

Applicability of systematic screening for signs and symptoms of depression in family practice patients in Slovenia

Ugotovitve sistematičnega presejanja znakov in simptomov depresije v ambulanti zdravnika družinske medicine v Sloveniji

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Abstract

Background: The prevalence of depression in primary care setting is high. About a half of patients with depression remain undetected. The aim of our study was to determine whether screening questionnaires assist family practitioners in identifying more patients with depression.

Methods: The multicentric study included 25 medical teams (a family practitioner and a nurse) from several Slovenian regions and 2,328 patients (86 % of all patients who were asked to participate) above 18 years of age, who had not been treated for mental disorders and who during the study visited their family practitioners for different medical problems. The study was divided into two phases, which lasted three consecutive hours daily over a period of ten working days. In the first phase, the family practitioners recorded the number of new diagnoses of depression. Six weeks later, patients completed the Zung Self-Rating Depression Scale (ZSRDS) in the waiting room. At the same time, family practitioner used the Patient Health Questionnaire 9 (PHQ-9) to screen depression symptoms.

Results: In the first phase, depression was diagnosed in 5.7 % participating patients, and in the second phase, 10.9 % of patients on ZSRDS or 9.6 % on PHQ-9 exceeded the cut-off score. The difference was statistically significant in ZSRDS ($p < 0.01$). Patients with positive screening results were mostly women – 16.9 % (PHQ-9) or 18.8 % (ZSRDS), and patients with chronic condition – 22.0 % (PHQ-9) or 23.3 % (ZSRDS), both in age groups from 46 to 55 years. The family practitioners treated 94.6 % (PHQ-9) or 71.3 % (ZSRDS) of people with positive screening results.

Conclusions: Results of both screening questionnaires were comparable. The screening tools can help family physicians in more efficient

identification of depression. Targeted screening in high-risk groups, women and chronic patients in the age group from 46 to 55 years, would be reasonable.

Izvleček

Izhodišča: Prevalenca depresivnih motenj na ravni primarnega zdravstva je visoka. Pri polovici bolnikov pa depresivne motnje niso prepoznane. Namen naše raziskave je bil ugotoviti, ali presejalni vprašalniki pomagajo zdravniku družinske medicine pri prepoznavanju bolnikov z depresivno motnjo.

Metode: V raziskavi je sodelovalo 25 zdravstvenih timov (zdravnik družinske medicine in sestra) iz različnih slovenskih regij in 2.358 bolnikov (86 % povabljenih k raziskavi), starih nad 18 let, ki se niso zdravili za duševno motnjo in so v času raziskave obiskali zdravnika zaradi različnih zdravstvenih težav. Raziskava je potekala v dveh fazah, ki so trajale po tri zaporedne ure dnevno deset delovnih dni. V prvi fazi raziskave so zdravniki beležili število novih diagnoz depresije. Čez šest tednov so bolniki v čakalnici izpolnili Zungovo samoocenjevalno lestvico depresije (ZSLD). Hkrati je zdravnik pri vseh teh bolnikih za presejanje simptomov depresije uporabil Vprašalnik o bolnikovem zdravju 9 (VBZ-9).

Rezultati: V prvi fazi so bile depresivne motnje diagnosticirane pri 5,7 % bolnikov, v drugi fazi je presejalno merilo preseglo 10,9 % (ZSLD) oz. 9,6 % (VBZ-9) bolnikov. Statistično pomembno razliko med obema fazama smo ugotovili le v primeru rezultatov ZSLD ($p < 0.01$). Najpogostejše so pozitivni presejalni rezultat imela ženske – 16,9 % (VBZ.9) oz. 18,8 % (ZSLD), in bolniki s kronično boleznijo – 22 % (VBZ-9) oz. 23,3 % (ZSLD), oboji v starosti od 46 do 55 let. Zdravniki so obravnavali 94,6 % (VBZ-9) oz. 71,3 % (ZSLD) bolnikov s pozitivnim presejalnim rezultatom.

