Do participants with depression receive more counseling on cardiovascular disease risk factors? The results of the WOBASZ II study

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ABSTRACT

BACKGROUND Depression was found to increase the risk of cardiovascular disease (CVD). In terms of CVD prevention in people with depressive symptoms, the main goal is to successfully control classic CVD risk factors.

AIMS The aim of the study was to assess the relationship between depression and 1) the frequency of healthcare utilization, 2) counseling on main CVD risk factors during usual medical visits, 3) compliance with pharmacotherapy in primary and secondary prevention.

METHODS WOBASZ II was a cross-sectional study targeting a representative sample of the Polish population. Trained nurses obtained information on depression (using the Beck Depression Inventory), education, healthcare utilization, counseling on CVD risk factors, and compliance with the recommended pharmacotherapy.

RESULTS As many as 5531 participants completed the Beck Depression Inventory questionnaire and provided information on CVD. After adjustment for age, sex, and education, participants without CVD but with depression had blood pressure measured slightly more often and received more frequent counseling on: nutrition (40% more), physical activity (43% more), and smoking cessation (nearly 30% more). Counseling on main CVD risk factors during typical visits and compliance with the recommended pharmacotherapy did not differ with regards to depression in patients with a history of CVD.

CONCLUSIONS The recommendations from the European Society of Cardiology for particularly careful control of CVD risk factors in people with depression are to some extent reflected in primary prevention. The relationship between depression and counseling on CVD risk factors in patients with CVD was insignificant. Compliance with the recommended pharmacotherapy was not related to depression.

INTRODUCTION A large body of evidence on associations between psychosocial risk factors and cardiovascular disease (CVD) has been collected in the last 2 decades. Both clinical depression and depressive symptoms have been found to increase the risk of incidence of coronary artery disease[1] as well as worsen its prognosis.[2]

The results of the Polish nationwide cross-sectional study showed that depressive symptoms were found twice as often in patients with coronary artery disease than in participants free of this disease. Both men and women with depressive symptoms are over twice as likely to have coronary artery disease, and 1.5-fold more

WHAT'S NEW?
The Study assessed whether the recommendations of the European Society of Cardiology for the particularly careful control of the main risk factors in people with unfavorable psychosocial characteristics are reflected in everyday medical practice. The WOBASZ II study targeted a representative sample of the Polish population and found that, in primary prevention, people with depression more often receive counseling on the main cardiovascular disease risk factors during typical visits than those without depression. The association between depression and counseling on cardiovascular disease risk factors in secondary prevention was insignificant; however, this issue seems to require more thorough research in terms of the scope and quality of medical visits for patients with cardiovascular disease. Compliance with the recommended pharmacotherapy was not related to depression.

likely to report myocardial infarction and arrhythmia.[3] The evidence from a prospective cohort study including Polish, Czech, and Russian data indicated that in Central and Eastern Europe the strength of the association between depression and CVD mortality is similar to the effect observed in the case of classic risk factors.[4] However, no method for the effective management of psychosocial risk factors has been described yet. Studies assessing the effect of treatment of clinically significant depression on improvement in CVD outcomes have been inconclusive.[5,6] Currently, the main goal for people with depressive symptoms is to pay special attention to successful control of classic CVD risk factors such as hypertension, hypercholesterolemia, and smoking. This is especially important as there is evidence that persons free of CVD with depressive symptoms have a poorer diet,[7] smoke more often,[8,9] and have low levels of physical activity.[10] The latest findings from the Framingham Study confirmed that depressive symptoms might act as a barrier for medication adherence, which exacerbates CVD risk factors in older adults.[11]

Also, in secondary prevention, patients with depression are more exposed to the main CVD risk factors, less likely to be open to lifestyle change, and less compliant to cardioprotective medication.[12-14] Although a clear need to control the major CVD risk factors is well justified, studies addressing the care of people with depression related to CVD are scarce.

The objective of the present study was to assess the relationship between depression and: 1) the frequency of healthcare utilization, 2) counseling on the main CVD risk factors during usual medical visits, and 3) compliance with the pharmacotherapy recommended in primary and secondary prevention.

METHODS Study population The Multi-Center National Population Health Examination Survey (WOBASZ II study) was conducted in Poland between 2013 and 2014. This was a nationwide, cross-sectional study aiming to achieve a sample representative for the total Polish population aged 20 years and older. The sample was drawn from the national population register, using a multistage sampling design. The main goals, methods, and sample selection in the WOBASZ II study have been reported previously.[15] Brief summary of information relevant for this publication is given below. Out of a randomly selected 15 200 residents, 13 643 were eligible for the study (10% of the sample were deceased, changed their place of residence, or contact was impossible due to poor health status). The response rate was 45.5%.

