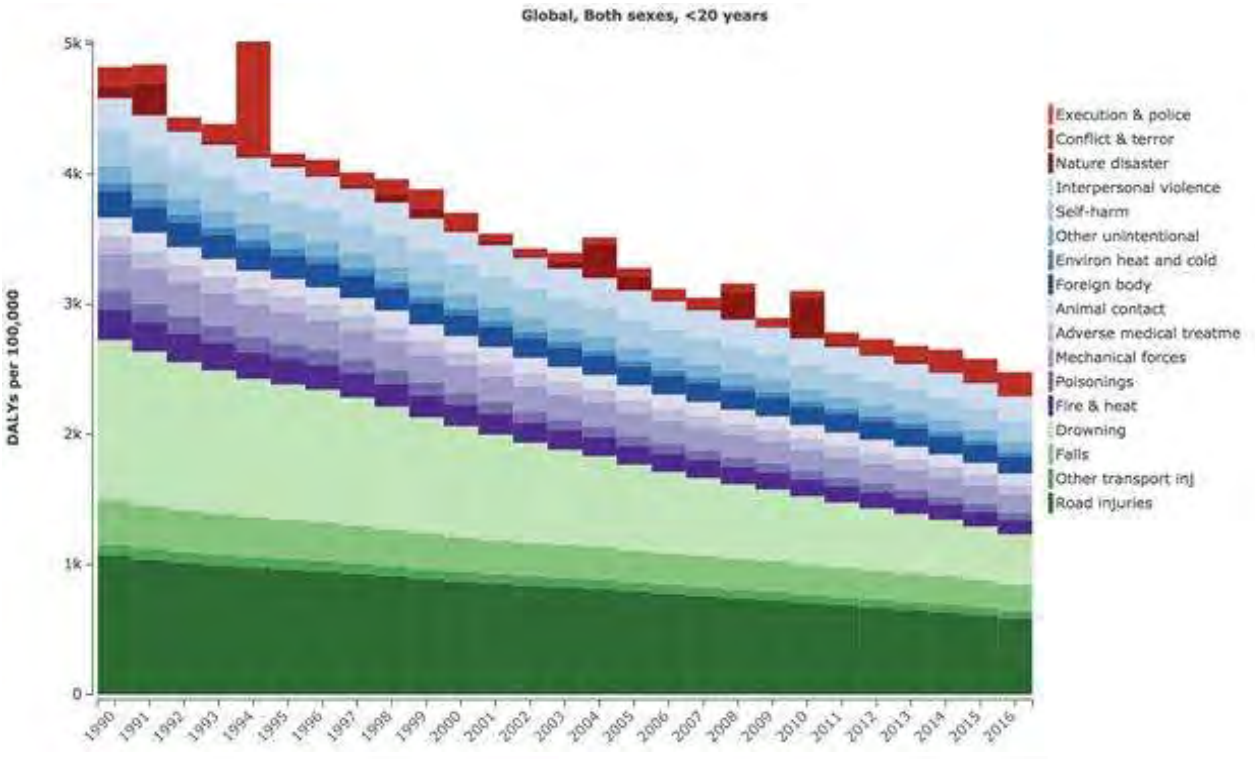
Methods: We derived estimates from the GBD 2016 study to determine rates of disability-adjusted life years (DALYs), which are the sum of years of life lost and years lived with disability, in the 0 to 19 year age group. We determined the leading causes of pediatric injury in terms of DALY rates, measured the geographic distribution of burden, and illustrated time trends over a 27-year period.

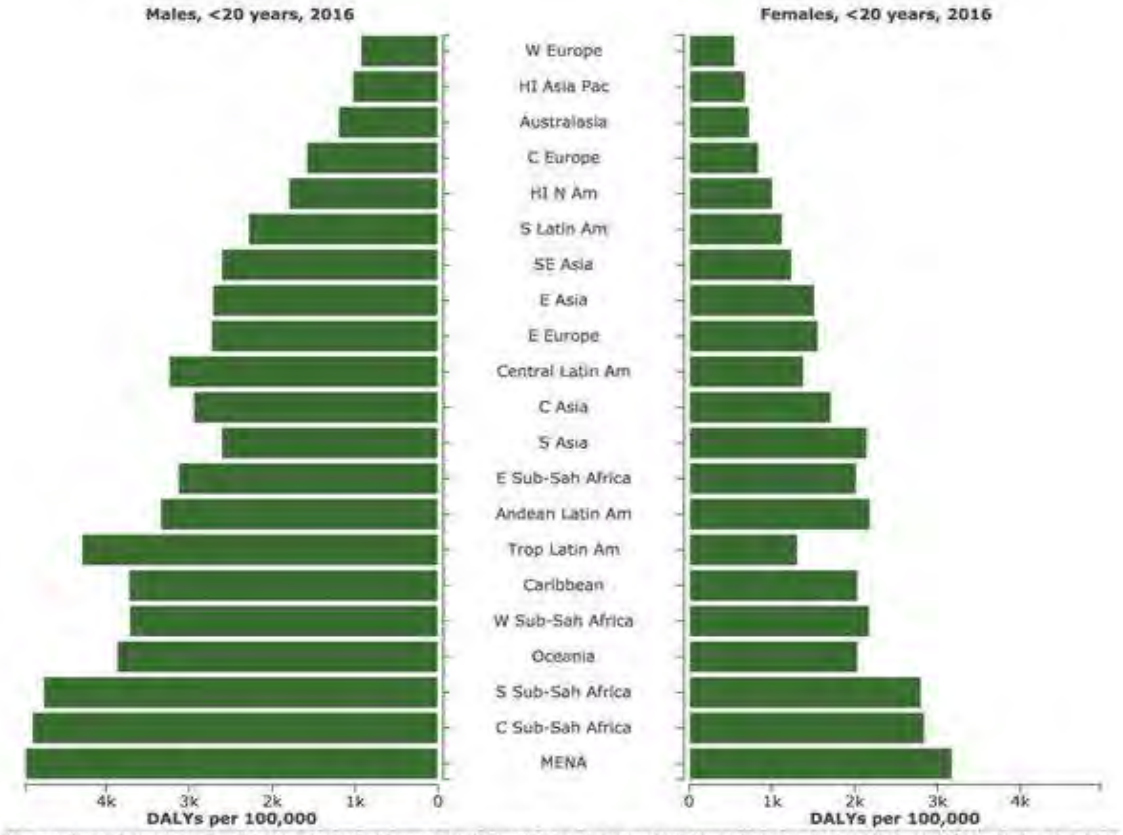
Results: Figure 1 shows DALYs per 100,000 by injury between 1990 and 2016 for both sexes under 20 years old. In 2016, the DALYs rate for all injuries was 2,479 per 100,000, representing 9% of total DALYs in this age group. From 1990 to 2016, there was a steady decrease in the rate of all-injuries DALYs (4,825 to 2,479 per 100,000). Figure 2 shows the DALYs rate for all injuries by sex and GBD region. North Africa and Middle East had the highest rate of DALYs at 4,095 per 100,000, followed by Central Sub-Saharan Africa and Southern Sub-Saharan Africa at 3,872 and 3,793 per 100,000, respectively. Figure 3 shows the DALYs rate by country for both sexes under 20 years of age.

Conclusions: The rate of global DALYs is decreasing, but continued efforts are needed to further reduce the burden of pediatric injuries. These burden estimates should inform safety initiatives and planning that consider the behaviors and needs of young people.

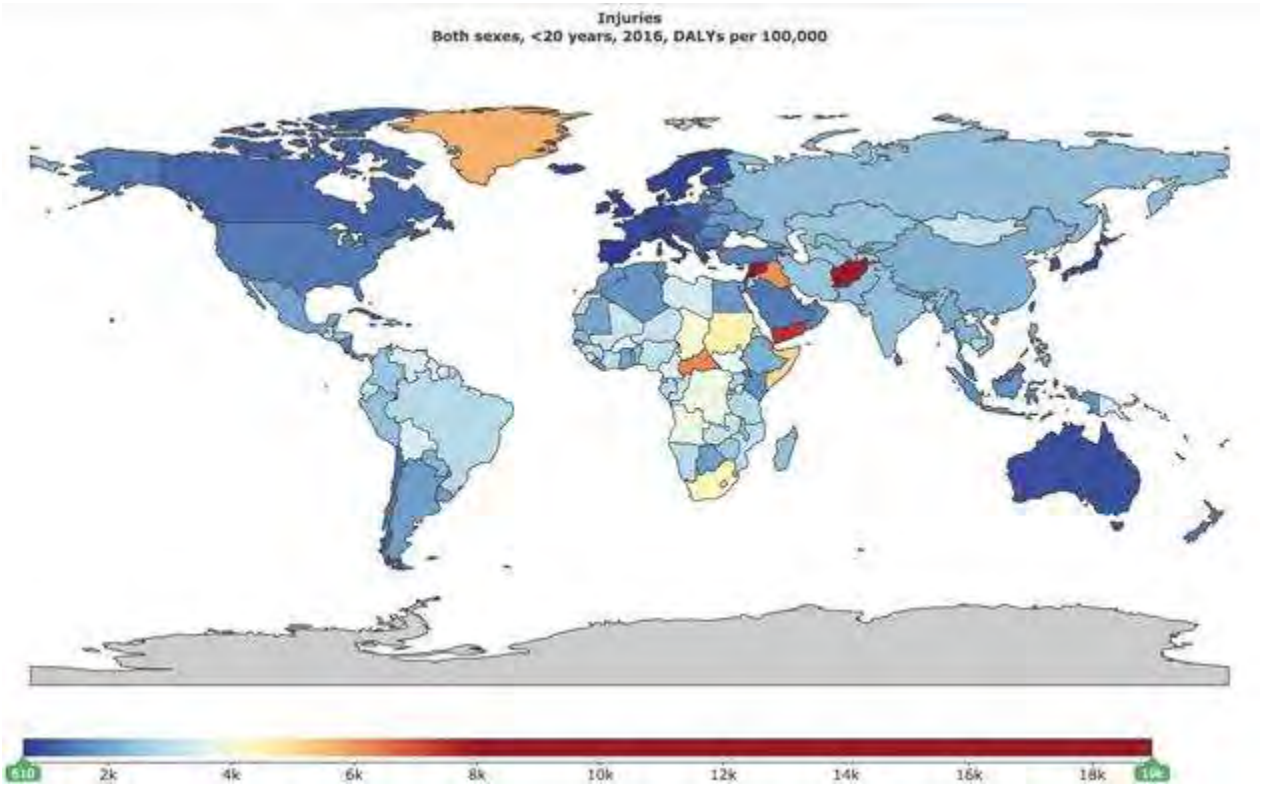
Acknowledgements
GBD Research Network

Keywords:
global burden of disease, injuries, injury





W Europe = Western Europe; HI Asia Pac = High-income Asia Pacific; C Europe = Central Europe; HI N Am = High-income North America; S Latin Am = Southern Latin America; SE Asia = Southeast Asia; E Asia = East Asia; E Europe = Eastern Europe; Central Latin Am = Central Latin America; C Asia = Central Asia; S Asia = South Asia; E Sub-Sah Africa = Eastern Sub-Saharan Africa; Andean Latin Am = Andean Latin America; Trop Latin Am = Tropical Latin America; W Sub-Sah Africa = Western Sub-Saharan Africa; S Sub-Sah Africa = Southern Sub-Saharan Africa; C Sub-Sah Africa = Central Sub-Saharan Africa; MENA = Middle East and North Africa


Injuries
Both sexes, <20 years, 2016, DALYs per 100,000
610
2k
4k
6k
8k
10k
12k
14k
16k
18k
19k

THE IMPACT OF DETENTION ON THE SOCIAL-EMOTIONAL WELLBEING OF CHILDREN SEEKING ASYLUM: A COMPARISON WITH COMMUNITY BASED CHILDREN

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Background and Aims: Accumulating literature demonstrates that immigration detention is harmful to children. However there is a scarcity of scientifically rigorous and reliable health data about children held in detention facilities.

We compared a community based population of recently arrived refugee children flown into Australia, not detained, with a population of children who arrived by boat seeking asylum, detained since arrival.

Methods: The parent-version of the Strength and Difficulties Questionnaire (SDQ) of children aged 4-15 years was compared in children living in the community with those held in detention.

Results: We compared 86 children who had a parent-completed SDQ performed, 38 (44%) in the community group and 48 (56%) in the detention group. The community sample had been living in Australia for 325 days, with no time in detention. The detention sample had been living in detention for 221 days. Mean age was similar at 8.4 years (P=0.18). Children in detention had significantly higher SDQ total difficulties scores than children in the community (P<0.0001). Four of the five SDQ subscale scores indicated greater disturbance amongst children in detention (<0.0001). The detention group also had significantly higher scores (P<0.001) as compared to Australian norms for the 4-6 and 7-15 year age group.

Conclusions: This study presents a rare opportunity to compare the wellbeing of displaced children detained following arrival in Australia with those settled in the Australian community. Children held in detention had significantly more social-emotional and behavioural difficulties than children living in the community, and at levels resembling a clinical cohort. Despite the small sample size and data restrictions, statistical significance between community and detention children is marked and demonstrates the negative impact of post arrival detention in children with similar levels of pre-arrival adversity. Removal of post-arrival detention is one of the most powerful interventions available to host countries.

Keywords:
refugee, asylum seeker, children, detention, social-emotional wellbeing, Strengths and Difficulties Questionnaire (SDQ)

THE REGIONAL LEARNING NETWORK: A MODEL FOR IMPROVING MATERNAL AND NEWBORN HEALTH CARE OUTCOMES IN UGANDA

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Background: To strengthen the health system and improve quality of maternal and newborn health (MNH) care and outcomes, Uganda's Ministry of Health (MoH) piloted a Regional Learning Network (RLN) in Western Uganda from 2016 to 2017 with support from Save the Children and the University Research Company (URC).

Methods: The RLN included 14 hospitals of various levels. URC carried out quality improvement (QI) activities focusing on the care around time of birth using plan-do-study-act cycles, clinical coaching, and a hands-on skills lab. Save the Children conducted network-building activities, such as maternal-perinatal death audits, health scorecard training, media engagement, district coordination meetings, and data quality assessments. Mix-method baseline and endline assessments included interviews with health facility staff and district stakeholders, register reviews, and direct observation of clinical processes and outcomes.

Findings: The RLN trained 137 frontline health workers through clinical mentorship and skills building sessions. Assessment of health worker knowledge and confidence at baseline and endline found increases across key competencies measured, e.g. neonatal sepsis management (15%-80%). Direct observations and interviews found improvements in the referral systems, supplies, commodities and infrastructure, and better documentation for MNH. Coverage of care increased for essential newborn care (73% to 96%), resuscitation (47% to 99%) and initiation of Kangaroo Mother Care (7% to 65%) with observed reductions in facility-based early neonatal mortality rate and stillbirths. Health worker interviews revealed that learning sessions had the greatest value for the network-building activity. District leaders and health facility staff indicated that orientation and training on the health scorecard fostered use of data for accountability and that media reported more accurate data.

Conclusions: The RLN pilot, demonstrated improvements in clinical outcomes, care processes, and shared learning. Lessons learned and best practices identified will assist the MOH and RRH in sustaining the RLN and adapting the model to other regions.

Keywords:
quality improvement, maternal and newborn health, childbirth, Uganda, scorecards, media engagement

UTILIZATION OF A STANDARDIZED IN-HOSPITAL MORTALITY AUDIT TO IDENTIFY MODIFIABLE FACTORS OF PEDIATRIC MORTALITY IN MWANZA, TANZANIA

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Background and Aims: Each year over 6.3 million children less than 5 die of treatable diseases in low and middle income countries. Improved understanding of contributing factors may allow for novel solutions. Utilizing a standardized mortality audit at Bugando Medical Center (BMC), we describe pediatric mortality patterns over a one-year period including timing and leading causes of death in an effort to identify modifiable targets contributing to mortality.

Methods: From 12/2015 through 11/2016, admission, discharge and mortality rates were collected on all pediatric patients (<12 years) at BMC. A standardized mortality audit, adapted from South Africa's Child PIP, was conducted on a sample of deaths within 24 hours. Data included demographics, timing of death, referral status, ultimate cause of death and perceived modifiable factors. Descriptive statistics were utilized for analysis.

Results: Overall mortality rate was 14% with 5,283 admissions and 742 deaths. Mortality was highest in the NICU (44%). Detailed auditing was performed on 96/742 mortalities. Median age of death was 10.6 months, with 46% <2 months. Respiratory failure was the ultimate cause of death in 43% of cases. Most mortalities (64%) occurred within 48 hours of admission, 78% occurred on nights or weekends and 83% were referrals. Modifiable factors in the ED and in-patient setting included lack of appropriate equipment; most notably airway equipment.

Conclusion: Child mortality is high at the referral level, and the most frequent age of death is 1 month to 1 year. Most deaths were referred from other facilities and occurred within 48 hours of admission indicating onset of serious illness at the community or first level facilities. Respiratory failure was the leading cause of death, and lack of appropriate equipment was the most frequent modifiable factor.

Keywords:
Clinical audit, Health systems, Low-income countries, Newborn and child health, Infant mortality, Service improvement

Hematology and Oncology

BACK PAIN WITH VERTEBRAL MRI SIGNAL ABNORMALITIES IN CHILDREN: ACUTE LYMPHOBLASTIC LEUKAEMIA UNTIL PROVEN OTHERWISE

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Background and Aims: Acute lymphoblastic leukaemia (ALL) is the most common childhood cancer. ALL commonly presents with typical features of bone marrow failure. In some cases, however, children present in an atypical manner and this can lead to delay in presentation, diagnosis and treatment.

Methods: Cases of ALL presenting with back pain and/or MRI vertebral signal abnormalities were identified. The case notes and radiological imaging were examined, and the literature reviewed.

Results: Firstly, an 8-year old girl presented with back pain following a fall from a horse. MRI confirmed T9 crush fracture with abnormal signal in T10 (Figure). Secondly, a 4-year old boy presented with atraumatic back pain. MRI showed hyper-intensity of T2/T6 vertebral bodies, suggestive of malignant infiltration. Thirdly, a 10-year old girl presented with severe back pain 35-months after initial diagnosis of ALL, during maintenance chemotherapy. MRI showed diffuse low vertebral signal with patchy areas of increased STIR signal. In all cases, full blood count (FBC) was minimally deranged; there were no blasts on blood film and CRP/ESR were unremarkable. Vertebral body biopsy and bone marrow analysis confirmed diagnosis of pre-B-cell ALL in all cases.

Conclusions: Traumatic and atraumatic back pain is a relatively common presentation in acute paediatric services. However, presence of vertebral collapse or marrow signal intensity changes – especially if present in more than one vertebra – should raise suspicion of ALL. As seen in all cases herein, ALL presenting in the spine is often accompanied by normal FBC, blood film and inflammatory markers. This can lead to delay in diagnosis or more invasive investigations such as vertebral body biopsies, and delay in treatment/symptom management. Clinicians should maintain a high index of suspicion of malignancy in any child presenting with back pain and MRI changes, with prompt referral to tertiary services for further investigation.

Keywords:
acute lymphoblastic leukaemia, paediatric oncology, back pain, vertebral fracture, atypical back pain

CLINICAL CHARACTERISTICS OF CHILDHOOD LEUKEMIA OUTBREAK: REVIEW OF CASES FROM A TERTIARY REFERRAL HOSPITAL

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Background and Aims: Leukemia's the most frequent pediatric cancer; it shows nonspecific symptoms and signs such as fatigue, pallor and hyporexia. While this disease progresses, other symptoms appear, delaying the diagnosis and increasing the risk of mortality. That's why the objective of this project is to identify the main symptoms of our patients in the outbreak.

Methods: Study was retrospective observational. Clinical histories of patients diagnosed with leukemia between 2 years were reviewed. Regarding the clinical presentations, they were divided into 6 categories: Hematological, Infectious, Infiltrative, General, Gastrointestinal and Musculoskeletal. Each category was analyzed individually.

Results: 128 cases were collected of which 55% were male and 45% female. Preschoolers and school children represent majority of cases, the most frequent age of outbreak ranges between 3-5 years (30%). The most frequent type of Leukemia is LLA-B (82%) followed by AML (13%) and ALL-T (5%). The most frequent symptoms at the outbeak were: Hematologic (66.4%), General (53.9%), Infectious (47.6%), Musculoskeletal (30.4%), Infiltrative (21.8%) and Gastrointestinal (18.7%). The most frequent haematological symptoms were: pallor (61%) and petechiae (25%); with regard to the most frequent general symptoms, those were: malaise, hyporexia and asthenia. 100% of patients with infectious symptoms had fever as the only symptom. Musculoskeletal symptoms are divided as follow: bone pain (54%), arthritis (33%), infiltrative signs: adenomegaly (56%) and hepatosplenomegaly (32%). Gastrointestinal symptoms: abdominal pain (41%), nausea and vomiting (23%) and 1 case of Jaundice and 1 case of Pancreatitis were reported as an outbreak form; and only 1 case of Tumor Lysis and acute renal failure.

Conclusion: The initial outbreak of Leukemia's varied, symptoms such as pallor, signs of thrombocytopenia (gingivorrhagia, ecchymoses and petechiae), fever and general symptoms are most frequent. Of equal importance, symptoms such as arthralgia and bone pain should be taken into account in the diagnosis stage.

Keywords:
leukemia, symptoms, Leukemia outbreak, Clinical Characteristics, children

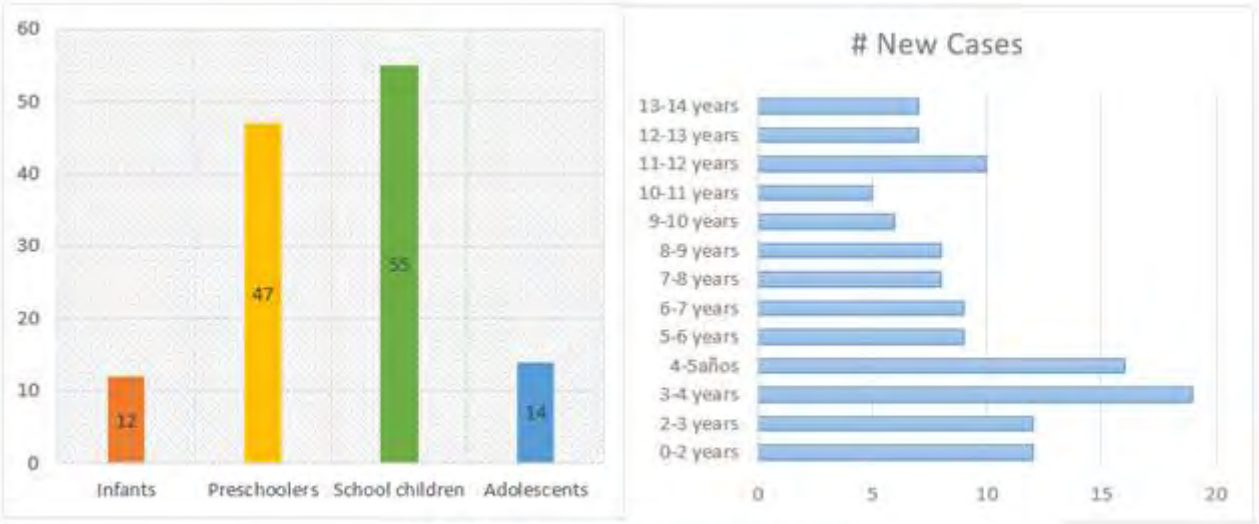


Table 1: Age at outbreak Leukemia admission

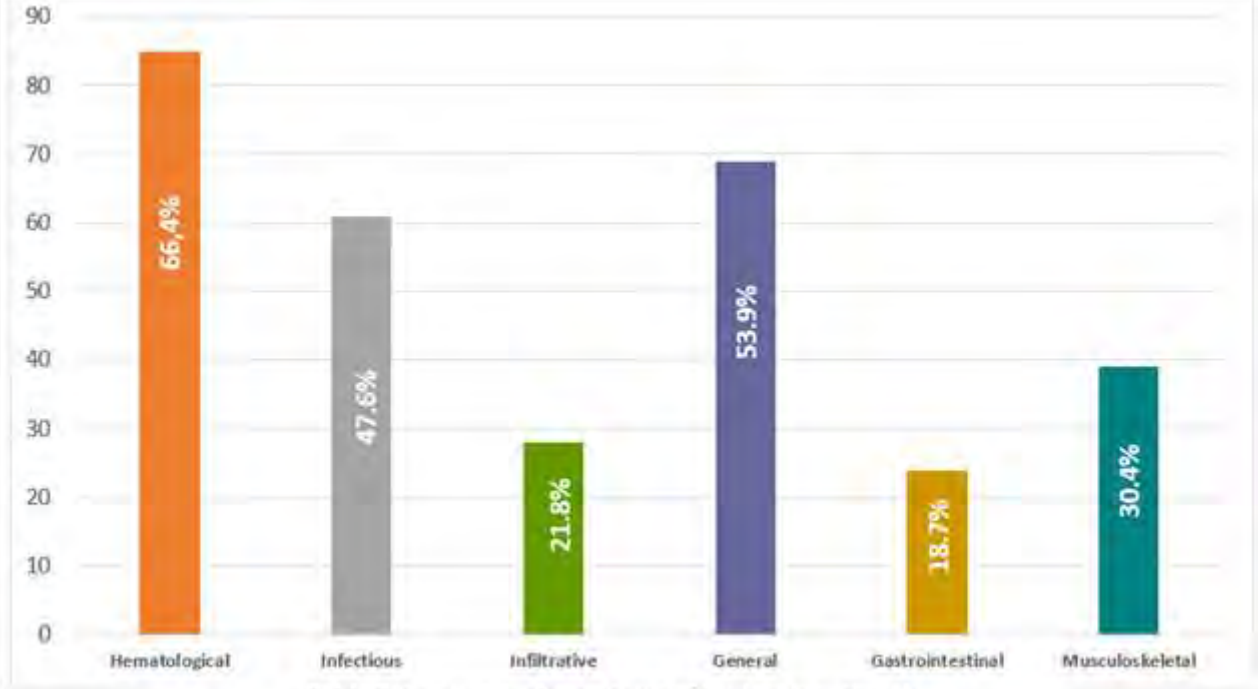
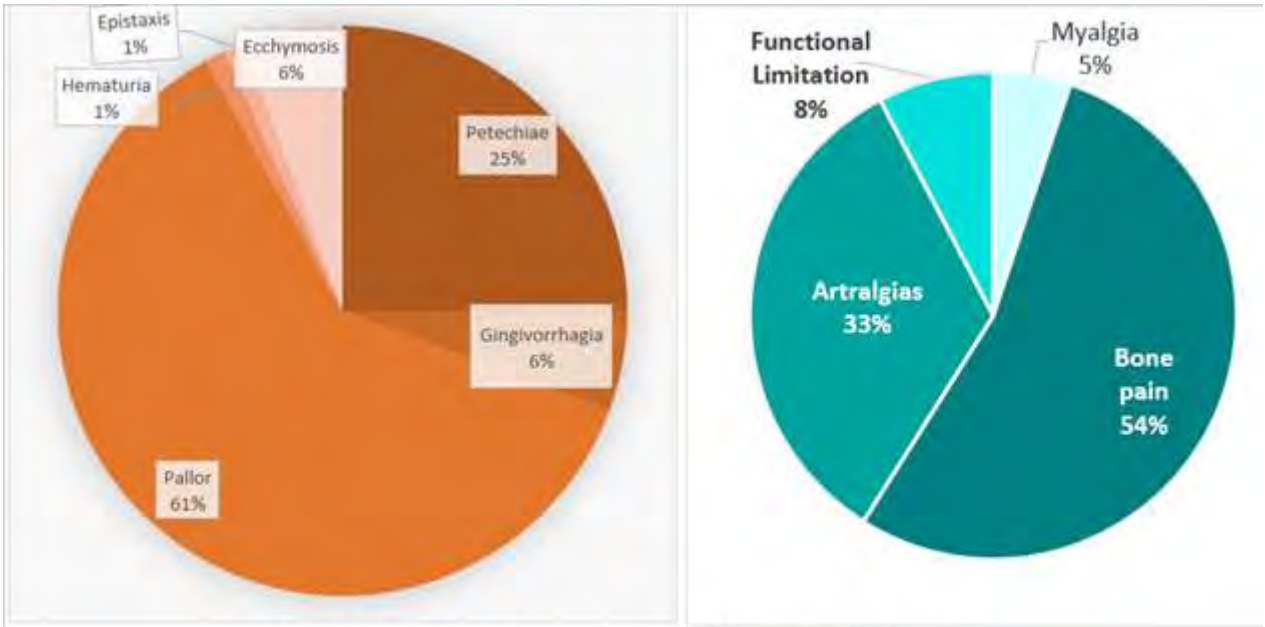
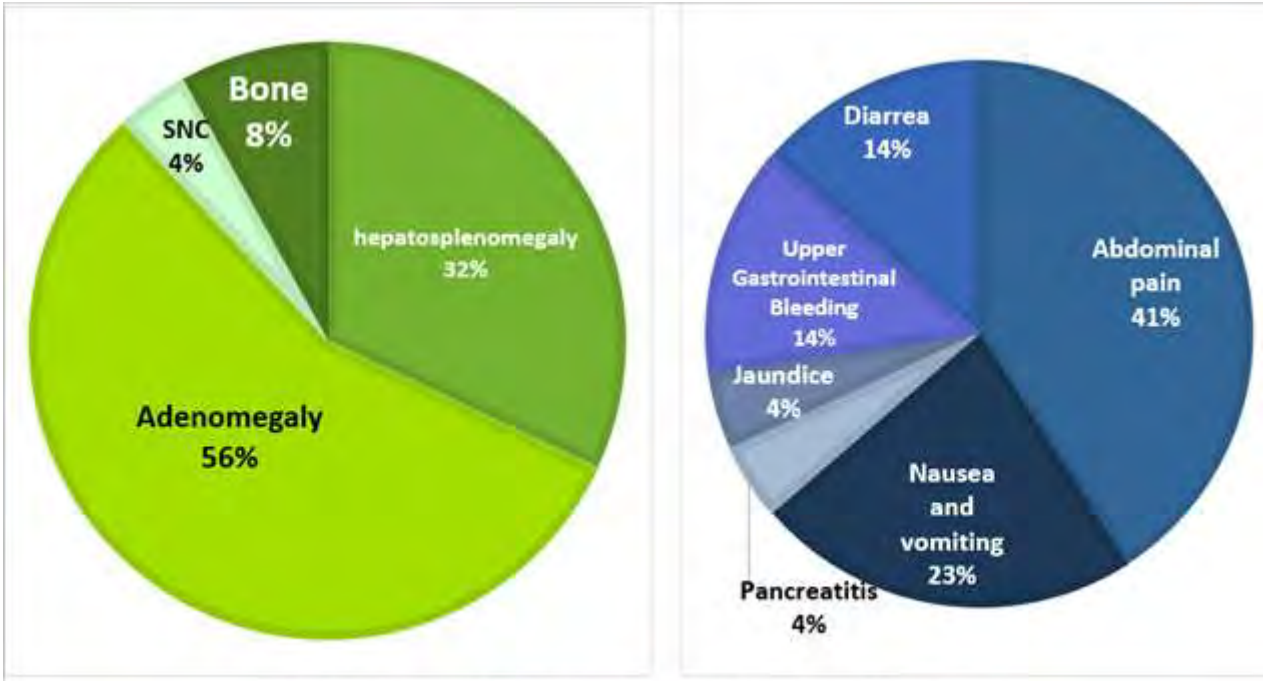