Zaključki: Rezultati presejalnih vprašalnikov so primerljivi. Presejalna orodja lahko pomagajo zdravniku pri bolj učinkovitem prepoznavanju depresivnih motenj. Smiselno bi bilo ciljno pre-

sejanje skupin z največjim tveganjem, in sicer žensk ter kroničnih bolnikov v starostni skupini od 46 do 55 let.

Introduction

Depression is present in 10 % to 12 % of patients in primary care setting.^{1,2} It is more prevalent among teenage and adult women and among patients with chronic condition.³ The international research PREDICT-D, which in the Slovenian sample included 74 family practitioners from outpatient clinics, diagnosed major depressive disorder in 5.8 % of patients according to DSM-IV criteria and in 14.5 % of patients according to ICD-10 (11.2 % of men and 16.4 % of women).⁴ The Slovenian study, which included patients' self-assessments, revealed that 9.3 % of men, 15.7 % of women and 18.1 % of patients with chronic condition of both genders suffered from depression.⁵

The prevalence of depression is high and steadily increasing.⁶ On average, the percentage of recorded diagnoses from the group of depressive disorders in family practice in Slovenia between 2001 (11,617 diagnoses) and 2008 (17,131) increased annually by approximately 6 %.⁷⁻¹⁴ According to the fact that depressive disorders in Slovenia contribute the most – i.e. 9 % – to the total burden of diseases, we should assume that depressive disorders present a great public health problem.¹⁵

High prevalence and the percentage of the total burden of disease direct our attention to another problematic aspect of depression on the primary care level – poor recognition. More than half of patients with depression are not recognised, and consequently, not treated.¹⁶⁻¹⁸ Unrecognised depression is reflected in more frequent visits to the family practitioner and extensive use of medical services.¹⁹ In chronic patients, this more often results in complications of chronic disease, in a higher risk for the development of new diseases and in an increase in mortality rate.²⁰

One of the possible solutions for more efficient identification of patients with depres-

sion is the use of screening questionnaires.²¹ However, it needs to be stressed that views on the effects of screening are contradictory. While Gilbody et al. in their meta-analysis stated that the routine screening has a minimum effect on the recognition and the result of the depression treatment, the U.S. Preventive Services Task Force recommends the systematic screening of the entire population.^{22,23} The latter is nevertheless subject to certain conditions: availability of staff, which after the screening provides diagnostics, efficient treatment and monitoring of an individual with depression.²³

Efficiency of the use of screening tools for depression in a family practice has not yet been studied in Slovenia. The aims of our study were: to determine whether family practitioners using screening questionnaires identify more patients with depression; to estimate the percentage of overlooked diagnoses in patients with clinical symptoms of depression; to compare screening results of two different methods of screening (self-rating vs. family practitioners); to examine the screening results in the context of subgroups regarding gender, age and presence of chronic condition. The study 'Presejanje, sistematično odkrivanje in celostna obravnava depresij v Sloveniji' (Screening, systematic detection and comprehensive treatment of depression in Slovenia) was implemented within the framework of target research programme 'Slovenian Competitiveness 2006–2013'.

Method

Screening tools

We applied two of the most frequently used screening questionnaires for depression signs and symptoms in the world.^{24,25}

The Zung Self-Rating Depression Scale (ZSRDS) has in the past already been used in Slovenia.^{26,27} It is comprised of twenty items

which include emotional, psychological and physical symptoms. An individual assesses the presence of a certain symptom in the past several days on the four-level scale. The composite score indicates the severity of depressive symptoms. It can be converted into SDS index, which represents the percentage of all possible depression points. The composite score varies between 20 and 80, and the SDS index varies between 25 and 100 points. An index between 50 and 59 points (40 to 49 composite points; hereinafter referred to as ZSRDS-40) indicates mild depression. Several researches applied the raw result of 50 points as the screening criterion, which equals the SDS index of 63 or the criterion for moderate depressive disorder.⁵ In the beginning of our research, we established the lower limit of SDS index for mild depression as the cut-off point. The analysis suggested that the criterion for mild depressive disorder is probably not suitable as the cut-off point, because more than a third of participating people demonstrated positive screening results. Hence, we considered the criterion of 50 composite points (hereinafter referred to as ZSRDS-50) in further analyses.

