

## Depression symptoms among patients with end stage renal disease and among primary health care patients

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### Summary

**Aim.** The paper aims at comparing the patients with end stage renal disease and Primary Health Care patients with regard to depression symptoms.

**Material and Method.** The research comprised 323 patients with end stage renal disease (ESRN) and 200 patients without renal failure – the Primary Health Care patients. The study applied Beck Depression Inventory.

**Results.** The group of patients with end stage renal disease got significantly higher scores in BDI as compared to Primary Health Care patients. The BDI results indicate the depression symptoms severity in the group of patients with mild or medium renal insufficiency, but in the PHC patients with mild symptoms.

depression / kidney failure / primary health care

### INTRODUCTION

Depression disorders are the most frequent mental disorders diagnosed among patients with somatic diseases [1]. The data indicate that depression disorders may affect up to 50% of patients with somatic diseases [2]. The problem of comorbidity of somatic disease and depression disorder also affects Primary Health Care patients. References give different data depending on the population covered and the method of evaluation used.

The severity level of depression may also vary significantly with regard to the diagnosed disease and the reported physical ailments. In the light of available data the pain syndromes put

patients at highest risk of depression, reaching as high as 80%. Slightly fewer depression symptoms are observed in patients suffering from hormonal disorders, such as hyperactivity of the cortex of the adrenal gland, hypothyroidism, diabetes, or in people suffering from neoplastic or circulatory system diseases. This phenomenon also concerns to a lesser degree infectious diseases, such as tuberculosis, infectious mononucleosis, hepatitis and influenza [1, 2].

There are many theories explaining the mechanisms of depression and somatic disorders comorbidity. It is often difficult to indicate clearly which of them is the main or only cause [3]. With any somatic disease, at any stage of its development, depending on the duration, patient's objective and subjective psychophysical sensations, patient's personality and all negative consequences of the disease, there will be involved psychogenic factors which shape the image of reactive depression.

In some diseases one can speak about a common pathogenic background; an example of this

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may be the comorbidity of depression and ischaemic heart disease. Except when it is a non-specific stress factor, somatic disease as a basic condition, may also cause damage to certain neurotransmitter mechanisms and in this way lead to depression. It may also trigger endogenous depression episode in an earlier predisposed person. On the other hand, depression disorder is a risk factor for developing many somatic diseases. Also drugs such as glyco steroids, antihypertensives and hormonal contraceptives play a role in developing and maintaining depression among patients with somatic diseases. Depressive symptoms may therefore be a primary symptom of a somatic disease, may be their precursor or may dominate during withdrawal depending on the relationship with somatic disease and the trigger mechanisms [1, 2, 3, 4].

Research suggests that depressive states are also the most common psychiatric disorders in patients with ESRD [5, 6]. The aetiology of depression in this case is complex. End-stage renal failure causes exposure to many physical and psychological stressors: starting from severe symptoms from internal organs, pain and insomnia, through the necessity to submit to a dietary regime, systematic dialysis or change in lifestyle or so far played roles and deterioration of the quality of life. On the other hand, the development of depression adversely influences the general health of a patient and also the patient-doctor cooperation in treatment; it increases the duration and frequency of hospitalisation and may cause cessation of kidney-replacement therapy; it causes an increase in mortality in dialysed patients and also increases the risk of committing suicide [7, 8, 9, 10, 11, 12, 13, 14]. Depression also has a similarly adverse influence in many somatic diseases by causing delays in diagnosing and stopping treatment, deterioration of quality of life, more frequent use of health care, higher intensity of fear and exposure to stress and sleeping disorders. The Primary Health Care patients with symptoms of depression more frequently smoke cigarettes and more often suffer respiratory and alimentary system disorders and pain [2, 15, 16]. According to references, depression among those patients is a disease often not diagnosed or treated [17, 18]. It can be influenced by several factors: some symptoms of depression such as fatigue, headache,

insomnia, lack of appetite may only be attributed to somatic disease, but also as one of many symptoms of ESRD. Bad temper may be wrongly interpreted as patient's "natural" reaction to his/her difficult health condition [2, 6], therefore routine application of screening tests for depression, such as Beck Depression Inventory might increase the effectiveness of diagnosing the disorder in patients with somatic disease who first refer to doctors of specialties other than psychiatry, including primary health care doctors, and then are referred to a psychiatrist.