Table 2: Frecuency of symptoms of Leukemia outbreak



Graph 3: Frecuency of Hematological and Musculoskeletal Symptoms



Grph 4: Frecuency of Infiltrative signs and Gastrointestinal symptoms

EARLY USE OF RITUXIMAB AS A NOVEL APPROACH IN THE TREATMENT OF MIXED AUTOIMMUNE HEMOLYTIC ANEMIA

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Background: Autoimmune Hemolytic Anemia (AIHA) in children is relatively rare, and therefore, available studies regarding the treatment in children are small, retrospective and/or anecdotal, limiting evidence-based guidelines towards the treatment for these patients. There is general agreement that corticosteroids are the first-line treatment for patients with warm antibody type AIHA. The use of Rituximab however, has been limited to second line therapy once corticosteroid therapy is assumed to be ineffective.

Case Description: We report the case of an 8-year-old male who was in his usual state of health until 2 days prior to admission when mother refers she noted generalized jaundice associated with hypoactivity, decreased oral intake, decreased urine output and general malaise. At an emergency department, laboratories revealed a hemoglobin level of 5.0. He was transferred to our institution due to worsening altered mental status associated with tachycardia, hypotension and oliguria.

Clinical Approach: Patient was admitted to the pediatric intensive care unit due to altered mental status, requiring intubation, and resuscitation therapy. Due to severe anemia, which was found at 3.0 at our institution, patient required O negative blood transfusion. In addition, he was started on intravenous immunoglobulins, Dexamethasone and Rituximab, as per Hematology recommendations. He was later found with both, warm and cold antibodies against RBCs.

Conclusion: Mixed AIHA is extremely rare. For warm antibody AIHA, a 2 week trial of Methylprednisolone along with intravenous immunoglobulins is recommended, with Rituximab considered only in refractory cases; for cold antibody AIHA Rituximab has been deemed first line in therapy. In our case, due to the patient's life-threatening condition, he was given Intravenous Immunoglobulins, Dexamethasone and Rituximab combine as first-line therapy. He showed marked improvement within 6 to 7 days of first Rituximab dose.

Keywords:
Pediatrics, Hematology, Critical Care, Mixed Autoimmune Hemolytic Anemia,

EFFECTS OF URIDINE DIPHOSPHATE GLUCURONOSYL TRANSFERASE 1A (UGT1A1) PROMOTER POLYMORPHISM ON CLINICAL AND LABORATORY PARAMETERS OF CHILDREN WITH SICKLE CELL ANAEMIA: REPORT OF THE FIRST NIGERIAN STUDY

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Background and Aims: Several genetic factors modulate the clinical course of sickle cell anemia (SCA) in different populations. There are no data on (TA)n repeat sequence (rs8175347) of UGT1A1 alleles and their impact on Nigerian SCA patients. In this study, we determined the UGT1A1 genotypes, their association with laboratory and clinical events among young Nigerians with SCA.

Patients and Methods: Following institutional approvals, the UGT1A1 rs8175347 SNP identification of 101 SCA patients and 64 controls was performed by Polymerase Chain Reaction. Their influence on patients` manifestations was determined.

Results: Four (TA)n alleles:(TA)5, 6, 7, and 8 were found with gene frequencies of 0.11, 0.43, 0.41 and 0.05 respectively. These were associated with 10 genotypes:TA5/5, 5/6, 5/7, 5/8, 6/6, 6/7, 6/8, 7/7, 7/8, 8/8. The low-(TA) 7/7, 7/8, 8/8), intermediate- (TA) 6/7, 6/8), and high-activity (TA) 5/5, 5/6, 5/7, 5/8, 6/5, 6/6,) genotypes were found in 21.2%, 38.2%, and 40.6% participants respectively (Table 1). There were significant differences in serum bilirubin and lactate dehydrogenase (LDH) of the patients when differentiated by the UGT1A1 genotype activity (Figure 1; $p<0.05$). Asymptomatic gallstone was the only clinical event associated with UGT1A1 genotype (Table 2) and this was found in 6 (5.9%) patients aged 10 to 16 years and were significantly of low-activity genotypes sub-group 5 (20%) vs 1(1.3%) p=0.0033. Although, bilirubin and HbF of patients with gallstones were significantly different from those without gallstone (Figures 2 and 3), only the serum bilirubin was associated with UGT1A1 genotypes on multivariate analysis ($p<0.0001$).

Conclusion: This study highlights the contribution of UGT1A1 polymorphisms, a non-globin genetic factor, to the laboratory and clinical manifestations of young Nigerian SCA patients for the first time. It also shows that children with co-inheritance of low UGT1A1 affinity genotypes are at risk of gallstone hence, the need to follow them up.

Keywords:
Sickle cell anaemia, Laboratory parameters, Clinical events, UGT1A1 polymorphism, Nigeria

Table 1: Allele and genotype frequencies of UGT1A1 promoter polymorphism among participants

Variables	**SCA N=101**	**AS N=19**	**AA N=45**
Allelotypes	Freq n (%)	Freq n (%)	Freq n (%)
(TA) 5	18 (11.7)	2 (6.7)	10 (12.5)
(TA)6	67 (43.5)	16 (53.3)	28 (35.0)
(TA)7	61 (39.6)	10 (33.3)	37 (46.2)
(TA)8	8 (5.2)	2 (6.7)	5 (6.3)
UGT1A1 Genotypes	**SCA (N=101)**	**AS (N=19)**	**AA (N=45)**
Genotypes	Freq n (%)	Freq n (%)	Freq n (%)
TA5/5	0 (0)	0 (0)	1 (2.2)
TA5/6	9 (8.9)	0 (0)	1 (2.2)
TA5/7	6 (6.0)	1 (5.2)	8 (17.7)
TA5/8	3(2.9)	0 (0)	0 (0)
TA6/6	25 (24.7)	8 (42.1)	5 (11.1)
TA6/7	31 (30.7)	7 (36.8)	21 (46.7)
TA6/8	2 (2.0)	1 (5.2)	1 (2.2)
TA7/7	22 (21.7)	1 (5.2)	4 (8.9)
TA7/8	2 (2.0)	1 (5.2)	4 (8.9)
TA8/8	1 (1.0)	0 (0)	0 (0)
	SCA (N=101)	**AS (N=19)**	**AA (N=45)**
UGT1A1 Genotypes by degree of Activity	Freq n (%)	Freq n (%)	Freq n (%)
Low-Activity genotypes TA (7/7, 7/8, 8/8)	25 (24.7)	2 (10.5)	8 (17.8)
Intermediate-Activity genotypes (TA6/7, TA6/8)	33 (32.7)	8 (42.1)	22 (48.9)
High-Activity genotypes TA5/5 , TA5/6, TA5/7, TA5/8, TA 6/6	43 (42.6)	9 (47.4)	15 (33.3)

FIGURE 1

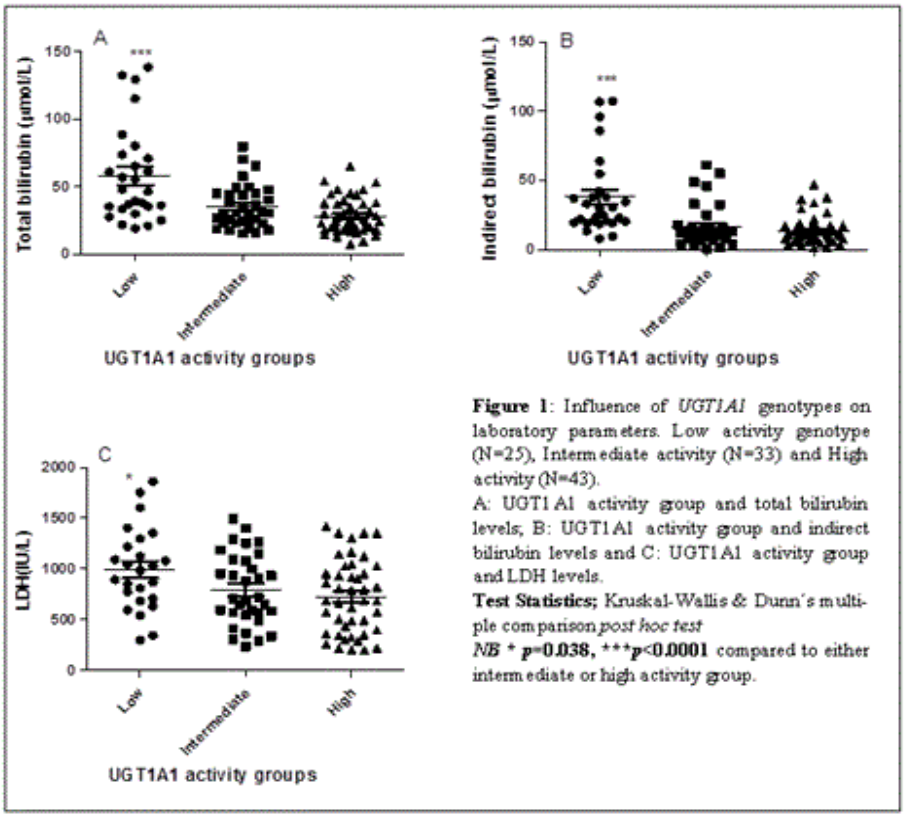

Figure 1: Influence of *UGT1A1* genotypes on laboratory parameters. Low activity genotype (N=25), Intermediate activity (N=33) and High activity (N=43).
A: UGT1A1 activity group and total bilirubin levels; B: UGT1A1 activity group and indirect bilirubin levels and C: UGT1A1 activity group and LDH levels.
Test Statistics; Kruskal-Wallis & Dunn's multiple comparison *post hoc test*
NB * **p=0.038,** *** **p<0.0001** compared to either intermediate or high activity group.

Table 2: Influence of UGT1A1 genotype on clinical events of patients

Clinical events	Low activity UGT1A1 genotypes N=25	Intermediate activity UGT1A1 genotypes N=33	c. High activity UGT1A1 genotypes N=43	P value [a vs (b + c)]
VOC per year	2 (0-6)	0 (0-6)	0 (0-6)	0.09*
Overt Stroke	1	1	2	1.000†
No overt stroke	24	32	41	
Osteonecrosis	1	1	3	1.000†
No osteonecrosis	24	32	43	
Leg ulcer	0	1	5	0.331†
No Leg ulcer	25	32	38	
Gallstones	5	1	0	**0.0033ǂ**
No Gallstone	20	32	43	
Priapism (Male only event, N=67)				
Priapism	1	2	2	1.000†
No Priapism	16	26	20	

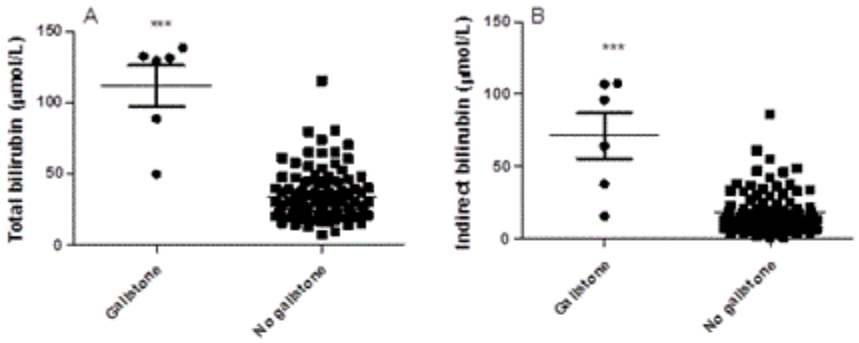

Figure 2: Comparison of parameters between patients with gallstones (N=6), and without gallstone (N=95).

A: Groups with and without gallstones and total bilirubin levels (***p=0.0001);

B:Groups with and without gallstones and indirect bilirubin levels(***p=0.0007)

C: Groups with and without gallstones and HbF levels (* p=0.01).

Test sta tistic: Mann-Whitney Test.

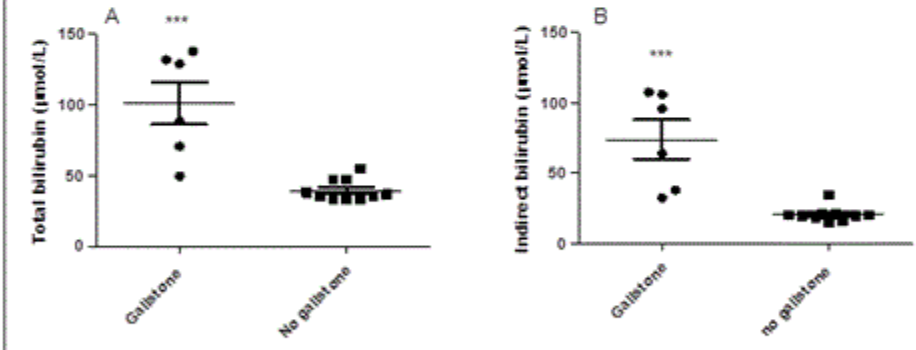

Figure 3: Comparison of parameters between patients with gallstones (N=6), and age and sex matched patients' cohorts without gallstone within similar UGT1A1 activity genotypes (N=10).

A: Groups with and without gallstones and total bilirubin levels (***p=0.0005);

B: Groups with and without gallstones and indirect bilirubin levels (***p=0.0005)
C: Groups with and without gallstones and HbF levels (* p=0.011).
Test sta tistic: Mann-Whitney Test.

INFLUENCE OF DELETIONAL ALPHA THALASSEMIA ON CLINICAL AND LABORATORY PARAMETERS OF YOUNG NIGERIANS WITH SICKLE CELL ANEMIA

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Background and Aims: The two α-globin genes are present within a 4-kb duplicated region leading to the possibility of rearrangements including deletions and triplications with many attendant downstream consequences. Despite the huge burden of sickle cell anemia (SCA) in Nigeria, there is scarcity of information on the influence of genetic markers on the clinical and laboratory parameters among Nigerian SCA patients. In this study, we determined the prevalence of deletional alpha thalassemia and its influence on the laboratory parameters and clinical manifestations in a group of young Nigerian SCA patients.

Patients and Methods: Following institutional approvals, 100 patients with SCA and 63 controls were studied. The diagnosis of SCA was confirmed by DNA studies. Alpha thalassemia (3.7 κb and 4.2 κb α-globin gene deletions), genotyping was done by multiplex gap-PCR method. Laboratory parameters including: complete blood count, hemoglobin quantitation, serum lactate dehydrogenase (LDH) and bilirubin were determined with standard techniques.

Results: Alpha thalassemia was found in 41 (41.0%) patients compared to 24 (38.1%) controls (p=0.744) and all were due to the 3.7 κb α-globin gene deletions (Table 1). Alpha thalassemia was associated with more frequent bone pain crisis (Table 3), and higher hemoglobin concentration, red blood cell count, and HbA2 level among the patients (Table 2). On the contrary, patients with alpha thalassemia had lower mean corpuscular volume, mean corpuscular hemoglobin, and white blood cell count (WBC) ($p<0.05$ Table 2). There were 6 (10.3%) patients with leg ulcers and none of them had alpha thalassemia, (p=0.0384 Table 3).

Conclusion: This study confirms that alpha thalassemia due to 3.7 κb α-globin gene deletions is common among Nigerian SCA patients and it significantly influenced their laboratory and clinical manifestations. The coexistence of this genetic modifier is associated with increased bone pain crisis and protects against sickle leg ulcers among the patients.

Keywords:
Sickle cell anemia, Alpha thalassemia, Laboratory parameters, Clinical manifestations, Children, Nigeria.

Table 1: Biodata and frequencies of alpha thalassemia alleles

Parameters	SCA (SS) N=100 n (%)	AS N=22 n (%)	AA N=41 n (%)	Chi-square, degree of freedom χ^2, df	P value
Age in years Median (Range)	8.5 (2-21)	9 (3 – 17)	8.5 (2 – 18)	NA	0.888[a]
Sex				1.350, 2	0.509[b]
Male	66 (66.0)	13 (59.0)	23 (56.0)		
Female	34 (34.0)	9 (41.0)	18 (44.0)		
Alpha thalassemia present	42 (42.0)	9 (41.0)	16 (39.0)	0.2866, 2	
Alpha thalassemia absent	58 (58.0)	13 (59.0)	25 (61.0)		0.866[b]
α-globin deletion genotype(s)	SCA (SS) N=100 n (%)	AS N=22 n (%)	AA N=41 n (%)		
αα/−α	34 (34.0)	9(41.0)	16 (39.0)	0.327, 2	0.849[b]
-α/-α	7 (7.0)	0 (0)	0 (0)	NA	**0.043***
ααα	1 (1.0)	0 (0)	0 (0)	NA	
Allele frequency	Total chromosome N=200 n(frequency)	Total chromosome N=44 n(frequency)	Total chromosome N=82 n(frequency)		
αα	150 (0.75)	36 (0.82)	66 (0.80)	1.590, 2	0.451[b]
-α	49 (0.25)	8 (0.18)	16 (0.20)	0.822, 2	0.662[b]
ααα	1 (0.005)	0 (0.0)	0 (0.0)	NA	

NB: a=Kruskal-Wallis test (ANOVA), b= Chi-square test, *=Fisher`s exact test, NA= Not applicable,, SCA=Sickle cell anemia, Significant p value is in bold font.

Table 2: Alpha thalassemia Alleles and laboratory parameters

Biomarkers	Alpha thalassemia with Heterozygous deletion N=34 Median (Range)	Alpha thalassemia with Homozygous deletion N=7 Median (Range)	SCA with no Alpha Thalassemia Trait N=58 Median (Range)	P Value
Hb (g/dl)	7.6 (6.3-11.2)	8.2 (7.6-10)	7.2 (6.2-11)	**0.0199**
MCV (fL)	78 (66.9-94)	74 (60.3 – 101)	84 (56 – 115)	**0.0025**
RBC (million cells/uL)	2.8 (2.15-3.9)	3.1 (2.7 – 4.1)	2.7 (1.8 – 4.8)	**0.0264**
WBC (x 10^3/uL)	14.7 (6.4 – 26.2)	7.8 (6.1 – 13.2)	13.3 (6.1 – 29.3)	**0.0353**
Platelet (x 10^3/uL)	358 (108-674)	334 (158-444)	371 (118-832)	0.2156
HbF (%)	8.8 (0.6 – 28.5)	13.1 (3.7 – 17.5)	10.7 (2.5 – 32.3)	0.1364
HbA_2 (%)	1.7 (0.3 – 3.8)	2.8 (1.5 – 4.0)	1.5 (0.2 – 3.1)	**0.0002**
MCH (pg)	24.5 (18.6 – 30.6)	24.4 (15.7 – 27.1)	26 (15.9 – 34)	**0.0021**
Total Bilirubin (mg/dl)	2.1 (0.43 – 7.7)	1.8 (1.03 – 8.1)	1.8 (0.8 – 5.2)	0.729
AST (IU/L)	58 (12 – 89)	40 (22 – 89)	43 (7 – 89)	0.3974
LDH (IU/L)	865 (215 – 1860)	771 (705 – 986)	881 (197 – 1681)	0.6469

NB- One case of Triplication not included, Significant p values are in bold fonts, Test statistics= Kruskal-Wallis ANOVA, Hb-Hemoglobin concentration, RBC-Red blood cells, MCV-Mean corpuscular volume, WBC-White blood cells count, HbF- Fetal hemoglobin, MCH- mean corpuscular hemoglobin, AST-Aspartate transaminase, LDH-Lactate dehydrogenase.

Table 3: Co-inheritance of sickle cell anemia with Alpha Thalassemia and clinical events

Clinical events	Patients with Alpha Thalassemia (N=42)	Patients without Alpha Thalassemia (N=58)	P value
Bone pain crisis per Year	Range (0 – 6) Median 3	Range (0 – 6) Median 1	**<0.0001†**
Stroke	2	3	1.000*
Osteonecrosis	3	2	0.6471*
Leg ulcer	0	6	**0.0381***
Priapism n=66 (Male only)	(N=34) 1	(N=32) 4	0.1974*

NB- Significant p values are in bold fonts, †= Mann-Whitney Test, *=Fisher`s exact test.

PLASMA CELL MYELOMA IN A SEVEN YEAR OLD BOY: A DIAGNOSTIC CHALLENGE

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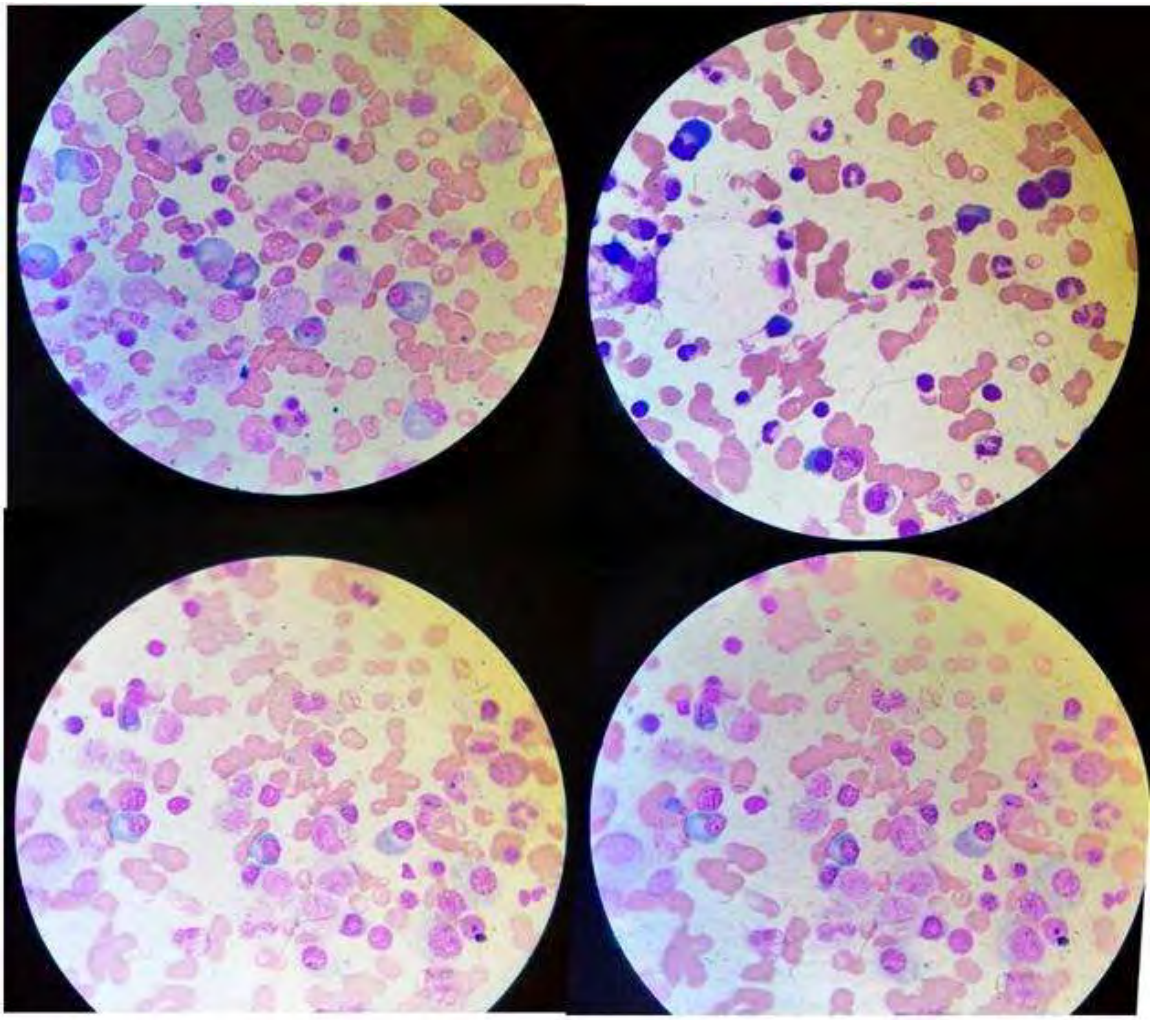
Background: Plasma cell myeloma (PCM) is a rare occurrence in children and thus may pose a diagnostic challenge. There are very few reports of PCM in children in literature and none yet known to be reported in Nigeria.