Patient Health Questionnaire 9 (PHQ-9) includes nine depression symptoms (in accordance with nine DSM-IV criteria).¹ The individual or the appraiser marks on the four-level scale how long a certain symptom was present in the last two weeks. A result above 9 on the scale indicates a suspected moderate depression. The total result may vary from 0 to 27. Martin et al. established that PHQ-9 is a valid scale for detecting major depressive disorders as well as under-threshold forms of depressive disorders in general population.²⁸ Sensitivity and specificity are 88 % if nine points are considered as the screening criterion.²⁹ Sensitivity and specificity of two screening questions are 97 % or 67 %.³⁰

The result of screening questionnaires alone cannot be the basis for the diagnosis, therefore a diagnostic interview should always be performed.

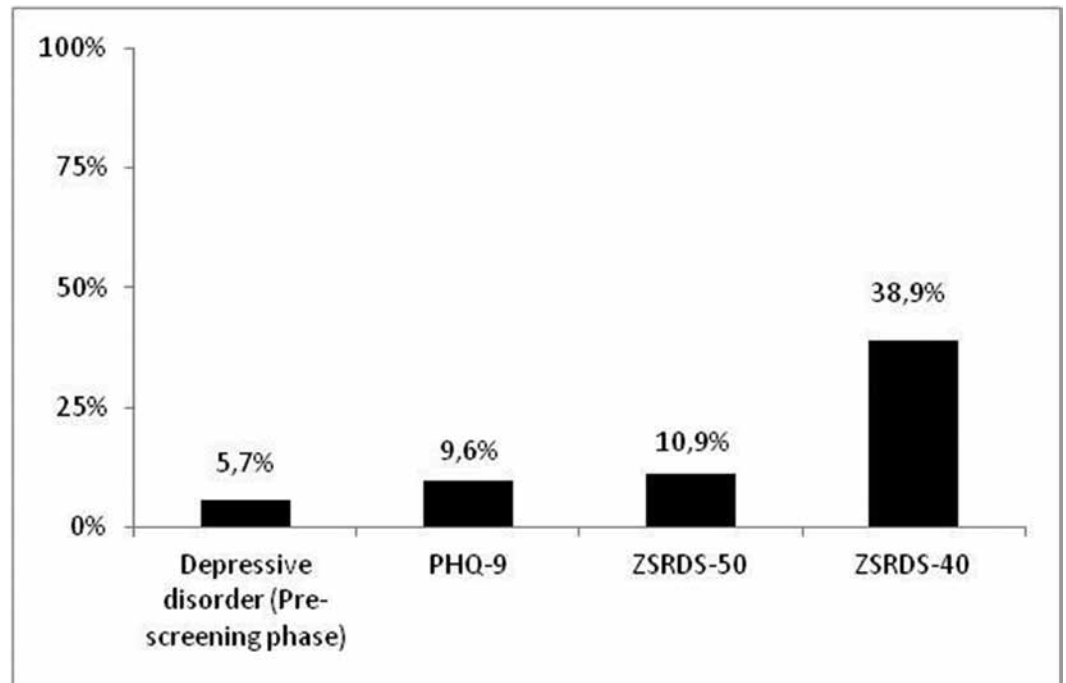
Study design

The study included 25 medical teams—a family practitioner and a nurse. The study was divided into two phases. In the first phase (pre-screening phase), family practitioners recorded newly established diagnoses of depressive disorders in three consecutive hours a day over the period of ten working days during their work in outpatient clinics. The second phase (screening phase) was implemented in the same time range six weeks after the first phase and it included the application of both screening questionnaires. Each patient visiting the selected medical team at the outpatient clinic in this period was invited by the nurse to participate in the research and was given a brochure. The brochure included information on the purpose of the research, description of the depressive disorder, the Zung Self-Rating Depression Scale and the informed consent for participation in the research. The nurse evaluated the completed questionnaire of participating patient and submitted the score to the family practitioner. After the examination, which was the reason for the patient's visit, the family practitioner asked the patient two screening questions from PHQ-9. In the case that the first two answers to the screening questions were positive, the