

## Supplementary Data

Diabetes risk assessment in Polish community pharmacies. Results from a pilot national screening campaign.

### Material and Methods

The research was awarded approval by the Ethics Committee of Poznan University of Medical Sciences (KB 137/25) as an open, retrospective study. It included a number of community pharmacies that participated in a national screening program for T2DM from November 2024 to February 2025. The screening lasted 16 weeks. Each participating community pharmacy nominated the pharmacists taking part in the study. All had completed appropriate courses organized by the Polish Centre of Postgraduate Medical Education received permission to measure capillary blood glucose, and to measure patient height and weight, and calculate body mass index (BMI). They also underwent an additional two separate one-day training courses, during which they were familiarized with an algorithm proposed for prediabetes or diabetes, with a special focus on the risk factors for the disorder and coping with impaired blood glucose results. All were provided with adequate materials, forms and educational leaflets for patients, detailed in the next section.

*Study participants.* The study inclusion criteria were as follows: written consent, age at least 18 years, lack of history of diabetes or use of insulin or oral hypoglycemic medications.

*Physical measurements.* Body weight was measured in kilograms with a digital weighing scale, and height in centimeters with a stadiometer. Body Mass Index (BMI) was calculated with a standard formula. Waist circumference was measured with an inelastic 1-cm wide tape kept snug to the body, halfway between the hip and the ribcage, according to standard protocols [1].

*Capillary blood glucose.* Fasting (random) capillary blood glucose was measured in each subject with an authorized model of glucometer.

Fasting blood glucose values between 5.6 and 6.9 mmol/l were regarded as indicative of impaired fasting glucose, and those exceeding 6.9 mmol/l as indicative of diabetes. In both situations, the pharmacists were encouraged to refer a patient to a physician. This concerned also results of random glucose exceeding 7.8 mmol/l [1, 2].

*FINDRISC score.* A risk score of 0 to 7 points indicates a low risk of diabetes (1% chance of diabetes over 10 years), 8 to 11 points a slightly elevated risk of diabetes (4% chance), 12 to 14 points a moderate risk of diabetes (17% chance), 15 to 20 points a high risk of diabetes (33% chance), and over 20 points indicates a very high risk of diabetes (50% chance) [3].

*Screening procedure.* The first stage in the proposed screening process was capillary blood glucose testing, either fasting or random: the result determined the further course of action (e.g., advice for lifestyle change or referral to the physician). The scheme also specifies the activities that should be performed by the pharmacist, such as education about risk factors and lifestyle modification, and recommends that newly-diagnosed patients receive a follow-up consultation focused on education about anti-diabetic treatment and self-monitoring. The algorithm and educational materials (Polish and English versions) assisting a pharmacist-led consultation that would facilitate patient education about diabetes prevention can be downloaded from the national website (<https://nowy-lek.pl/>).

*Data collection.* The following data were collected: pharmacy (name, address), patient (sex, age, fast - fed capillary blood glucose result, FINDRISC score, history of diabetes).

*Statistical analysis.* Data was analyzed using STATISTICA (TIBCO Software Inc, version 13.3). Categorical data (sex, age range, history of diabetes, FINDRISC score range) were expressed as frequency counts and percentages, with differences between groups being assessed with the Chi square test. The remaining data were expressed as mean and standard deviation (when normally distributed) or as median and interquartile range (when not normally distributed). Differences between groups were assessed using the non-parametric Kruskal-Wallis test. A two-sided *p*-value below 0.05 was considered statistically significant. The correlations between continuous variables were calculated using Spearman's test.

*Materials.* The participating pharmacies were supplied with measuring tapes, glucometers and strips, stadiometers and electronic scales. The materials consisted of the following: a) The patient's informed consent for participation in the study, b) General Data Protection Regulation (GDPR) information clause, c) algorithm for screening procedure, d) FINDRISC questionnaire translated into Polish, e) information forms with glycaemia results and individual risk factors for T2DM, for both the patient and the general practitioner (GP), f) educational leaflets for patients about the prevention of T2DM and its management, g) glycaemia measurement diary, h) case report form. All documents (forms) were distributed online.

## References

1. Waszyk-Nowaczyk M, Jasińska-Stroschein M, Sierpniowska O, Jedra A. [Guidelines for pharmacists on the procedure for measuring glucose concentration in capillary blood]. Warsaw, 1 st Edition, 2025 available at <https://nowy-lek.pl/> [2025, accessed 4 April 2025]
2. Davies MJ, Aroda VR, Collins BS, et al. Management of hyperglycaemia in type 2 diabetes, 2022. A consensus report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). *Diabetologia* 2022; 65: 1925-66.
3. Lindström J, Tuomilehto J. The diabetes risk score: a practical tool to predict type 2 diabetes risk. *Diabetes Care* 2003; 26: 725-31.