Case Report: We describe a seven year old boy who presented with eight month history of retrosternal chest pain, dry cough, recurrent fever, progressive weight loss and generalized bone pains. He was chronically ill, pale and febrile, with axillary lymphadenopathy and tenderness along the spine, neck and hip. Initial diagnosis of tuberculosis was made. Other considerations were juvenile idiopathic arthritis. Erythrocyte sedimentation rate was >150mm/hour, mantoux test 12mm, haematocrit was 23%, chest x-ray showed hilar adenopathy but gene expert for tuberculosis was negative. Rheumatoid factor was negative. He developed gibbus and pectus carinatum while on treatment for tuberculosis.

Following completion of anti-TB medications, fever persisted and there was progressive limitation of movement. Hence, diagnosis of PCM was considered based on the progressive skeletal lesions and anaemia. Blood smear showed rouleaux formation and circulating plasma cells; bone marrow plasmacytosis (>10% malignant plasma cells with multinucleated forms and some with flaming cytoplasm); serum protein electrophoresis revealed monoclonal gammopathy; serum free light chain showed monoclonal proliferation of κ light chain (κ: λ = 3.7, reference range 0.26 – 1.65), serum protein was normal, Bence Jones protein was negative. There were lytic lesions of long bones and vertebrae with fusion of T5, T6. Renal function remained normal. A definitive diagnosis of PCM was made. He completed four cycles of Vincristine, Adriamycin and Dexamethazone with good clinical response. Fever and bone pains have resolved and bone marrow plasma cells is <5%. He is currently on follow-up.

Conclusion: A high index of suspicion, early diagnosis and prompt management may improve the chances of survival of patients with PCM.

Keywords:
Plasma cell myeloma, protein electrophoresis, chemotherapy.



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QUANTIFICATION OF PEDIATRIC BLOOD DEMAND BY DISEASE TYPE AND THE GLOBAL UNMET NEED FOR PEDIATRIC TRANSFUSION SERVICES

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Backgrounds and Aims: A sufficient blood transfusion supply is crucial for health system planning and surgical services. This analysis sought to quantify the relationship between different pediatric conditions and the blood supply, and to highlight countries where the blood supply is insufficient for pediatric transfusions.

Methods: We utilized the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) and National Inpatient Sample (NIS) to estimate the total number of blood units required for treatment of different conditions by sex in the USA in 2014. We calculated the units required per prevalent case for each cause by dividing blood units over Global Burden of Disease (GBD) prevalence estimates for the USA. We multiplied this value by GBD prevalence for every country to calculate the pediatric blood demand, and divided this by the supply estimates from the WHO's 2016 Global Status Report on Blood Safety and Availability to determine unmet need.

Results: Figure 1 shows the blood demand breakdown by cause in each region for both sexes. Females have a greater blood demand in most regions, particularly in Sub-Saharan Africa, South Asia, and Oceania, where the prevalence of maternal disorders is high. Lower-income regions also have greater prevalence of pediatric non-communicable diseases and neglected tropical diseases, which account for an increased demand relative to high-income regions. Figures 2 and 3 show the pediatric blood demand per 1,000 people and the ratio of pediatric demand over total supply in each country, respectively. Demand is greatest in Sub-Saharan Africa, where supply is also the smallest. In Southeast Asia, a small need in pediatric populations is unmet due to a limited blood supply.

Conclusions: Countries with the greatest blood demand also tend to have the least supply. Innovative treatment methods are needed in these settings to save blood and maximize health system efficiency.

Keywords:
Global Health, Blood Supply, Transfusion, Inequity, Global Burden of Disease, Health System

Figure 1: Pediatric blood demand by sex and cause in each global region

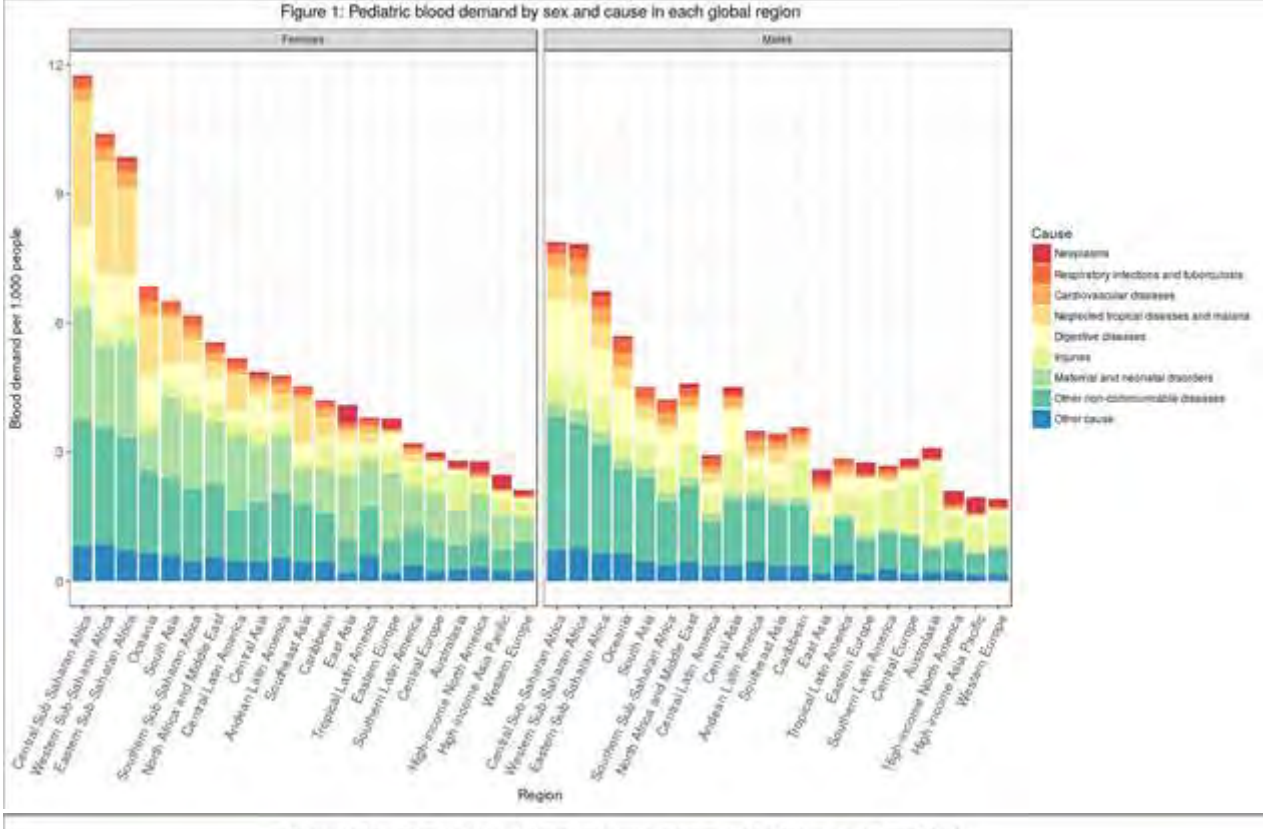


Figure 2: Pediatric blood demand per 1,000 people, 2014

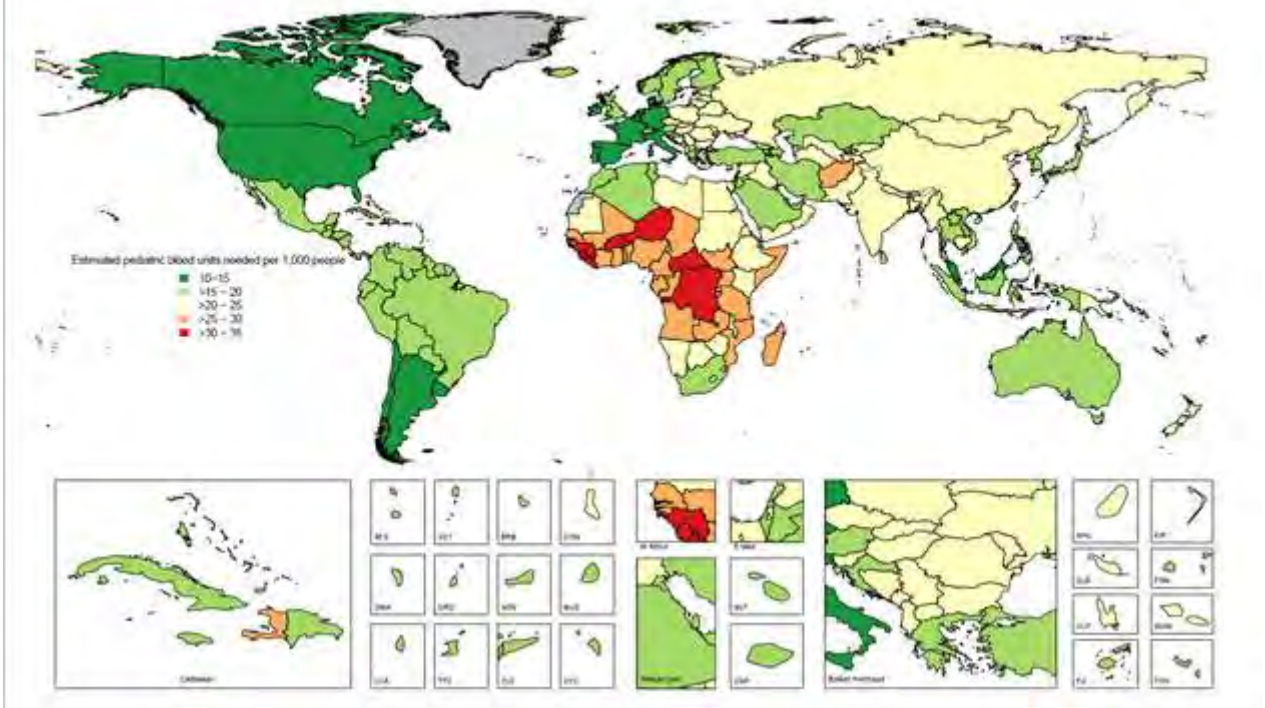
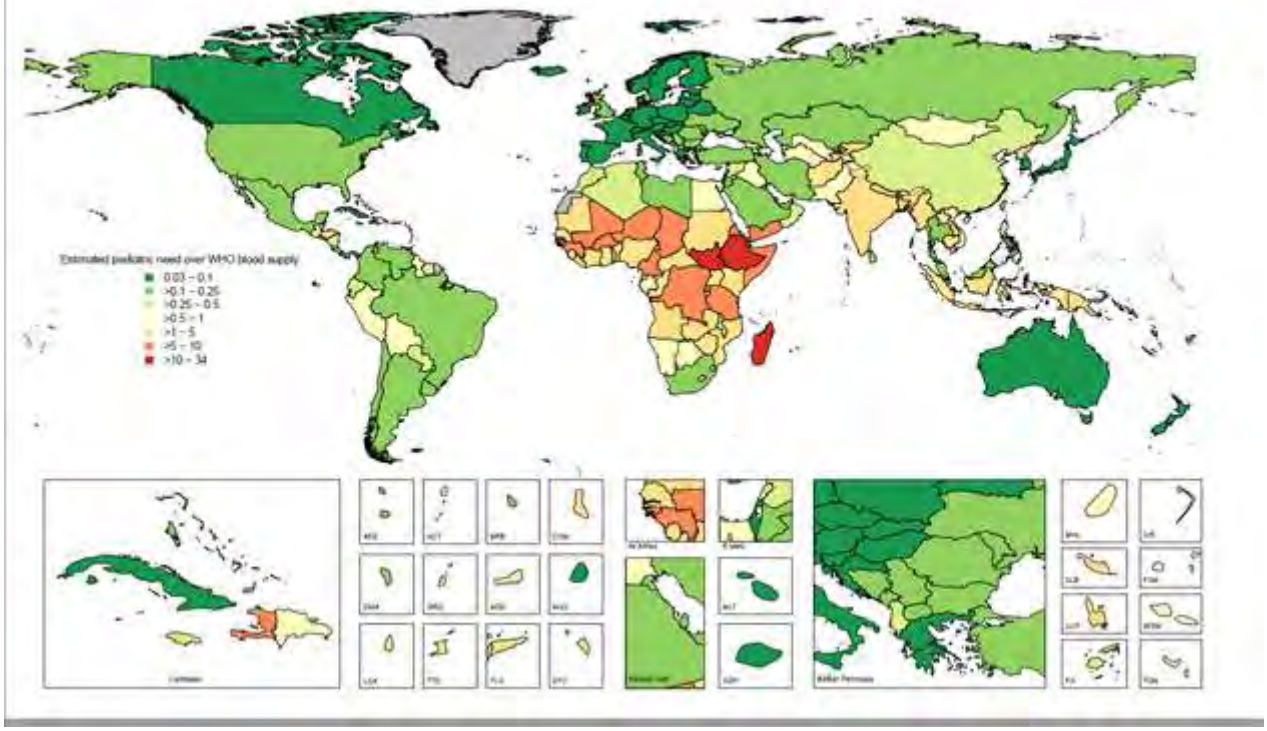


Figure 3: Pediatric blood demand vs. supply, 2014



STUDY ON THE MRNA EXPRESSION OF IN1 GENE ASSOCIATED WITH CLINICAL EFFICACY AND PROGNOSIS FOR CHILDHOOD HEPATOBLASTOMA

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Objection: To study on the mRNA expression level of IN1 gene associated with the clinical efficacy and prognosis for HB in pediatrics and to confirm the early warning value for prognosis and chemotherapy sensitivity.

Method: We selected 47 HB patients of III and IV stage from October 2014 to February 2018 (male 32, female 15) and collected the clinical data. To test the IN1 gene mRNA expression level using Immunofluorescent immunofluorescence PCR and to analysis the relationship between the mRNA expression of IN1 gene and clinical data using SPSS 20.0 software.

Result: ① The medium age 30 months (5~ 137 months). There were 23 cases of III stage, and 24 cases of IV stage, and were 7 cases of low risk group, 15 cases of medium risk group, and 25 cases of high risk group. ②clinical efficacy and prognosis Followed up to 1th July 2018, the medium time was 13 months. These patients of HB were treated by surgery with chemotherapy or only chemotherapy. One patient was dead and 46 patients were survival. The OS was 97.9%. 21 patients received remission (15 cases of complete remission and 7 cases of partial remission). The remission rate was 44.7% (21/47). ③ IN1 gene mRNA expression average PCR quantitative of 74 patients IN1 gene mRNA was 31.3±0.4;-ΔΔCT=0.09±0.16; -ΔΔCT of patients with chemotherapy sensitivity and poor chemotherapy efficacy was 0.06±0.12 and 0.03±0.04. –ΔΔCT of patients with and without radical surgery was 0.06±0.12 and 0.03±0.04. The statistical results showed that the mRNA expressing level of IN1 gene was associated with chemotherapy sensitivity and weather having radical surgery (P=0.003,0.02).

Conclusion: the expression of IN1 gene was low level for poor efficacy of HB patients in pediatrics. We should think that IN1 gene expression could be a early warning factor for treatment sensitivity and prognosis.

Keywords:
Hepatoblastomal IN1 gene; mRNA; prognosis

Infectious Diseases

A REVIEW OF HIV DRUG RESISTANCE PATTERNS AMONG CHILDREN AND ADOLESCENTS ON FIRST AND SECOND LINE ANTIRETROVIRAL THERAPY AT THE UNIVERSITY TEACHING CHILDREN'S HOSPITAL, LUSAKA, ZAMBIA

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Background: The University Teaching Children's Hospital has been providing antiretroviral therapy since 2004. Regular viral resistance (VR) testing performed since 2016. This is a review of resistance patterns for patients from May 2016 to Dec 2017.

Methods: Retrospective laboratory viral genotype resistance reports used to abstract data on patients ARV drug treatment regimen from the computerized Smart Care system. Data analysed according to drug regimen at the time VR requested using Microsoft Excel.

Results: During the 20 month period, 175 VR tests performed in virologically failing patients. Sixty five were on first line regimen (47 Non-Nucleoside Reverse Transcriptase Inhibitors [NNRTI}; 18 Lopinavir [LPVr] based backbone), 102 were on second line Protease Inhibitor (PI) regimen (eight unknown). Resistance to ANY class of drugs detected in 146 (83%).
Of the 47 on NNRTI backbone of Nevirapine/Efavirenz in their first line regimen, 91% developed resistance. One patient had a primary PI mutation with no prior exposure to PI's. Five of the 18 (30%) on LPVr syrup-based first line developed resistance to PI drugs (average age 5 years).
14% of 102 patients failing virologically on second line PI based regimen, had developed resistance. Commonest PI mutations for ALL 20 patients failing on PI regimen were M46I/L (85%), V82A (80%) and I54V (75%).70% had 3 or more major PI mutations.
NRTI mutations were reported in 103 patients (59%). Majority had M184V (83%); 25% L74V/I; 22% Y115F and 11% K65R. Multiple TAMS of 3 or more were reported in 11%.

Conclusions: Extensive NNRTI resistance in virally unsuppressed children and adolescents on first line ART. The data raise concerns regarding PI resistance among young children on LPVr syrup-based first line regimen. Emerging PI resistance in patients on second line underscores importance of adherence counselling, viral load monitoring and genotypic analysis before third line ART consideration.

Keywords:
HIV drug resistance, treatment failure

EFFICACY AND SAFETY OF DUAL SOFOSBUVIR/DACLATASVIR THERAPY IN CHILDHOOD CANCER SURVIVORS CHRONICALLY INFECTED WITH HEPATITIS C VIRUS (HCV)

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Background: Childhood cancer survivors are at risk of infection with HCV and little data is published on their treatment by the recent direct acting antivirals (DAAs). We aimed to study the efficacy, safety and tolerability of dual sofosbuvir/daclatasvir (SOF/DCV) DAA therapy in childhood cancer survivors infected with chronic HCV.

Methods: This prospective, uncontrolled, open-label multicenter study enrolled 20 eligible, chronic HCV, genotype 4, infected children who had already been cured from leukemia/lymphoma were included in the study. Seventeen were survivors of acute lymphoblastic leukemia (ALL); two were cured of Hodgkin lymphoma and one of non-Hodgkin lymphoma. Their age ranged from 8 to 16 years (with a mean of 13.12 ± 4.22) and 50% were males. All patients were treated with a regimen of dual DAA drug therapy in the form of a single daily weight-adjusted dose of both Gratisovir (generic sofosbuvir) and Daktavira (generic daclatasvir) for 12 weeks. All were interferon-naive except one ALL survivor. Patients were monitored throughout the treatment and follow-up period for safety and efficacy outcome measures including liver and kidney functions and hematological indices. Viremia was monitored at enrollment, 2 weeks (very rapid virologic response vRVR) and 12 weeks (end of treatment response EOTR) whereas 12 weeks after end of treatment (sustained virilogic response SVR 12) data analysis is pending.

Results: No fatalities or treatment-emergent serious or severe adverse events were reported throughout the study. All patients showed normalized liver enzymes with normal other liver, hematological, and renal function tests at the end of the study. The vRVR and EOTR were 100% and we project an intent-to-treat (ITT) SVR 12 rate to be 20 of 20 (100%; 95% confidence interval [CI] 84% -100%).

Conclusions: SOF/DCV combined therapy might be used safely and effectively in the treatment of chronic HCV genotype 4 infection in leukemia/lymphoma cured children.

Keywords:
Hepatitis C, childhood cancer, DAAs, Sofosbuvir, Daclatasvir

PHYSICAL EXAM AS AN ESSENTIAL TOOL TO EARLY RECOGNITION OF A LIFE-THREATENING CENTRAL NERVOUS SYSTEM (CNS) LIFE THREATENING DISEASE

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As clinicians we are used to diagnose a common repertoire of conditions based on the complaints presented. But what happens when, after initial evaluation and treatment, the symptoms do not resolve?

An 8-year old male with history of asthma who presented with acute onset fever, chest pain, headache and neck pain of 5 days evolution. Travel and exposure history were unrevealing; immunization status was up to date. Patient was initially evaluated at local ED due to fever and chest pain, where he was diagnosed with a respiratory infection. Two days later, he was again seen in the ED because he developed neck pain and headache plus continues febrile; he was diagnosed with a sinus infection. Patient continues to worsen which prompted reevaluation at a different ED, where he was admitted with a diagnosis of asthma and presumed pneumonia.

On his hospital day 4, patient required transfer to the PICU following his initial evaluation by pediatric Infectious Disease service as physical exam at that time was remarkable for photophobia, altered mental status, positive Kernig's sign and seizures. Empiric therapy to cover for infectious etiologies of CNS infection was initiated promptly, neuro-protective measures including hypertonic saline plus ventilation support was given.

Unfortunately, given his critical condition, CSF analysis was done a few days later. His diagnostic workup was consistent with viral meningoencephalitis, but no definitive pathogen was identified. Patient required management by a multidisciplinary team given his slow clinical improvement and residual neurologic deficit.

Most diagnosis are based on clinical manifestations and evaluation should be individualized guided by clinical clues, laboratory data and imaging. CNS infections are an acute life-theratening emergency. Physicians should be aware of the classic symptoms seen in a patient with CNS infection as it will lead to prompt identification and management of these conditions.

THE EFFECTIVENESS OF ROTAVIRUS VACCINATION IN CHILDREN HOSPITALIZED DUE TO DIARRHEA - 3-YEAR OWN OBSERVATIONS

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Introduction: Rotavirus vaccinations (RV) are the most effective method of preventing severe infections and hospitalizations due to rotavirus gastroenteritis (RVGE).

Aim of the Study: Assessment of the implementation of preventive vaccinations against rotavirus in children hospitalized in one of the Warsaw pediatric department and their impact on the frequency of hospitalization due to rotavirus diarrhea.

Material and Methods: Analysis of 7590 history of diseases of children hospitalized in the Department of Pediatric of the Bielanski Hospital in 2011-2013 (3 years).

Results: Out of 7590 hospitalized children, 1379 (18.2%) were diagnosed with gastrointestinal (GI) infection. The most frequent cause of gastroenteritis were rotavirus infections confirmed in 40.5% (554/1379) cases. In children diagnosed with RVGE, nosocomial infections were confirmed in 29.7% (165/554) cases.
Of the hospitalized, born after 2006 children (the date of introduction of vaccines to Poland), at least one dose of the vaccine was vaccinated 24.1% (1094/1335) children, received at least one dose of vaccine. The majority of patients (81.9%) completed the full vaccination schedule. Most of children (87.1%) were vaccinated the monovalent vaccine (Rotarix). In children vaccinated against rotavirus, 9.2% (51/554) of patients were diagnosed RVGE. In 33.3% (17/51), children who received the vaccine, were diagnosed with nosocomial infections. In the whole group, the effectiveness of vaccination against severe RVGE was 69%.

Conclusions: The number of children vaccinated against rotavirus in a group hospitalized for various reasons, in one of the Warsaw pediatric wards in 2011-2013, was 24.1%. The effectiveness of vaccination was high and amounted to 69%. The number of vaccinated children was low, so that it could have a significant impact on the frequency of hospitalization due to rotavirus infections.

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Keywords:
gastroenteritis, rotavirus, rotavirus vaccination

Mental Health

ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD) AND MENTAL HEALTH IN CHILDREN

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Background and Aims: According to the Centre of Disease Control and Prevention (CDC), ADHD has an estimated prevalence of 9.4%; 64% of children with ADHD had another mental, emotional or behavioural disorder.
Locally, limited data exists regarding ADHD and mental health. A student health survey in Trinidad in 2007 showed 39.8% of children being physically attacked, 20.8% bullied and 16.5% in violent groups; it was not clear if any of the children had ADHD. We have seen an increase in referrals for ADHD but the numbers diagnosed are below expected.
We sought to explore the co-morbidities that may impact mental health in children with ADHD.

Methodology: Children with ADHD seen between Jan 2017 and Feb 2018 were identified using an existing patient database and case notes retrieved; information regarding ADHD and its co-morbidities were entered into a computerized database designed to collect patient data and perform statistical functions.

Results:
1087 patients were seen.

130 (11.9%) patients had ADHD; 75.3% Male, 49% Learning difficulty, 38% Autism spectrum disorder (ASD) and 43% using Methylphenidate.

100 patients had Vanderbilt ADHD feedback forms. Teacher feedback indicated, 38% had peer relationship problems, 54% reading difficulty, 59% writing difficulty and 42% difficulty in mathematics. 50% of patients were referred to Student support services but only 14.6% had a teacher's aide.

Parent feedback indicated, 26% children had anger problems and 13% depressive symptoms. Conduct disorder symptoms were reported in 9% and oppositional defiant disorder (ODD) symptoms in 41%. Teachers reported conduct and/or ODD symptoms in 28% of patients; 16% were in fights and 10% had stolen items and 13% destroyed property.

Conclusion: There is a high incidence of possible mental health issues in children with ADHD. A nationwide prevalence study and bolstering of multidisciplinary support services to meet the needs of children with ADHD is urgently needed.

Keywords:
ADHD, Mental Health, Children

INFLUENCE OF EARLY LIFE STRESS AND PERCEIVED PARENTAL BONDING ON DECISION-MAKING STYLE AND MOTIVATION TO USE ALCOHOL IN ADULTHOOD

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Objectives: This study was conducted to clarify the influence of early life stress (ELS) and perceived parental bonding (PB) on decision-making style (DMS) and motivation to use alcohol (MA).

Methods: Participants included men aged 18-65 years with experience drinking alcohol. Participants completed surveys addressing basic sociodemographic information, ELS PB, DMS, and MA. Then, a hierarchical regression analysis was conducted to confirm the mediator variables and causal relationships. Total 267 subjects participated in the study and survey was conducted between July 1 to July 31, 2017.

Results: The regression analysis revealed that ELS was associated with the MA enhance and coping subscales: R2 = 0.446 and 0.539, respectively, and PB was associated with MA enhance and coping subscales: R2 = 0.346 and 0.367, respectively and which were both statistically significant. To confirm the mediating effect, a regression analysis was performed by inputting DMS, and the regression coefficients decreased.

Conclusion: ELS and attachment directly positively influenced participants' MA. In addition, ELS and PB directly influenced the DMS rationality and intuition subscales. Lastly, DMS mediated MA. Therefore in evaluating MA, it is necessary to consider the ELS, PB and DMS.

Keywords:
decision making style (DMS); early life stress (ELS); motivation to use alcohol;
parental bonding (PB)

SCREENING MENTAL HEALTH IN CHILDREN OF LATINO PARENTS AT A PRIMARY CARE OFFICE

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Background and Aims: With any major cultural adjustment, mental health problems are bound to arise. The purpose of our project is to screen for potential mental health disorders the children of Latino immigrants at a primary care setting.

Methods: Latino parents of children ages 2 to 18 completed the Strength and Difficulties Questionnaire-SDQ (sdqinfo.com) at time of their children checkup. The SDQ examines children's behaviors as markers for mental health issues. Demographic information (country of origin, time living in U.S., and preferred language) was also collected. Questionnaires were scored for each subscale (emotional, conduct, hyperactivity, peer and social). Children were grouped into different categories of risk for developing mental illness. Our institution IRB approved the study.

Results: 72 parents from countries such as Cuba, Mexico, Colombia, and Guatemala, completed the SDQ. Overall SDQ totals were 73% normal, 14% borderline and 13% abnormal (Fig.1). The parents of abnormal scores reported generally higher externalizing (conductive + hyperactive) at an average of 5.42± 0.11 over internalizing (emotional + peer problems) at an average of 3.82±0.08 (p=0.019) for females and externalizing score of 5.48± 0.12 over internalizing score of 3.79±0.08 for males (p=0.029) (Fig.2).