family physician asked the remaining seven questions. After that he examined the result of the self-assessment questionnaire. The patients who were unable to independently complete the self-assessment questionnaire were treated only on the basis of PHQ-9. In the case of positive screening result on at least one questionnaire, the family practitioner treated the patient according to diagnostic guidelines without other directions from the researchers. 28 % of PHQ-9 questionnaires included in the research were implemented in total, and the remaining percentage to the extent of two questions.

Six family physicians did not submit the results from the pre-screening phase, so we were not able to include them in the analysis of differences between the pre-screening phase and the phase of screening.

The research was approved by the National Medical Ethics Committee.

Figure 1: Average percentage of people with depressive disorder in the pre-screening phase and clinical level of depression signs and symptoms of depression in the screening phase.



Statistical analyses

We used SPSS version 13.0 statistical package (SPSS Inc, Chicago, IL, USA) for analysis. The significance of differences between the percentage of people with depressive disorders in the pre-screening phase and the percentage of people with clinical signs and symptoms of depression in the screening phase was tested with non-parametric test for dependent samples (Wilcoxon). χ^2 tests were used to identify significant differences between age groups, between men and women and between patients with and without chronic conditions. The reliability coefficients (Cronbach's alpha) for ZSRDS

and for PHQ-9 were calculated. We have set the limit for statistical significance at $P < 0.05$.

Results

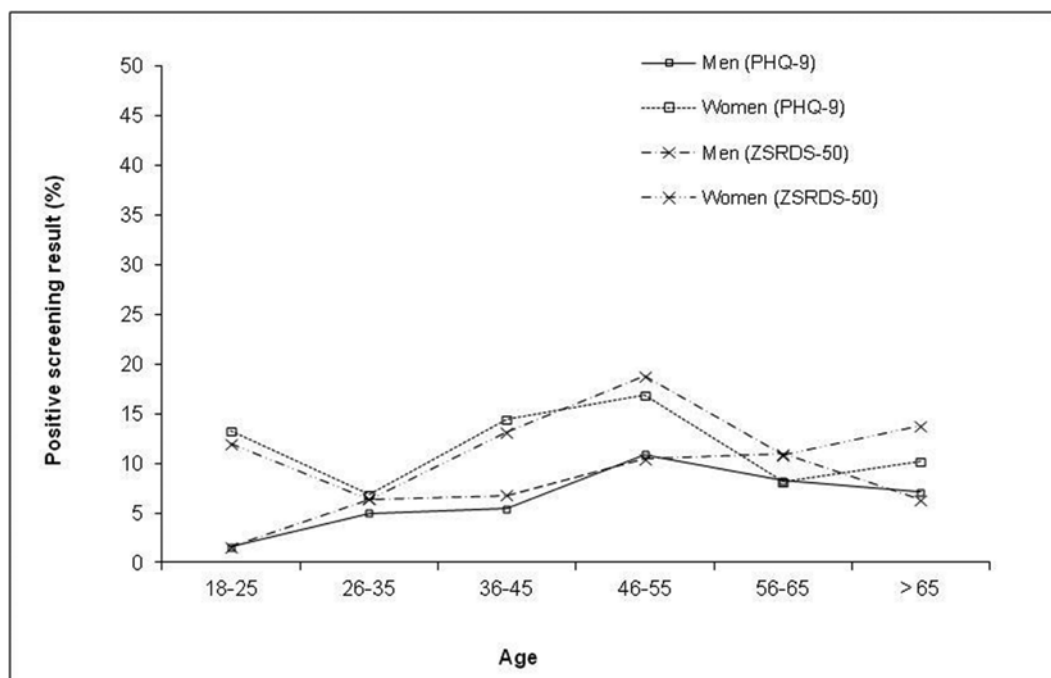
2,328 people above 18 years of age, who had not been treated for mental disorders (86 % of all patients who were asked to participate), agreed to take part in the study. The analysis included 1,930 patients who completed both screening questionnaires. 1,108 of them were women (57.4 %). Mean age was 48.3 years (SD = 15.6).

