

# Female sex, young and old age, northern German residency, high HbA<sub>1c</sub> and insulin use predict depressed mood in 35,691 T2D patients

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## Conclusions:

Depressed mood is a frequent psychological comorbidity in adult type 2 diabetes (T2D) patients. In clinical care, routinely screening for psychological problems as recommended by guidelines is absolutely advisable, especially in high-risk patients.

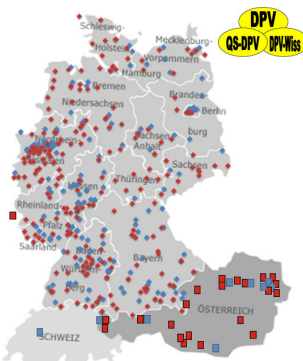
## Background & aim:

Between T2D and depressive symptoms a bidirectional relationship has been reported. The primary aim of this study was to analyze predictors of depressed mood in T2D. Secondly, the odds ratio of developing a clinically recognized depression in patients with conspicuous screening result was evaluated.

## Methods:

➤ 35,691 T2D patients aged ≥18 years from the German/Austrian multi-center prospective diabetes follow-up registry (DPV) were analyzed (Fig.1).

➤ All had completed the WHO-5 questionnaire, a reliable and validated 5-item screening tool for depression (score ≤7: likely depression).



**Fig.1: DPV registry (09/2014)**

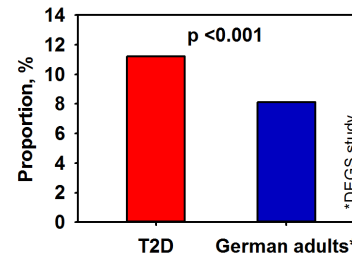
■ internal medicine  
 ■ pediatric centers

- To identify patients with a clinical diagnosis of depression, the registry was searched for a diagnosis or treatment of depressive disorder by using ICD-10 codes, DSM-IV/5 criteria and/or specific search terms.
- Southern parts of Germany: 'Baden-Württemberg', 'Bavaria', 'Hesse', 'Saarland', 'Saxony', 'Rhineland-Palatinate'. Northern parts: all other regions.
- Logistic regression modeling (SAS 9.4) was applied to study potential predictors (e.g. demographics, regional aspect, diabetes therapy, glycemic control) for depressed mood as well as the risk of developing clinically recognized depression.

## Results:

- 11.2% of patients (n=4,000) had depressed mood/ likely depression.
- Compared to data from the German Health Interview and Examination Survey for adults (DEGS), depressed mood was more prevalent in our cohort of T2D patients (Fig.2).
- Median age [IQR] of study participants was 68.9 [59.2 – 76.5] years. Subjects with likely depression had a later diabetes onset and were more often female (Tab.1).

**Fig.2: Depressed mood in T2D vs. German adults**

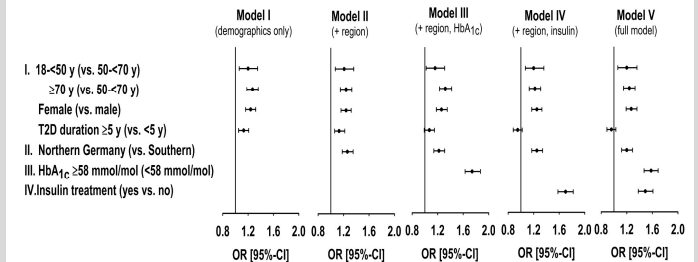


**Tab.1: Patient's characteristics (median [IQR] or %)**

	T2D patients with WHO-5 score		P-value
	≤7	>7	
<b>N</b>	4,000	31,691	-
<b>Females, %</b>	54	48	<0.001
<b>Age, years</b>	70.6 [59.8 – 78.8]	68.7 [59.1 – 76.2]	<0.001
<b>Age at T2D onset, years</b>	60.5 [49.6 – 70.2]	58.3 [43.1 – 67.7]	<0.001
<b>T2D duration, years</b>	7.6 [2.4 – 12.9]	7.0 [2.1 – 13.5]	0.76

➤ In logistic regression analyses, young and very old age as well as female sex were associated with depressed mood (Fig.3). Moreover, living in northern federal states of Germany, poor glycemic control and insulin therapy were related to depressed mood in T2D.

**Fig.3: Logistic regression models for depressed mood**



➤ The odds of developing a clinical diagnosis of depression was 1.95 (95%-CI: 1.66 – 2.29) times higher in patients scored ≤7 in the WHO-5 questionnaire.

**List of all participating diabetes centers, sponsors and additional information on DPV: [www.d-p-v.eu](http://www.d-p-v.eu). Funding: BMBF Competence Net Diabetes, German Centre for Diabetes Research (DZD), European Foundation for the Study of Diabetes. Conflict of interest: None.**