Supplemental files

The importance of office blood pressure measurement frequency and methodology in evaluating the prevalence of hypertension in children and adolescents with type 1 diabetes: The SWEET international database

Short title: Hypertension in pediatric type 1 diabetes

Andriani Vazeou[1], Sascha R. Tittel[2,3], Niels H Birkebaek[4], Olga Kordonouri[5], Violeta Iotova[6], Barbara Piccini[7], Banshi Saboo[8], Auste Pundziute Lyckå[9], Sebastian Seget[10], David M Maahs[11], George Stergiou[12]

[1] Diabetes Center, A' Department of Pediatrics, P&A Kyriakou Children's Hospitals, Athens, Greece.
[2] Institute of Epidemiology and Medical Biometry, Central Institute for Biomedical Technology (ZIBMT), Ulm University, Ulm, Germany.
[3] German Center for Diabetes Research (DZD), Munich-Neuherberg, Germany
[4] Department of Pediatrics and Steno Diabetes Center Aarhus, Aarhus University Hospital, Aarhus, Denmark.
[5] Children's Hospital AUF DER BULT, Hannover Medical School, Hannover, Germany.
[6] Department of Pediatrics, Medical University, Varna, Bulgaria.
[7] Regional Center for Pediatric Diabetes, Meyer University Children's Hospital, Florence, Italy.
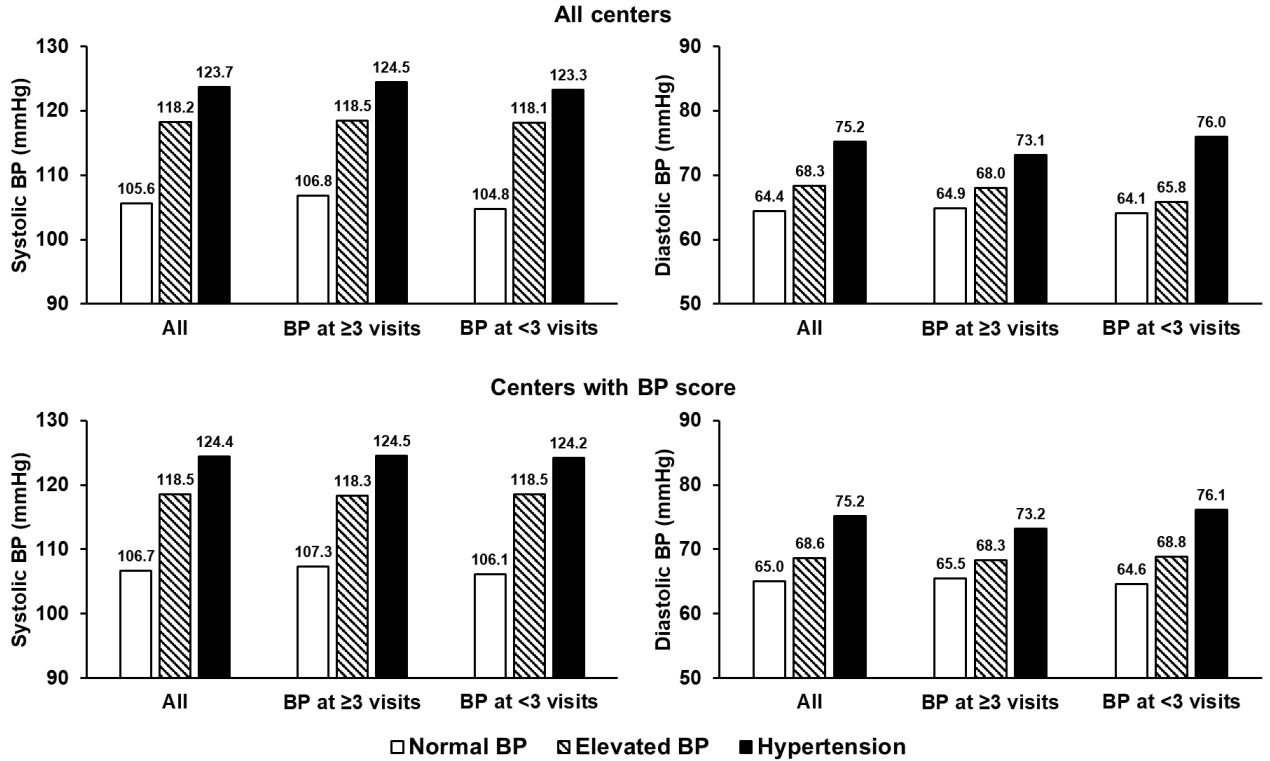[8] Diacare- Diabetes Care and Hormone clinic, Ahmedabad, Gujarat, India
[9] Queen Silvia Childrens Hospital, Sahlgrenska University Hospital and Department of Pediatrics, Institute for Clinical Sciences, Sahlgrenska Academy, University of Gothenburg, Sweden
[10] Department of Children's Diabetology, Medical University of Silesia, Katowice, Poland.
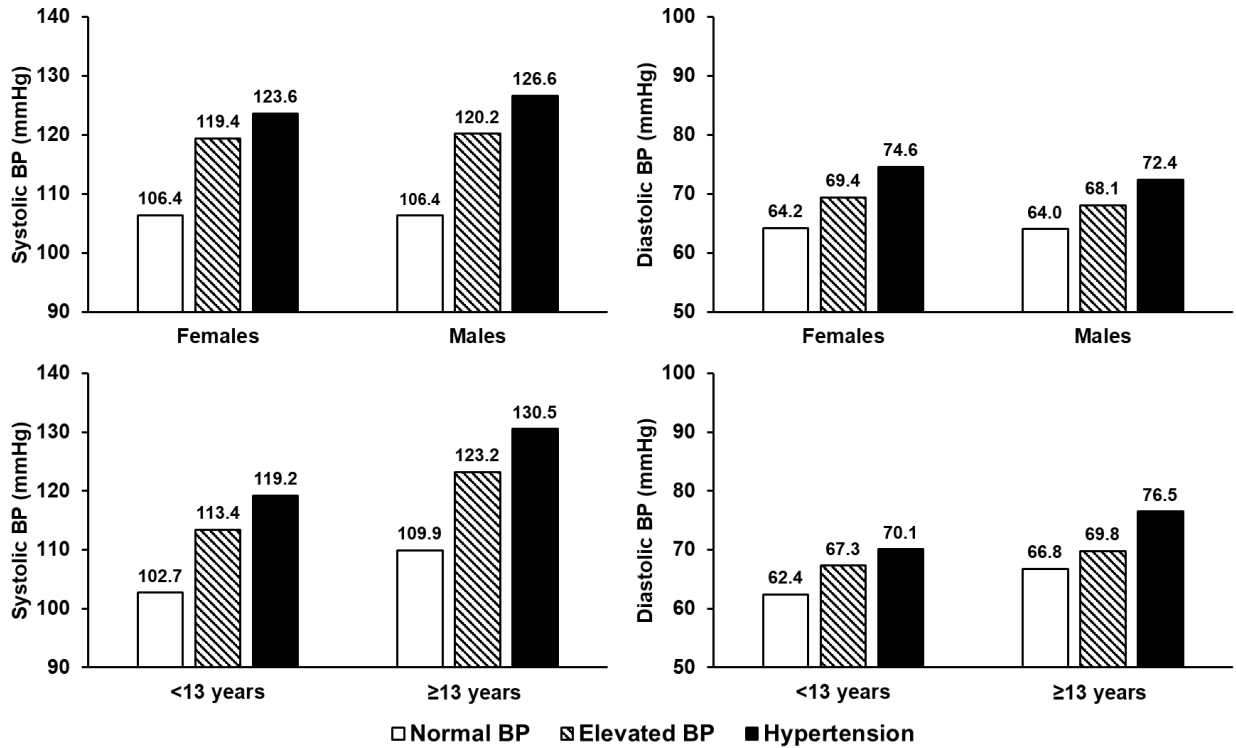[11] Department of Pediatrics and Stanford Diabetes Research Center, Stanford, CA, USA.
[12] Hypertension Center STRIDE-7, National and Kapodistrian University of Athens, School of Medicine, Third Department of Medicine, Sotiria Hospital, Athens, Greece.