Table 1: Positive screening result – difference between men and women and difference between patients with and without chronic disease.

	Men (%)	Women (%)	χ^2	p	Df
PHQ-9	7.1	11.9	12.11	<0.005	1
ZSDS-50	7.8	13.0	12.79	<0.001	1
	Chronic disease not present (%)	Chronic disease present (%)			
PHQ-9	8.8	14.0	11.27	<0.050	1
ZSDS-50	9.0	14.7	13.46	<0.001	1

Women reported clinical signs and symptoms of depression more frequently than men, while patients with chronic condition reported signs and symptoms of depression more frequently than patients without chronic condition.

Figure 2: Positive screening result and age – controlled for gender.



Reliability of both questionnaires was high – Cronbach's alpha for ZSRDS was 0.86 and 0.87 for PHQ-9.

The differences between the results of pre-screening and the results of ZSRDS are significant ($N = 19$; $Z = 3.82$, $p < 0.001$ is for ZSRDS-40; $Z = -2.21$, $p = 0.027$ is for ZSRDS-50). The difference between the results of pre-screening and PHQ-9 is not significant ($Z = -1.68$, $p = 0.093$).

Screening result and type of treatment

Due to depression symptoms, the family practitioners treated 176 (94.6 %) individuals with positive PHQ-9 scores, 6 patients (3.2 %) were not treated, and there is no treatment data on 4 patients (2.1 %). We assume that the latter were not treated. 149 patients (71.3 %) were treated owing to positive ZSRDS-50 results, 26 patients (12.4 %) were not treated, and there is no treatment data on 34 patients (16.3 %). The treatment included antidepressants and anxiolytics, referral to a specialist, counselling, other forms of treatment or a combination of the above-mentioned treatments.

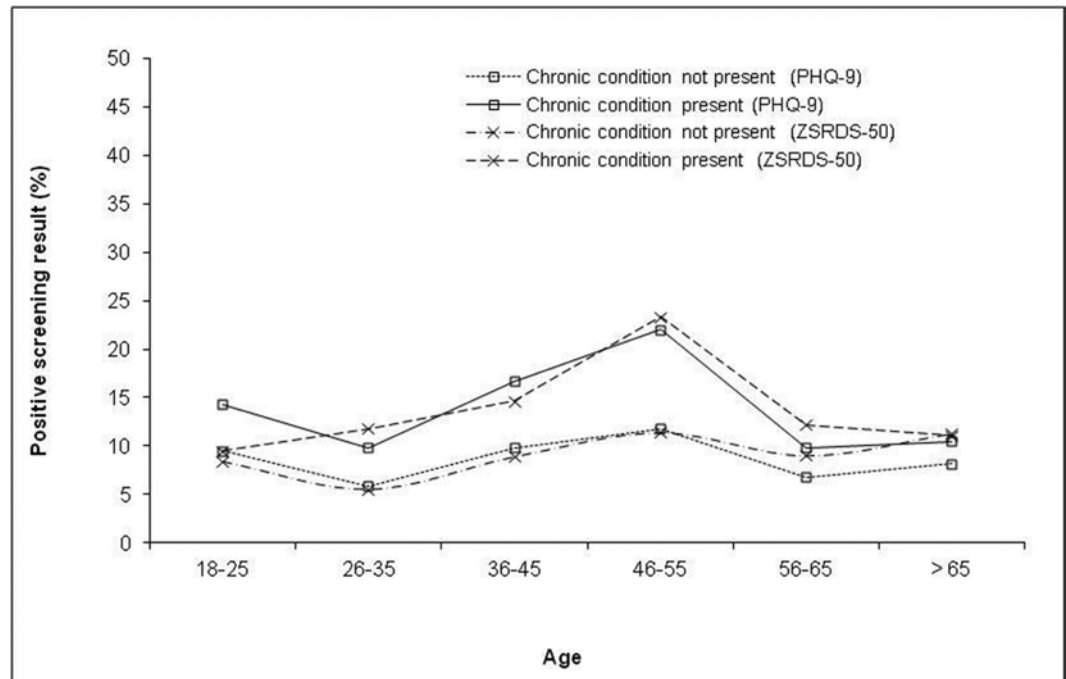
Positive screening result and age, gender and presence of chronic condition