Data collection Trained nurses interviewed participants following a standard questionnaire. Data were obtained on depressive symptoms, education, CVD risk factors, and healthcare utilization characteristics. Blood collection for biochemical tests was performed according to standardized methods.

Measurements Depression was assessed using the Beck Depression Inventory (BDI).[16] The BDI included 21 items scored 0 to 3. The total possible score was from 0 (lack of depression symptoms) to 63 (highest depression symptoms). A cutoff point of 10 or higher was accepted.[17] The BDI was administered to participants aged 20 to 74 years (92% of the sample). Healthcare utilization was assessed by asking about hospitalization in the previous 12 months (yes / no) and medical consultations in the previous 12 months (yes / no). Counseling on CVD risk factors was assessed using the following questions: "During a typical medical visit, do you usually: 1) have your blood pressure measured? 2) receive advice regarding smoking cessation? 3) receive nutritional advice? 4) receive advice to increase physical activity?" Compliance with any recommended pharmacotherapy was assessed by asking the respondent whether they bought all the drugs prescribed during their last medical visits ("Yes, bought and take medications according to the medical recommendation" vs "Did not buy or bought but do not use medications according to medical recommendations").

Statistical analysis Distributions of participants' ages are presented as means (SD) according to subgroups by depression symptoms and history of CVD. Differences in mean age were assessed using the t test. Categorical variables are presented as raw numbers and percentages. Comparisons of the distributions of categorical variables with categories of depression symptoms were done using the χ^2 test. The main statistical method was multivariable logistic regression. The relationships between healthcare utilization, CVD risk factors counseling and

compliance with pharmacotherapy and history of CVD were assessed using logistic regression after adjusting for age. The associations between the above variables and depression symptoms were assessed after adjusting for age, sex, and education. Analysis was run for the strata of the history of CVD. The results are presented as odds ratios (ORs) with 95% CI. All analyses were done using the statistical package STATA version 14 (StataCorp LP, College Station, Texas, United States).

RESULTS As many as 5531 participants completed the BDI questionnaire and provided information on CVD. Of these participants, 567 had a positive history of CVD. In persons with CVD, medical visits, hospitalizations, and counseling were more frequent than in participants free of CVD (FIGURE 1). TABLE 1 presents descriptive statistics for age, sex, education, healthcare utilization characteristics, frequency of counseling on CVD risk factors, and compliance with pharmacotherapy recommended by depression and history of CVD. Among participants free of CVD, persons with depression were on average 5 years older, predominantly women, and had lower education. Both hospitalizations and medical consultations in the previous 12 months were more prevalent in participants with depression. The number of blood pressure measurements and counseling on nutrition, physical activity, and smoking cessation during typical visits was also higher in persons with depression. Similar to participants free of CVD, in participants with CVD, depression was more prevalent in women. No other differences in terms of depression were found in participants with CVD.

After adjustment for age, sex, and education, participants free of CVD with depression were

more likely to attend medical consultations or to be hospitalized (45% and 71% more, respectively) (TABLE 2). Compared with participants without depression, the former also slightly more often had their blood pressure measured, and received more frequent counseling on: nutrition (40% more), physical activity (43% more), and smoking cessation (nearly 30% more). No association between compliance with pharmacotherapy linked to depression was found in participants free of CVD.

The frequency of medical visits, hospitalizations, counseling on the main CVD risk factors during typical visits, and compliance with the recommended pharmacotherapy did not differ between patients with a history of CVD with depression as compared with those without depression.

DISCUSSION Our results suggest that, in primary prevention, persons with depression use medical care more often and receive counseling on the main CVD risk factors during typical visits more frequently. However, in persons with CVD, the prevalence of depression was not related either to frequency of medical care use or to frequency of counseling on CVD risk factors. Our findings did not confirm noncompliance with recommended pharmacotherapy in participants with depression.

