Vitamin D status in Danish 9-month-old children

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DP2-03

EFFECTIVENESS OF ZINC SUPPLEMENTATION PLUS ORAL REHYDRATION SALTS COMPARED WITH ORS ALONE AS A TREATMENT FOR ACUTE DIARRHEA IN INFANTS AGED 1 TO 6 MONTHS IN A PRIMARY HEALTH CARE SETTING

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OBJECTIVE: To evaluate whether education and provision of zinc supplements to caregivers is effective in the treatment of acute diarrhea in infants aged 1 to 6 months.

METHODS: Six clusters of 30,000 population were randomly assigned to intervention and control sites. Government, private providers, and village health workers were trained to prescribe zinc and ORS in diarrheal episodes in the intervention areas, and ORS alone in the control areas. Outcomes were measured in two cross-sectional surveys commencing 3 months (survey 2) and 6 months (survey 3) after the start of the intervention.

RESULTS: In the two surveys, zinc was used in 36.7% and 62.1%, and ORS in 30.1% and 61.1% of diarrheal episodes in the four weeks preceding interviews in the intervention areas compared to 4.7% and 8.8% in control areas. The 24-hour and 2-week prevalence of diarrhea and acute lower respiratory infections were lower in the intervention communities (survey 2 and 3).

CONCLUSIONS: Diarrhea in the first 6 months of life is effectively treated when caregivers receive education along with easy access to supplies of ORS and zinc, without adversely affecting the use of ORS.

DP2-04

VITAMIN D STATUS IN DANISH 9-MONTH-OLD CHILDREN

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INTRODUCTION: Danish term infants are recommended vitamin D supplement of 10 µg/day on their first year. Objective To assess serum 25(OH)D in 9-month-old Danish children.

METHODS: The study is part of an observational cohort study (SKOT) following randomly selected term healthy children from age 9 to 36 months. All 312 (girls 163) Caucasian children, except for 10 mixed Caucasian-non-Caucasian, were examined at age 9 months. Serum 25(OH)D was assessed by chemiluminescence assay.

RESULTS: Weight and length were 9068±992 gram (mean ± SD) and 71.9±2.5 cm, respectively, 252 received vit D supplementation almost every day, 52 less often, and 8 were not supplemented. Serum 25(OH)D (n=255) was 77.2±22.7 nmol/L (range: 12–151). No significant sex difference (p=0.37) was observed. Prevalence of severe vitamin D deficiency (≤12.5 nmol/L) was 0.4% (n=1), deficiency (≤37.5 nmol/L) 2.8% (n=7), insufficiency (37.5–50.0 nmol/L) 7.8% (n=20) and sufficiency (50–250 nmol/L) 89.4% (n=228). There were higher levels in June–November (n=107) than December–May (n=148) (p=0.02), 81.2±21.9 and 74.3±22.8 nmol/L, respectively.

CONCLUSION: Nearly all received vit D supplementation, and 89.4% had sufficient serum 25(OH)D, however, there was an effect of season.

DP2-05

IRON-DEFICIENT RATS ARE MORE RESISTANT TO ZINC DEFICIENCY THAN IRON-ADEQUATE RATS

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Different responses of rats to zinc-deficient diets between iron-deficient and iron-adequate groups were determined. In Experiment 1, forty-eight male rats received a diet of 25 µgZn/g with either 40 µgFe/g or 3.9 µgFe/g diets for 21 days (stage 1). Thereafter, the same groups of rats were subjected to zinc-deficient (<1 µg/g) diets for 14 days (stage 2). Plasma, kidney and femur zinc concentrations decreased as zinc deficiency developed. Kidney and femur zinc

levels were significantly higher in iron-deficient than in iron-adequate rats. Blood and bone marrow aminolevulinic acid dehydratase (ALA-D, EC 4.2.1.26) and plasma alkaline phosphatase (ALK-P, EC 3.1.3.1) activities decrease with zinc deficiency in iron-adequate group, however, in iron-deficient group these activities either increased (blood ALA-D) or remained constant (bone marrow ALA-D and plasma ALK-P) throughout the experiment. In Experiment 2, the survival time after consuming zinc-deficient diets (<1 µg/g) was compared between rats fed iron-deficient and rats fed iron-adequate diets. The length of survival for iron-deficient group was longer (133 ± 17 d) than the iron-adequate group (98 ± 13 d), (p < 0.01). In Experiment 3, the influence of dietary iron levels (2 µg/g, 13 µg/g or 40 µg/g) on osmotic fragility of erythrocyte and thiobarbituric acid-reactive substances (TBARS) in liver of rats fed either zinc deficient (<1 µg/g) or zinc-adequate (25 µg/g) diets was examined. Although the osmotic fragility of erythrocyte and TBARS values in liver increased in zinc deficient groups, rats fed with iron-adequate diets had higher hemolysis and TBARS values than low iron groups. These results suggest that iron-deficient rats are more resistant to zinc deficiency than iron-adequate rats.

DP2-06

ASSESSMENT OF ANAEMIA AND IRON STATUS OF SCHOOL AGE CHILDREN (AGED 7-12 YEARS) IN RURAL COMMUNITIES OF ABIA STATE, NIGERIA

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RATIONALE AND OBJECTIVES: Anemia is highly prevalent in developing countries and has been associated with various factors including iron deficiency, malaria and worm infestation particularly among children. This study investigated iron status of school children aged 7-12 years in rural communities of Abia state, Nigeria.

METHODS: A total of 249 school children, 120 males and 129 females, aged between 7-12 years, were used in the study. Hemoglobin, hematocrit, and serum ferritin were used to determine anemia and iron status. The subjects were also screened for malaria parasites and worm infestation to determine their impact on anemia. C-reactive protein (CRP) was used as an indicator of inflammation or infection. Socioeconomic, anthropometric, body composition and dietary information were also collected from the children using standard methods.

RESULTS: The prevalence of anemia was 82.6%, while iron deficiency was 77.8%. The average daily iron intake was estimated to be 30% below the recommended allowance. Malaria parasites and worm infestation were high in the children (93.2% and 41.8%, respectively). Anemia was significantly associated with helminth infestation, malaria parasite, and CRP.

CONCLUSION: Generally the result of the study indicates that there was high prevalence of anemia, thus, there is need for malaria and helminths control intervention in these communities.

DP2-07

EFFECT OF FOOD INTAKE ON CONCENTRATION OF ETHANOL AND MARKERS OF ETHANOL CONSUMPTION

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RATIONALE: Absorption of ethanol is influenced by the concurrent intake of food. It is, however, unknown whether urinary markers of ethanol consumption e.g. ethylglucuronide (ETG) or 5-hydroxytryptophol (HTOL), are also influenced by food intake.

METHODS: We performed a randomized study with 13 healthy male volunteers (26 ± 3 years, BMI 24 ± 3 kg/m²) who received either ethanol only (0.7 g ethanol per kg body weight) or equal amounts of ethanol after a standardized breakfast (560 kcal). Blood ethanol concentration was measured in 15 min intervals for 6 hours. Urinary ETG and HTOL were measured for three days. The area under the curve (AUC) was calculated.

RESULTS: The AUCs of blood ethanol and ETG were significantly lower after