



## ABSTRACTS COLLECTION

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## Effect of a diet fortified with zinc and physical exercise of resistance in the phosphorylation of protein kinase B (Akt) and protein tyrosine phosphatase 1B (PTP1B) in a rat model of type 2 diabetics

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**Introduction:** Type 2 diabetes mellitus (DM2) is a metabolic disorder characterized by a chronic hyperglycemia resulting from a deficiency in the action and/or production of insulin. In this context, zinc (Zn) and physical activity can increase the activity of protein kinase B (Akt), a serine/threonine kinase that regulates the processes of cell survival and proliferation. Interestingly, protein tyrosine phosphatase 1B (PTP1B), a phosphatase capable of dephosphorylating both, the insulin receptor and insulin receptor substrate 1 (IRS1), has an amino acid sequence recognized by Akt, so it could be phosphorylated by Akt in its residue inactively attenuating the insulin resistance of the liver tissue.

**Objective:** To evaluate the effect of zinc and physical exercise (Ex) resistance on the phosphorylation of Akt and PTP1B in livers of rats with type 2 diabetes.

**Material and methods:** Weaning rats were fed for 8 weeks with a high-fat diet (HFD) for 12 weeks to generate the DM2 condition. Then, the treatments (diet and exercise) were started for 12 weeks in the 4 groups (HFD, HFD + Zn, HFD + Ex, HFD + ZnEx) ( $n = 7$  per group). After 12 weeks, the rats were sacrificed. Lipid profile, glycemia and insulin were measured by commercial Kit. For the phosphorylation assay, antibodies against Akt and PTP1B were used in their total and phosphorylated forms (pAktSer473 and pPTP1BSer50 respectively).

**Results:** *Metabolic parameters in serum:* There were no significant differences between the groups ( $n = 7$  per group). *Phosphorylation of Akt:* The HFD + Zn group showed significantly higher levels of pAkt with respect to HFD ( $n = 3$  per group). *Phosphorylation of PTP1B:* The HFD + Ex group showed significantly higher levels of pPTP1B with respect to the HFD + Zn + Ex group ( $n = 3$  per group).

**Conclusion:** Although zinc increased the phosphorylation of Akt and PTP1B, this was not able to attenuate metabolic disorders in the serum of the rats induced by the high-fat diet.

**Disclosure:** A.R., M.Rivera, M.A., and M.Ruz declare no competing interests.

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## Association of polypharmacy with potential pharmacological interactions and adverse events in hospitalized children

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**Introduction:** Prescription >2 drugs (polypharmacy) is a common practice in hospitalized children and can be a risk factor for potential drug interactions. Recognizing pharmacological interactions is not always a simple task for the clinician, since the signs or symptoms can overlap with the disease and go unnoticed.

**Objective:** Evaluate the association of polypharmacy with potential pharmacological interactions in hospitalized children.

**Material and methods:** Cohort study. Hospitalized children with indication >2 drugs administered by any route were included; those with re-entry to the study were excluded. The potential pharmacological interactions were classified into four levels according to their severity: contraindicated, major, moderate, and minor. The duration of the polypharmacy and label characteristics of the drugs were recorded. The follow-up was for 14 days. The study was approved by the Committee of Ethics in Hospital Research.

**Results:** A total of 177 children entered the study. In 160 (90.4%) polypharmacy was found. Potential pharmacological interaction was documented in 92 (57.6%,  $p = 0.001$ ); according to risk: contraindicated 2.1%, higher 44.7%, moderate 50%, and lower 3.2%. Forty four point seven percent presented an adverse event; 52.1% had at least one off-label medication, 18.1% with insufficient bibliographic evidence; 30.9% had >9 drugs for >10 days. Children with three or more prescribed drugs had a 9.5 times higher risk of potential drug interactions (odds ratio 9.47, 95% confidence interval: 2–43).

**Conclusion:** The prescription of polypharmacy in hospitalized children was associated with a higher risk of drug interactions and the presence of adverse events.

