Preliminary results of public health prevention program for diabetic ketoacidosis in children and adolescent

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OBJECTIVE

- Diabetic ketoacidosis (DKA) is the leading cause of mortality in a type 1 diabetes mellitus (T1DM) in pediatric population.
- The prevalence of the DKA in the developed world ranges from 15% to 61% and in Croatia it is 33 to 36%. In the past few decades in Europe there have been no significant changes in the prevalence of DKA in patients with newly diagnosed T1DM.
- In the previous preventive program known as the "Parma campaign", which was conducted between 1991 and 1998 and reduced the prevalence of DKA from the initial 78% to the cumulative prevalence during the campaign of 12.5%.

METHODS

- Prevention program was started in April 2017 and consists of a series of activities (lectures, TV shows, social networking, public posters, free phone line) aimed to educate the entire public, primarily children and adolescents, parents, employees in pre-school and school facilities and medical workers.
- The study included 37 children and adolescents with newly diagnosed T1DM during the prevention program period from 1 April 2017 to 31 December 2018 and control group of 54 children and adolescents with newly diagnosed T1DM before prevention program from 1 January 2015 to 31 March 2017. DKA was defined according to ISPAD guidelines from 2014.

ujedinjeni protiv dijabetesa

KAMPANJA ZA RANO OTKRIVANJE DIJABETESA U DJECE

Figure 1. Campaign poster

RESULTS

- The prevalence of DKA in the pre-campaign period was 33.3% while in the period during the campaign was 24.3%.
- Glucose levels were significantly lower during the prevention program (29.28 ± 10.7 vs. 24.9 ± 9.59 mmol/L, P<0.05), while c-peptide levels were significantly higher during the prevention program (0.23 ± 0.16 vs. 0.35 ± 0.31 nmol/L, P<0.05).

Table 1. Demographic and biochemical characteristics of the subjects

Parameter	Pre-campaign (N=54)	Campaign (N=37)	P
Sex – N (%)			
Male	31 (57.4)	27 (72.9)	0.129
Female	23 (42.6)	10 (27.1)	
Age (yr)	8.82 ± 4.82	9.48 ± 4.25	0.504
BMI z score	-0.67 ± 1.27	-0.29 ± 1.74	0.238
Glucose (mmol/L)	29.28 ± 10.7	24.9 ± 9.59	<0.05
Hemoglobin A1c (%)	11.25 ± 2.17	11.44 ± 1.88	0.666
C peptid (nmol/L)	0.23 ± 0.16	0.35 ± 0.31	<0.05
Prevalence of DKA (%)	18 (33.3)	9 (24.3)	0.355
Mild	8 (44.4)	5 (55.6)	0.586
Moderate	4 (22.2)	3 (33.3)	0.357
Severe	6 (33.4)	1 (11.1)	0.214
pH	7.33 ± 0.14	7.37 ± 0.1	0.153
HCO_3 (mmol/L)	16.71 ± 7.32	17.8 ± 6.46	0.467

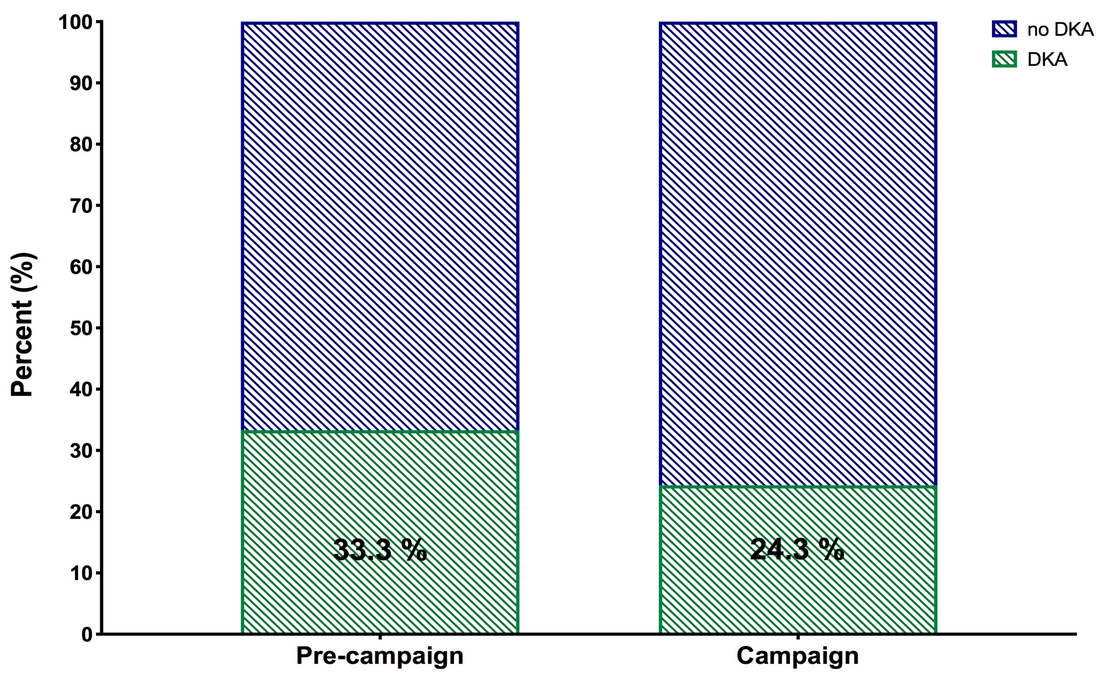

Figure 2. Prevalence of DKA

CONCLUSION

- In conclusion, this decrease of prevalence DKA in children and adolescents with newly diagnosed T1DM during the preventive campaign.
- However, additional studies with longer follow-up period are needed to further clarify the impact of public health prevention program on prevalence of DKA.

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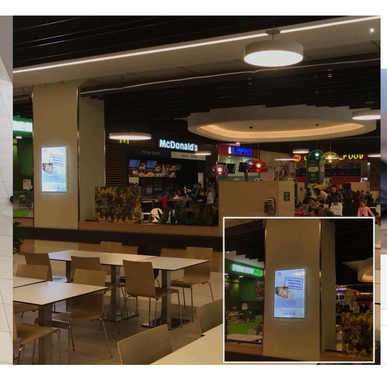

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Diabetes and insulin

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