Conclusions: Culturally/linguistic sensitive mental health screening is an important and easily forgotten component to pediatric care particularly for children of immigrant parents. So far in this study, the SDQ scores among our Latino immigrant population are elevated from previously reported UK standards of 80% normal and 20% borderline or abnormal. Among the borderline and abnormal scores, externalization was reported more often than internalization. At this time our number is too small to correlate specific demographic factors that might be more or less protective.

Keywords:
Mental Health, Latino Children, Screen

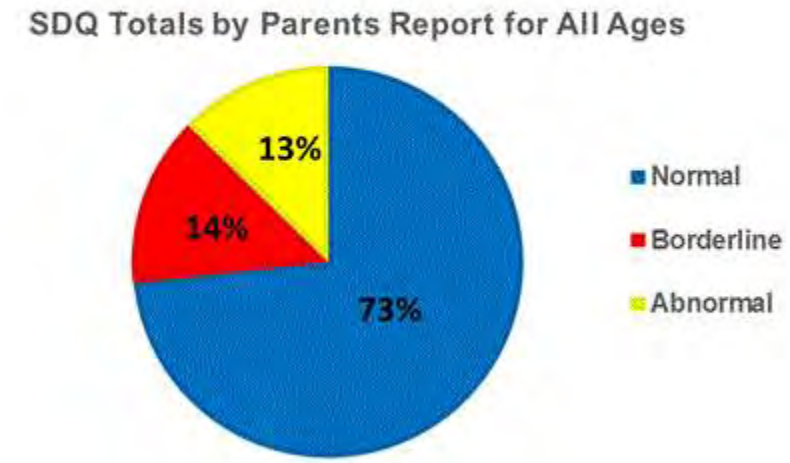
SDQ Totals by Parents Report for All Ages
13%
14%
73%
Normal
Borderline
Abnormal

Fig. 1

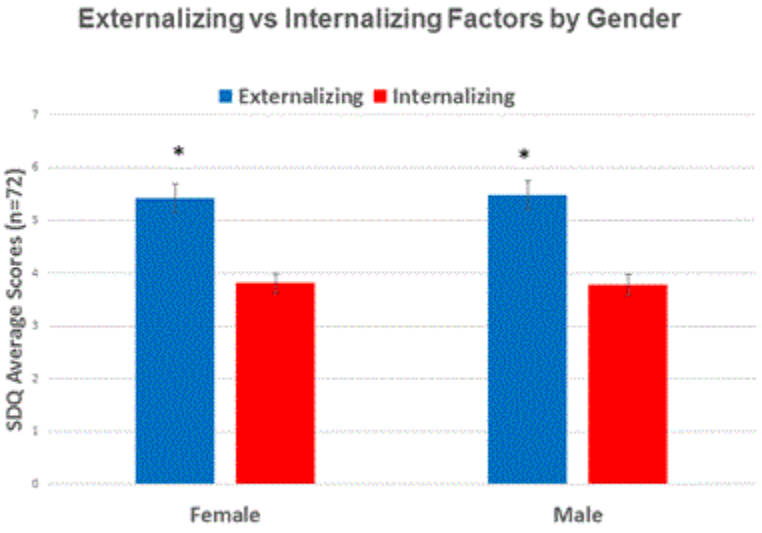
Externalizing vs Internalizing Factors by Gender
Externalizing
Internalizing
SDQ Average Scores (n=72)
*
*
Female
Male

Fig. 2

SUICIDE IN ADOLESCENTS EXPOSED TO THE YOUTH JUSTICE SYSTEM: A 22-YEAR RETROSPECTIVE DATA LINKAGE STUDY

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Background and Aims: The incidence of suicide is elevated in incarcerated and formerly incarcerated adults and this difference is even more pronounced among young people (those aged <25 years) in the adult justice system. Despite this, little is known about the epidemiology of suicide in young people exposed to the youth justice system (YJS). We aimed to estimate the suicide rate in a large cohort of young people exposed to the YJS in Australia, and to identify the demographic/criminogenic risk factors associated with these deaths.

Methods: Data relating to all young people who had any contact with the YJS in Queensland between January 1993 and December 2014 (N=49,228) were linked to Australia's National Death Index. We calculated the incidence rate of suicide within the cohort, stratified by sex and Indigenous status. Poisson regression was used to assess the change in suicide rates over time. Crude mortality rates (CMRs) were calculated for all-suicide and method-specific suicides, both overall and within subgroups.

Results: Of the 48,228 participants, 1452 (3%) died during the follow-up period. For 31% (458) of decedents, the cause of death was suicide. The proportion of deaths due to suicide was highest for Indigenous females (37.9% of all deaths), followed by Indigenous males (36.8%), non-Indigenous males (30.1%) and non-Indigenous females (25.8%). Hanging was the most common method of suicide (83%).

Conclusions: The disproportionately high incidence of suicide deaths following contact with the YJS represents a considerable cause for concern. There is a pressing need to better understand the trajectories of young people after discharge from the YJS, possibly through the use of linked administrative health and social care data. This missing epidemiological knowledge would inform targeted, preventive interventions to be implemented during the window of opportunity when these vulnerable young people are under the care of the YJS.

Keywords:
Youth justice; mortality; cohort; suicide

Neonatology

A RANDOMIZED CASE-CONTROL TRIAL OF A HYPOTHERMIA ALERT DEVICE IN LOW BIRTH WEIGHT NEWBORNS AND THE EFFECT ON KANGAROO MOTHER CARE (KMC) AND WEIGHT GAIN IN TWO PROVINCES OF PAPUA NEW GUINEA

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Background: The hypothermia bracelet, locally renamed as Bebi Kol Kilok, is a simple, innovative device, which detects and alerts in the event of neonatal hypothermia, facilitating Kangaroo Mother Care (KMC) and other thermal care of new-borns. This life-saving device is put in baby's wrist immediate after birth that monitors a newborn continuously for 1 month both at health facility and at home. If the baby is hypothermic, the device sounds an alarm enabling the parent to warm with Kangaroo Mother Care (KMC) including breastfeeding and swaddling before severe hypothermia can cause death. If continuing to alarm despite warming the baby, the parents seek skilled care before an infection can become severe.

Objective: To understand if the Hypothermia Alert Device has an effect on KMC compliance at home and weight gain of newborns on 4th week follow-up.

Methods: Low Birth Weight (LBW) newborns were enrolled in the study and randomly selected for Hypothermia Alert Device (Case) or Control group. Newborns were given the Bracelet before discharged, parents and doctors were blinded. Parents were given home diaries to monitor KMC and were asked to come to weekly follow-ups to measure weight gain.

Results: 338 neonates completed the 4-week trial; 161 were in the control group and 176 were in the bracelet group; of these, 152 participants in the control group completed KMC diaries and 172 bracelet group completed KMC diaries. The results of the clinical trial reveal that parents of neonates in the bracelet group demonstrated better compliance to KMC. In the bracelet group, the average daily time spent doing KMC was significantly higher at home (5.6 hours vs. 0.6 hours, p= 0.005). There was an increase of average weight gain per day in the bracelet group after the fourth week follow-up appointment (31.2 grams vs. 25.3 grams, p= 0.057).

Conclusion: The Hypothermia Alert Device was found to be an effective intervention to promote parent adherence to Kangaroo Care in the home and weight gain during the neonatal period

Keywords:
Hypothermia; Hypothermia Alert Device; Kangaroo Mother Care; Home Care; Low Birth Weight; Neonatal Weight Gain

COMPETING RISK SURVIVAL ANALYSIS OF TIME TO IN-HOSPITAL DEATH OR DISCHARGE IN A LARGE URBAN NEONATAL UNIT IN KENYA

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Background and Aims: Most neonatal deaths occur in low and middle-income countries like Kenya. Increasing the coverage and quality of maternal and essential neonatal care in these countries could prevent up to 71% of neonatal deaths with 82% of this effect attributable to facility based care. Inpatient mortality will, therefore, be a key indicator of progress in neonatal survival in low and middle-income countries. However, there is a paucity of neonatal clinical outcomes data from these countries. The aim of this study was to describe time to in-hospital death or discharge alive following admission to a large urban neonatal unit in Kenya.

Methods: Using routine data (n=9115) collected from the neonatal unit, competing risk survival analysis was used to compute the cumulative incidence of in-hospital death accounting for discharge alive as a competing risk by birthweight category.

Results: Overall about 1 in 10 (9%) of neonates admitted died. The overall median length of stay was 2 days with a range of 0-98 days. Competing risk survival analyses showed that the probability of in-hospital death (cumulative incidence) is higher than that of discharge alive in extremely low birth weight(<1kg) and very low birth weight (1-1.499kg) neonates. In addition, splitting the low birth weight (1.5-2.499kg) by 500 g revealed that the probability of discharge rises to be higher than that of death in the 2 to less than 2.5kg sub-category.

Conclusions: The longer length of stay in those discharged alive for neonates weighing < 1.5kg suggests that improved survival will lead to longer hospital stays with an attendant increase in costs. There is residual variation in risk of in-hospital death in the commonly used 1.5-2.499 category (low birth weight). This category which should be split further into at least two categories (1.5-1.99kg and 2-2.499kg) when reporting neonatal outcomes.

Keywords:
neonate, length of stay, in-hospital mortality, competing risk

CORRELATING BIRTH LENGTH AND OCCIPITOFRONTAL CIRCUMFERENCE TO BIRTHWEIGHT IN THE TERM NIGERIAN NEWBORN INTRODUCTION:

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[1]Massey Street Children's Hospital, Lagos Island, Nigeria, [2]Laos state University Teaching Hospital, Ikeja, Nigeria, [3]Lagos State University College of Medicine, Ikeja, Nigeria

Background: Perinatal death rates are high in sub-Saharan Africa where poverty, lack of basic equipment and man power are mainly responsible. Many newborns are delivered without proper documentation of anthropometry especially by unskilled birth attendants. Identification and prompt referral of a high risk newborn may be life saving

Aim: To evaluate the correlation between birth length and head circumference to birth weight

Method: A prospective cross-sectional study over a six month period (Dec 2010 -May 2011) carried out on term and apparently well neonates delivered between 37 to 41 weeks at the Obstetrics and Gynecology unit of the Lagos State University teaching Hospital, Lagos, Nigeria. All anthropometric measurements birth weight, (taken with a weighing scale) birth length and Occipitofrontal circumference (OFC) were taken (with a tape measure) within the first 24 hours of life. An average of two readings was recorded.

Results: A total of One thousand, one hundred and sixty eight neonates were recruited into the study. 599 (51.3%) were males and 569 (48.7%) were females with a male: female ratio of 1.1:1. Birth weight ranged from 2000g to 5400g with an overall mean of 3259 ± 470g. The mean length of the neonates was 49.46 ± 2.34 cm. The birth weight and the length of the neonates increased with gestational age and there was a strong positive correlation between birth weight and length (r = 0.627). The OFC ranged from 31cm to 39cm, with a mean of 34.6 ± 1.25 cm. OFC correlated positively with gestational age (r = 0.199). There was also a strong positive correlation between birth weight and OFC (r = 0.556).

Conclusion: The strong correlation between birthweight birth length and OFC may suggest a cheap and simple method for determining high risk babies especially at birthing centres that lack basic equipment to weigh newborns.

Keywords:
Anthropometry, Birth weight, Occipitofrontal circumference Correlation

Table I: Weight Mean ± SD (g), according to gestational age and gender.

Gestational age (Weeks)	Weight (g) Male	Female	t value	p value
37	3079 ± 0.44	3076 ± 0.43	0.07	0.094
38	3355 ± 0.47	3138 ± 0.48	2.83	0.005*
39	3400 ± 0.36	3226 ± 0.41	3.25	0.001*
40	3402 ± 0.44	3313 ± 0.44	1.47	0.144
41	3458 ± 0.52	3249 ± 0.45	3.01	0.003*
OVERALL	**3339 ± 0.45**	**3200 ± 0.44**	**4.01**	**<0.001***

*statistically significant p<0.05

Table II: Length Mean ± SD (cm), according to gestational age and gender.

Gestational age (Weeks)	Length (cm) Males	Females	t value	p value
37	49.38 ± 2.16	48.58 ± 2.27	3.12	<0.001*
38	49.52 ±2.34	49.39 ± 2.44	0.47	0.635
39	49.93 ± 2.62	49.42 ± 2.25	1.59	0.109
40	49.96 ± 2.27	49.55 ± 2.42	2.48	<0.001*
41	50.01 ± 2.59	49.57 ±2.03	1.33	0.185
OVERALL	**49.76 ± 2.39**	**49.30 ± 2.28**	**3.81**	**<0.001***

*statistically significant p<0.05

Table I11 Occipito-frontal circumference (cm) in relation to gender and gestational age.

	Occito-frontal circumference (cm)			
	Male	Female		
Gestational age(weeks)	Mean ± SD	Mean ± SD	t value	p value
37	34.3 ± 1.14	33.9 ± 1.08	2.79	0.006*
38	34.6 ± 1.11	34.5 ± 1.13	1.05	0.294
39	35.2 ± 1.08	34.6 ± 1.12	3.75	<0.001*
40	35.1 ± 1.37	34.7 ± 1.41	2.09	0.038*
41	35.0 ± 1.28	34.6 ± 1.35	2.04	0.043*
OVERALL	**34.8 ± 1.23**	**34.4 ± 1.25**	**4.68**	**<0.001***

*statistically significant p<0.05

EFFECT OF POST-NATAL GESTATIONAL AGE ASSESSMENT TRAINING OF HEALTH CARE PROVIDERS ON NEWBORN CARE PRACTICES IN MIGORI COUNTY, KENYA

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Background and Aims: Prematurity is a major contributor to neonatal deaths globally with East African countries ranking among the top 15 countries accounting for 75% of these deaths (1) (2).
Late preterms (32 to 37 weeks) contribute the highest number of newborn deaths. Their early recognition for low cost interventions is crucial for achieving sustainable development goal 3.2 (3).
In Kenyan public hospitals, preterm babies are largely cared for by middle level health care providers as specialists are few. This study sought to explore the effect of training middle level health care providers on post-natal determination of gestational age previously done by specialists and determine the effect of this training on newborn management.

Methods: Interventional mixed methods study with a prospective quasi-experimental arm (comparison of before and after effect) and qualitative aspect. It was conducted at the Migori county referral hospital in Kenya. Health care providers received training on use of New Ballard score and Inter growth 21st charts. Quantitative data was collected using questionnaires and analyzed using SPSS version 21 while qualitative data was collected through focused group discussions and explored for emerging themes and quotes.

Results: The health care providers were able to use the skills gained to classify preterms based on gestational age, which was not previously done.They accurately classified 65% of the preterms as late preterm. Kenya national ETAT+ guidelines were used as surrogate markers for newborn care practices. There were statistically significant improvements in the health care providers use of chlorhexidine for cord care 70% (p value <0.0001), and vitamin K administration 46% (p value <0.0001).

Conclusion: Training of middle level health care providers' in post-natal gestational age assessment is an affordable strategy for early recognition of late preterms that can be adopted towards improving survival.
Funding:Bill and Melinda Gates

Keywords:
Gestational age assessment, training, late preterm

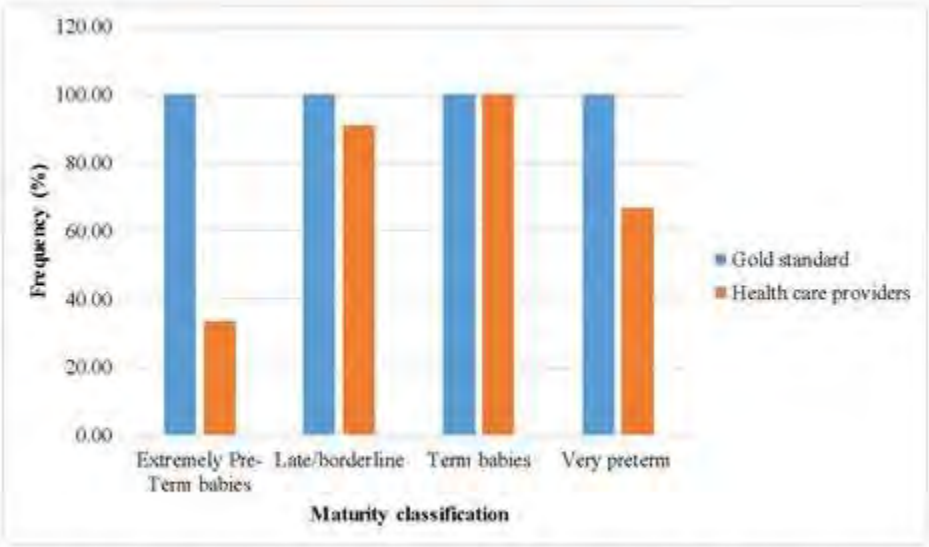
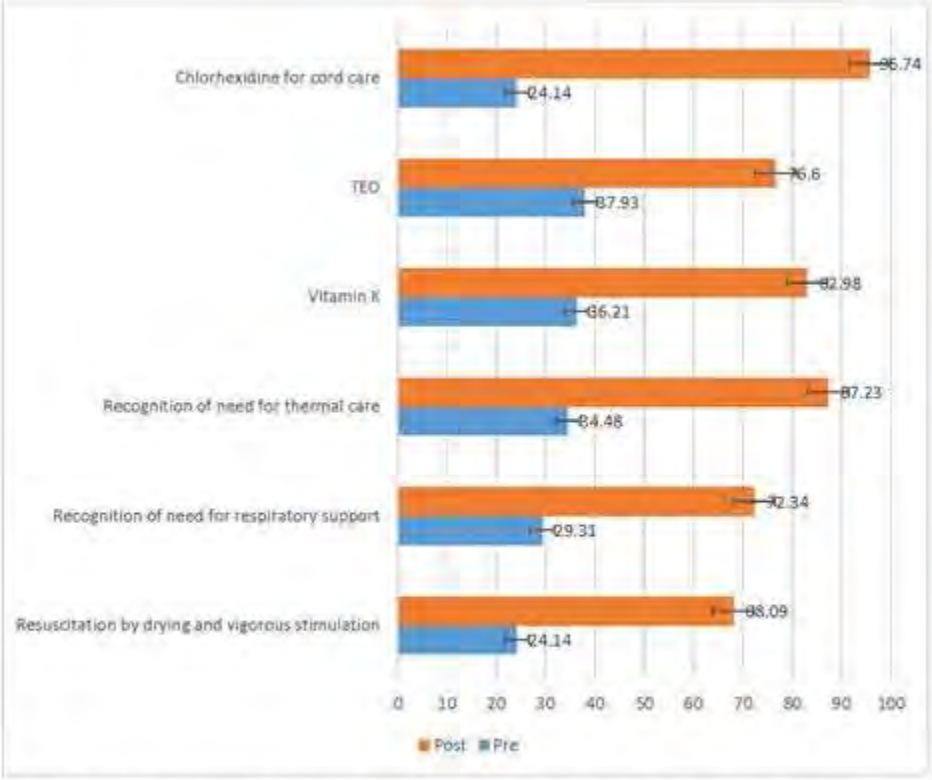


Figure 1: Comparison of maturity classification of newborn by Health Care providers against Gold standard/Expert

Table Summary of newborn classification by Health Care providers against Gold standard/Expert (after gestational assessment)

Maturity class	Accuracy n (%)	95% CI
Overall	30(65.22)	(0.500-0.779)
Extremely Pre-Term babies	6(13.04)	(0.058-0.268)
Late/borderline	10(21.74)	(0.118-0.365)
Term babies	8(17.39)	(0.087-0.317)
Very preterm	6(13.04)	(0.058-0.268)



Graph showing comparison of Health Care Provider Implementation of ETAT+ guidelines and Essential newborn care during the study period

Table Showing Odds ratio for health care Provider implementation of ETAT+ guidelines during the study period

INDICATOR VARIABLE	Pre training n (%)	Post training n (%)	Crude Odds Ratio (95% CI)	P Value
Resuscitation by drying and vigorous stimulation				
Yes	14(24.14)	13(27.66)	1.2(0.500-2.890)	0.682
No	44(75.86)	84(72.34)	Ref	
Recognition of need for respiratory support				
Yes	17(29.31)	34(72.34)	6.3(2.687-14.807)	<0.0001
No	41(70.69)	13(27.66)	Ref	
Recognition of need for thermal care				
Yes	22(37.93)	41(87.23)	11.2(4.082-30.627)	<0.0001
No	36(62.07)	6(12.77)	Ref	
Vitamin K				
Yes	21(36.21)	39(82.98)	8.6(3.388-21.776)	<0.0001
No	37(63.79)	8(17.02)	Ref	
TEO				
Yes	22(37.93)	36(76.60)	5.4(2.269-12.638)	<0.0001
No	36(62.07)	11(23.40)	Ref	
Cord care				
Yes	16(27.59)	31(65.96)	5.1(2.209-11.710)	<0.0001
No	42(72.41)	16(34.04)	Ref	
Chlorhexidine for cord care				
Yes	14(24.14)	45(95.74)	70.7(15.179-329.445)	<0.0001
No	44(75.86)	2(4.26)	Ref	

n - Number; (%) - Percentage; P - P value (level of significance <0.05); OR - Odds Ratio; CI - Confidence interval

GROWTH OUTCOMES OF NEWBORNS BORN TO WOMEN WITH POSITIVE ZIKA SCREENS DURING PREGNANCY, HIMA SAN PABLO BAYAMÓN CASE SERIES

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Since the Zika Virus epidemic outbreak in the Americas in 2015, several studies have confirmed a causal link between infection during pregnancy and a range of congenital anomalies. In response to the global public health emergency, mandatory active surveillance during pregnancy was established in Puerto Rico. Both symptomatic and asymptomatic exposures in pregnancy are documented. There is a growing body of evidence supporting that the risk of intrauterine Zika infection related to central nervous system development persist throughout pregnancy. However, we have identified a gap in the evidence regarding disproportionate growth parameters and sex discrepancies in the susceptibility to adverse outcomes.

A consecutive case series was established through examination of hospital registry of live births from August 2016 through March 2017. Sample selection was based on exposure to maternal Zika infection during pregnancy following the Puerto Rico Department of Health reporting criteria. Growth measures including head circumference (HC, cm), Length (L, cm) and weight (W, kg) extracted from the hospital registry was evaluated using the World Health Organization's Nutritional Survey platform to determine the sex adjusted Z scores. The criteria for microcephaly as defined by the Department of Health was defined by a HC Z score < -3. Sex specific prevalence was also evaluated.

We identified 82 infants (56.1% female) with history of maternal Zika exposure as confirmed by laboratory testing. The prevalence of premature birth was 8.5%, and the mean Z score for HC was -0.29±1.34, Length -0.22±1.56, and weight -0.35±1.17. The prevalence of microcephaly for the entire series was 3.7%, while the sex specific prevalence for females was 6.7%.

This reports adds to the evidence confirming the central nervous system effects of intrauterine Zika exposure. A sex disparity for microcephaly was observed, which requires further study.

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Keywords:
Disproportionate Growth, Zika

IMPLEMENTING THE CONCEPT OF PERINATAL CARE IN A LOW RESOURCE SETTING; OUTCOME ON DELIVERIES IN A TERTIARY CENTER IN NIGERIA

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Background and Aims: Perinatal survival is intimately linked to effective maternal and newborn care throughout the continuum of pregnancy, labour and postpartum period. In many low-resource settings (LRS) newborn babies face difficult odds of living past the first month of life. The risks associated with day of birth and the first day of life are ameliorated by collaborative care for mother and baby.
To describe the identified and documented high risk situations necessitating early intervention measures in the context of implementation of the Concept of perinatal care in a LRS.

Methods: The prospectively stored records of perinatal consults to neonatal care team over 8months were reviewed. The maternal socio-demographics, indication (s) for consult and risk factors, resuscitation and outcome were examined. Frequencies, Chi square and students t test were utilized and the significance was set at $p<0.05$

Results: A total of 270 consecutive consults received were reviewed. The parturient aged 14 to 51 years; 210 (77.8%) booked and 60 (22.2%) unbooked cases. The common indications for consult were previous caesarean sections 42 (15.6%), PIH 38 (13.3%), Foetal distress 33 (12.2%). The GA range 25-43 weeks; 204 (75.6) term, 64 (23.7) preterm, 2 (0.97), post term. Resuscitation was not required for 183 (67.8%), some 74 (27.4) and extensive 13 (4.8).
Post resuscitation care was routine 188 (69.6%), observation 36 (13.3%) and admission 46 (17.0%). The survival rate of 258/270 (95.6%). Booking status & level resuscitation were significant determinants of survival.

Conclusion: Although there were varied patterns of intrapartum complications that requiring intervention at delivery, their early recognition and interventional measures contributed significantly to favorable outcome. The implementation of the concept of perinatal care in LRS should be upheld and promoted.

Keywords:
concept of perinatal care, low resource settings, perinatal consults

NEONATAL OBSTETRIC TRAUMA IN A HOSPITAL IN THE SUBURBS OF DAKAR, SENEGAL

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Introduction: Neonatal obstetric traumas remain an important cause of morbidity-mortality. The objective of this study was to study obstetric traumatic lesions of the new-born in the paediatric department of the Centre hospitalier Roi Baudouin.

Patients and Method: This was a descriptive retrospective study of new-borns with obstetric trauma received at the Centre hospitalier Roi Baudouin's paediatric ward over a 12-month period. The variables studied were maternal (age, parity, presentation, mode of delivery and place of delivery,) and neonatal (birth weight, type of lesion and diagnosis time).

Results: Out of the 1426 new-borns received during the study period, 60 had trauma, a hospital frequency of 4.2%. The average age of new-borns for consultation was 8.85 days. The known and found contributory factors were: birth weight greater than 3500 g and the absence of cry at birth. Births were delivered by midwives (80%), the hospital was the main place of birth (61.7%). The main clinical presentations were: neonatal brachial plexus palsy (38.3%), fracture of the clavicle (33.3%) and caput succedaneum (13.3%).

Conclusion: New-born obstetric trauma are relatively frequent at the Centre hospitalier Roi Baudouin. The diagnosis is delayed due to a lack of proper examination of the new-born in the delivery room. Systematic examination of new-born at birth would be a reliable means for the detection and early management of this condition.

Keywords:
Trauma obstetrical; New-born

NEUROLOGIC PATHOLOGY OF THE NEONATES IN A NEONATOLOGY DEPARTMENT-RETROSPECTIVE STUDY 2015-2018

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Background and Aims: Neurological pathology is frequent in neonatal hospital settings in the normal-weight newborns as also in low-weight and/or premature infants. Due to modern management of the newborn more diagnostic approach is done in relation to neurologic states.Rare constellations of symptoms and signs are better understood due to the whitespread of infromation and possibility of medical investigations.

Material and Methods: We present the types of neurologic involvement in the newborns from our hospital in a 3 year retrospective study, which were investigated with laboratory, echography and MRI exams. Ammoniemia was measured in most of the newborns and screening for phenilketonuria and hypothrioidism were done.

Results: Neurologic states were posthypoxic, posthemorrhagic, malformative but also posttraumatic or in genetic constellations such as Down syndrome, but also postinfectious states.Severe posthemorrhagic or posttraumatic states needed neurosurgical inteverveniton and also spina bifida or congenital hydrocephalus needed neurosurgical care.