**Disclosures:** K.I.A.-M., M.D.O.V., and A.L.-V. declare no competing interests.

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## Effects of ibuprofen on growth in very preterm infants treated for patent ductus arteriosus

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**Background:** Ibuprofen is an effective intervention for closure of patent ductus arteriosus in preterm infants. However, ibuprofen treatment is not known to be associated with adverse effects on growth. We investigated whether ibuprofen treatment influences growth in very preterm infants during the first year of life.

**Methods:** We analysed a cohort of infants delivered at  $\leq 31$  weeks gestation and birth weight  $\leq 1500$ g, between 2006 and 2016 followed longitudinally. Of 132 infants with patent ductus arteriosus, 65 were treated with ibuprofen and 67 were untreated. An echocardiogram was performed in all patients at 3–5 days. Relative growth gain and growth velocities for weight, height and head circumference between birth and the corrected ages of term, 4 and 12 months was calculated. We compared growth patterns between both groups using linear mixed-effects modelling.

**Results:** The group treated with ibuprofen with respect to the untreated group showed a significantly lower length gain from birth to 12 months corrected age (21.1% [95% confidence interval (CI): 17.4–24.8] vs. 27.0% [95% CI: 22.4–31.5],  $p = 0.017$ ) and significantly lower length velocity (0.366 cm/week [95% CI: 0.347–0.385] vs. 0.401 cm/week [95% CI: 0.382–0.419],  $p < 0.010$ ) respectively.

**Conclusion:** Ibuprofen exposure may exacerbate postnatal growth restriction in very preterm infants.

**Disclosures:** E.C., M.C., and A.R. declare no competing interests.

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## Impact of air pollution and climate on children's health. Analysis of respiratory illness-related visits to the emergency department of a children's hospital using time series

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**Background:** Despite there is evidence showing that air pollution and climate have an impact on respiratory illness in children, few studies evaluate this interaction in Buenos Aires.

**Objective:** To evaluate the impact of the interaction between atmospheric pollutants and the climate on the number of emergency department (ED) visits for acute respiratory infection (ARI) in a pediatric hospital in Buenos Aires.

**Material and methods:** Ecological study, using time series with generalized additive models, including all ED visits and ARI-related ED visits, between 2012 and 2016. The predictors were levels of air pollutants (carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), particulate matter <10 $\mu$  (PM10)) and meteorological variables (temperature, humidity). Time variables (day of the week, warm/cold semester) were used for controlling. Lags of up to 7 days were built.

**Results:** Full series of total and ARI-related ED visits were used. In order to control biases, a series with 7-day moving averages was established for ARI-related visits. Only the total ED visits correlate with day of the week (Monday and Saturday more visits and Thursday less). The cold semester showed 28% more total ED visits and 122% more ARI-related visits than the warm semester. Contaminant data measured in three monitoring stations were used. One of them did not show correlation with any outcome variable. The other two showed correlation between CO and PM10, and ARI-related visits, and between CO and NO<sub>2</sub> and total visits, with different lags.

**Conclusion:** The season accurately explains the increase in the number of total visits and ARI-related visits. Although the level of some pollutants shows correlation with the number of visits, their impact is not relevant.

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#### Changes in the nutritional status of indigenous children under 5 years of age in Paraguay between 2008 and 2016

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**Introduction:** Malnutrition is a pending challenge that has a detrimental impact on the development of indigenous children.

**Objective:** To describe the changes in the nutritional status of indigenous children under 5 years of age in Paraguay between 2008 and 2016.

**Material and methods:** Cross-sectional study, based on nationally representative data from the Survey of Indigenous Households (EHI 2008) and from the Multiple Indicator Cluster Survey (MICS 2016). The nutritional diagnosis was performed according to World Health Organization (WHO) criteria.