When analysing differences between age groups, we addressed gender (Figure 2) and presence of a chronic condition (Figure 3) separately. Chronic condition was recorded with 658 patients (34.1 %). The percentage of patients with chronic condition increased with age; it was the lowest (17.8 %) in the age group from 26 to 35 years, and the highest (62.5 %) in the age group of 66 years and above ($\chi^2 = 186.70$, $p < 0.001$, $df = 5$).

When considering gender of the participants, it was demonstrated that the percentage of patients with positive screening results between individual age groups differed significantly only among women; thus, in PHQ-9 (women: $\chi^2 = 14.57$, $p < 0.05$, $df = 5$; men: $\chi^2 = 8.79$, $p = 0.118$, $df = 5$) as well as in ZSRDS-50 (women: $\chi^2 = 15.36$, $p < 0.01$, $df = 5$; men: $\chi^2 = 7.97$, $p = 0.158$, $df = 5$). The largest percentage of women with positive screening results on both questionnaires was in the age groups from 18 to 25 years (13.3 % in PHQ-9 or 12.0 % in ZSRDS-50), from 36 to 45 years (14.4 % in PHQ-9 or 13.1 % in ZSRDS-50) and from 46 to 55 years (16.9 % in PHQ-9 or 18.8 % in ZSRDS-50).

The percentage of patients with positive screening results in various age groups differs

Figure 3: Positive screening result and age – controlled for chronic condition.



significantly only in the group with chronic condition; thus, in PHQ-9 screening (acute condition: $\chi^2 = 6.26$, $p = 0.28$, $df = 5$; chronic condition: $\chi^2 = 13.82$, $p < 0.05$, $df = 5$) as well as in ZSRDS-50 screening (acute condition: $\chi^2 = 6.00$, $p = 0.306$, $df = 5$; chronic condition: $\chi^2 = 12.48$, $p < 0.05$, $df = 5$). Particularly high percentage of patients with clinical level of signs and symptoms of depression was established among patients who visited their family practitioners because of their chronic condition and were in age group from 46 to 55 years (22.0 % in PHQ-9 and 23.3 % in ZSRDS-50).

Discussion

Efficiency of screening questionnaires

The percentage of depressive disorder diagnoses in the pre-screening phase is almost equal to the percentage of patients with major depressive disorder established by the PREDICT-D study while considering the DSM-V criterion.⁴ The prevalence of clinical symptoms estimated on the basis of screening questionnaires is higher and more similar to the prevalence assessed on the basis of the ICD-10 criterion (Figure 1) in the above mentioned study. In comparison to the findings of another Slovenian study

where depression symptoms were assessed with ZSRDS, we established a somewhat smaller prevalence among women and men (Table 1).⁵

Although the family practitioners by the help of PHQ-9 did not identify significantly more patients with clinical level of depressive symptoms than in the pre-screening phase, the difference is considered important from the clinical viewpoint. This assumption is supported by the percentage of the treated patients with regard to the screening result, the majority (94.6 %) of patients with positive PHQ-9 results were being treated. We cannot accurately answer the question why a significant number of patients with high ZSRDS results were not treated. There are some explanations. It may be an issue of the manner of questionnaire application, i.e. self-assessment (ZSRDS) in comparison with the family practitioner's assessment (PHQ-9). Family practitioners may have used or interpreted the ZSRDS results in different way as PHQ-9 results, or we actually identified more false positive cases with ZSRDS. The latter is least likely if we consider the findings of studies, which indicate that reliability and validity of ZSRDS are on appropriate level²⁴ and comparable to the other most frequently used screening tools for depression.³¹