Conclusions: Proper management of the neonate with neurological involvement leads to minimal developemental delays and neurological sequels. We have had a close relationship to the neurosurgeon team which made the interventions in time. Antiepileptic drugs are used after the national and international protocols and guidelines so Phenobarbital and Levetiracetam and Phenitoin are the best choice in neonatal status epilepticus of this age as also for the treatment of seizures, and the Pyridoxine test is mandatory to each neonate which has convulsions. Surveillance after discharge in the neurological outpatients service closed to our clinic inpatient services permits to prevent complication and helps to educate mother and other members of the family, to diminish at the lowest grade the impact of the neurological damage on the child. In this sense the monitoring of height, weight, food intake, head circumference until 1 year of age and some cases 2-3 years of age are bringing the best results.

Keywords:
neurologic, pathology, neonate, quality of life, sequels

PATTERN OF NEONATAL MORBIDITY AND MORTALITY IN A PRIVATE HEALTH FACILITY IN NORTHERN NIGERIA

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Background and Aims: Newborn morbidity and mortality are still very high in developing countries despite significant decline in developed countries. Neonatal mortality is the highest contributor to under five mortality rate. To determine the pattern of morbidity and mortality of admitted babies in the Special Care Baby Unit of Madonna hospital Makurdi, Nigeria.

Methods: All neonates admitted into the Special Care baby Unit over a ten-year period (2005-2015) were retrospectively studied. Information documented included the sex, age at admission, gestational age, birth weight, and reasons for admission, and outcome were abstracted from the case notes.

Results: A total of 1,121 babies were admitted during the period under review. The male to female ratio was 1.2:1 in favor of the males (617:504). Majority of the patients (69.5%) were aged less than 7 days, with a mean 6.17 days. The mean weight on admission was 2807g. There were 573(52.3 %) preterm babies. Neonatal sepsis, neonatal jaundice, prematurity and birth asphyxia were the most common morbidities. The major causes of death were prematurity, neonatal sepsis and neonatal jaundice, giving a mortality rate of 14.1%. Neonates with sepsis had a favorable outcome and this was statistically significant $p<0.01$.Majority of the babies, 817(72.9%), were discharged home.

Conclusion: The neonatal mortality rate in this study is high. The major causes of admission are preventable. Strengthening perinatal care, emergency obstetric care services and neonatal resuscitation skills are necessary to reduce the neonatal mortality.

Keywords:
neonates, morbidity, mortality, Nigeria

Morbidity and Mortality Distribution in Admitted Neonates.

Morbidity	Admission N(%)	Mortality N(%)
Sepsis	486(43.4)	50(31.6)
Jaundice	229(20.4)	22(13.9)
Prematurity	227(20.2)	60(38.0)
Asphyxia	48(4.3)	10(6.3)
Respiratory tract infection	29(2.6)	4(2.5)
Diarrhoea	25(2.2)	1(0.6)
Congenital Anomaly	19(1.7)	0(0.0)
Tetanus	17(1.5)	4(2.5)
Meningitis	15(1.3)	2(1.3)
Birth injury	5(0.3)	0(0.0)
Others	21(1.9)	5(3.2)
Total	**1121(100)**	**158(14.1)**

UMBILICAL CORD LENGTH AND FETAL OUTCOME AT FEDERAL MEDICAL CENTRE, ABEOKUTA, NIGERIA

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Background and Aims: The umbilical cord (UC) disposition and length pre-delivery remains unrecognized and cord complications a major unavoidable cause of fetal death. This study aims to determine the relationship between the length of UC at delivery and neonatal outcome

Methods: An 8-month cross-sectional prospective study involving 359 pregnant women with singleton gestation at estimated gestational age of ≥ 34weeks undergoing vaginal delivery or emergency caesarean section. Eligible women were recruited in labor and UC examination was done at delivery for loop, site and number; knots (true or false); and any cord abnormalities. Post-delivery, UC were clamped at 2 points and cut in between. Cord length (cm) was the addition of measurements from the cut end of the cord to fetal umbilicus and from the other cut end to the placental attachment using flexible tape. The Apgar scores, weight, sex and length were noted.

Results: Mean cord length was 51.9cm, range 24-120cm; the cord length range with the highest frequency was 41-50cm (Figure 1). Below 5th percentile (≤37cm) was considered as short UC and above 95th percentile (≥ 67cm) as long (Table 1). Cord length varied with weight, length but not with the babies' sex (Table 2). Short cords had higher incidence of operative delivery (p=0.000). The incidence of all types of cord complications increases as cord length increases (p<0.001) with the highest proportion of low Apgar score at 5 among the long cord group (14.3%) [p=0.0001] while cord prolapse accounting for majority [Table 3].

Conclusions: Umbilical cord length is variable with majority having normal cord length. Although long UC were associated with occurrence of cord accidents, short cords were associated with increased operative delivery, only long UC (particularly with cord prolapse) were associated with adverse perinatal outcomes. Thus, UC length could be a predictor of adverse perinatal outcome.

Keywords:
Umbilical cord, length, long, short, normal, APGAR, complications

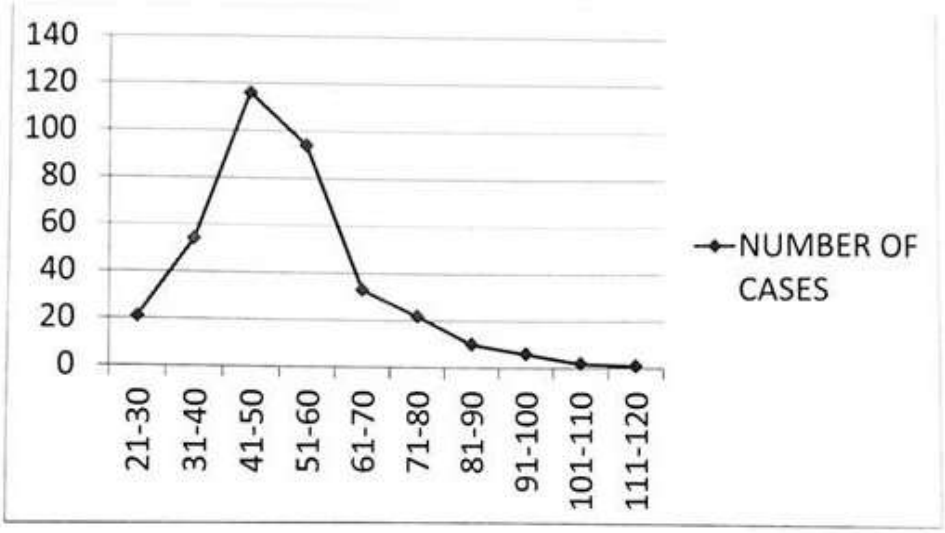

Figure 1: Distribution of cases according to length of umbilical cord

Table 1: Distribution of cases in groups according to length of umbilical cord

Length of Cord	N (%)	Mean umbilical cord length (cm ±SD)
Short	52(14.5)	31.1(2.86)
Normal	258(71.9)	50.6(6.9)
Long	49(13.6)	80.9(11.0)

Table 2: Comparison of mean umbilical cord length across gender and anthropometric measurements

Parameter		*N*	*Mean cord length*	*Std. Deviation*	*T*	*df*	*P value*
Sex	Male	184	53.27	15.41	1.74	357	0.083
	Female	175	50.50	14.77			
Birth weight (Kg)	<2.5	27	44.52	11.77			
	2.5-3.99	313	51.89	14.72	2.53	388	0.012
	>=4	19	63.05	19.76	3.14	330	0.002
Birth length (cm)	<40	17	41.35	9.36			
	40-50	286	50.96	14.30	2.73	301	0.007
	>50	56	60.03	17.32	4.19	340	0.000

Table 3: Umbilical cord length and incidence of cord complications and APGAR score

CORD COMPLICATIONS		CORD LENGTH			MEAN CORD LENGTH
		Short	Normal	Long	
Nuchal Cords	Yes	0	19	29	72.13 ± 14.14
	No	52	239	20	48.80 ± 12.71
Statistics		χ^2= 83.829, df=1, p = 0.0001			t= 11.66, df = 357, p=0.0001**
True/False Knot	Yes	0	6	16	75.0 ± 20.0
	No	52	252	33	50.92 ± 14.09
Statistics		χ^2 = 56.93, df = 1,p = 0.0000			t=7.54, df = 357, p=0.0001**
Cord Prolapse	Yes	0	1	4	84.78 ± 17.68
	No	52	257	45	51.08 ± 14.12
Statistics		χ^2 = 7.441, df =1 , p = 0.006*			t=5.28, df=357, p=0.0001**
Apgar Score at 1 min	<7	41(78.8)	27(10.5)	38(77.6)	
	≥7	11(21.2)	231(89.5)	11 (22.4)	
Statistics		χ^2 = 0.793 df =1 , p = 0.373		χ^2 = 111.04, df =1 , p = 0.000	
Apgar Score at 5 min	<7	1(1.9)	0 (0)	7(14.3)	
	≥7	51(98.1)	258(100)	42 (85.7)	
Statistics		χ^2 = 7.441, df =1 , p = 0.006*		χ^2 = 31.58, df =1 , p = 0.000	

* =Yates' correction applied, ** = Student t test

VIDEO-DEBRIEFING COMPARED TO STANDARD HELPING BABIES BREATHE TRAINING IMPROVES BAG-MASK-VENTILATION SKILLS AMONG SKILLED BIRTH ATTENDANTS IN SUB-SAHARAN AFRICA: A CLUSTER RANDOMIZED TRIAL

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Background: Neonatal mortality reduction in low-resource-settings has been slow in the past two decades despite global efforts to improve new-born survival. Most deaths occur within the first 24 hours of life from birth asphyxia. Approximately 10% of babies need help to breathe at birth. Skilled birth attendants (SBA) must always be knowledgeable and skilful to provide prompt new-born resuscitation to save lives. Innovative teaching method is needed to enhance skills attainment and retention among frontline health care workers.

Objectives: We aimed to compare effect video-debriefing (intervention) with standard helping babies breathe (HBB) taining (control) on skilled birth attendants' knowledge and skills attainment in the study setting.

Methods: A cluster randomised trial of 26 public and private delivery health facilities in Northern Uganda were randomised to control and intervention arms. A total of 87 participants were trained. Forty three participants from 13 control clusters had standard neonatal resuscitation training only, while 44 participants from 13 intervention clusters had standard training plus video-debriefing. Pre- and post-training knowledge and skills assessments were done by all participants irrespective of prior HBB training. Data was entered in EPIDATA 3.1, and exported to STATA 14 for analysis. Analysis was by intention to teat. Two sample t-test was used to compare mean difference in scores and chi squared tests to compare proportions between intervention and control arms.

Results: Video-debriefing plus standard HBB training improved SBA's Bag-Mask-Ventilation (BMV) Skills scores compared to standard HBB training only [(RR 1.20, 95% CI 1.00-1.45) & (mean difference -4.1, 95% CI of -7.7, - 0.4)].
There was no statistically significant difference post-test MCQ, OSCE A, and B scores between groups. Both training improved knowledge and skills scores from baseline.

Conclusion: Video-debriefing plus standard HBB training improves bag-mask-ventilation skills among SBAs. Skills improvement is key to saving new-born lives at birth.

Keywords:
Video Debriefing, Helping babies breathe, training, knowledge, skills, retention, skilled birth attendants

Nephrology

COMPOSITIONAL ALTERNATIONS OF GUT MICROBIOTA IN CHILDREN WITH PRIMARY NEPHROTIC SYNDROME AFTER 6-WEEK INDUCTION THERAPY

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Background and Aims: Primary nephrotic syndrome (PNS) is one of the common glomerular diseases in children. Glucocorticoid (GC) is the first-line drug for PNS due to its anti-inflammatory and immunosuppresive effects. Approximately 90% of pediatric PNS patients achieve complete remission after 6-week induction therapy. Regulatory T cells (Treg cells) which maintain tolerance to self-antigen play a critical role in the pathogenesis of PNS. Treg cells decrease at onset of PNS and recover after GC treatment. Moreover, Treg cells could be induced by short-chain fatty acid (SCFA)-producing gut microbiota. However, it remains unknown whether the 6-week induction therapy alters the composition of gut microbiota which subsequently maybe contributed to the remission in children with PNS.

Methods: Fecal samples of 20 children with PNS were collected at onset (Group A) and after finishing the 6-week induction therapy (Group B). The total bacteria DNA were extracted and the V3-V4 region of bacteria 16S ribosomal RNA gene was sequenced. The composition of the gut microbiota was compared before and after the induction therapy by using bioinformatics methods.

Results: The richness and diversity of gut microbiota were similar between two groups. Gut microbiota at the phylum level was dominated by four phyla including Firmicutes, Proteobacteria, Bacteroidetes and Actinobacteria, but there were no significant differences between two groups. However, at the genus level, the increased abundance of gut microbiota after induction therapy was observed in SCFA-producing bacteria including Romboutsia, Stomatobaculum, Howardella and Mobilitalea($P<0.001$). Moreover, the functional profile of gut microbiota was analyzed by PICRUSt method. It showed that selenocompound metabolism, isoflavonoid biosynthesis and phosphatidylinositol signaling system were involved in the induction therapy of PNS.

Conclusions: SCFA-producing bacteria increased in children with PNS after induction therapy and may be attributed to its remission. Selenocompound metabolism, isoflavonoid biosynthesis and phosphatidylinositol signaling system were involved in induction therapy.

Keywords:
Primary nephrotic syndrome, Gut microbiota, Glucocorticoids, Regulatory T cells

INFECTION IN CHILDREN SUFFERING FROM RELAPSING NEPHROTIC SYNDROME(NS)

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Background and Aim: Relapsing incidence of NS is 60-90%. Infection might be a contributing factor for relapse of the NS. The aim of this study is to observe the infection and type of infection as the cause of relapsing NS.

Method: A prospective observational study was done for a period of one year. A child of 1-12 years of age of relapsing NS was included in this study. After inclusion of the cases thorough history, clinical examination, and investigations were done to find out the association of infection in these cases.

Result: Total 52 cases of relapsing NS were included in this study. Male/Female ratio was 3.3:1. $${84.6%) children were of poor socio-economic family. Mean age of the children was 6.3 years. Cough was the main symptom found in 22(42.3%) of relapsing NS. High total leukocyte count (TLC) was found in 16(30.5%) of patients. Among the high level of TLC, the averags value was 12512/cu mm. Evicence of infection was observed in 38 cases. Respiratory Tract Infection (RTI) and Urinary Tract Infection (UTI) was detected in 23(44.3%) and 22(42.2%) respectively. p value was <.001. Majority of RTI was upper respiratory tract infection (URTI).

Conclusion: Infection was an important contributing factor for the relapse of NS. URTI and UTI is the important cause of relapsing NS. Prompt identification and management of infection is necessary for the prevention of relapse of every case of NS.

Keywords:
Infection, Relapsing NS, Children

RE-EVALUATE THE DIAGNOSTIC VALUE OF ELECTRON MICROSCOPY IN CHILDREN WITH ALPORT SYNDROME

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Background and Aims: The characteristic changes of glomerular basement membrane (GBM) under electron microscope (EM) have been recognized as the golden standard for diagnosing Alport syndrome(AS). However, ultrastructural changes of GBM under EM were often non-specific or rare in these children patients. It is time for AS children to re-evaluate the diagnostic value of EM.

Methods: 31 AS children were confirmed by AS diagnostic criteria during 2011.5 -2018.3. Abnormal distribution of COL4 a3 and/or a5chain immunofluorescence in GBM was recorded COL4 immunofluorescence abnormality; Any one or two mutations with COL4A3, COL4A4and COL4A5of the AS pathogenic genes were recorded as genetic testing abnormally; GBM abnormal changes under EM were considered if one or more of the following four items existed (1) irregular GBM (2) diffuse thinning of GBM (3)diffuse thickening or thickening with thinning of GBM (4)splitting and multilaminated appearance of the lamina densa, basket weaving pattern of GBM. The sensitivity and specificity of EM were calculated compared with COL4 immunofluorescence and genetic testing as golden standard respectively.

Results: Among 31 AS children,17 were male and 14 were female. The courses were from 2 months to 5 years. 27 cases (87.1%) showed abnormal COL4 immunofluorescence, 29 cases (93.5%) were confirmed AS pathogenic gene mutation, of which 24 cases COL4A5, 3 cases COL4A4, 2 cases COL4A4, ultrastructural changes under EM were abnormal in 8 cases (25.8%). The sensitivity of EM were 25.9% and 27.6%, the specificity were 75% and 100% when collagen IV immunofluorescence and genetic testing as golden standard respectively.

Conclusions: Only a quarter of the confirmed AS children found abnormal GBM ultrastructural changes under EM, diagnostic specificity of EM varied 75% to 100%, however sensitivity was about 25.9% - 27.6%. For children with AS, lower sensitivity EM cannot allow a definitive and early diagnosis to be made.

Keywords:
Children; Alport syndrome; IV collagen; immunofluorescence; Electron microscopy (EM). next generation sequencing

THE MOLECULAR MECHANISMS OF RGC-32 IN REGULATING TUBULAR EPITHELIAL CELL REPAIR THROUGH G2/M CHECKPOINT

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Objectives: To study the direct role of RGC-32 and its possible mechanisms of regulating the G2/M checkpoint in the tubular epithelial cell repair process.

Methods: (1) AIKI model：The WT and KO mice of AIKI group were clipped bilateral renal pedicle for 45 min, and the mice of Sham group were not. (2) AAN and Sham group: The WT and KO mice of AAN group were injected of Aristolochic acid. The mice of Sham group were not. (3) Differentially expressed proteins in the kidney of RGC-32 knockout mice were investigated with the iTRAQ. (4) We made NRK-52E cells RGC-32 expressed in either high or low expression by transient transfection. Then we induced the cell damage by TNF-α. The cell cycle distribution was measured by flow cytometry, the mRNA expression of NGAL, FN, DNA-PK, α-SMA were measured by qPCR.

Results: (1) Comparing with WT AIKI and AAN mice, the duration of the increase of serum creatinine and KIM-1 expression of RGC-32 knockout mice was longer, the proportion of G2/M phase cells of RGC-32 knockout mice was higher and the deposition of Collagen fibers in kidney of RGC-32-/- mice was more. (2) Comparative proteomic analysis revealed 361 differentially expressed proteins in RGC-32-/- mice. The differently expressed protein DNA-PKcs participated in the regulating of G2/M phase. (3) High-expressed RGC-32 in NRK-52E can reduce renal DNA-PKcs mRNA expression decreased degree, inhibited the G2/M phase arrest and reduce the epithelial-mesenchymal transition in the process of renal tubular epithelial cell damage and repair. Low-expressed RGC-32 in NRK-52E can worsen DNA-PKcs mRNA expression decreased degree, promote the G2/M phase arrest and increase the epithelial-mesenchymal transition in the process of renal tubular epithelial cell damage and repair.

Conclusions: RGC-32 may regulate G2/M checkpoint through DNA-PKcs in the process of renal tubular epithelial cell damage and repair.

Keywords:
RGC-32, Tubular epithelial cell repair, G2/M checkpoint; AKI, Gene knockout

Neurology

A COMPARATIVE STUDY OF BUCCAL MIDAZOLAM VERSUS INTRAVENOUS MIDAZOLAM IN ACUTE SEIZURES IN CHILDREN

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Initial emergent therapy of acute seizures involves intravenous benzodiazepines. In the absence of intravenous access buccal, intranasal or rectal routes are other effective options.

Primary Objectives: To compare the efficacy of buccal with intravenous midazolam in the control of acute seizures in terms of: -

a) Proportion of seizure episodes controlled within 10 minutes
b) Mean time required to control seizures

Secondary Objectives:

a) Mean time required for administration of drug
b) To compare time to regain consciousness

Study Design: Open labelled Randomised Controlled Trial

Material and Methods: Consecutive 80 patients (2 months-12 years) with acute seiuzres presenting to the Emergency Ward of Department of Pediatrics, Government Multi Speciality Hospital, Sector-16, Chandigarh, India were randomely allocated to 2 Groups, Group 1 received buccal midazolam (0.3 mg/kg/dose) and Group 2 received intravenous midazolam (0.1 mg/kg/dose).

Results: Seizures were controlled in buccal and intravenous group in 95% and 97.5% of cases respectively within 10 min. (P =1.00). Median (IQR) time required to control seizure in buccal and intravenous group was 92.5 (71.2, 105) and for 232 (203, 288) seconds respectively with P value <0.001. Mean time taken for drug administration in buccal and intravenous group was 29.25 + 9.631 and 175.45 + 61.035 seconds respectively (P <0.001). Regain of consciousness time was significantly shorter in buccal midazolam group as compared to intravenous group (P = 0.03).

Conclusions:

- Buccal midazolam is effective and safe in treatment of active seizure in pediatric age group.
- Time for buccal drug administration was significantly less.

Keywords:
Buccal Midazolam, Acute Seizures

FAMILIAL ATP1A3-RELATED DISEASE IN A CHILD WITH MILD ALTERNATING HEMIPLEGIA OF CHILDHOOD AND VARIABLE FAMILIAL PENETRANCE

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Background: Alternaitng Hemiplegia of Childhood (AHC) predominantly occurs as a sporadic disease usually due to ATP1A3 mutation with only three families previously reported. Here we report a mother and son who manifested variable penetrance with the child showing typical AHC manifestations, albeit mild, and the mother showing even milder symptoms. This has not been reported before.

Case Report: Our patient is a 10year male with an ATP1A3 gene mutation (R463C, c.1387C>T, heterozygous, variant predicted to be disease causing) who was born at term. Pregnancy was complicated by preeclampsia and frequent preterm labor; delivery and postnatal course were uneventful. He presented to pediatric neurology clinic with the following: 1) Episodes of predominantly right sided hemiplegia and at times quadriplegia that started at the age of seven years which would typically resolved with sleep and at times with laughter. 2) Full body dystonic episodes which started within weeks after birth and that occur 1-2 times per month. 3) Episodes of abnormal eye movements, autonomic dysfunction, tremor, myoclonus, ataxia, involuntary laughter, and choreoathetosis. His development, which was relatively normal during the first seven years of life (except for late toilet training and for need for speech therapy); school performance regressed at the age of 7 years. He was diagnosed with attention-deficit disorder and autism spectrum disorder. His neurological exam, MRI, and EEG were normal. His mother had the same ATP1A3 mutation and had history of dyslexia, mental difficulties, and hearing loss persisting into adulthood with one episode of weakness in childhood.

Conclusion: ATP1A3 disease within the AHC spectrum but outside the classical picture of AHC, can manifest with partial symptoms of AHC and with variable manifestations within the same family. Awareness of the spectrum of manifestations is important for recognition of the disorder and for initiation of proper diagnostic and therapeutic interventions.

Keywords:
Alternating hemiplegia of childhood, ATP1A3

FIRST ANTI-EPILEPTIC DRUG MEDICATION AND OUTCOMES AFTER THE FIRST 6 MONTHS OF TREATMENT IN A PAEDIATRIC NEUROLOGY SERVICE IN NIGERIA

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Background and Aim: Children in the developing world are disproportionately affected by epilepsy and access to appropriate diagnosis and anti-epileptic drugs (AED) are limited. There have been increasing efforts in reducing the epilepsy treatment gap in Africa. We set out to evaluate most frequently used first AED medication and seizure outcomes in the first 6 months of therapy.

Methods: All new cases of epilepsy seen in the tertiary Paediatric Neurology clinic, University College Hospital, Ibadan, Nigeria were prospectively followed for a minimum period of 6 months after first AED. Clinical data, detailed seizure history, EEG and neuroimaging were obtained to diagnose and classify epilepsy.

Results: A total of 386 children with epilepsy were enrolled. Age at first epileptic seizure ranged from 1 month to 15 years, median 3 years. Epilepsy was generalised in 241 (62.4%) and focal in 145 (37.6%). Common epilepsy syndromes in the cohort were West syndrome 18 (4.7%), childhood absence epilepsy 14 (3.6%) and Rolandic epilepsy 7 (1.8%). Sixty eight (17.6%) and 53 (13.7%) children had neonatal seizures and previous episodes of status epilepticus respectively. The leading AEDs prescribed as first treatment were carbamazepine 215 (55.7%) and sodium valproate 131 (33.9%), with use of phenobarbitone in 22 (5.7%). At the end of the first 6 months of treatment, 85 (22.0%) children had a change in AED and 207 (53.6%) remained on monotherapy. Children with associated neurological co-morbidities were more likely to have a change from the first AED prescribed by 6 months of treatment ($p<0.001$).

Conclusion: Two-thirds of childhood epilepsies in Nigerian children are generalised with marked delay in diagnosis. Carbamazepine and sodium valproate are the leading AEDs used as first line treatment in Nigerian children. One in five children in our cohort would require a change of AED by 6 months after start of therapy.

Keywords:
Epilepsy, Childhood, Anti-epileptic drugs, Outcomes

GASTROINTESTINAL MANIFESTATIONS OF ALTERNATING HEMIPLEGIA OF CHILDHOOD

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Background: Alternating Hemiplegia of Childhood (AHC) is a neurodevelopmental disorder characterized by recurrent episodes of paralysis, dystonia and other manifestations. In most patients, the cause is a mutation in the neuronal ATP1A3 gene. Although episodes of autonomic dysfunction such as sweating and flushing are known to occur, gastrointestinal symptoms have not previously been recognized to be a significant problem in AHC.

Aims: Describe the gastrointestinal manifestations in a cohort of 12 consecutive AHC patients seen during a 3-month period in our AHC multidisciplinary clinic.

Methods: Retrospective review of our prospective AHC database.

Results: All 12 patients exhibited gastrointestinal symptoms warranting medical attention. These included the following: vomiting (9), constipation (8), poor PO intake resulting in weight loss/failure to thrive (7), diarrhea (5), dysphagia (5), aspiration (3), dehydration (3), abdominal distension (2), sialorrhea (2), nausea (2), abdominal pain (1), and melena (1). Symptoms occurred independent of the hemiplegia, autonomic episodes or other AHC type spells. The mean number of gastrointestinal symptoms was 4.17/patient (median 4, range 1-9). Diagnostic procedures included upper endoscopies (4) and swallow studies (4). Specific diagnoses included GERD (8), food allergy (4), gastroparesis (2), and eosinophilic esophagitis (1). Medication management was needed in 11 patients. Surgical interventions included gastrostomy tube insertions in 6 (due to poor PO intake in 4/6 and recurrent aspirations in 2/6) and Nissen Fundoplications due to GERD (2/6). Furthermore, 1 patient with a gastrostomy tube also required endoscopic botulinum toxin injections to the pylorus due to gastroparesis.

Conclusions: Gastrointestinal problems are common and are at times severe in patients with AHC. Awareness of these problems and anticipatory guidance should help in planning the correct medical and surgical interventions for AHC patients. Our findings also suggest that the neuronal pathophyisology of the disease results in dysregulation and abnormalities in the function of the gastrointestinal system.

POLYSOMNOGRAPHIC FINDINGS AND SLEEP DISORDERS IN PATIENTS WITH ALTERNATING HEMIPLEGIA OF CHILDHOOD

Dr. Linh Tran[1], Dr. Sujay Kansagra[1], Dr. Ryan Ghusayni[1], Dr. Bassil Kherallah[1], Dr. Talha Gunduz[1], Ms. Melissa McLean[1], Ms. Lyndsey Prange[1], **Dr. Mohamad Mikati[1]**

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Background and Aims: Patients with Alternating Hemiplegia of Childhood (AHC), a disorder that starts during the first 18 months of life, experience bouts of hemiplegia and other paroxysmal spells that resolve during sleep. Patients often have multiple comorbidities that could negatively affect sleep, yet sleep quality and sleep pathology in AHC are not well characterized. This study aims to report sleep data from both polysomnography (PSG) and clinical evaluations in patients with AHC.