**Results:** We evaluated 268 children under 5 years of age from the MICS 2016 survey (range 1–59 months, average age 27.1 months; 51.1% male) and 555 children under 5 years of age from the EHI 2008 survey (range 1–59 months, average age 29.1 months; 53.9% male). The average z-scores were: weight-for-age  $-0.40 \pm 0.9\text{DE}$  (2016) vs.  $-0.56 \pm 1.2\text{DE}$  (2008), weight-for-height  $0.74 \pm 0.9\text{DE}$  (2016) vs.  $0.64 \pm 1.2\text{DE}$  (2008), and height-for-age  $-1.57 \pm 1.1\text{DE}$  (2016) vs.  $-1.75 \pm 1.6\text{DE}$  (2008). The prevalence of underweight (UW), wasting (WA), and stunting (ST) decreased significantly between 2008 and 2016: UW 9.8% (2008) vs. 4.3% (2016), WA 1.5% (2008) vs. 0.2% (2016), and ST 41.7% (2008) vs. 31.5% (2016). The number of children in risk of malnutrition decreased for UW and WA, and increased for ST: in risk of UW 25.0% (2008) vs. 16.0% (2016), of WA 5.6% (2008) vs. 2.6% (2016), and of ST 29.4% (2008) vs. 38.5% (2016). The prevalence of obesity remained unchanged during the two periods: 9.0% (2008) vs. 8.9% (2016), while the prevalence of overweight decreased: 28.6% (2008) vs. 23.8% (2016).

**Conclusion:** Despite apparent improvements in the nutritional status of indigenous children in Paraguay during 2008–2016, the nutritional profile remains preoccupying. Food and nutrition policies and interventions designed for indigenous people must be strengthened in accordance with their food perceptions and cultural lifestyles.

**Disclosure:** V.B. received funding from Paraguayan National Council for Science and Technology (CONACYT) Grant Project PINV15-1304—“La transición nutricional en el Paraguay: ¿En dónde estamos?” M.S. and V.B. declare no competing interests.

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#### Drug–drug interaction between tacrolimus and meropenem in pediatric renal transplant patients

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**Introduction:** Tacrolimus (TAC) is the cornerstone of the immunosuppressive regimens to avoid graft rejection in pediatric renal transplant patients. Possible urinary tract infections (UTIs) may develop and require antibiotic therapy. Carbapenems may modify blood levels of TAC. There are no studies describing the interaction between TAC and meropenem.

**Objective:** To evaluate drug-to-drug interaction between meropenem and tacrolimus in pediatric renal transplant patients at Hospital de Pediatría Garrahan, Buenos Aires, Argentina.

**Material and methods:** We retrospectively evaluated pediatric renal transplant patients with UTI treated with meropenem. Patients with variation in TAC dose  $\geq 20\%$  were excluded. We registered TAC doses, TAC trough concentrations (C0) and C0 normalized by the dose/kg (C0norm) with and without meropenem, demographic, and biochemical parameters. Data were collected from medical records, excluding possible confounding drug–drug interactions. Differences in TAC C0 and C0norm before and after the administration of meropenem were analyzed using Wilcoxon's test ( $p < 0.05$ ).

**Results:** Thirteen patients were identified and seven were excluded due to a modification in TAC doses  $\geq 20\%$  during antibiotic therapy. Six patients were included with a median age (range) of 15.5 years (6.5–16.8 years) and a post-transplant time of 20 days (13–57 days) prior to infection. The C0norm values were increased by a median (range) of 217.5% (126.0–574.7%) with meropenem vs. no antibiotic ( $p < 0.05$ ). The maximum effect of this interaction was 9 days (6–15) post initiation of the antibiotic.

**Conclusion:** We reported for the first time the interaction between meropenem and tacrolimus, confirmed by the increase in TAC C0norm. This report may contribute to avoid TAC overexposure and reduce possible adverse events.

**Disclosures:** N.R., P.C.G., N.L., and P.S. declare no competing interests.

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#### Fatty acids and complex lipids percentage distribution in milk of mothers receiving care in the health system of La Plata, Argentina

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**Introduction:** Lipids percentage distribution in human milk, depends on the diet. Fatty acids and complex lipids are important substrates in infant neurogenesis.

**Objective:** To assess the fatty acids and complex lipids percentage distribution present in the milk of mothers receiving care in the public health system.

**Material and methods:** We performed a descriptive, cross-sectional study analysing milk samples obtained from adult mothers attending Instituto de Desarrollo e Investigaciones Pediátricas (IDIP), Buenos Aires, 90 days after birth, in the period 2016–2017. Food intake was assessed with a 24-h reminder. The techniques used were as follows: gas chromatography, thin-layer chromatography, and Fiske–Subbarow. The study protocol was approved by IDIP's Institutional Research Review Board.