**Supplementary Table SI.** General characteristics of respondents

Parameter	All subjects	No diabetes in history
	<i>N</i> (%)	<i>N</i> (%) / median (25 <sup>th</sup> – 75 <sup>th</sup> )
Gender		
Females	792 (68.7)	756 (69.2)
Males	361 (31.3)	336 (30.8)
Age		
< 25	22 (1.9)	22 (2.0)
25-44	328 (28.4)	312 (28.6)
45-64	364 (31.6)	359 (32.9)
65-80	394 (34.2)	357 (32.7)
> 80	45 (3.9)	42 (3.8)
FINDRISK score		
Low		333 (30.5)
Slightly elevated	-	395 (36.2)
Moderate		181 (16.6)
High		154 (14.1)
Very high		29 (2.6)
Glucose [mmol/l]		
Fasting	-	5.5 (5.1 – 5.9) <sup>a</sup> ( $P=0.056$ ), <sup>b</sup>
Random		5.7 (5.1 – 6.4) <sup>c, d</sup>

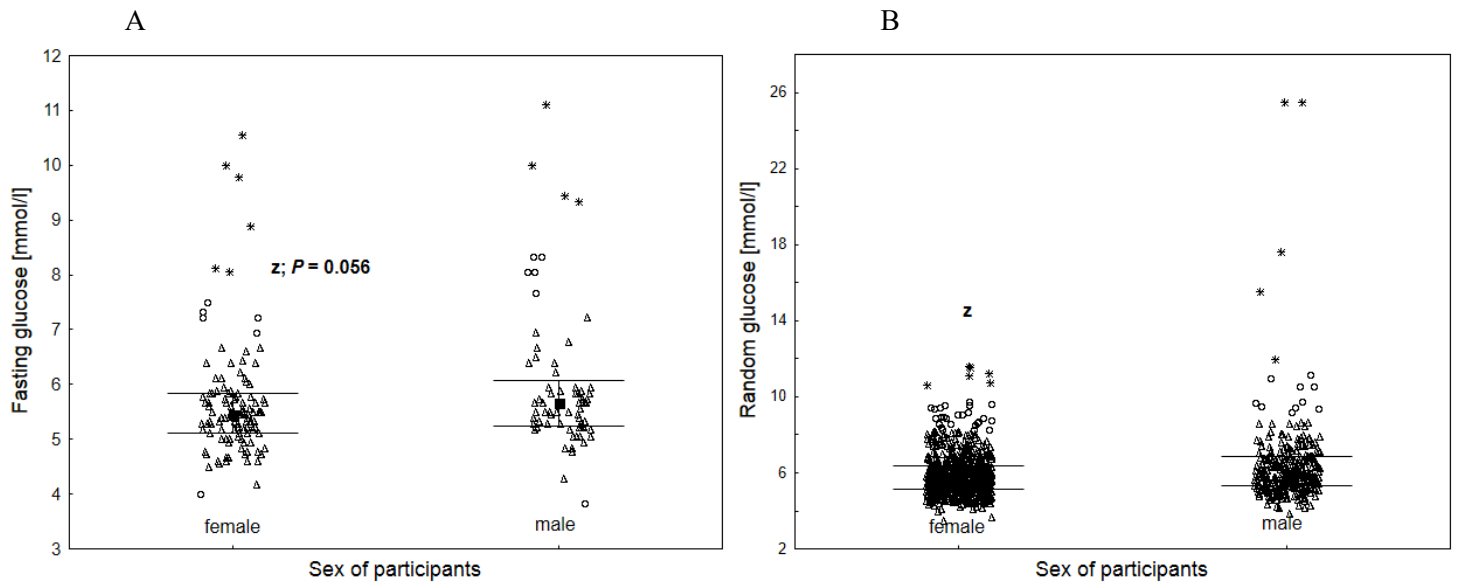
<sup>a</sup>Kruskal-Wallis:  $H(1, N = 180) = 3.6; p = 0.056$ ; category: gender (fasting blood glucose), <sup>c</sup>Kruskal-Wallis:  $H(1, N = 912) = 13.9; p = 0.0002$ ; category: gender (random blood glucose), <sup>b</sup>Kruskal-Wallis:  $H(3, N = 180) = 13.2; p = 0.004$ ; category: age (fasting blood glucose), <sup>d</sup>Kruskal-Wallis:  $H(4, N = 912) = 58.6; p < 0.0001$ ; category: age (random blood glucose).

