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THE EFFECT OF 'TELEMEDICINE' ON GLYCAEMIC CONTROL AND OTHER CLINICAL OUTCOMES IN CHILDREN AND ADOLESCENTS WITH TYPE 1 DIABETES – A SYSTEMATIC REVIEW AND METAANALYSIS OF RANDOMISED CONTROLLED TRIALS

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To systematically review the published randomised controlled trials (RCT) that evaluate the effectiveness of telemedicine (TM) in terms of glycaemic control primarily and other clinical outcomes such as quality of life, patient satisfaction and severe hypoglycaemic episodes in children and adolescents with type 1 diabetes.

Design: The randomised controlled trials are extracted from data sources including Medline/PubMed, EMBASE, Web of Science, PsycINFO, Cochrane Library and CINAHL using the PICO model. **P** Children and adolescents with Type 1 diabetes. **I** Telemedicine (TM). **C** Conventional model healthcare. **O** Primary Outcome: Glycaemic control as observed by glycosylated haemoglobin (HbA1c). Secondary Outcomes: Diabetes related quality of life (DQoL), Patient satisfaction, Severe hypoglycaemic episodes. The search identified 1199 records and 16 trials were eligible. **o** The meta-analysis showed a marginal improvement in glycaemic control at three months follow up which did not reach statistical significance and was not sustained at six months follow up.

o Only few studies evaluated the effect on patient satisfaction, DQoL (Diabetes-related quality of life) and occurrence of severe hypoglycaemic episodes which also showed no significant difference between the intervention and control groups.

This study found limited evidence to support the use of TM in children and adolescents with type 1 Diabetes.

o However, it must be noted that this intervention did not result in an increase in significant adverse effects such as frequency of severe hypoglycaemic episodes or DKA.

o Our subgroup analysis indicated a small improvement in HbA1c at three months which was not sustained at six months follow up. This could be improved by using sustained re-inforcement strategies.

o This study is limited by high heterogeneity, limited evidence base on many of the outcomes and the use of various modes and intensities of telemedicine interventions making the evaluation of outcome efficacy and cost-effectiveness assessment difficult.

o High-quality RCTs are needed to evaluate the role of TM in improving glycaemic control in this patient population

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INADEQUATE SLEEP HABITS ARE ASSOCIATED WITH OBESITY IN HIGH SCHOOL CHILDREN

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Objective to examine sleep habits and associations between inadequate sleep habits and measures of obesity in high school adolescents.

Methods A total of 127 adolescents (61% male) aged 15-17 years were recruited from patients of the Children's hospital

referred to due to obesity and other conditions in 2017-2019 years. The sample was evaluated to determine if a relationship existed between inadequate sleep habits and measures of obesity (percentile weight-for-length – body mass index – BMI, kg/m²; neck circumference – NC, cm; waist circumference – WC, cm).

Participants provided demographic information and completed the Adolescent Sleep Habits Survey (ASHS). Adolescent weight/length, NC and WC were measured; obesity defined as BMI $\geq$ 95th percentile, NC $\geq$ 90th percentile and WC $\geq$ 90th percentile for age and sex. Measures of inadequate sleep habits: possible activities in bed and possible activities if difficulty falling asleep in the last two weeks. All associations were analyzed using a method of odds ratios (ORs) with 95% confidence intervals [CIs]. All differences were considered significant at $p < 0.05$.

Results A greater proportion of males than females (52.6% versus 43.7%, $p < 0.05$) and of obese adolescents compared with lean peers (64.2% versus 39.1%, $p < 0.05$) reported inadequate sleep habits. Sleep habits named «ASHS activity in bed» such as «Eat every night» was associated with BMI $\geq$ 95th percentile (OR 1.30, 95% CI 1.25-1.35), NC $\geq$ 90th percentile (OR 1.65, 95% CI 1.59-1.71) and WC $\geq$ 90th percentile (OR 1.72, 95% CI 1.65-1.88). Possible activities if difficulty falling asleep such as «Wake up and to do something (e.g., eat; drink warm milk/coffee) every night» were also associated with measures of obesity: BMI $\geq$ 95th percentile (OR 1.35, 95% CI 1.29-1.41 and OR 1.21, 95% CI 1.17-1.25, respectively), NC $\geq$ 90th percentile (OR 2.10, 95% CI 1.8-2.65 and OR 1.75, 95% CI 1.59-1.91, respectively) and WC $\geq$ 90th percentile (OR 2.5, 95% CI 1.89-3.1 and OR 2.2, 95% CI 1.28-2.99, respectively). Inadequate sleep habit such as «Watch TV in bed every night» was found to be associated with measures of obesity after adjusting for several covariates. No statistical significance was found if the above measures of inadequate sleep habits were noted as «twice or once in the last two weeks» in relation to BMI, NC or WC.

Conclusion In addition to existing literature, this study found that inadequate sleep habits every night as well as short sleep duration in late adolescence may relate to the development of obesity as measured by BMI, NC, and WC.

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VITAMIN D INSUFFICIENCY AND CARDIO METABOLIC CONSEQUENCES IN CHILDREN WITH OVERWEIGHT OBESITY

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Obesity, vitamin D deficiency and cardio-metabolic consequences represent some of the most important widespread health concerns worldwide. There is a well-established inverse relationship between vitamin D status and obesity shown in a few observational studies. There are no comprehensive data on vitamin D deficiency among children with obesity in Kosovo. The aim of the study was to assess the prevalence of vitamin D deficiency and metabolic disorders among children with obesity and overweight.