**Results:** The study included 12 samples of milk from exclusively breastfeeding mother. The five most frequently consumed foods by the mothers were: sunflower oil, beef, chicken meat, processed baked goods, and whole milk products. Complex lipids distribution was:  $40.70 \pm 5.11\%$  of sphingomyelin;  $21.12 \pm 3.32\%$  phosphatidylcholine;  $4.22 \pm 1.25\%$  phosphatidylinositol;  $7.94 \pm 1.96\%$  phosphatidylserine; and  $26.03 \pm 5.98\%$  phosphatidylethanolamine. The fatty acids with majority percentage were: oleic acid ( $31.77 \pm 2.59\%$ ), palmitic acid ( $21.73 \pm 1.92\%$ ), and linoleic acid ( $18.86 \pm 5.72\%$ ). Median docosahexaenoic acid (DHA) in milk was 0.13% and arachidonic acid 0.42%.

**Conclusion:** Predominant fatty acids were sphingomyelin, phosphatidylcholine, and phosphatidylethanolamine. The oleic acid was the highest percent fatty acid and DHA percentage was low.

**Disclosures:** S.V., A.M., V.F., B.M., M.F., and H.G. declare no competing interests.

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#### Physical activity favours high positive feelings and life satisfaction but does not eliminate the effect of screen time on negative feelings among Chilean children

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**Introduction:** Due to high level of physical inactivity and screen time among Chilean children, and their behavioral and emotional problems at an early age, it seems appropriate to analyze the relationship between them to prevent their mental health at long term.

**Objective:** The aim of the study was two-fold: (i) to explore the relationship between physical activity and screen time with cognitive (Life satisfaction [LS]) and affective (Positive affect [PA] and Negative affect [NA]) components of subjective well-being (SWB); and (ii) to examine the combined associations between physical activity and screen time with these components of SWB in Chilean children.

**Material and methods:** This cross-sectional study enrolled 1540 children (1040 boys) aged 8–12 years old. LS, PA and NA were assessed with validated questionnaires. Children were asked how many days in the past 7 days they had been physically active for at least 60 min. Screen time was assessed by asking the participants to report the number of hours per day they spent using the television, video games, and/or computer in the past 7 days.

**Results:** Results show a positive trend between LS ( $p < 0.001$ ) and PA ( $p = 0.001$ ) for 1-day increments per week of physical activity. In contrast, findings reveal an inverse trend between screen time and NA for 1-h increments per day of screen time ( $p = 0.017$ ). Also, children who meet physical activity guidelines have higher LS and PA compared to inactive peers, even with high screen time. In contrast, excessive screen time was also related with negative affect independent of the level of physical activity (active or inactive).

**Conclusion:** It seems important that children should decrease the amount of time that they spend on screen-based activities and at the same time to promote regular physical activity in order to reduce NA and improve SWB.

**Disclosures:** I.H.-A., X.O.-G., O.F.-V., and A.G.-H. declare no competing interests.

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#### Knowledge about bioethics of limitation of therapeutic effort (LTE) in seriously ill patients during medicine internship

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**Introduction:** The limitation of the therapeutic effort (LTE) is still a controversial issue. Medical ethics and clinical bioethics teaching are fundamental in physicians training, and will impact in their future decisions. It is considered that by the end of their carrier, medical students must have acquired knowledge to manage situations involving LTE.

**Objective:** To estimate the degree of knowledge regarding bioethical issues of LTE in medical students by the end of their carrier.

**Material and methods:** Descriptive study including interns of a school of medicine at private university. A random sample was obtained, and 220 subjects were included. A questionnaire developed by experts was administered to evaluate knowledge regarding bioethical issues of LTE. Data were analyzed with IBM SPSS Statistics 22.0.

**Results:** From the total 50.9% were female; 70.5% were 24 years old. Regarding their beliefs, 67.7% identified themselves as Catholics and 32.3% as Evangelical. When the questionnaire was administered, only 23.6% showed a satisfactory knowledge of bioethics in LTE. A high percentage do not know to which patients LTE can be applied or who decides its application.