The results for participants free of CVD indicate that recommended intensified control of the main risk factors in people with unfavorable psychosocial characteristics is implemented. Comprehensive advice in terms of major risk factors, if effective, has the potential to reduce CVD risk associated with depressive symptoms. To the best of our knowledge, no Polish studies have been published assessing
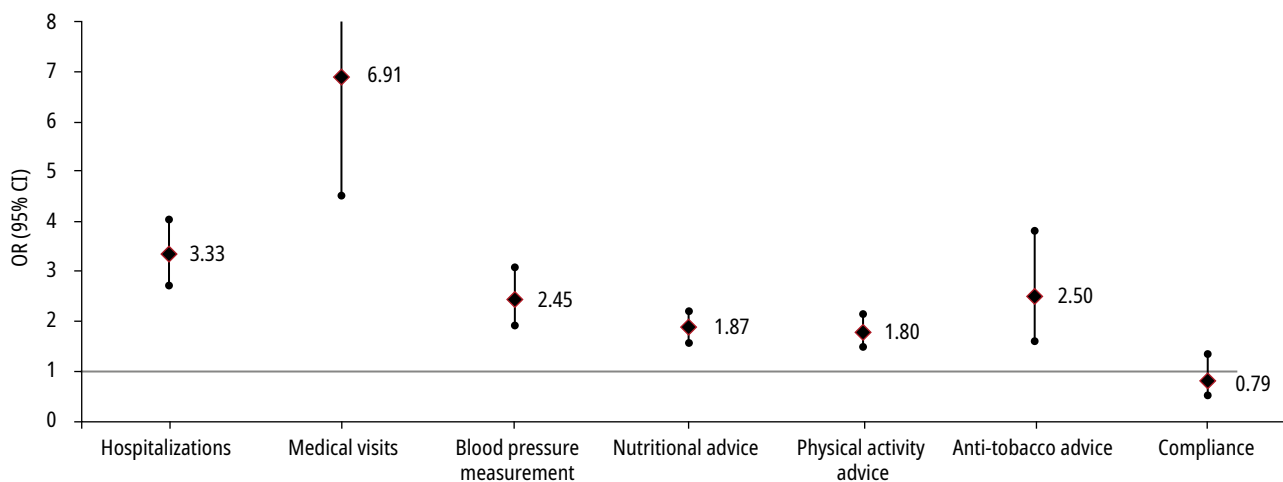
FIGURE 1 Prevalence of healthcare utilization characteristics, frequencies of counseling on cardiovascular disease (CVD) risk factors, and compliance with pharmacotherapy recommended in participants with CVD, adjusted for age (reference: participants free of CVD)

Abbreviations: OR, odds ratio

TABLE 1 Distribution of age, sex, education, healthcare utilization, frequency of counseling on cardiovascular disease risk factors and compliance with recommended pharmacotherapy by depression and history of cardiovascular disease

Parameter		Free of CVD (N = 4964)			History of CVD (N = 567)		
		Low BDI[a] (n = 3993)	High BDI[b] (n = 971)	P value	Low BDI[a] (n = 330)	High BDI[b] (n = 237)	P value
Age, mean (SD)		44.4 (13.9)	49.3 (14.3)	<0.001	60.0 (9.6)	61.7 (9.9)	0.06
Male sex		1.869 (46.8)	351 (36.2)	<0.001	180 (54.6)	109 (46.0)	0.04
Education	Primary / vocational	1323 (33.2)	433 (44.8)	<0.001	177 (53.6)	141 (59.5)	0.36
	High	1.565 (39.2)	338 (35.0)		118 (35.8)	76 (32.1)	
	University	1101 (27.6)	196 (20.3)		35 (10.6)	20 (8.4)	
Married / cohabiting		2762 (69.2)	618 (63.7)		242 (73.3)	162 (68.4)	
≥1 hospitalization in the previous 12 months		351 (8.8)	146 (15.04)	<0.001	92 (28.0)	79 (33.3)	0.17
≥1 medical visit in the previous 12 months		2883 (72.3)	790 (81.4)	<0.001	319 (97.0)	228 (96.2)	0.62
Blood pressure measurement		1927 (52.6)	562 (61.5)	<0.001	283 (86.5)	203 (87.1)	0.84
Nutritional advice		857 (23.6)	299 (33.1)	<0.001	174 (55.2)	116 (52.0)	0.46
Physical activity advice		700 (19.3)	243 (26.9)	<0.001	143 (45.4)	92 (40.9)	0.3
Antitobacco advice		512 (49.2)	179 (57.2)	0.01	61 (84.7)	58 (80.6)	0.51
Compliance	Yes	2729 (92.2)	721 (91.2)	0.32	291 (93.6)	216 (93.5)	0.98
	No	230 (7.8)	70 (8.9)		20 (6.4)	15 (6.5)	