**Supplementary Table SII.** Capillary blood glucose measurements in subgroup of subjects – concerns complete forms, only

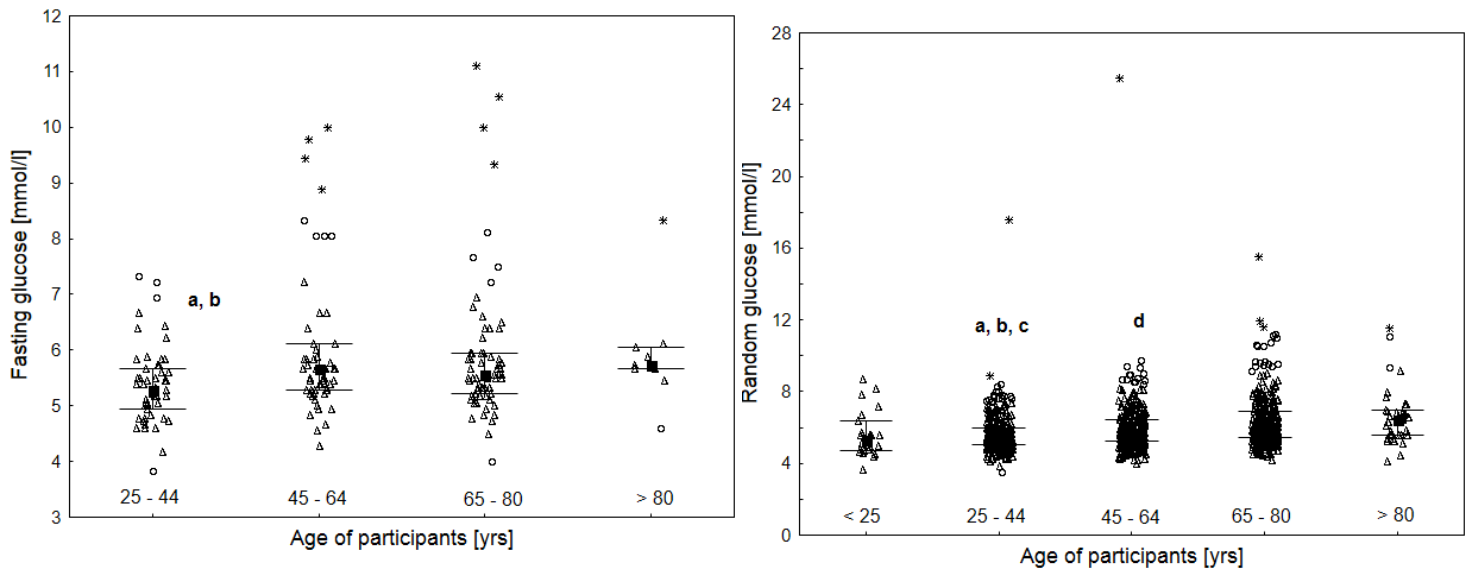
<b>Subgroup of patients/parameter</b>	<b>Capillary blood glucose – categories</b>	<b>N (%)</b>
No diabetes in history	–	1092
Fasting blood glucose [mmol/l]	Total	180 (100.0)
	< 5.6	95 (52.7)
	5.6–6.9	64 (35.5)
	≥ 7.0	21 (11.8)
Random blood glucose [mmol/l]	Total	912 (100.0)
	< 7.8	838 (91.9)
	7.8–11.0	66 (7.2)
	≥ 11.1	8 (0.9)

**Supplementary Table SIII.** FINDRISC score in subgroup of subjects – concerns complete forms, only

<b>Subgroup of patients</b>	<b>FINDRISC score – categories</b>	<b>N (%)</b>
No diabetes in history	–	1092
Fasting blood glucose below 5.6 mmol/l	Total	95 (100.0)
	Low	41 (43.1)
	Slightly elevated	34 (35.8)
	Moderate	6 (6.3)
	High	12 (12.6)
	Very high	2 (2.2)
Random blood glucose below 7.8 mmol/l	Total	838 (100.0)
	Low	273 (32.6)
	Slightly elevated	300 (35.8)
	Moderate	139 (16.6)
	High	106 (12.6)
	Very high	20 (2.4)



**Supplementary Figure S1.** Fasting and random blood glucose according to sex of respondents ( $N = 1092$ ). **A** – z – compared to male subjects ( $p = 0.056$ ) (Kruskal-Wallis:  $H(1, N = 180) = 3.6$ ); **B** – z – compared to male subjects ( $p = 0.0002$ ) (Kruskal-Wallis:  $H(1, N = 912) = 13.9$ ). The plot presents raw data as well as median with 25<sup>th</sup> – 75<sup>th</sup> quartile



**Supplementary Figure S2.** Fasting and random blood glucose according to age of respondents ( $N = 1092$ ); A – compared to subjects aged 45 to 64 yrs. ( $p = 0.02$ ); B – compared to subjects aged 65 to 80 yrs. ( $p = 0.02$ ) (Kruskal-Wallis:  $H(3, N = 180) = 13.2$ ;  $p = 0.004$ ); (b) a – compared to subjects aged 45 to 64 yrs. ( $p = 0.0055$ ); b – compared to subjects aged 65 to 80 yrs. ( $p < 0.0001$ ); C – compared to subjects aged  $> 80$  yrs. ( $p = 0.0002$ ); D – compared to subjects aged 65 to 80 yrs. ( $p = 0.006$ ) (Kruskal-Wallis:  $H(4, N = 912) = 58.6$ ;  $p < 0.0001$ ). The plot presents raw data as well as median with 25<sup>th</sup> – 75<sup>th</sup> quartile