**Conclusion:** Only 23.6% of participants showed a satisfactory knowledge of bioethics in LTE. Our results are similar to other studies developed both locally and internationally.

**Disclosures:** G.M. and G.U. declare no competing interests.

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#### Evolution of morbidity and mortality at the children's hospital in Lima, from 1930 to 1960

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**Objective:** To describe the rates of morbidity and mortality of children hospitalized at the Children's Hospital, today known as National Institute of Child Health (INSN), during its first 30 years of activity, from 1930 until 1960.

**Material and methods:** Comparative descriptive study with historical epidemiological approach. Data source were the files of the statistical office of the INSN. Proportions of morbidity and mortality were calculated by causes.

**Results:** Most common diseases in 1940 were: pertussis, tuberculosis, typhoid, bronchopneumonia, measles, fracture, diphtheria, malaria, pneumonia, tonsillitis and adenoid vegetations. In 1950: bronchopneumonia, measles, pertussis, dystrophy, tonsillitis; toxicosis, dyspepsia, enterocolitis, tuberculosis, burns. In 1960: bronchopneumonia, dehydration, tonsillitis, measles, vegetations, otitis, dyspepsia, hernias, bronchitis, fracture. Disease-related case-fatality rates were, in 1940:

meningitis 83%, decompensation 64%, toxicosis 51%, bronchopneumonia 43%, dystrophy 43%, tuberculosis 42%, pertussis 21%, otitis 16%, pharyngeal diphtheria 16%, dyspepsia 14%. In 1950: atrepsia 89%, tetanus 77%, toxicosis 75%, meningitis 65%, tuberculosis 43%, nephrosis 40%, bronchopneumonia 37%, enterocolitis 34%, imperforate anal 33%, septicemia 33%. In 1960: atrepsia 88%, septicemia 84%, tetanus 76%, prematurity 76%, atresia 62%, bronchopneumonia 61%, gastroenteritis 56%, congenital lues 50%, toxicosis 49%, congenital heart disease 43%.

**Conclusion:** Regarding the morbidity and mortality in children during 1930 and 1960, there was prevalence of infectious diseases, malnutrition (atrepsia), and dehydration (toxicosis).

**Disclosures:** R.S., G.N., C.D., V.S., and P.V. declare no competing interests.

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#### Socio-economic characteristics are associated with nutritional deprivation in the Paraguayan households

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**Introduction:** Adequate nutrition constitutes one of the most basic dimensions of human well-being.

**Objective:** To assess the nutritional deprivation of Paraguayan households and its association with socioeconomic characteristics.

**Material and methods:** We used an extension of Alkire-Foster methodology (Alkire and Foster, 2011) to calculate both the incidence and degree of nutritional deprivation. The resulting nutritional deprivation index allows to consider minimum food group requirements that vary by food groups, as well as by individual characteristics such as age, gender, and activity level. Six food groups (vegetables, fruits, cereals, dairy, proteins, oils) as well as their sub-groups were considered. The analysis was applied to data from a nationally representative Income and Expenditures Household Survey 2011–12 (EIG 2011–12, available at <http://www.dgeec.gov.py/microdatos/>).

**Results:** Paraguayan households were significantly deprived across most food groups. Statistically significant differences were shown to exist between rural and urban households, with more urban than rural households being deprived in vegetables (62% vs. 38%,  $p < 0.001$ ), and more rural than urban households being deprived in grains (29% vs. 23%,  $p < 0.001$ ) and protein foods (60% vs. 54%,  $p < 0.001$ ). The incidence of food group deprivation decreased monotonically with increase in income across all food groups but vegetables; differences in food group deprivations between rural and urban households were significant especially in lower income households. Logistic regression results showed that, after controlling for a number of socio-ambiental factors, the poorest 40% of households were about two or more times as likely to be nutritionally deprived as the richest 60% of households (Q1 households: odds ratio (OR) = 2.7, 95% confidence interval (CI): 1.9–3.8; Q2 households: OR = 1.9, 95% CI: 1.4–2.5). Adjusted prevalence of nutritional deprivation was also found to decrease in mother's education and household's area of residence and increase in household size.