Data are presented as number (percentage) unless otherwise indicated.

a BDI <10

b BDI ≥10

Abbreviations: BDI, Beck Depression Inventory; CVD, cardiovascular disease

TABLE 2 Association between depressive symptoms and the frequency of healthcare utilization, compliance with pharmacotherapy recommended, and counseling on main cardiovascular disease risk factors during usual medical visits (reference category: Beck Depression Inventory <10)

Parameter	Medical consultation in the last 12 months	Hospitalization in the last 12 months	Noncompliance with recommended pharmacotherapy	Blood pressure measurement	Nutritional counseling	Physical activity counseling	Antitobacco counseling
Free of CVD (n = 4964)	1.45 (1.21–1.74)	1.71 (1.39–2.12)	1.24 (0.93–1.65)	1.15 (0.98–1.36)	1.40 (1.19–1.65)	1.43 (1.20–1.70)	1.29 (0.99–1.69)
History of CVD (n = 567)	0.65 (0.25–1.66)	1.32 (0.91–1.90)	1.00 (0.50–2.02)	0.99 (0.59–1.68)	0.86 (0.61–1.22)	0.85 (0.60–1.21)	0.75 (0.30–1.86)

Data are presented as odds ratio (95% CI). Adjusted for age, sex, and education.

the control of CVD risk factors in terms of depressive symptoms. However, in the general population, the control of the main CVD risk factors is rather poor,[18-21] so although participants with depressive symptoms receive more frequent counseling, there is still room for improvement.

Our results in participants with CVD indicated no significant difference in the frequency of CVD risk factors counseling related to depressive symptoms. However, CVD patients in general have more medical visits and are more intensively advised in terms of CVD risk factors, so the majority of these patients recalled advice on risk factors during typical visits, irrespective of depressive symptoms. The results of EUROASPIRE (European Action on Secondary and Primary Prevention through Intervention to Reduce Events) studies showed that achievement of treatment targets in terms of classic risk factors in secondary prevention in Poland is substantially higher than in the general population.[22] This may suggest that patients with CVD receive more intensive care and that is why the differences between patients with and without depression are attenuated.

However, there are other areas that require action in patients with depression. The results of the EUROASPIRE IV study showed that, of the over 20% of patients with CVD with symptoms of depression, antidepressants were prescribed only in 2.4% of them.[14] Also, a relatively small proportion of patients with CVD participated in cardiac rehabilitation, while exercise training in a group setting was related to a decrease in depressive symptoms.[23]

Our study is the first to address the issue of adjusting CVD care according to depressive symptoms, which is becoming a more important issue. Depending on the source, it is estimated that depressive symptoms affect about 20% of the population and their prevalence is increasing.[4,24] It seems that depressive symptoms cannot be ignored in effective treatment of CVD. The present analysis was done on a population-based, nationwide sample so it gives a broader view of the issue than observations in clinical settings only. The use of standard research methods, intensive training of interviewers, and strict adherence to the research protocol in all centers contributed to the high quality of the collected data.

Nevertheless, some caution is recommended as the relatively modest participation rate might have affected the representativeness of the sample. Persons with major depression might have not participated in our study, so the described associations were found in the healthier part of the general population. This may suggest some underestimation of the effect, which means that associations could be stronger than reported.

Furthermore, the BDI identifies the trait depression in a population. A cutoff point of 10 is rather low and does not correspond with a clinical diagnosis of a major depressive disorder. However, we decided to use it as it was found that in Central and Eastern Europe, depressive symptoms increased CVD mortality risks in the general population even for scores below the cutoffs that are commonly used to define depression.[4] It cannot be excluded that adopting a higher cutoff point could have resulted in even stronger relations. However, as mentioned above, it is likely that persons with major depression are underrepresented in the study on the general population, so the issue should preferably be addressed in studies with clinical setting.

Also, in this study we were not able to differentiate the scope and quality of CVD counseling related to depression, and in CVD patients this could have differed.

In conclusion, the recommendations of the European Society of Cardiology for a particularly careful control of the main risk factors in people with unfavorable psychosocial characteristics[25] are to some extent reflected in primary prevention. The relationship between depression and counseling on the main CVD risk factors in patients with CVD was insignificant; however, more thorough research on the scope and quality of medical visits in patients with CVD is needed. Compliance with pharmacotherapy recommended by healthcare professionals was not related to depression.

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