During the pre-screening phase, the family practitioners in our study on average diagnosed depressive disorders in 5.7 % of patients. We assumed that this level reflects the percentage of diagnosed patients with depressive disorders in their population or the 'level' of recognition. Does the percentage of patients with clinical level of signs and symptoms of depression on screening questionnaires, which exceeds 5.7 %, represents those patients who are otherwise not diagnosed by the family practitioner? The result of screening questionnaires indicates that in the treated population of the participating family practitioners there were 3.9 % (PHQ-9) or 5.2 % (ZSRDS-50) more patients with clinical symptoms of depression than the diagnoses established by family practitioners without a screening tool. This means that there were 40.6 % or 47.7 % of patients with whom the family practitioners may have overlooked serious depressive symptoms. The results comply with foreign findings.^{16,17} We cannot assess the percentage of actually overlooked cases, because we do not have data on patients with positive results that the family practitioners actually performed the diagnostic interviews with and what were the results of the interviews. Our assumption is indirectly supported by treatment data, because only 5.2 % of patients with positive PHQ-9 screening results were not treated for depressive symptoms.

Gender, age and presence of chronic condition

The PHQ-9 and ZSRDS-50 results are similar in all subgroups (Figure 2). Women are at greater risk for depressive disorder (Table 1). The largest percentages of women with clinical signs and symptoms of depression were in age groups from 18 to 25 years and from 36 to 55 years. We can speak about two periods – the transitional period from adolescence into early adulthood and the period of menopause. The similar results have been confirmed in reference literature.³

High level of depressive symptoms among patients with chronic condition is consistent with current findings (Table 1).^{3,5} Our results indicate that the percentage of

chronic patients with clinical level of depressive signs and symptoms is especially high in age groups from 36 to 45 years and from 46 to 55 years (Figure 3). The level of clinical depressive symptoms among patients without chronic condition is similar in all age groups. On the basis of our results, we can assume that there is an interaction between ageing factors and presence of a chronic condition, which can be reflected in the severity of depressive signs and symptoms. This interaction should be subject to further research. Our results point out that family practitioners should pay particular attention to recognising depression disorders among chronic patients in the mentioned age period.

Research limitations

The duration of the study and the manner of sampling, which reflected the relatively limited availability of medical teams, affected smaller representativeness of the sample and did not allow us to collect several types of data. Six of twenty-five family practitioners did not submit their results from the pre-screening phase, which reflects in poorer generalisation of the results with regard to significant differences between individual family practitioners in the number of cases with an identified depressive disorder in the pre-screening phase. Thus, the result of limitations is the absence of several types of data (patients' diagnoses, socio-demographic data), which would provide us a better insight into the extent of overlooked cases with depressive disorder and into risk factors. When we were designing the study, our ZSRDS criterion was set too low. Later analysis and comparison with several other studies showed that the more appropriate cut-off for the recognition of patients with depressive disorders is the cut-off that considers the signs and symptoms for moderate depressive disorders.

Conclusion

By the help of screening tools, family practitioners may diagnose more patients, who suffer from depressive disorder and

who are otherwise likely to be overlooked. Women and patients with chronic condition are at greater risk for clinical signs and symptoms of depression, particularly in the age group from 46 to 55 years. Both questionnaires that were used in the study provided similar results; nevertheless, the family practitioners treated a higher percentage of patients who had positive screening results in PHQ-9 questionnaires. In terms of time efficiency, it would be reasonable to consider the option of self-assessment use of PHQ-9. Epidemiologic data and results of the research suggest possible benefits of application of screening tools in identifying depressive disorders in family practice, especially in high-risk groups. However, family practitioners are those who – while considering the results of our study and their own experience – have to add their own contribution to the decision on the form of screening that will be acceptable and feasible for them.

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