**Conclusion:** Nutritional deprivation in Paraguay is a multidimensional problem that is associated with several socio-economic characteristics.

**Disclosures:** V.B. and M.C. received funding from Paraguayan National Council for Science and Technology (CONACYT) Grant Project PINV15-1304—“La transición nutricional en el Paraguay: ¿En dónde estamos?” V.B., M.C., and M.S. declare no competing interests.

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#### Risk factors associated with a prolonged hospital stay in patients hospitalized in the neonatal intermediate care unit

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**Introduction:** The hospital length of stay is an indicator of hospital efficiency; it can be conditioned by multiple identifiable and avoidable factors.

**Objective:** To evaluate association between prolonged hospital stay and neonatal and maternal risk factors.

**Material and methods:** Case-control study including neonates admitted to the Neonatal Intermediate Care unit of the “Ovidio Aliaga Uribe” Children's Hospital, La Paz, Bolivia between November 2016 and October 2017. Maternal and neonatal risk factors were evaluated. Analysis was performed with IBM SPSS Statistics 22.0, 2013 and Epi Info 7.2; CDC, 2015.

**Results:** A total of 132 neonates were studied. Prolonged hospital stay was defined as longer than 15 days. A total of 32 patients (cases) showed prolonged stay. Evaluated maternal predictors were: extreme maternal age (odds ratio (OR): 1.8; 95% confidence interval (CI): 0.6–5.2), pregnancy  $\geq 3$  (OR: 2.2; 95% CI: 0.9–5.3), pre-eclampsia (OR: 2.3; 95% CI: 0.6–8.7),  $< 5$  prenatal controls (OR: 1.1; 95% CI: 0.4–2.5), urinary tract infection (OR: 0.5; 95% CI: 0.1–1.8) and premature rupture of membranes (OR: 1.0; 95% CI: 0.1–10.3). Evaluated neonatal predictors were: neonatal resuscitation (OR: 4.3; 95% CI: 1.2–15.5), surgical pathology (OR: 15.0; 95% CI: 5.3–42.4), subspecialist required (OR: 18.9; 95% CI: 6.0–58.9), congenital malformation (OR: 8.9; 95% CI: 3.3–23.6), low weight for gestational age and preterm (OR: 3.2; 95% CI: 0.4–24.1), adequate weight for gestational age and preterm (OR: 1.6; 95% CI: 0.4–5.8), non-institutional delivery (OR: 4.6; 95% CI: 0.9–21.8), and neonatal sepsis (OR: 2.2; 95% CI: 0.5–6.4).

**Conclusion:** Requiring neonatal resuscitation, congenital malformations, surgical pathologies, and requiring subspecialist consultation were identified as risk factors for prolonged hospital stay.

**Disclosure:** A.P. declares no competing interest.

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#### Associations of the age of ceasing breastfeeding and the age of starting formula-based feeding on nutritional status in Chilean children from birth to 3 years of age

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**Introduction:** There is not much research about the dual effect of age of cessation of breastfeeding and formula-based feeding on nutritional status in Chilean children from a longitudinal perspective.

**Objective:** To evaluate if the age of cessation of breastfeeding or the age of starting formula-based feeding was associated with a variation in nutritional status from birth to 3 years of age.

**Material and methods:** Longitudinal data were obtained from routine medical check-ups on 8373 children. Weight-for-height z-scores (WHZ) were calculated between birth to 3 years old at 6 monthly age intervals and categorised as normal ( $\leq 2$  SD) and overweight/obese (WHZ  $> 2$  SD) following World Health Organisation current recommendations. The age of ceasing breastfeeding and starting of formula-based feeding were categorised in three age intervals ( $< 3$  months, 3–6 months, and  $> 6$  months of age). Data were analysed utilising sequential repeated-measures analysis of variance (ANOVA) and binomial generalized estimating equations (GEEs), after controlling sociodemographic factors.