Methods: We analyzed nocturnal PSG and clinical sleep evaluation results of a cohort of 28 consecutive patients (22 children, 6 adults) with AHC evaluated in our AHC multidisciplinary clinic according to our comprehensive AHC clinical pathway. This pathway includes, irrespective of presence or absence of any sleep related complaints, a baseline PSG and evaluation by a board-certified sleep specialist.

Results: Out of 22 children, 20 had at least 1 type of sleep problem. PSG was performed on all 22 children. Six had obstructive sleep apnea (OSA) and 8 had central sleep apnea. Patients had abnormal mean overall apnea-hypopnea index of 5.8 (range 0-38.7) and an abnormal mean arousal index of 15.0 (range 4.8-46.6). Based on sleep history, 16 children had difficulty falling asleep, staying asleep or both, 9 had behavioral insomnia of childhood, and 2 had delayed sleep-wake phase syndrome. Out of the 6 adults, 5 had difficulty falling asleep, 3 had difficulty staying asleep, 6 had nighttime awakenings, and 3 had frequent snoring. PSG could be performed on 4 adults and revealed OSA in 2. Other sleep related complaints in adults included prolonged sleep, daytime sleepiness, sensations, pain, and movements during sleep.

Conclusions: Sleep dysfunction is common amongst children with AHC and this also occurs in adults with the disorder. Physicians should routinely screen for sleep pathology, with a low threshold to obtain a nocturnal PSG.

Keywords:
alternating hemiplegia in childhood, ATP1A3 mutations, polysomnography, sleep, sleep apnea

Comparison of PSG findings in children with AHC versus normal population data

Variable	Mean	Standard Error of Mean	Range	Population Mean +/- Standard Deviation	One-Sample T-Test (P-value)
Combined Apnea Hypopnea Index (AHI)	5.8	1.88	0-38.7	0.2 +/- 0.6[13]	0.007*
Average Sleep O2 Saturation	97%	0.3%	94-99%	97 +/- 0.6%[36]	0.584
O2 Saturation Nadir	88%	1.7%	59-97%	91.8 +/- 2.7 %[36]	0.05
Arousal Index	15.0	2.07	4.8-46.6	6.1 +/- 1.8[36]	<0.001*

SLEEP DISORDERED BREATHING AND SCOLIOSIS IN TYPE 1 CHIARI MALFORMATION WITH SYRINGOMYELIA AND SYRINGOBULBIA

Doctor Zakir Shaikh[1], Doctor Nilofar Dudha[2], Doctor Mandeep Rana[2], **Miss Devin Gardner[3]**

[1]Surat Municipal Institute of Medical Education and Research, Surat, India, [2]Boston University Medical Center, Boston, United States, [3]Marist College, Poughkeepsie, United States

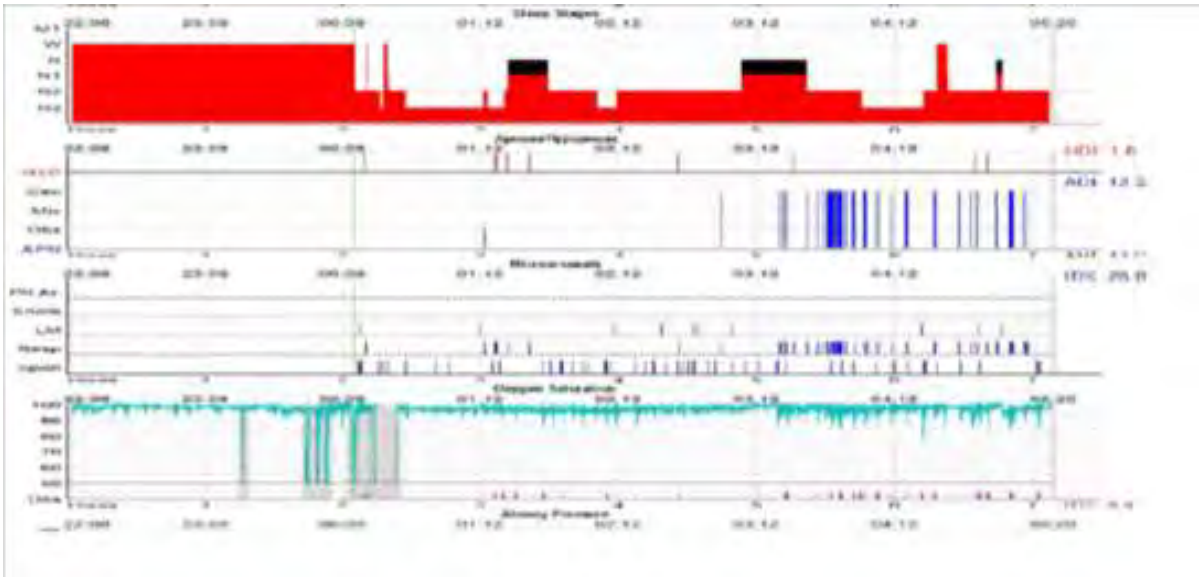
Background and Aims: Sleep disordered breathing that includes obstructive and central sleep apnea are common in chiari malformation. We describe a case of female who found to have severe central apnea and mild obstructive sleep apnea on polysomnography that raised suspicion about the possibility of posterior fossa lesion or chiari malformation and resolution of central sleep apnea after surgical decompression.

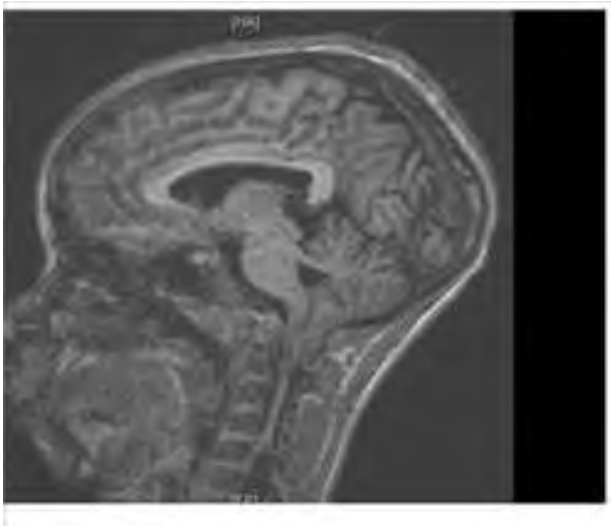
Methods: Case Report

Results: 13 year old female was seen for initial evaluation for snoring, multiple nocturnal awakening and tonsillar hypertrophy. She also reported throat discomfort, tonsillolith and pause in her breathing witnessed by family. Polysomnogram revealed overall AHI was 14 with Obstructive AHI 2 and Central AI 12. The central events were prominent during NREM sleep during second half of the study night in supine position. Her BMI was normal. MRI brain revealed Chiari I malformation with peg like configuration of the cerebellar tonsils, displaced 2.1 cm below the level of foramen magnum. Cervical Spine MRI revealed large syrinx that extends from C2 to T12, more prominent from C4 to T2. On further evaluation noted to have right sided weakness, decreased pin prick and vibration, altered temperature sensation on contralateral side and positive Romberg. She underwent sub occipital Chiari decompression, C1 laminectomy, and duraplasty. Her breathing significantly improved, no apneic spells noted. Postoperative follow up, her symptoms of snoring and witnessed apnea were entirely resolved. Follow up PSG, 3 months later showed no SDB with AHI of 0.7.

Conclusions: The severe SDB in this case most likely related to brainstem compression affecting dorsal and ventral respiratory neurons in lateral medulla which is responsible for respiratory rhythm genesis. The central apnea occurs through depression of respiratory afferents (DRG and VRG) and/or efferent conducted by vagus and glossopharyngeal nerve. Obstructive events more likely due to depression of inspiratory signals to laryngeal muscles.

Keywords:
Sleep Disordered Breathing, Chiari Malformation, Central Sleep Apnea





COMPARISON OF TWO INVASIVE DIAGNOSTIC METHODS FOR HELICOBACTER PYLORI IN CHILDREN

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Background and Aims: There are some challenges for the diagnosis of H. pylori through invasive diagnosis. In case of rapid urea test, the presence of other urease producing bacteria in the stomach cannot be denied. Also, when density of the bacteria is low, rapid urea test has been reported with poor sensitivity. Isolation of H. pylori has several disadvantages: special condition for transporting, media, incubation and few days waiting for the colonies to appear. The aim of this study was to reveal the relationship between rapid urease test and isolation of H. pylori in children.

Methods: A group of 1757 children, admitted in a pediatric gastroenterology regional center in Northeast Romania, diagnosed with gastritis and/or peptic ulcer by upper endoscopy underwent gastric biopsy for H. pylori infection.

Results: Out of 1757 children with gastritis, 574 children (32,67%) had H. pylori infection diagnosed by the urease test. Out of 574 children, in 541 children (94.25%), the infection was confirmed by the direct microscopic examination. In our study, we found a highly significant association between these two diagnostic methods of H. pylori infection ($\chi 2$; $p < 0.001$). Referring to the results obtained by the microscopic examination, the urease test had sensitivity values (99.81%) and specificity (97.28%) very good. The urease test presented 1 false negative case and 33 false positive cases.

Conclusions: In children, H. pylori infection can be diagnosticated through only one test, when we used upper endoscopy. The low cost, ease and speed of diagnosis of H. pylori infection gives urease test an advantage.

Keywords:
Helicobacter pylori, invasive tests, urease test, children

ETIOLOGY OF CHRONIC PANCREATITIS IN CHILDREN - SINGLE CENTRE EXPERIENCE

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Background and Aims: Chronic pancreatitis (CP) is of a rare occurrence in childhood. The etiology of CP in children is varied and includes anatomic anomalies, gene mutations, metabolic disorders and others. The aim of this study was to investigate the etiological aspects of CP in children from well-defined homogenous single-centre cohort.

Methods: 369 children with CP (aged: 0.6-18 years; mean 9; F-191, M-178) hospitalized between 1988 and 2017 were enrolled into the study. The diagnosis of CP was established according to INSPIRE recommendations. Clinical and epidemiological data were recorded and analyzed. All patients were screened for mutations in the high-risk genes associated with CP (CFTR, CTRC, PRSS1, SPINK1, CPA1, CEL-HYB). All children had preceding imaging studies, including US, CT, MRCP and/or ERCP.

Results: Gene mutations were found in 226 children (61.2%) (SPINK1 mutation in 90 children, CTRC in 90 patients, CFTR in 48 patients, PRSS1 in 46 children, CEL-HYB in 8 and CPA1 in 4). Anatomic anomalies of pancreatic duct were diagnosed in 57 patients (15.4%) (36-pancreas divisum, 8-ansa pancreatica, 7-ABPU, 2-two main pancreatic ducts, 4-other). Toxic-metabolic risk factors were found in 46 patients (12.4%), with dominance of lipid disturbances (26 children). CP was associated with biliary tract diseases in 42 patients (11.4%). Autoimmune pancreatitis was diagnosed in 9 children (2.4%). Idiopathic CP was diagnosed in 50 children (16%).

Conclusions:
1. Gene mutations and anatomic anomalies of pancreatic duct are the most common etiologic factors of CP in children.
2. Our data demonstrate the need for genetic testing in children with CP.

Keywords:
chronic pancreatitis, children, gene mutations

HEPATIC INSUFFICIENCY DUE TO DIFFUSE NEONATAL HEMANGIOMATOSIS

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Background and Aims: The term diffuse neonatal hemangiomatosis (DNH) has been used to describe multifocal vascular lesions affecting the skin and organs. We report the case of an infant with a diffuse neonatal hemangiomatosis.

Methods: A 45-day-old male infant with respiratory distress, tachypnea, and intercostal retractions. In the last 24 hrs, he refused to eat. He had a heart rate of 160 beats/minute and an oxygen saturation of 89%. Multiple papule-like purple lesions compatible with hemangiomas were noted on his thorax, abdomen, and extremities. The abdomen was found distended with hepatosplenomegaly. Liver function tests showed total bilirubin 10.9 mg/dL, direct bilirubin 1.9 mg/dL, indirect bilirubin 9 mg/dL, AST 160 UI/dL, ALT 178 UI/L, LDH 585 UI/L, alkaline phosphatase 246 UI/L, gamma-glutamyl transpeptidase 178 UI/ml, creatinine 0.4 mg/dL and ammonium 80 mg/dL. An echocardiogram showed heart failure, elevated pulmonary artery pressure and a patent ductus arteriosus. Abdominal ultrasound showed countless hypoechoic lesions involving the entire liver parenchyma. On MRI the main hepatic artery, hepatic veins and inferior vena cava were dilated. Multiple hypointense focal lesions on T1 and hyperintense on T2, 10-30 mm in diameter with very little liver parenchymal between them were seen. Figure 1 and 2. Treatment for heart failure with digoxin and furosemide was started. Also, prednisolone 2 mg/kg/day and propranolol at an initial dose of 1 mg/kg/day and gradually increased to a dose of 3 mg/kg/day were administered for DNH.

Results: At 12 months of age, the skin lesions had disappeared. A follow-up ultrasound showed reduction of hypoechoic lesions (less than 2 mm). At 24 months of follow-up the patient had no evidence of heart failure and normal liver function. Figure 3.

Conclusion: Diffuse neonatal hemangiomatosis is a rare and potentially fatal disease. Due to its rapid development, early intervention is necessary to prevent progression.

Keywords:
Newborn, liver, hemangiomatosis

Figure 1. MRI delineates multiple discrete homogeneous lesions, 10-30 mm in diameter with very little liver parenchymal between them.

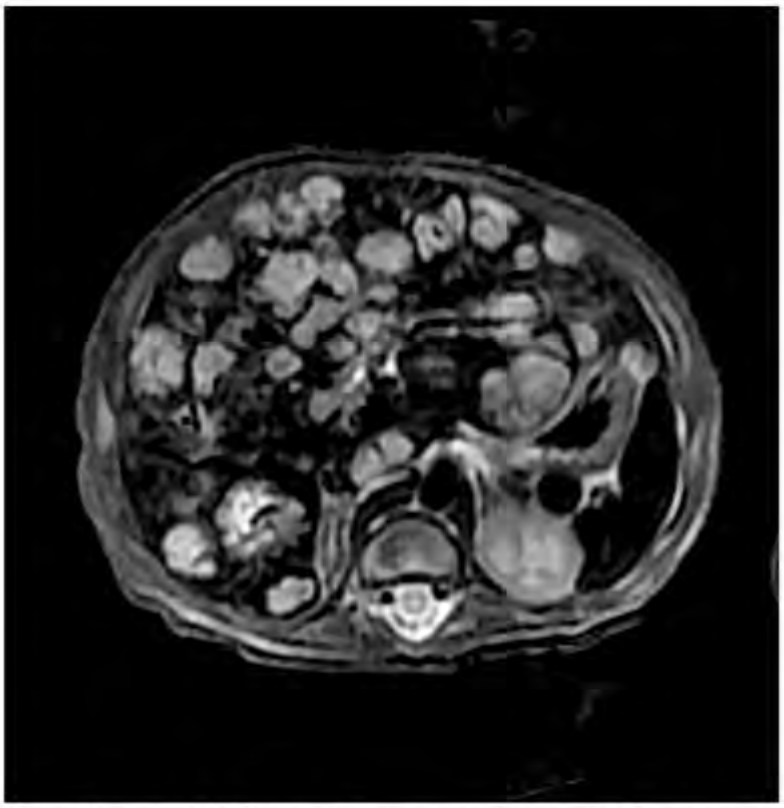

Figure 2. An axial T2 magnetic resonance image with fat saturation demonstrates multiple hyperintense lesions with near total hepatic parenchymal replacement.

Figure 3. Ultrasound images twenty-four months later: the hypoechoic lesions seem unnoticed.

AUTOINMUNE HEPATITIS IN CHILDREN IN A FOURTH-LEVEL HOSPITAL. CASE REPORT

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Autoimmune hepatitis inflammatory necrotic process of the liver, progressive to cirrhosis. Of etiology not well elucidated probably multifactorial, genetic factors and a trigger of the disease, probably viral. Presentation very variable from asymptomatic of casual findings to fulminant starts, so the treatment is wide from immunosuppression with corticosteroids to the need for liver transplantation. The diagnosis is clinical by signs and symptoms of liver disease, laboratorial by the presence of markers: hypergammaglobulinemia, antibodies ANA, LKM, etc.

Objective: To present 3 cases with a diagnosis of auto hepatitis in the National Hospital of Itauguá-Paraguay.
The 1st, patient with jaundice month history, with marked hyperbilirubinemia and hepatomegaly, with good clinical evolution started the treatment;
The 2nd of torpid evolution, patient of 8 years who enters for emergencies. Due to the fall from the own height and the fracture of the femur, whose analysis shows alterations in the hepatic functionality with blood dyscrasia, elevated transaminases, factor VII deficiency, laboratories suggestive of HAI and subsequently infection of the site of difficult resolution.
Third, a 14-year-old patient with history of petechiae in lower limbs 8 months, laboratories where moderate anemia and ANA +, in follow-up plan for rheumatology, the patient has not returned to control, and then to the emergency room with a 3-day history of hematemesis, anasarca, hypoalbuminemic tomb, total proteins elevated by hypergammaglobulinemia, blood dyscrasia and transaminase decreased by liver cirrhosis, hepatic encephalopathy developed and death after ten days of hospitalization.

It draws attention to the diversity of the three cases, with different evolutions, which evidences an early diagnosis and early start of the fundamental treatment for the subsequent evolution.

KNOWLEDGE OF PEDIATRICIANS ON GASTROESOPHAGEAL REFLUX DISEASE, DIAGNOSIS AND TREATMENT

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Background and Aims: Physiologic gastroesophageal reflux has a prevalence of 85% during the first year of life. To evaluate knowledge of Mexican pediatricians regarding the diagnosis and treatment of gastroesophageal reflux disease in patients younger than 1 year old.

Methods: This is a questionnaire, semiquantitative, and transversal study. A survey with 18 questions was developed and validated using Delphi methodology. Google Forms platform was used to distribute and apply the survey to general pediatricians and sub-specialists. Participation was anonymous and voluntary. The evaluation was based on American and European Societies for Pediatric Gastroenterology, Hepatology and Nutrition and Secretaria de Salud of Mexico. Performance was classified on correct answers: poor (0-4), regular (5-7), and good (8-10). Statistical descriptive and inferential analysis was applied using Microsoft Excel 2013 and SPSS Statistics 20.

Results: 139 pediatricians were surveyed. 59.71% of the surveyed pediatricians have a sub-specialty. Women got better scores evaluations against men (p=.03). Gastroenterologists obtained better scores when comparing against pulmonologists but not against other groups. Most (47.5%) of the pediatricians overestimated GERD prevalence. 63% of the pediatricians would initiate empiric therapy having diagnosis suspicion. When presented with GERD, a few (12.23%) considered a pHmetry and most of the pediatricians considered initiating empiric therapy (42.45%). Most (85.1%) of the pediatricians would use a motility agent, most likely cisapride (49.64%).

Conclusion: In this sample pediatricians do not follow guidelines recommendations despite most of them consider having a considerable knowledge of this disease. These results suggest a need to encourage knowledge update based in clinical practice guidelines.

Keywords:
gastroesophagic reflux disease, survey, pediatrics.

KWASHIORKOR: A RARE INITIAL PRESENTATION OF CYSTIC FIBROSIS

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Backgrounds and Aims: Cystic fibrosis (CF) is a multisystemic disease, resulting from a defect in the cystic fibrosis transmembrane regulator (CFTR) gene which results in a dysfunctional protein unable to transport sodium and chloride ions across cell membranes. It occurs primarily in Caucasians but it can also affect Hispanics. Its incidence in Mexico is not well documented, but it affects around 1 in 8,000 live births. Nutritional failure in CF is multifactorial; there is fat, protein and fat-soluble vitamin malabsorption as a result of pancreatic insufficiency, and bile salt abnormalities due to liver disease, exacerbated by an increased work of breathing secondary to pulmonary infections. Kwashiorkor is a recognized complication of CF characterized by hyproproteinemia, edema and anemia, however, it is rarely the presenting feature of CF.
The aim of this poster is to present a case of CF presenting as an acute protein malnutrition without respiratory symptoms.

Methods: A 3-month-old girl with a history of loose stools, anemic syndrome, xerosis, edema and acute malnutrition. The patient had a positive family history with a brother that died in infancy due to an unknown GI problem. Upon arrival, she was started on a malnutrition protocol to work-up the etiology. She was found to have an elevation of liver enzymes, anemia, hypoalbuminemia, a positive fecal fat test, and a duodenal biopsy that ruled outl ymphangiectasia. She was discharged one month later with a full recovery, however, she was readmitted two months later with acute malnutrition without an apparent cause, raising suspicion for CF as a possible etiology. Two sweat chloride test were abnormal (> 60 mmol/L), leading to the diagnosis of CF.

Conclusions: Kwashiorkor is a very rare presentation of CF, but it must be considered in the differential diagnosis of acute malnutrition, especially when there is relapse in management.

Keywords:
Malnutrition, Cystic Fibrosis, Kwashiorkor

MULTICENTER RANDOMISED-CONTROLLED TRIAL OF THE EVALUATION OF THE TOLERANCE AND SAFETY OF EARLY ENTERAL NUTRITION IN CHILDREN AFTER PERCUTANEOUS ENDOSCOPIC GASTROSTOMY PLACEMENT

Dr Anna Wiernicka[1], Malgorzata Matuszczyk[1], Prof Agnieszka Szlagatys-Sidorkiewicz[2], Prof Ewa Toporowska-Kowalska[3], Dr Katarzyna Popinska[4], Prof Urszula Chlebowczyk-Grzybowska[5], Dr Ewa Hapyn[6], **Prof. Jaroslaw Kierkus[1]**

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Aim: To assess the tolerance and the safety of early (3 hours) versus delayed (8 hours) initiation of feeding after the percutaneous endoscopic gastrostomy (PEG)procedure in children. The goal is to establish an optimum post PEG feeding standard in paediatric patients.

Material and Methods: Children with clinical indications for PEG placement recruited from six medical centers in Poland were included to the study. Patients were centrally randomized to receive the first feeding bolus via a feeding tube 3 hours (group 1) or 8 hours (group 2) after the PEG placement. Preparation for the procedure, postoperative care and resumption of feeding were performed according to the study designed protocol in all patients. The primary endpoint was the number of patients who achieved full feed (total fluid and caloric requirements) within 48 hours of the first feeding bolus.

Results: A total of 97 patients were randomized; 49 patients were assigned to the group 1 and 48 to the group 2. There was no differences in the tolerance of feeding (81,6% vs 91,6%), the number of complications (25,5% vs 37,5,%) and the duration of hospitalization after PEG placement between the groups (p>0,05). Most complications were mild. Two patients (all in group 2) due to the PEG dislocation (6 days post PEG placement in one case and 14 days in the other) were qualified for the laparotomy. One death not related to the investigational procedure has been reported during the study (7 days post PEG placement, group 2).

Conclusions: The introduction of early feeding (3 h) after PEG placement in children appears to be well tolerated by patients. Early initiation of post PEG feeding did not have any impact on number of complications and the duration of hospitalization.

NON-HIGH-DENSITY-LIPOPROTEIN CHOLESTEROL (NON-HDL-C) LEVEL AND SKIPPING BREAKFAST IN SCHOOL CHILDREN

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Objective: To examine whether skipping breakfast is associated with increase the levels of non-HDL-c among school children.

Design, Setting, and Participants: A cross-sectional survey was conducted among 539 school children aged 9-12 years old from Niagara Region of Canada.
Main outcome measures: Non-fasting finger blood was taken for total-c and HDL-c measurements. Non-HDL-c was calculated as the difference between total-c and HDL-c. The information of skipping breakfast during the previous week was obtained from a questionnaire, which was categorized into three groups, i.e., none, 1-3 times, and 4+ times. Demographic information and other related variables were described by the three skipping breakfast groups.

Results: Approximately 44% children (n=182) reported skipping breakfast in the last week. There were significant differences between the three groups in the means of total-c, non-HDL-c, BMI, waist circumference, proportions of overall health excellent, eating dinner with parent, and skipping breakfast affecting learning ($P<0.05$). The number of days of skipping breakfast was weakly correlated to the level of non-HDL-c ($r=0.145$, $P<.0001$). Multiple regression results indicated that every one more skipping breakfast would increase approximately 0.06 mmol/L level of non-HDL-c ($P<0.01$), on average, after adjusting for those aforementioned potential confounding variables. The adjusted mean levels were 2.772, 2.942, and 3.070 mmol/L for none, skipping 1-3 times, skipping 4+ times of breakfast, respectively; the mean differences between none and other two groups were statistical significance ($P<0.05$).

Conclusion: Non-HDL-c levels is positively associated with the number of skipping breakfast among school children and further research is needed to confirm this relationship.

Keywords:
non-HDL cholesterol, school children, skipping breakfast

PATTERN AND FACTORS ASSOCIATED WITH MALNUTRITION AMONG PRIMARY SCHOOL PUPILS IN PLATEAU STATE, NIGERIA.

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[1]Jos University Teaching Hospital, Jos, Jos, Nigeria, [2]Jos University Teaching Hospital, Jos, JOS, Nigeria, [3]Jos University Teaching Hospital, Jos, JOS, Nigeria

Background:
Appropriate and adequate diet is required for the optimal growth and development of school aged children. Nutrition education and dietary intervention is often emphasized, to the exclusion of non-dietary and social/environmental factors that may influence nutritional status. Knowledge of this factors would guide intervention measures.

Objective: The aim of this study was to determine the prevalence, pattern of malnutrition and associated factors among primary school pupils in Plateau State, Nigeria.

Methodology: Using stratified simple random sampling, 390 pupils were recruited from 10 randomly selected public and private primary schools across Plateau State in North Central Nigeria. Information on hygienic practices and crowding status were obtain using Structured Interviewer administered questionnaires. Weight and height to the nearest 0.1kg and 0.1cm respectively were measured. The BMI, weight and height z scores were analyzed using SPSS version 21.

Results: Age range was 6-12 years (mean 9.7 ±1.92) with a M:F ratio of 1.04 : 1. 109(27%), 190(48.7%) and 91(23.3%) were from lower, middle and upper Socio Economic Class respectively. Using Height Z score, 224(57.4%) 112(28.8%) and 54 (13.8%) were normal, stunted and Tall for age respectively. BMI-Z score showed 307(78.8%), 63(16.2%) and 20(5.1%) were normal, undernourished, and overnourished respectively.
Having more persons living in a house, more children in the house, not bathing nor changing underwear daily was associated with both stunting (p-0.00, 0.002, 0.00, 0.00) and undernutrition (p-0.00, 0.013, 0.002, 0.020). While increased number of persons sharing bed with index child was associated only with stunting (p-0.007)

Conclusion: There was a high prevalence of stunting and undernutrition in the study group. Education on the primary cause of malnutrition along with hygienic and socio-environmental factors is crucial in combating it

Keywords:
Malnutrition, Primary School children, Non-dietary Factors

PREVALENCE OF MALNUTRITION AMONG WAYUU CHILDREN IN LA GUAJIRA, COLOMBIA

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[1]Baylor College Of Medicine & Texas Children's Hospital, Houston, United States, [2]Baylor College of Medicine Children's Foundation Colombia, Bogota, Colombia

Background: Malnutrition contributes to over 50% of all preventable deaths in children under the age of five worldwide. In 2014, the Baylor College of Medicine Children's Foundation Colombia, as part of a needs assessment, weighed and measured all children between the age of 6 months and 5 years in 172 Wayuu communities in La Guajira. Our primary objective was to determine the prevalence of malnutrition.