One hundred and thirty children between 9 and 13 years of age were recruited during systematic visits from primary schools in Prishtina. Anthropometric parameters and blood pressure were measured. Morning blood samples were tested for (full blood count, erythrocyte sedimentation rate, glucose, cholesterol, triglycerides, alanine aminotransferase (ALT), aspartate aminotransferase (AST), total and direct bilirubin, urea, creatinine and 25-OHD3).

From all 130 children (33.85% with overweight and 66.15% with obesity) vitamin D deficiency (<20 ng/ml) was found in 79.2% of children, vitamin D insufficiency (20-30 ng/ml) in 17.7%, while only four children had sufficient vitamin D levels (30-100 ng/ml). Children with obesity had significantly more often deficient values of vitamin D compared with children with overweight ($p < 0.001$). A statistically significant negative correlation was found between the values of vitamin D and BMI in children with obesity ($r = 0.2729$; $p = 0.011$). In this group, the increase in BMI was significantly associated with reduced vitamin D values. All children with overweight had normal blood pressure and normal values of metabolic parameters. On the other hand, 17.4% of children with obesity had hypertension and 9.3% had increased blood glucose levels. All children with obesity had an elevated level of serum triglycerides while in comparison with children with overweight, children with obesity had significantly higher values of triglycerides ($p = 0.0089$). The significant positive correlation between triglycerides values and BMI was found as well ($r = 0.4471$; $p < 0.001$). Moreover, children with obesity and hypertension had significantly lower vitamin D levels ($p = 0.00007$) compared with children with obesity and normal blood pressure.

Children with overweight and obesity have a high risk of metabolic disorders and hypertension, but they are more prevalent in obese children.

213 REVISITING DIAGNOSES OF TYPE 1 DIABETES MELLITUS ON ALL PATIENTS ATTENDING THE PAEDIATRIC DIABETES SERVICE, UNIVERSITY HOSPITAL GALWAY, IRELAND; ARE WE MISSING CASES OF MODY?

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Introduction As per the National Diabetes Guideline, auto-antibodies should be tested for all paediatric patients at presentation, to confirm a diagnosis of Type 1 Diabetes Mellitus. It is reported that up to 10% of children diagnosed with T1DM have antibody negative Type 1 Diabetes Mellitus and furthermore, it is estimated that 5-6% have Monogenic Diabetes/MODY. The heterogeneous group of monogenic diabetics are often misclassified as having Type 1 or Type 2 Diabetes Mellitus.

Aims To audit the antibody profile of all paediatric patients attending the Diabetes Service at UHG. To repeat a full antibody profile, for those patients with incomplete/no antibodies sent. To invite patients with negative antibodies and a detectable c-peptide, out of the honeymoon period, to undergo genetic testing for MODY.

Methods A database of all paediatric diabetes patients was created using a secure, hospital-only accessed drive and subsequently anonymised. The electronic health record of each

patient was reviewed to identify if antibodies had been sent at diagnosis. Antibody results (Anti-GAD, Anti-IA2, ZnT8

Antibodies) were recorded on all patients. Patients were categorised as antibody positive, negative or incomplete. Those with a negative or incomplete profile were identified for repeat/further investigation including repeat antibodies, c-peptide or genetic testing.

Results 195 patients were included in the study. Of these, 36% ($n=69$) had incomplete or no antibodies sent at diagnosis. 64% ($n=126$) had complete antibody profiles; of these, 104 patients had positive antibodies. 22 patients had negative antibodies and have had C-peptide sent. To date, we have identified one patient with Monogenic Diabetes (INS mutation).

Conclusion At diagnosis, MODY cannot be distinguished easily from Type 1 Diabetes Mellitus, based on clinical characteristics. Reviewing the antibody profile and identifying these patients is essential in guiding prognosis and appropriate treatment, as well as inheritability of the disease.

214 PEDIATRIC DIABETES CARE AND INSURANCE CHOICE

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Evaluating the delivery of pediatric diabetes medical care cannot be done promptly without the analysis of the role of insurance companies since they have a major role in covering the cost of care starting from contracting with health care systems, providing insulin, medication, and diabetes supplies and allowing prompt referrals to other ancillary health care providers.

The objective of the study is to get feedback evaluation from families about their insurance companies regarding diabetes care. We surveyed 100 families with children with type 1 and type 2 diabetes in our practice, seeking their opinions about the delivery of diabetes care.

In a confidential questionnaire, we asked about family experiences related to satisfaction with their insurance companies in providing diabetes supplies, medications and health provider coverage.

75% of families had commercial insurance while 25% had government supported one.

90% of families felt that they had a choice in finding the right physician to seek diabetes care.

50% of families were not satisfied with their insurance providers' coverage, 48% were satisfied and 2% were neutral. Diabetes management is one of the main global public health concerns.

Diabetes-related health expenditures for pediatric diabetes has been increasing worldwide due to the increased incidence of type 1 diabetes and obesity-related type 2 diabetes in children. The economic burden is considered very complex due to the chronic nature of this diagnosis.

Outcomes and adherence to diabetes treatment depend on insurance status.

Patients with insurance were most likely to get (HbA1c) testing, foot and eye exams, diabetes education, and influenza immunization. The fear of out-of-pocket costs could lead to poor access to health care and poor utilization of diabetes care.