**Results:** The age of starting formula-based feeding showed a significant heterogeneity in WHZ. GEE analysis showed that children starting formula-based milk after 6 months of age were significantly less likely of being overweight/obese across the age intervals compared to children starting formula-based milk before 3 months of age. The age of cessation of breastfeeding was not significantly associated with the dependent variables.

**Conclusion:** While the age of starting formula-based feeding would exert a significant effect on nutritional status, the age of ceasing breastfeeding showed no effect on nutritional status.

**Disclosures:** R.R., R.V., and N.M.-T. declare no competing interests.

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#### Assessment of EPIinfant scale for exercise intensity perceptual self-regulation in healthy children

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**Introduction:** The EPIinfant scale (escala de Esfuerzo Percibido Infantil [Children Perceived Exertion scale], <http://www.scielo.org.co/pdf/bio/v36n1/v36n1a04.pdf>) has been validated for the perceptual estimation of exercise intensity in children, but its usefulness for self-regulation of exercise load remains unknown.

**Objective:** The aim of the study was to evaluate the validity of the EPIinfant scale to regulate and reproduce exercise intensity in a sample of healthy children.

**Methods:** Fifteen children between 8 and 12 years old were selected. An incremental load test (ILT) and three perceptual regulation tests (PRT) were performed on a treadmill. The tests were performed with an interval of 48 h between them. In the PRT, the workload was randomly selected and adjusted perceptually, considering the levels 3, 6, and 9 of the EPIinfant scale for 5 min. The average heart rate (HR) during the PRT was considered as the physiological response reproduced. Variance analysis, simple linear regression, and reliability analysis were used to determine the reproducibility of HR during PRT.

**Results:** There was a significant difference in HR between perceptual levels during PRT ( $p < 0.001$ ). Additionally, a positive correlation was observed between the HR during the ILT and the PRT ( $r = 0.83$ ,  $r^2 = 0.69$ ). The intraclass correlation coefficient was 0.76, 0.83, and 0.93 at perceptual levels 3, 6, and 9; and the mean discordance between HR during the ILT and the PRT was  $-2.4$  beats/min.

**Conclusion:** In the sample studied, the EPIinfant scale was valid to allow the perceptual regulation and reproduction of exercise intensity in treadmill.

**Disclosures:** I.R.N., S.L.-M. and D.Z. declare no competing interests.

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#### Effects of physical exercise on autonomic balance and sympathetic neurotransmission in rats treated with nicotine

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**Introduction:** Nicotine has been shown to induce oxidative stress and endothelial dysfunction in different vascular beds. However, its effects on autonomic control have been poorly studied. Physical exercise (PE) is an effective therapeutic strategy for the treatment of cardiovascular disease (CVD). However, if PE can prevent cardiovascular damage induced by exposure to tobacco components, it has been partially elucidated.

**Objective:** To evaluate the effects of physical exercise on the autonomic control and sympathetic neurotransmission of rats treated with nicotine.

**Methodology:** Wistar rats distributed in four groups were used: Control, Control + PE, Nicotine, and Nicotine + PE. The PE protocol consisted of 45 min of running at an intensity of 60–70%, five times per week, for 4 weeks. Nicotine treatment consisted of 28 days of treatment 1 mg/kg of subcutaneous nicotine. After 24 h, the animals were anesthetized and cannulated for the recording of heart rate (HR), blood pressure (BP), and analysis of heart rate variability. For the analysis of renal sympathetic activity (rSNA), the post-ganglionic renal nerve was positioned on a bipolar electrode for the spontaneous recording of its activity. Subsequently, the baroreflex sensitivity was determined for the control of the rSNA.

**Results:** The nicotine-treated animals presented a lower heart variability and rSNA, as well as a lower bradycardial and sympathetic-inhibitory response in response to incremental doses of phenylephrine. For its part, EF was effective in preventing alterations in HR variability, rSNA, and baroreflex sensitivity.

**Conclusions:** Twenty eight days of treatment with nicotine altered the autonomic control of the cardiovascular system, by means of the inhibition of the parasympathetic component of the baroreceptor reflex and the decrease of the rSNA in basal conditions, which was effectively prevented by the EF.

**Disclosures:** I.R.N., R.C., and F.R.M. declare no competing interests.