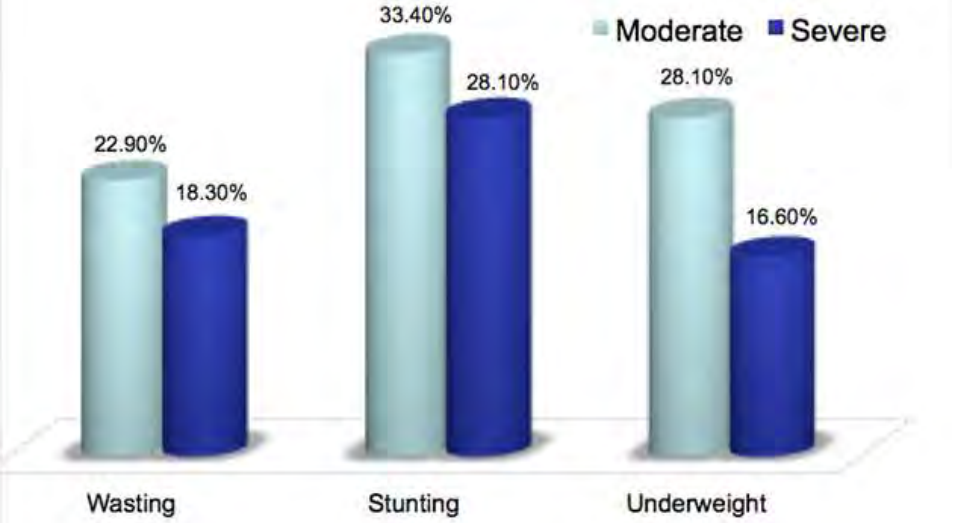
Methods: All children under five within the Wayuu communities were measured and weighed. World Health Organization based z-scores were utilized for determining the prevalence of wasting (weight for height) and stunting (height for age). Children are considered wasted or stunted if they have a WHO z-score of < -2 and severe if < -3.

Results: Out of the 1420 children included in the wasting analysis, 585 (41.2%) met criteria for wasting, and 260 children (18.3%) met criteria for severe wasting. Normally nourished children had a younger median age (29 months) than the children with wasting (34 months; adjusted p-value = 0.03). Out of 1433 children included in the stunting analysis, 882 (61.5%) met criteria for stunting and 403 (28.1%) met criteria for severe stunting. The nutritionally normal group had more children in the 6-12 month age group than the stunted and severely stunted groups (adjusted p-value < 0.001).

Conclusions: Malnutrition rates among Wayuu children in La Guajira are tremendously high. This is likely due to the predominance of rural based communities with a significant lack of resources, susceptibility to recent drought, food insecurity, and limited access to medical and nutritional support. Other studies have also found disproportionately high levels of malnutrition among indigenous groups in Latin America. The Wayuu and other indigenous and resource-limited populations in Latin America require urgent assistance to address their disproportionately high rate of malnutrition and food insecurity.

Keywords:
Malnutrition, wasting, stunting, indigenous, Wayuu

Prevalence of Malnutrition



Wasting (Weight for Height)

	Normal	Under-nourished z-score < -1	Wasted z-score < -2	Severely Wasted z-score < -3
6-12 months	19.1%*	10.7%	9.5%	12.7%
13-23 months	22.6%	17%	19.7%	22.3%
24-35 months	24%	22.2%	27.4%	24.6%
36-47 months	17.3%	22.9%	24.3%	19.6%
48-60 months	17.1%	27.2%*	19.1%	20.7%

* Significantly different on post-hoc analysis

Stunting (Height for Age)

	Normal	Stunted z-score < -2	Severely Stunted z-score < -3
6-12 months	20.3%*	9.0%*	8.7%*
13-23 months	16.9%	21.9%	23.8%
24-35 months	20.3%	25.1%	29.0%
36-47 months	19.4%	21.1%	22.3%
48-60 months	23.0%	23.0%	16.1%

* Significantly different on post-hoc analysis

Pulmonology

PROFILE OF HISPANIC PEDIATRIC PATIENTS ADMITTED TO HOSPITAL DUE TO ASTHMA EXACERBATION

Lara S. Oliver-Torres[3], MD Lymarie C. Rosado-Barreras[1], Bryan López-Ortiz[2], PhD Anabel Puig-Ramos[1], MD Gilberto Puig[1,3]

[1]Upr- School Of Medicine, San Juan, United States, [2]Upr- Rio Piedras Campus, San Juan, United States, [3]San Jorge Children's Hospital, San Juan, United States

There is a prevalence of asthmatic children and hospital admissions due to asthma attacks among Puerto Ricans living in the island over ones living in the United States. This study assessed the profile of patients admitted to PICU and Ward due to asthma exacerbations. This retrospective case-control study evaluated all admissions due to asthma, of patients 4-21 years old, to a pediatric children's hospital in San Juan, Puerto Rico from July 2016 to July 2017.

Patients under mechanical ventilation at home, history of: any neuromuscular disorder, cystic fibrosis, bronchopulmonary dysplasia, NICU admission, immunosuppression, and less than 48 hours with symptoms were excluded.

The following data was collected: demographic, origin (PICU or Ward), clinical, previous hospital admissions, and relevant past medical history and management. Asthma severity was assigned using the Asthma Clinical Respiratory Score (CRS) on admission. Data was expressed as means, medians ± SD, frequencies, and percentages as appropriate. An un-paired Mann-Whitney test was used to compare continuous variables of patients from PICU vs Ward. A Fisher's Exact Test was used for proportions and categorical data.

In total 254 admissions were evaluated, 34% were from PICU. PICU admissions: 51% female, average age 8.9 years. Ward: 52% males, mean age 9 years. Hospital LOS of admissions to PICU were longer than admissions to Ward (9.2 vs 5.4 days). Average PICU LOS was 4.8 ± 2.4 days and average Ward LOS was 5.4 ± 3.3 days. PICU patients had 65% moderate and 35% mild asthma. Ward patients had 48% moderate and 52% mild asthma. A 95% of patients received IV steroids in the first 24 hours, only 28% used Ipatropium for asthma management.

This study can be used to define guidelines for admission of asthmatic patients to Ward or PICU since they are at risk for life-threatening exacerbations requiring PICU admissions.

Keywords:
Asthma, Critical Care, Hispanic

Sustainable development

A CRITICAL ASSESSMENT OF THE SCIENTIFIC INTEGRITY OF STATE ENVIRONMENTAL AND HEALTH PROCESSES RELATIVE TO A PROPOSED COAL-TO-DIESEL PLANT IN DALE, INDIANA

Dr. Norma Kreilein[1]

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Background and Aims: The proposed Dale, Indiana, coal-to-diesel conversion facility, which will process hydrogen sulfide to produce liquid sulfur (1), is situated inside town limits and near several vulnerable entities within a region known for numerous heavily-polluting coal-fired power plants. (2) (Fig. 1)
Spencer County, Indiana, ranks #23 among all US counties for toxic emissions, and Indiana ranks #1/56 states/territories for toxic releases/square mile. (3) Governor Eric Holcomb publicly stated that all the state's decisions about the project will be based on facts and science: "We're not going to do anything to jeopardize our health." (4) This abstract seeks to scrutinize existing Indiana environmental and health processes for scientific integrity relevant to the proposed plant.

Methods: Meta-scientific analysis used to examine existing Indiana environmental/health governence.

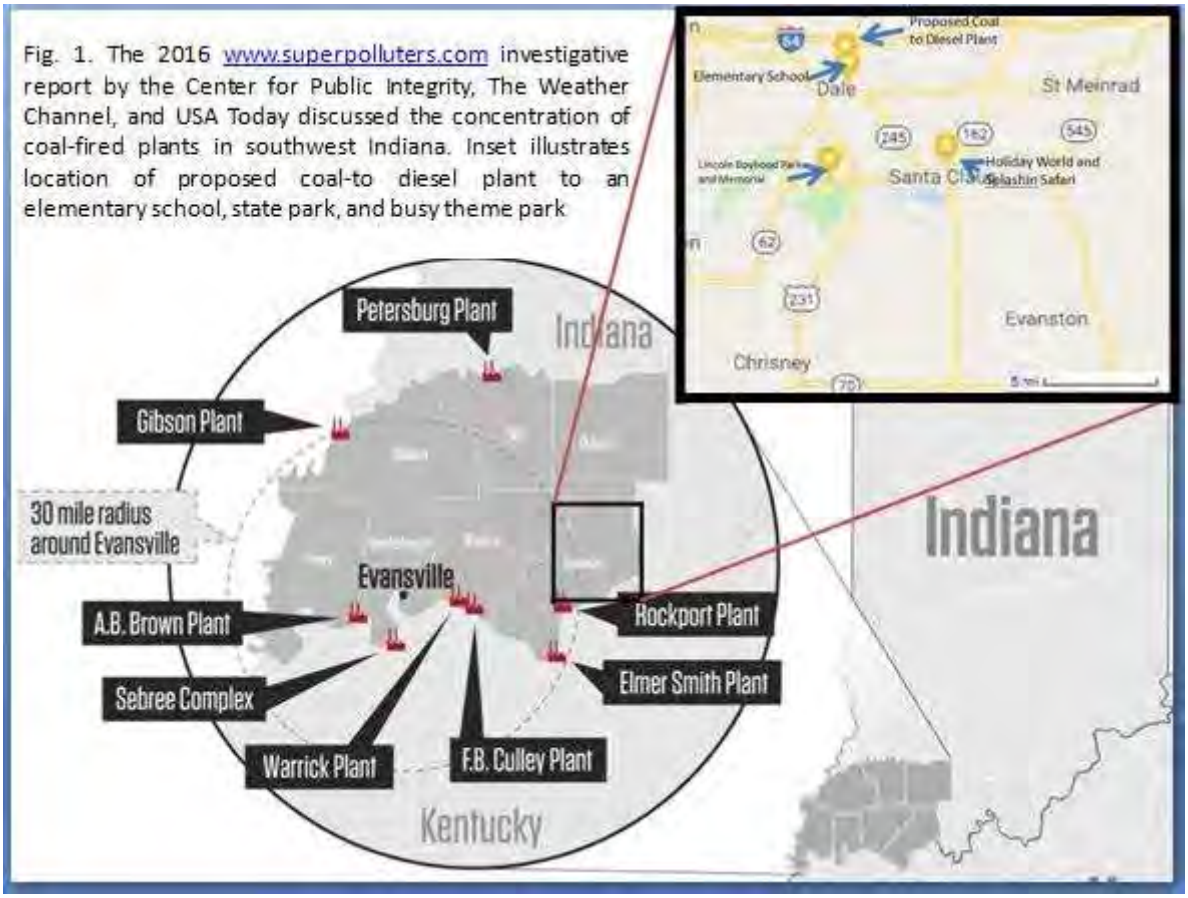
Results: Indiana Department of Environmental Management (IDEM) maps indicate southwest Indiana has few SO2 and particulate monitors, contradicting its statements that surveillance targets polluted areas. (5)(6) (Fig. 2) Numerous alerts suggest the region is disproportionately burdened. (7) (Fig. 3) IDEM utilizes "voluntary compliance and pollution prevention when working with the regulated community," and assists with permit completion. (8)(9) (Fig. 4) "The Indiana State Department of Health (ISDH) said it has no authority over outdoor air quality," despite previous internal and external appeals. (10) (11) "ISDH spokeswoman Jennifer O'Malley said by email that 'outdoor air quality is beyond the scope of ISDH and was not a consideration' in its infant-mortality work. . . the Indiana Department of Environmental Management. . . said it has no public-health specialists on staff." (2)

Conclusions: Historical and/or ongoing monitor mismatch/paucity, industrial self-policing/permit assistance, and failure to acknowledge pollutants influence public health benchmarks constitute serious, unacceptable breaches of scientific integrity which subvert Indiana government's duty to protect the health of its citizens.

1.https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=80600626&dDocName=80599966&Rendition=web&allowInterrupt=1&noSaveAs=1&fileName=80599966.pdf
2.https://features.weather.com/superpolluters/
3.https://iaspub.epa.gov/triexplorer/tri_factsheet.factsheet?&pstate=IN&pcounty=spencer&pyear=2016&pParent=TRI&pDataSet=TRIQ1
4.https://indianaeconomicdigest.com/main.asp?SectionID=31&SubSectionID=132&ArticleID=92397
5.https://www.in.gov/idem/airquality/2346.htm
6.https://www.in.gov/idem/toxic/2332.htm
7.https://www.in.gov/idem/

8.https://www.in.gov/idem/airquality/2344.htm
9.https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=82567597&dDocName=82568202&Rendition=web&allowInterrupt=1&noSaveAs=1&fileName=82568202.pdf
10. https://www.nwitimes.com/news/special-section/infant-mortality/medical-experts-air-pollution-a-likely-cause-of-infant-deaths/article_6056841e-5554-11e7-8715-d7ea7ffe3278.html
11.http://www.ipa2016.com/cfm/index.cfm?It=916&Id=1&Se=2&Lo=2&Sv=&Rn=1&AF=202&AA=Download&AD=1955,734 p304

Keywords:
sustainable development, scientific integrity, pollution, public health, Indiana Department of Environmental Management



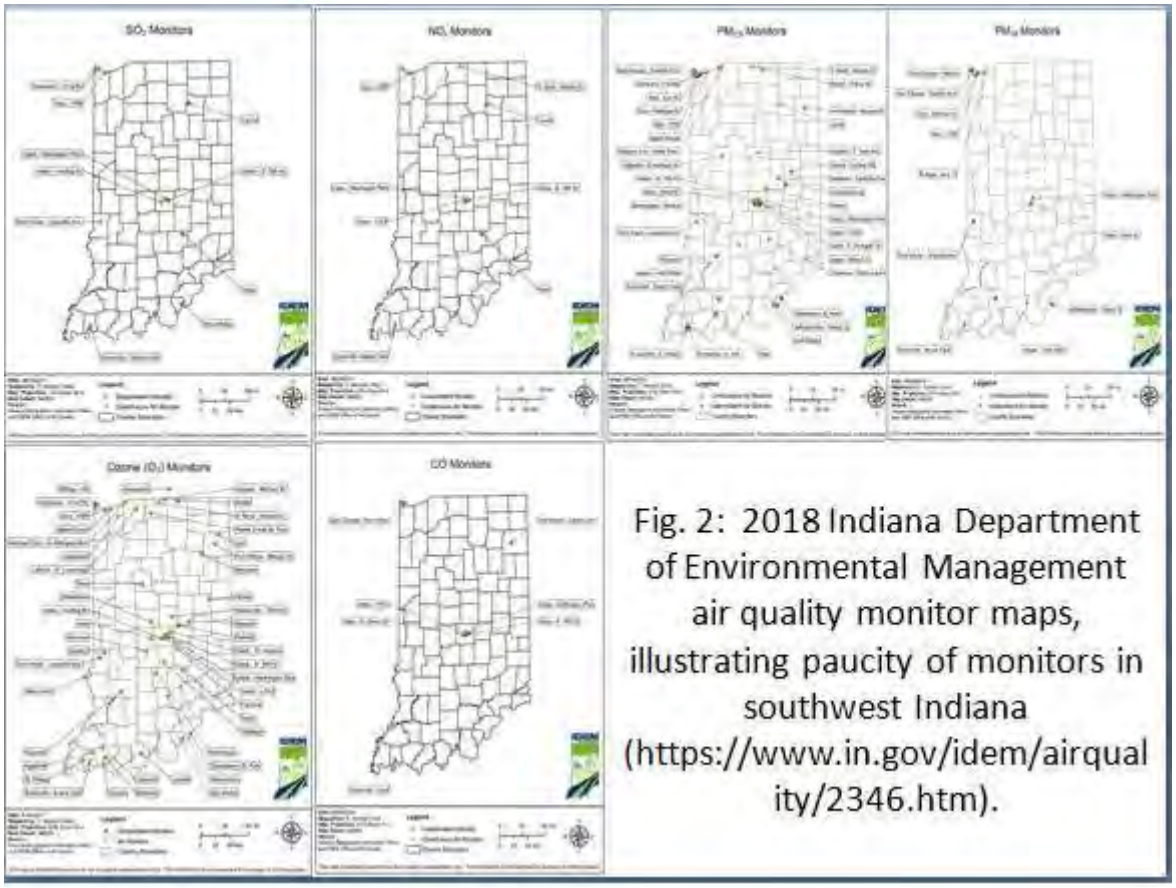


Fig. 2: 2018 Indiana Department of Environmental Management air quality monitor maps, illustrating paucity of monitors in southwest Indiana (https://www.in.gov/idem/airquality/2346.htm).

Figure 3. Recent Regional Ozone Alerts https://www.in.gov/idem/

News

Follow the latest news from IDEM News on Twitter.

7/13/2018	IDEM Issues Air Quality Action Day tomorrow for three Indiana regions
7/12/2018	IDEM Issues Air Quality Action Day tomorrow for four Indiana regions
6/29/2018	IDEM Issues Air Quality Action Day tomorrow for two Indiana regions
6/28/2018	IDEM Issues Air Quality Action Day tomorrow for five Indiana regions
6/27/2018	IDEM Issues Air Quality Action Day tomorrow for two Indiana regions

Fig. 4. IDEM Virtual File entry: IDEM official providing significant technical assistance in the permitting process for the proposed Dale, IN, coal-to-diesel plant.

From: Logan, Doug (mailto:DLogan@idem.IN.gov)
Sent: Monday, June 11, 2018 6:17 AM
To: Stoeben, Lamp
Subject: [External] Riverview Energy T147-39554-00001

Good morning,

There was an article about the project in yesterday's Indianapolis Star, apparently reprinted from the Evansville newspaper. That article described a higher production capacity than I remembered, so I have been working at my desk today. I do not see naphtha and diesel throughput expressed anywhere except the storage tank calculations. There, I calculated the tons PTE as it was noted in the previous permit project, as the total throughput of each product, e.g., naphtha, through each tank dedicated to the product, in the case, T1, T2, and T5 (the swing tank). That methodology is consistent with the way we typically calculate potential to emit for tanks. Putting the tank naphtha and diesel throughput totals into PTE calculations for loading racks gives results consistent with the application tables. The article I mentioned may have added up the numbers for all of the tanks in a category to get what the writer used as plant-wide capacity values, but I just cannot be sure. Can you provide the nominal output for naphtha and diesel?

I would like to have some clarification about HAPs. Table 1S has a list of HAPs for the loading rack, and the flyashes calculations use the same list, but I cannot track out what the HAP percentages in the naphtha stream are projected to be. When I try to work back from any consistent units for a HAP and VOC, I do not get the percentages that appeared in the earlier version of the calculations. Can you provide the component or plant annual emissions of the seven named HAP species in the naphtha product? Please clarify whether the entry means some mixture of substituted phenol compounds, like the name "phenols" implies (or if you meant phenol (hydroxybenzene), CASRN 108-95-2) since the CAS number appears in your list, too.

Thank you.

Doug Logan
Environmental Engineer, Office of Air Quality
Indiana Department of Environmental Management
Direct Phone: 317-234-5329
Fax: 317-232-6748
Email: dlogan@idem.in.gov

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https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=82567597&dDocName=82568202&Rendition=web&allowInterrupt=1&noSaveAs=1&fileName=82568202.pdf

A SEMANTIC INFORMATION STANDARD FOR GLOBAL CHILD HEALTH

Drs Elizabeth Siderius[1], Mrs Petra Poulissen[2], Emeritus Professor of Paediatrics Sanath Lamabadusuriya[3], Drs Marc de Graauw[4]

[1]Youth Health Care, GGD IJsselland, Zwolle, The Netherlands, [2]Rare Care World, Loosdrecht, The Netherlands, [3]Consultant Paediatrician, Colombo, Sri Lanka, [4]Healthcare ICT specialist, magrit.nl, Amsterdam, The Netherlands

Background and Aims: The United Nations Sustainable Development Goals (SDG) "ensure healthy lives and promote well-being for all ages". To meet the challenge of sustainable healthcare, communication and cooperation between all involved in child health should be supported. Information systems, providing interoperability between public health, medical- and social care, generate data to improve health. To establish a semantic interoperable child health record, efficient management and publishing of terminologies is a precondition.

Methods: A core set of terminologies was identified:

ICPC International Classification of Primary Care
HPO Human Phenotype Ontology
LOINC Standard for identifying health measurements, observations, and documents
ICD International Classification of Diseases
ORPHAnet Classification of rare diseases
OMIM Catalog of Human Genes and Genetic Disorders
ATC Anatomical Therapeutic Chemical Classification System
SNOMED Clinical health terminology
ICF International Classification of Functioning, Disability and Health

Some terminologies are already connected (ORPHAnet, OMIM, HPO), others (LOINC, ICF, ATC) need to be aligned to complete the health record. Recognizable features, diagnostics, therapies, and disabilities of six chronic diseases where aligned with the terminologies to demonstrate the feasibility of a universal child health record.

Results: A sub-set of terminologies was connected with medical guidelines of Thalassaemia, Sickle Cell Disease, Fibrodysplasia Ossificans Progressiva, Goldenhar-, Treacher Collins- and Shwachman Diamond syndrome. The ICPC, HPO and LOINC are useful as a diagnostic tool. After diagnosis, disease modules aligned with OMIM, ORPHAnet, ICD, LOINC, ATC and ICF can simplify the care for children with complex and disabling conditions. A tight integration of all terminologies for these conditions is possible and yields a promising model for earlier recognition and better care.

Conclusions: One integral international e-health concept based on common terminologies can help to work towards a universal integrated child health care, including the disabled child. Thus generating data to follow up on the SDG targets.

Keywords:
General Pediatrics, Chronic Disease, Global Health, Electronic Health Record

Technology and Social Media

A MOBILE PHONE-BASED DIGITAL HEALTH APPLICATION TO SUPPORT IMPLEMENTATION OF NEWBORN CARE PROGRAMS IN LOW/MIDDLE-INCOME COUNTRIES

Dr. Sherri Bucher[1], Ms. Elisabeth Meyers[2], Mr. Prem Avanigadda[2], Mr. Bhavani Agnikula[2], Dr. Saptarshi Purkayastha[2]

[1]Indiana University School Of Medicine, Indianapolis, United States, [2]IUPUI School of Informatics and Computing, Indianapolis, United States

Background and Aims: Each year, there are 2.65 million stillbirths and nearly 2.8 million newborn deaths, the majority of which are preventable and occur in low/middle-income countries (LMICs). Helping Babies Survive (HBS) programs train health care providers in LMICs to recognize and manage intrapartum asphyxia and complications from prematurity, and to deliver essential newborn care. Helping Babies Breathe (HBB), the flagship HBS program, has scaled in over 80 countries. We describe an integrated, mobile phone-based digital toolkit designed to provide comprehensive support for the entire suite of Helping Babies Survive programs across all aspects of the implementation cascade.

Methods: Using Android-based open-source tools and iterative, agile development processes, our team has developed an app, mobile Helping Babies Survive (mHBS), which is integrated with District Health Information System 2 (DHIS2), a health informatics and database platform used by Ministries of Health in many LMICs. mHBS/DHIS2 has off-line capability to support training, data collection (program metrics and indicators; mortality and morbidity outcomes), and data visualization functions for de-identified aggregate data. During field testing in Kenya and Nigeria, mHBS/DHIS2 will be used by nurse-midwives to access virtual reality neonatal resuscitation training simulations; conduct self-guided resuscitation debriefings and knowledge tests; and report perinatal deaths. Trainers will use mHBS/DHIS2 to evaluate health workers' newborn care skills and performance competencies.

Results: We have developed a built prototype of an innovative mobile phone app which is purpose-designed to comprehensively support health care providers in LMICs as they implement HBS programs for neonatal resuscitation, essential newborn care, and care for the small/premature baby.

Conclusion(s): mHBS/DHIS2 may prove to be an extremely valuable tool for newborn care providers in LMICs. Integration with DHIS2 provides a foundation for additional sustainability and scalability, and aligns with ongoing efforts by international partners to strengthen global data collection processes for newborn care.

EXPLORING THE VIEWS OF OSTEOGENESIS IMPERFECTA CAREGIVERS ON INTERNET-BASED TECHNOLOGIES: AN EXEMPLAR OF THE TECHNOLOGY VIEWS AND NEEDS OF CAREGIVERS OF CHILDREN WITH RARE AND CHRONIC CONDITIONS

Ms. Aimee Castro[1,2], Ms. Khadidja Chougui[1,2], Dr. Frank Rauch[1,2], Dr. Argerie Tsimicalis[1,2]
[1]*McGill University, Montreal, Canada,* [2]*Shriners Hospitals for Children-Canada, Montreal, Canada*

Background and Aims: Osteogenesis imperfecta (OI) (also known as "brittle bone disease") is a rare genetic condition that can lead to frequent debilitating bone fractures. Informal caregivers (such as parents) play a critical role in helping children with chronic and complex health conditions to thrive in the community. Research has shown that caregivers of children with OI often lack access to information about the condition, feel distressed, and are socially isolated. Internet-based technologies (IBT) have been useful for supporting caregivers in other populations. The objective of this qualitative descriptive study was to explore the views of OI caregivers on the uses of IBT to facilitate their caregiving work.

Methods: Eighteen adult caregivers of children with OI were recruited at a university-affiliated pediatric hospital in Montreal, Canada. Individual interviews were used to explore each caregiver's perceptions of the applicability of IBT to their caregiving work. The audio-recordings were transcribed and thematically analyzed using Excel software.

Results: Participants shared that IBT facilitated the following activities of daily caregiving: physical care, relational care, self care, caregiving logistics, finding community resources, finding OI medical resources, and connecting with other OI families. However, caregivers also revealed concerns about the health consequences, accessibility, and quality of online content. Caregivers offered suggestions for how IBT can be optimized to support OI families. IBT should be built to be multilingual, regularly updated by medical professionals, easy to navigate, secure, interactive, and population-specific.

Conclusions: OI caregivers' ideas on the uses of IBT may prove beneficial to other OI caregivers, as well as to caregivers of children with other rare and/or chronic conditions. Clinicians should share the strategies that OI caregivers recommended with families newly diagnosed with OI. Caregivers' suggestions for IBT products should and will inform the development of future IBT targeting similar populations.

Keywords:
mHealth, internet-based technologies, caregiving, care givers, parenting, osteogenesis imperfecta, rare diseases, pediatric health care

Internet-Based Technologies (IBT)

IMPLEMENTATION OF AN ONLINE NUTRITION EDUCATION STRATEGY BY THE SPECIAL NUTRITION PROGRAM WOMEN INFANTS AND CHILDREN OF PUERTO RICO (PRWIC): CHALLENGES THAT CATASTROPHIC EVENTS POSE ON NUTRITIONAL EDUCATION COMPLIANCE

Dr. Maribel Campos[1], Dr. Cristina Palacios[2], Lic. Alexandra Reyes[3]

[1]University Of Puerto Rico, San Juan, Puerto Rico, [2]Florida International University, United States of America, [3]Special Nutrition Program Women Infants and Children, San Juan, Puerto Rico

Background and Aims: The PRWIC has the obligation to fulfill a minimum of education contacts among participants. There is a significant loss of participants when they reach 2 years of age.

Methods and Aims: We established an alliance between the PRWIC and researchers from the Medical Sciences Campus to increase the retention of eligible children to the program, by developing a new nutrition education strategy. Through the alliance we were able to integrate the input of program participants and mentors that facilitated the evaluation of the preferences of the community and the integration of the theoretical framework of persuasive technology for the adoption of healthy habits. Both the research staff and nutritionists of the program received training to develop the content. 35 educational modules were developed, aimed at different participant categories. A pilot study was launched in May 2017 in 20 clinics (10 intervention 10 control) to evaluate the effect on retention and program compliance.

Results: The implementation process was slow but progressive until we faced the impact of Hurricanes Irma and Maria on the country's infrastructure. Up to June 1, 2018 a total of 982 participants had been registered, with the majority falling under the children above 2 years category (70%). Despite the catastrophic damages caused by the hurricanes, contacts completed by participants were be documented in the days after the events, even in municipalities where the clinics had been displaced due to loss of essential services.