Correspondence: Andriani Vazeou, MD
               Pediatrician - Diabetologist
               Director Diabetes Centre
               A' Department of Pediatrics
               P&A Kyriakou Children's Hospital
          agerasim@gmail.com

Supplemental Figure S1. Median systolic and diastolic BP: In all centers (Cohort A), in the total cohort, in the group with BP at ≥3 and <3 visits; BP at ≥3 vs <3 visits p<0.0001: In Centers with BP score indicative of BP measurement methodology (Cohort B), in the total cohort, in the group with BP at ≥3 and < 3 visits; BP at ≥3 vs BP at< 3 visits p<0.0001. Systolic and diastolic BP were adjusted for age, BMI-SDS and region.

Supplemental Figure S2. Median systolic and diastolic BP in cohort A, in the group of participants with ≥3 measurements per year, according to age and gender stratification. Males had higher systolic BP compared with females (p<0.0001). Patients ≥13 years of age had higher systolic and diastolic BP compared with those < 13 (p <0.0001). Systolic and diastolic BP were adjusted for BMI-SDS, diabetes duration, HbA1c and region for gender stratification and diabetes duration, HbA1c and region for age stratification.

	Females No=5034	Males No=5406	Females vs males	≥13 years No =5567	<13 years No= 4873	≥13 vs <13 years
	Median (LQ UQ)	Median (LQ UQ	p value	Median (LQ UQ)	Median (LQ UQ	p value
Age years	13.3 (10.7, 15.5)	13.3 (10.5, 15.5)	ns	15.4 (14.2,16.6)	10.4 (8.4, 8.4	<0.001
Disease duration years	4.5 (2.2, 7.5)	4.3 (1.9, 7.4)	0.023	5.5 (2.8, 9.2)	3.36 (1.4, 5.7)	<0.001
BMI- SDS	0.73 (0.1, 1.4)	0.52 (-0.2, 1.3)	<0.001	0.66 (-0.1, 1.4)	0.59 (-0.1, 1.3)	ns
Height -SDS	0.3 (-0.4, 1.0)	0.40 (-0.3 1.1)	<0.001	0.3 (-0.4, 1.0)	0.4 (-0.22. 1.16)	<0.001
HbA1c%	7.9 (7.1, 8.9)	7.8 (7.1, 8.7)	<0.001	8.0 (7.2, 9.1)	7.7 (7.0, 8.5)	<0.001
HbA1c mmol/mol	62.7 (54.3, 73.6)	61.6 (53.8, 71.8)	<0.001	64.1 (55.1, 76.5)	60.4 (53.0, 69.2)	<0.001
Insulin U/kg/d	1.0 (0.7- 1.01)	0.8 (0.6 -1.0)	<0.001	0.87 (0.7, 1.0)	0.8 (0.6,0.9)	<0.001
Systolic BP mmHg	110.0 (103.0 117.0)	110.0 (103.0, 119.0)	<0.001	115.0 (109.0, 122.0)	105.0 (100.0, 111.0)	<0.001
Diastolic BP mmHg	67.0 (61.5, 71.0)	65.5 (61.0, 70.0)	<0.001	69.0 (64.0, 73.0)	63.0 (60.0, 68.0)	<0.001
Males %				51.7	51.8	ns
Pump %	55.9	53.4	0.04	52.6	57.0	<0.001

Supplemental Table S1. Demographic characteristics of patients with BP in ≥ 3 visits stratified by gender and age (≥/<13 years of age). Unadjusted comparisons between males and females and   ≥/<13 years of age.

	Model 1 Diastolic BP No of observations 15742 (15401 used) Covariates: age, sex, diabetes duration, height-SDS, HBA1c, region, total center score		Model 2 Diastolic BP No of observations 15742 (15384 used) Covariates: age, sex, diabetes duration, BMI-SDS, HBA1c, region, total center score		Model 3 Diastolic BP No of observations 15742 (15657 used) Covariates: age, sex, diabetes duration, BMI-SDS, region, total center score	
Fit statistics	AkIC 104862.8		AkIC 104391.1		AkIC 106601.1	
Effect	**Estimate (SE)**	**p**	**Estimate (SE)**	**p**	**Estimate (SE)**	**p**
Intercept	49.2 (0.6)	<0.001	49.0 (0.6)	<0.001	53.5 (0.5)	<0.001
Age	0.8 (0.02)	<0.001	0.8 (0.02)	<0.001	0.8 (0.02)	<0.001
Gender female	0.8 (0.1)	<0.001	0.6 (0.1)	<0.001	0.6 (0.1)	<0.001
Gender male	0		0		0	
Disease duration	0.1 (0.02)	<0.001	0.1 (0.02)	<0.001	0.1 (0.02)	<0.001
Height-SDS	0.3 (0.1)	<0.001				
BMI-SDS			1.1 (0.05)	<0.001	1.0 (0.05)	<0.001
HbA1c	0.5 (0.03)	<0.001	0.5 (0.03)	<0.001		
Region Europe	-1.6 (0.2)	<0.001	-2.0 (0.2)	<0.001	-3.0 (0.2)	<0.001
Region Australia/NZ	-5.9 (0.4)	<0.001	-6.6 (0.4)	<0.001	-7.3 (0.4)	<0.001
Region South America	-4.2 (0.5)	<0.001	-4.8 (0.5)	<0.001	-5.6 (0.5)	<0.001
Region North America/Canada	-0.7 (0.2)	0.006	-0.7 (0.2)	<0.001	-1.6 (0.2)	<0.001
Region Asia/middle East/Africa	0		0		0	
Total Center Score	1.5 (0.2)	<0.001	1.6 (0.15)	<0.001	1.5 (0.2)	<0.001
Scale	52.9 (0.6)		51.7 (0.6)		52.9 (0.6)	

Supplemental Table S2. Results of linear regression analysis: Diastolic BP by total center score in 3 different models, after adjusting for multiple variables showing that total center score is an independent determinant of systolic BP after adjustment of multiple co-variates. SE: Standard Error, AkIC: Akaike information criterion