

EDUCATION TO IMPROVE SAFETY OF INSULIN SELF-INJECTION IN PATIENTS WITH TYPE 2 DIABETES: RECOMMENDATIONS BASED ON AN ANALYSIS IN A GROUP OF PATIENTS USING INSULIN PENS.

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BACKGROUND:

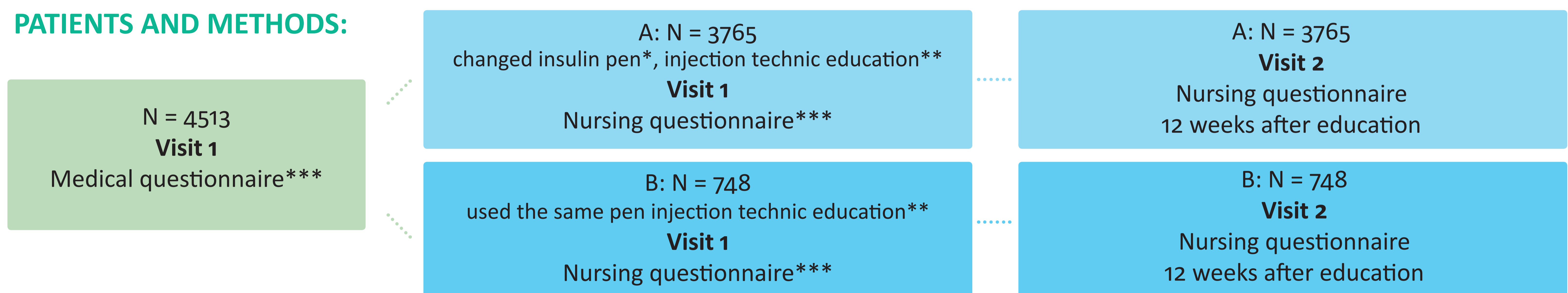
Periodic assessment of a patient's injection technique and the technical condition of the equipment is an integral part of diabetes patient care.

AIM:

To identify errors in insulin self-injection technique among patients with type 2 diabetes and to determine the scope of education that they should receive.

Figure 1. Research and educational project – Poland in 2013 – study method and patient flow.

PATIENTS AND METHODS:



* Changed insulin pens, after an independent decision of the patient and doctor,
** The teaching of injection techniques included demonstrations and instructions.
*** Three surveys were completed for each patient: one medical questionnaire (medical history and inclusion in the program) and two nursing questionnaires (evaluation of injection technique).

Figure 2. Results – demographics.

Demographics	A: N = 3765				B: N = 748			
	Mean	SD	SE	95% CI	Mean	SD	SE	95% CI
Age (years – Y)	65.39	10.18	0.17	65.06-65.72	64.73	9.98	0.51	63.73-65.73
BMI	30.40	5.27	0.09	30.23-30.57	30.07	4.70	0.23	29.60-30.54
Duration of diabetes (Y)	10.13	6.73	0.11	9.90-10.34	11.40	6.91	0.35	10.71-12.09
Insulin therapy duration (Y)	5.26	4.95	0.08	5.10-5.43	6.305	5.75	0.29	5.72-6.87
HbA1c (%)	8.28	1.53	0.03	8.23-8.33	8.00	1.43	0.08	7.85%-8.14%
The type of insulin	59.39% Gensulin M30				31.20% Novomix			
Needle length 8/6/5/4 mm	50.76%/35.38%/8.55%/2.76				50.06%/32.23%/8.71%/1.88%			
Professional status: works/unemployed	77.55%/22.45%				77.55%/22.45%			
Gender: female/male	53.00%/46.03%				52.96%/47.03%			

BMI = weight (kg)/height² (in metres).

Figure 3. Results – evaluation of injection technique (**p < 0.01; *p < 0.001).

Evaluation of injection technique	I Visit		II Visit	
	A	B	A	B
Correct storage (CS) of insulin pens	87.18%	90.36%	93.81%**	94.19%**
CS of new insulin cartridges	95.43%	97.23%	99.09%**	99.75%**
Proper mixing of cloudy insulin	51.26%	57.10%	79.23%*	81.79%*
Injection without disinfection	75.26%	76.10%	80.05%*	81.47%*
Lifting a skin fold (pinching up a fold of skin)	90.28%	91.37%	98.77%*	99.27%*
Injection angle (at 90°) (At the right angle injection)	66.23%	66.84%	70.49%*	69.61%*
Rotating injection sites each time	64.47%	66.50%	79.96%*	82.19%*
Rotating injection sites – every few injections	23.58%	23.96%	18.78%*	16.79%*
No rotation of injections	11.95%	9.72%	1.08%*	1.02%*
Ejecting 1-2 units before the injection	46.06%	54.31%	83.36%*	83.67%*
Awareness of the need to select needle length	51.12%	55.30%	94.95%*	93.69%*
Proper choice of needle size in practice	44.73%	52.27%	79.79%*	78.34%*
Replacing the needle (RN): after every injection	6.7%	7.12%	28.44%*	27.23%*
RN: after several injections	31.19%	36.65%	54.44%*	55.72%*
RN: when replacing cartridges	47.07%	44.27%	17.12%*	17.05%*
Lack of pen hygiene (never cleaning the pen)	41.81%	39.80%	5.11%*	6.14%*
Cleaning the pen daily	4.35%	4.34%	18.78%*	19.18%*

CONCLUSIONS:

1. Basic errors in insulin injection technique were found in both groups, especially with respect to changing needles.
2. Upon the second visit, most of the evaluated parameters improved significantly; although they still deviated from the desired state.
3. Periodic patient education is necessary and special attention should be given to motivating the patient, because the degree of compliance with safety guidelines increased disproportionately to the observed increase in the level of knowledge.

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