Conclusion: Despite the instability of face-to-face services due to hurricanes, this new strategy remained available to provide essential information to program participants and facilitate compliance with national standards. Acknowledgment: This work was subsidized in part by the Robert Wood Johnson Foundation and its Interdisciplinary Research Leaders Program, in addition to the United States Food and Nutrition Service Special Projects Program.

Keywords:
Nutrition Education, Persuasive Technology, Participant Retention, Disaster Response, Hurricanes

INSTANT CONNECTIONS: HOW TO USE SOCIAL MEDIA FOR GLOBAL CHILD HEALTH

Miss Hillete Warner[1]

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Proliferation in use of technology and social media like WhatsApp and Twitter has created instant connections between millions of users at opposite corners of the globe. Hundreds of millions of tweets are shared by more than 300,000 million users each day (Twitter, 2016). Global Child Health practitioners have a great opportunity to use social media to share, learn, engage and connect with one another and amplify their collective voice for advocacy, knowledge-sharing, and engaging citizens and stakeholders in the populations they work in. Today, scholarly, evidence-based information has the potential to go viral - reaching millions of users across most geographical borders on social media, compared to traditional media including TV and newspaper, which are slowly reaching their demise.

Social media including Twitter are essential knowledge translation tools to disseminate information and demonstrate value of global child health programming and research. With more than 3,700 followers, SickKids Centre for Global Child Health shares its work to improve the lives of women and children by reaching Twitter users on every continent, with a potential reach of 16 million users (Audiense Analytics). Some of the Centre's key audiences on Twitter include the Bill and Melinda Gates Foundation, the Government of Canada, and The Lancet Global Health, who receive in-the-moment news about the Centre and engage in conversations on timely global child health issues.

As a relatively new organization, the Centre has gained international awareness in the global health community thanks in part to its dedicated use of Twitter. The Centre also trained doctors, nurses, and scientists to independently share their work on Twitter. As a result, each week, the Centre receives on average 5,000 views of its tweets and gains 2-3 new followers each day (Twitter Analytics). Emerging technologies such as Twitter Lite for users in developing countries will also be discussed.

Keywords:
social media, global child health, advocacy, twitter, technology, knowledge translation, global health, maternal health, child health

NEOINNOVATE: INTEGRATION OF MHEALTH AND WEARABLE BIOMEDICAL DEVICE TECHNOLOGIES TO REDUCE NEONATAL MORBIDITY AND MORTALITY

Dr. Sherri Bucher[1], Dr. Saptarshi Purkayastha[2], Professor William Combs[3], Professor Fabian Esamai[4]

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Background: There are intersecting opportunities for digital health and biomedical device innovation within the maternal-newborn-child health landscape in low/middle-income countries, due to an increased penetration of mobile devices, expanding cellular networks, and an uptick in affordable wearable/wireless sensor technologies. Simultaneously, our team has developed two prototypes: (1) an app, Mobile Helping Babies Survive (mHBS) to support newborn care programs, and (2) NeoWarm, a wearable biomedical device to prevent neonatal hypothermia.

Methods: The initial mHBS and NeoWarm prototypes were developed in parallel, by two international teams of informatics, biomedical engineering, and global health collaborators. Currently, through combined efforts, we are using open-source, agile development processes to integrate mHBS with District Health Information System 2 (DHIS2), a health management information system used by Ministries of Health in 60+ LMICs. Simultaneously, we are incorporating sensor technology into NeoWarm, and providing wireless connectivity to mHBS/DHIS2, which will enable the automated, continuous capture of infant vital signs (temperature, heart rate, breathing, and oxygen saturation), and metrics for care of the premature/small baby, such as duration of Kangaroo Mother Care (KMC), for each adult-infant dyad utilizing the wearable NeoWarm device. Information will be securely displayed on mobile devices, and linked with DHIS2, via the mHBS/DHIS2 app.

Results: Separate proof-of-concept testing and qualitative evaluations (focus group discussions; interviews) in Africa have demonstrated the feasibility and acceptability of each of these initial prototypes among potential end-users and key stakeholders, including health care providers (HCPs), parents and family members, and community opinion leaders.

Conclusions: Combined, NeoWarm and mHBS/DHIS2 may: (1) Provide HCPs with innovative training opportunities by which to improve their knowledge, skills, and competencies; (2) Improve the ability of HCPs to deliver, monitor, and evaluate evidence-based newborn care interventions; (3) Decrease the burden associated with collecting standardized clinical measures, and calculating and reporting core indicators and key outcomes.

Tuberculosis

RISK ASSESSMENT OF CHILDHOOD TUBERCULOSIS IN GREECE

Dr Constantine Vassalos[1], **Dr Ioannis Koutelekos[2]**, Dr Dimitrios Papaventsis[3], Ms Marina Panagi[3], Dr Evdokia Vassalou[4], Dr Evangelos Vogiatzakis[3], Dr Simona Karabela[3]

[1]Greek Health System, Athens, Greece, [2]Department of Pediatric Nursing, University of West Attica, Athens, Greece, [3]National Reference Center for Mycobacteria, Athens, Greece, [4]National School of Public Health, Athens, Greece

Background and Aims: Greece is a country with a low tuberculosis (TB)-incidence (<5/100,000 population/year). Migrants from countries with a high/medium TB-incidence make up ~10% of Greece's population. Long-standing school-based Bacillus Calmette-Guérin (BCG)-vaccination and tuberculin skin-test (TST)-screening programs were discontinued in September 2016 and in March 2018, respectively. We explored National Health System's capacity to manage childhood TB based on risk assessment.

Methods: We retrieved data on children aged ≤16 years tested for TB from the 2014/15 NMRC's registries. The two-step approach of TST, followed by interferon–gamma release assay (IGRA), was employed in addition to clinical evaluation. Bacteriologically confirmed TB-cases were not included in the study.

Results: Of the 120 tested children [boys: n=65(54.2%)], 24(20%) were <5 years old. The 26/120(21.7%) originated in foreign countries with a high/medium TB-incidence. The 35(29.2%) were TB-contacts. The 33(27.5%) had manifestations possibly suggesting TB such as lymphadenopathy [n=10(30.3%)], fever [n=7(21.2%)] and radiological abnormalities [n=3(9.1%)]. The 57(47.5%) were tested for TB-exposure for medical reasons such as during/prior to steroid/immunomodulator intake. Native children were 2-times as likely to be tested for medical reasons as foreign children [50/94(53.2%) vs. 7/26(26.9%); PR=1.98(95%CI:1.02-3.83); p=0.044]. Foreign children were mainly tested for having symptoms relevant to TB [n=10/26(38.5%)] or being TB-contacts [n=9/26(34.6%)]. Positivity rate was 2- and 10-fold higher among children suspected of having TB [n=3/33(9.1%)] and been in contact with an infectious person [n=16/35(45.7%)], respectively [PRadjusted=2.02(95%CI:1.10-3.71), p=0.023; PRadjusted=10.4(95%CI:3.82-28.2), p<0.001]. Of native child contacts, 46.2 % (12/26) tested TB-positive.

Conclusions: Low TB-rate in children with suspected TB reflects low ongoing TB-transmission in the community. In Greece, a low-incidence country: 1) Targeted contact investigations have been effective in the country's child population. 2) In addition to standard protocols pediatric medical officers were aware that children originating in high/medium-incidence countries are at risk of developing TB and paid attention to testing symptoms suggestive of TB and investigating TB-exposure.

Keywords:
childhood tuberculosis, risk assessment, country with low tuberculosis incidence, testing

Vaccinations

EIGHT YEARS FOLLOW-UP OF THE IMMUNE RESPONSE IN CHILDREN AFTER ONE OR TWO DOSES OF INACTIVATED HEPATITIS A VACCINE IN PANAMA

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Background and Aim: Hepatitis A virus (HAV) is a major public health problem in middle and low-income countries with intermediate endemicity. The use of a single-dose hepatitis A vaccine has been explored as a valuable strategy to mitigate limited financial resources.
The inactivated hepatitis A vaccine (Havrix) was introduced in Panama's universal vaccination program in April 2007 as a 2-dose (2D) schedule, recommended for 12 and 18 months-aged children, however, following vaccine introduction some children received only 1 vaccine dose.
Persistence of anti-HAV antibodies ≥7 and <10 years post-vaccination was assessed with the last received of a 2D and 1-dose (1D) series of Havrix in Panama.

Methods: A cross-sectional serosurvey was conducted (June 2016-September 2017) enrolling children who received 1D or 2D Havrix at selected centers 7-to-10years after last dose. Persistence of HAV immunity was assessed measuring circulating anti-HAV antibodies by ELISA. Seropositivity (SP) was defined as anti-HAV antibody concentration ≥15 mIU/mL. Non-inferiority of 1Dvs2D was confirmed if the lower limit of the 95% confidence interval (CI) of the SP difference was ≥ -10%.

Results: We analyzed 600 subjects (300 in each group). Mean age for first dose administration was 28.4 months (1D) and 14.0 months (2D). Mean time between last Havrix dose and SP assessment was approximately 8 years in both groups. SP about 8 years post-vaccination was 74.3% ([69.0%; 79.2%] 95%CI) after 1D and 97.7% ([95.3%; 99.1%] 95%CI) after 2D. (Table 1)
The difference in SP rate between subjects who received 1D and 2D was -23.3% ([-28.8%; -18.3%] 95%CI).

Conclusion:
About 8 years post-vaccination, a significant difference of seropositivity rates between complete and partial vaccination with Havrix was observed. Nonetheless, anti-HAV seropositivity was observed in most of the children of Panama after only 1D.

Keywords:
hepatitis A, vaccination, long term protection, 1 dose

Table 1. Baseline characteristics, anti-HAV seropositivity status and GMC by *Havrix* dose group

		1D Group N = 300	2D Group N = 300	Total N = 600
Characteristics	**Parameters or Categories**	**Value or n (%)**	**Value or n (%)**	**Value or n (%)**
Age at the Persistence visit [years]	Mean	10.5	10.0	10.2
	SD	0.9	0.7	0.8
	Median	10.3	9.9	10.0
	Minimum	8.2	8.7	8.2
	Maximum	12.8	12.0	12.8
Residency	Rural	107 (35.7)	43 (14.3)	150 (25.0)
	Urban	193 (64.3)	257 (85.7)	450 (75.0)
Age at the time of first dose of *Havrix* [months]	Mean	28.4	14.0	21.2
	SD	15.9	3.2	13.5
	Median	22.0	12.5	15.2
	Minimum	10.6	8.3	8.3
	Maximum	62.7	28.6	62.7
Time between last *Havrix* dose and SP assessment [years]	Mean	8.1	8.2	8.1
	SD	0.7	0.5	0.6
	Median	8.3	8.2	8.2
	Minimum	7.0	7.0	7.0
	Maximum	10.0	9.7	10.0
Anti-HAV seropositivity	n	223 (74.3)	293 (97.7)	516 (86.0)
	95% CI	69.0-79.2	95.3-99.1	83.0-88.7
	GMC	40.2	123.9	70.6
	95% CI	34.2-47.4	111.5-137.7	63.4-78.6

Subjects with ≥ 7 years and < 10 years between last *Havrix* dose and Persistence visit
1D Group = Subjects received one dose of *Havrix*
2D Group = Subjects received two doses of *Havrix*
N = total number of subjects
n = number of subjects in a given category
% = n/N x 100
GMC = Geometric Mean antibody Concentration.
Antibody concentrations below the cut-off (15 mIU/mL) of the assay will be given an arbitrary value of half the cut-off for the GMC computation
SP: Seropositivity
95% CI = 95% confidence interval
Subjects are defined as being seropositive if their anti-HAV antibody concentration is ≥ 15mIU/mL

PROGRESS TOWARD ROUTINE CHILDHOOD VARICELLA IMMUNIZATION IN THE AMERICAS

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Background and Aims: In 2014, WHO recommended that countries where varicella is an important public health burden could consider introducing varicella vaccination in the routine childhood immunization program. The objective of this review is to describe the progress toward routine childhood varicella immunization in the Americas and sub-regions: North America (NA), South America (SA) and Central America and the Caribbean (CAC). Methods: A comprehensive search including official national government websites and published literature was conducted to identify information of countries/ territories in the Americas with universal varicella vaccination (UVV) in their National Immunization Program (NIP). Results: As of 2018, 17 of the 51 countries/territories in the Americas have UVV. 9 of them have implemented a 2-dose schedule. In most cases, the first dose of varicella vaccine is recommended at 12-15 months and the second dose at school-entry (4-6 years of age) (table 1 and 2). In Canada, SA and CAC, the varicella vaccine is primarily publicly-funded. In US, it is provided by the Vaccines for Children or covered by health insurance. 7 of every 10 children aged 1-year in the Americas have access to UVV (10.1 million of a total birth cohort of 14.3 million). When analysed by sub-region, 2, 6 and 8 of every 10 children aged 1-year, respectively, in CAC, NA and SA, have access to UVV. Conclusion: The Americas is the region in which more countries have introduced varicella vaccination as part of their NIPs when compared to other world regions. New introductions have accelerated in the Americas in recent years: until 2007, 7 countries had introduced UVV; by 2018, had increased to 17 countries. Although 7 of every 10 children have access to UVV in the Americas, this proportion varies greatly by sub-regions, with greater opportunities to increase access in CAC and Mexico.

Keywords:
VARICELLA, IMMUNIZATION and INFECTION PREVENTION AND CONTROL PROGRAMS

Table 1. Universal Varicella Vaccine in National Immunization Programs in the Americas (excluding Canada) by country, year of introduction of first and second doses, target age and type of vaccine.

Country	Dose 1		Dose 2		Type of varicella vaccine* (Dose 1 /Dose 2)
	Year Introduction	Age (months)	Year Introduction	Age (years)	
Antigua	2014	24	-	-	Monovalent
Argentina	2015	15	-	-	Monovalent
Bahamas	2012	12	2012	4-5	Monovalent
Barbados	2012	12	-	-	Monovalent
Bermuda	2012	24	-	-	Monovalent
Brazil	2013	15	2018	4-6	MMRV or Monovalent/ Monovalent
Cayman Islands	2000	12	2009	3-6	Monovalent
Colombia	2015	12	2019**	5	Monovalent
Costa Rica	2007	15	-	-	Monovalent
Ecuador	2010	15	-	-	Monovalent
Panama	2014	15	2017	4	Monovalent
Paraguay	2013	15	-	-	Monovalent
Peru	2018	12	-	-	Monovalent
Puerto Rico	1996	12-15	2007	4-6	Monovalent/MMRV***
United States	1996	12-15	2007	4-6	Monovalent /MMRV***
Uruguay	1999	12	2014	5	Monovalent

* Monovalent: varicella-only vaccine; MMRV: measles, mumps, rubella and varicella. **Colombia plans to start the second dose in 2019, when the cohort vaccinated with 12 months reaches 5 years old. ***ACIP recommendation

Table 2. Universal Varicella Vaccine in National Immunization Programs in provinces and territories of Canada.

Country	Dose 1		Dose 2		Type of varicella vaccine* (Dose 1 / Dose 2)
	Year introduction	Age (months)	Year introduction	Age	
BC /YT	2005/2007	12	2012	4-6	Monovalent/ MMRV
NB/NS	2004	12	2009	18 m	MMRV/MMRV
SK/ PE/ NL	2005/2000/2005	12	2009	18 m	MMRV/MMRV
NT	2001	12	2013	36 m	MMRV/MMRV
AB/ MB	2001/2004	12	2012	4-6 y	MMRV/MMRV
ON	2004	15	2011	4-6 y	Monovalent/ MMRV
QC	2006	18	2016	4-6 y	MMRV/Monovalent
NU	2002	12	2015	18m	MMRV/ MMRV

AB: Alberta; BC: British Columbia; MB: Manitoba; NB: New Brunswick; NL: Newfoundland and Labrador; NT: Northwest Territories ; NS: Nova Scotia; NU: Nunavut ; ON: Ontario, PE: Prince Edward Island, QC: Quebec, SK: Saskatchewan; YT: Yukon. * Monovalent: varicella-only vaccine; MMRV: measles, mumps, rubella and varicella. M: months; y:years

Miscellaneous

DEVELOPMENT, VALIDATION AND RELIABILITY ANALYSIS OF A MULTIDIMENSIONAL FUTURE LIFE EXPECTATIONS QUESTIONNAIRE FOR PEDIATRIC PATIENTS WITH CANCER

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Background and Aims: Although cancer experience affects individual's expectations about what future will hold, information on life expectations of pediatric population with cancer (PPC) is minimal. We developed, validated and conducted reliability analysis of a novel multidimensional future life expectations questionnaire (MFLEQ) for PPCs to better monitor their coping strategies.

Methods: The content of the newly-developed questionnaire with 20 potential questions was determined by five experts. Face validity was ensured through interviewing cognitively 15 PPCs, respectively. PPCs were recruited to participate in the study of questionnaire's construct analysis to be assessed using exploratory factor analysis. The reliability of the final questionnaire was then assessed. SPSS.21 was used for all analyses.

Results: Experts reached a consensus on a draft questionnaire with 18 items easily understood and answered by the interviewed child patients. Of the 143 recruited PPCs, 102(71.3%) [boys: n=62(60.7%); average age: 12.7±3.3] with hematological malignancies [n=58(57%)] and solid tumors [n=44(43%)] fully completed the 4-point Likert scale draft questionnaire. The optimal three-factor solution explained 57.3% of variance. KMO value was 0.72 and Bartlett's test was significant ($\chi 2=539$, df=78, $p<0.001$). The final 13-item MFLEQ-PPC (Figure 1) included the 'family life expectations' subscale with five items explaining most (23.2%) of variance. Four items were grouped together to form the 'daily life and vocational expectations' subscale interpreting 18.8% of the variance. The 'friendship networking expectations' subscale included four items and accounted for 15.3% of variance. Item loadings were between 0.48-0.88. Reliability (Cronbach's alpha) for the whole scale was 0.82 and for subscales ranged from 0.65-0.84. The intra-class correlation coefficient varied from 0.77-0.87.

Conclusions: The 13-item MFLEQ-PPC proved to be a valid and reliable instrument. It would provide pediatric personnel and researchers information on the as-yet not readily accessible future life expectations of children and adolescents with hematological malignancies and solid tumors requiring long-term healthcare.

Keywords:
pediatric patients with cancer, future life expectations, questionnaire, development, validation, reliability

		Strongly disagree	Disagree	Agree	Strongly agree
		(1)	(2)	(3)	(4)
1	I believe my future family will be a normal one				
2	I believe I will start my own family				
3	I believe I will provide enough my future family				
4	I believe I will have the same chance to start a family as everyone else my age				
5	I believe I will have a partner in the future				
6	I believe I will be able to do in daily life what everyone else my age does				
7	I believe I will have the power to do everyday things				
8	I believe I will do my dream job				
9	I believe it will be easy for me to find a job				
10	I believe I will have several close friends in my life				
11	I believe there will many friends I can talk to when I feel lonely				
12	I believe I will always have friends around me				
13	I believe my friends will invite me to hang out				

Figure 1. The Multidimensional Future Life Expectations Questionnaire for Pediatric Patients with Cancer.
Note: The English version of the questionnaire presented here is by no means linguistically validated.

FUTURE LIFE EXPECTATIONS OF PEDIATRIC PATIENTS WITH CANCER

Ms Georgia Kamperopoulou[1], Dr Maria Moschovi[2], Dr Evgenia Vlachou[3], Mr Evangelos Dousis[3], Prof Eleni Evangelou[4], Dr Constantine Michael Vassalos[1], Dr Evdokia Vassalou[5], Dr Ioannis Koutelekos[4]

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Background and Aims: Research on cancer patients' expectations on life goals is an emerging area of research. However, little information is available on future life expectations (FLE) of pediatric patients with cancer. We aimed at exploring what, if any, may have an impact on future life expectations of Greek pediatric patients with cancer.

Methods: From July 2017 to March 2018, 102 pediatric patients with cancer (62 boys, 40 girls; median age: 13) completed the newly-developed 4-point Likert scale Multidimensional Future Life Expectations Questionnaire for Pediatric Patients with Cancer with three subscales referring to their 'family life' ('fl'), 'daily life and vocational' ('dv') and 'friendship networking' ('fn') expectations, respectively. They also provided information on their socio-demographic characteristics, health status and healthcare. Mean scores were calculated and multiple regression analysis was performed. Stata 12.1 was used for analyses. Ethical issues were addressed.

Results: Overall, pediatric patients with cancer yielded an average FLE score of 3.33±0.42. In 'fl', 'dv' and 'fn' subscales, average scores were 3.29±0.63, 3.51±0.45 and 3.19±0.54, respectively. Results from multiple regression analysis are presented in Tables 1-4.

Conclusions: Greek children and adolescents with cancer highly expected to live a life of normalcy. However, getting older had an adverse impact on their future expectations, particularly for family, daily and professional life. An explanation may be that with the passage of time pediatric patients with cancer were becoming more aware of the difficulties in their life raised by their condition. A positive perception of their selves made them feel normal enough to start their own family in the future. Likewise, shared decision making in the context of patient-centered care seemed to empower pediatric patients with cancer in order to form their future life expectations, for having a normal family life despite their struggling with cancer and building a supportive network of friends.

Keywords:
pediatric patients with cancer, future life expectations, impact

Table 1. Interpretation of overall future life expectations in Greek pediatric patients with cancer

Characteristics of pediatric patients with cancer	R2	F	df	
	0.26	1.02	26	
	beta coefficient	95% confidence interval	*t*	p
Age	-0.06	(-0.11) – (-0.01)	-2.51	0.014
Patient-centered care	0.50	0.09 – 0.91	2.42	0.018
Constant	3.72	2.68 – 4.77	7.08	<0.001

Only significant result are shown

Table 2. Interpretation of future life expectations for family life in Greek pediatric patients with cancer

Characteristics of pediatric patients with cancer	R2	F	df	
	0.27	1.33	22	
	beta coefficient	95% confidence interval	*t*	p
Age	-0.08	(-0.15) – (-0.01)	-2.41	0.019
Self-image	0.31	0.01 – 0.60	2.09	0.040
Patient-centered care	0.84	0.25 – 1.44	2.84	0.006
Constant	2.78	1.32 – 4.24	3.80	<0.001

Only significant result are shown

Table 3. Interpretation of future life expectations for daily and professional life in Greek pediatric patients with cancer

Characteristics of pediatric patients with cancer	R2	F	df	
	0.20	0.74	26	
	beta coefficient	95% confidence interval	*t*	p
>13 years old	-0.31	(-0.61) – (-0.02)	-2.12	0.037
Constant	4.30	3.25 – 5.35	8.15	<0.001

Only significant result are shown

Table 4. Interpretation of future life expectations for friendship networking in Greek pediatric patients with cancer

Characteristics of pediatric patients with cancer	R2	F	df	
	0.21	0.94	22	
	beta coefficient	95% confidence interval	*t*	p
Patient-centered care	0.61	0.09 – 1.13	2.33	0.022
Constant	3.28	2.08 – 4.47	5.45	<0.001

Only significant result are shown

PREVALENCE OF OVERWEIGHT/OBESITY AND EATING HABITS AMONG GREEK CHILDREN FROM HIGH-INCOME FAMILIES, 2017

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Background and Aims: High-income communities are less likely to face childhood overweight and obesity. We explored overweight/obese status and evaluated eating patterns in relation to body mass index (BMI) in Greek children from high-income families.

Methods: In May/June 2017, 200 children from high-income families [110(55%) girls)], aged 10□12 years, were randomly recruited from schools located in a high-income area in Greater Athens. For BMI[=weight(kg)/(height(m))2], cut-off points defining overweight and obesity for their gender and age were set in accordance with international standards to calculate combined overweight/obesity rate. Studied children answered an ad hoc questionnaire on eating behavior. We performed multiple regression of BMI on their eating habits.

Results: In Greek children from high-income families, overweight/obesity rate was 8.5% (17/200), with 14/200(7%) being overweight and with 3/200(1.5%) being obese. Fast food diet and high-calorie intake were more likely to relate with high BMI in children from high-income households, as opposed to healthy, varied diet. Frequently eating out and ordering food were more likely to be associated with high BMI readings in children from high-income families, in contrast to frequent healthy snacking and routinely eating homemade meals together with family. (Table 1).

Conclusion: The prevalence of overweight and obesity among children from high-income families was low; it was three-times less than that of 32% found in Greece's general child population [Kyriazis et al. Arch Med Sci 2012; 8(5):859-860]. Children from well-off families with a strong purchasing power for high quality foods had adopted a diverse healthy diet plan that prevented them from gaining weight. Practicing mindful eating on the part of children seems to be inculcated by high-income parents, generally thought to invest more time in their children, as, especially, in Greek society eating and preparing homemade meals are traditionally considered to strengthen the family bond.

Keywords:
overweight, obesity, eating habits, children, high-income families

Table 1. Multiple regression of BMI regressed on several eating habits of Greek children from high-income families, 2017

Eating habits	Answers	RR	(95% CI)	p-value
Do you eat fried foods (e.g. French fries)	yes no	4.44	(1.30–15.1)	0.017
Do you eat bread with butter/margarine	yes no	4.18	(1.31–13.4)	0.016
Do you drink chocolate milk	2-6 x / week <1 x / month	3.47	(1.03–11.7)	0.044
Do you eat vegetables	yes no	0.58	(0.35–0.96)	0.033
Do you eat fruits	yes no	0.48	(0.29–0.79)	0.004
Do you snack on fruits	2-6 x / week <1 x / week	0.19	(0.06–0.66)	0.009
Do you eat out	≥1-2 x / week <1 x / week	3.03	(1.10–8.37)	0.032
Do you eat ordered food	5-7 x / week 1-2 x / week	3.59	(1.17–11.0)	0.025
Do you eat together with your family	2-6 x / week 1-3 x / week	0.11	(0.02–0.55)	0.007
(Intercept)		*10.21*	*(0.21–489)*	*0.239*

Only significant results are shown

WHAT IS THE COST BENEFIT RATIO OF SENDING ADENO-TONSILLAR TISSUES FOR HISTOLOGY: DOES ADENOID/ TONSILLAR TISSUE IN CHILDREN UNDERGO MALIGNANT TRANSFORMATION?

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Background: Due to the enormous amount spent on histology of adenoid and tonsillar samples from children with adeno-tonsillectomy with no confirmed result of malignancy, it has become expedient to reconsider sending such tissues for histology.

Objectives: This study is aimed at determining the necessity of sending tissues of adenoid and tonsils for histology by means of ascertaining the prevalence of malignancy among children with adeno-tonsillectomy.

Methods:
This was a retrospective study done in three private hospitals that provide care for children in Enugu. Data was obtained from the medical records of 72 patients who had undergone tonsillectomy and/or adenoidectomy from September 2011 to May 2018. All the surgical cases done had their samples sent immediately for histology.

Results:
A total of 72 adeno-tonsillar tissues were taken for histology of which all showed lymphoid hyperplasia with none showing any form of malignancy. Age group ranged from 6 months-18 years with 57 males and 15 females. Histology of the adeno-tonsillar tissue specimen was done among all the children with each costing 9000 Naira (26 US dollars). There were 3 tonsillectomies, one adenectomy and 68 adeno-tonsillectomies done. Indications for surgery were mainly upper air way obstruction for 69 cases and recurrent tonsillectomy for 3 cases. Histology revealed lymphoid hyperplasia for all cases. None of the patients in our study had histologic evidence of malignancy.

Conclusion: Routine histopathologic examination in adeno-tonsillectomy specimens among children may be dispensable as it showed a negative cost–benefit ratio.

Keywords:
Adenoids, Tonsils, Children, Histology, Cost–benefit ratio