## MATERIAL AND METHOD

In total 323 patients with end-stage renal disease (GB 1), treated in Centres in Lublin, Stalowa Wola, and Przemyśl, were investigated and 200 respondents without kidney problems, the Family Physician Outpatients (GB 2). In patients with renal insufficiency (GB 1) 206 patients were undergoing haemodialysis, 64 – were undergoing peritoneal dialysis, the remaining 53 people were after renal transplantation.

The study applied Beck Depression Inventory. BDI is one of the most popular tools for assessment of the mental state in patients with depression, having been used since 1961. The BDI differentiates well between healthy and ill subjects with depression symptoms as well as the severity of depression in sick persons. The Inventory is considered commonly as "the tool which reliably and well assesses the depressive patients' clinical condition and is a precious complement to psychiatric evaluation". In addition, high correlation of evaluations has been shown when using the BDI and the Hamilton Depression Rating Scale. The BDI allows for evaluation of intensity of the symptoms of depression as far as mood, social attitudes and somatic symptoms are concerned [19].

For evaluation of research results the chi-squared  $\chi^2$  statistical function test was applied. This test calculates the significance of more than two differences between groups. If the calculated  $\chi^2$  (empirical result) is lower than the critical value read in the table (theoretical result), then the features are considered insignificant and null hypothesis should be adopted. The significance level adopted in this work is  $\alpha=0.05$ . With statis-

tical significance of features, there was calculated strength of relationship – C. The following distribution was made: with the strength of relationship  $0.1 \leq C_{kon} < 0.3$  there is a weak correlation for alternative hypotheses H1, with the strength of relationship  $0.3 \leq C_{kon} < 0.5$  there is an average correlation for the alternative hypothesis H1, with the strength of relationship of  $0.5 \leq C_{kon} < 0.7$  the correlation is high for the alternative hypothesis H1 [20, 21].

**RESULTS**

The group of patients with ESRD (GB1) obtained statistically higher scores in the Beck’s Depression Inventory compared to the group of Family Physician Outpatients (GB2) ( $0.3 \leq C_{kon} < 0.5$ ; average correlation) (Tab. 2). The results obtained from BDI indicate the severity of depression symptoms in the GB 1 group of a mild degree (56.35%) and of moderate degree (22.29%), as compared to the group GB 2 which got scores in a mild depression scale (45.77%), or below (lack of depression symptoms 54.23%) (Tab. 1).

**Table 1.** Severity of depression symptoms in patients with ESRD (GB 1) and in Family Physician Outpatients (GB2)

	Lack of depression symptoms	Mild depression	Moderate depression	Acute depression
GB 2	109	92	0	0
	54.23%	45.77%	0.00%	0.00%
GB 1	69	182	72	0
	21.36%	56.35%	22.29%	0.00%
Total	178	274	72	0
	33.97%	52.29%	13.74%	0.00%

Statistical analysis of the results obtained also showed statistically significant differences in severity of depression between the groups of patients, the Family Physician Outpatients and the three subgroups studied: haemodialysed patients ( $0.3 \leq C_{kon} < 0.5$ , the average correlation), peritoneally dialysed patients ( $0.3 \leq C_{kon} < 0.5$ , the average correlation) and after renal transplantation ( $0.1 \leq C_{kon} < 0.3$ , weak correlation) (Tab. 2).

**Table 2.** Differences between patients with ESRD (GB 1), subgroup of haemodialysis patients (HD), peritoneal dialysis patients (PD) and patients after kidney transplantation (T), and a group of Family Physician Outpatients (GB 2) with regard to the severity of depression symptoms measured with BDI

GB 2 from:	dw	$\chi^2$ empirically	$\chi^2$ calculation	Strength of dependence	Correlation
GB 1	2	5.991	8.854	0.4	+
HD	2	5.991	100.441	0.4	+
PD	2	5.991	64.368	0.4	+
T	2	5.991	12.035	0.2	+

Most patients who were affected by depression were in the subgroup of peritoneal dialysis patients: 92.19%, of which 76.56% obtained a result indicating mild severity of depression. The subgroup of haemodialysed patients demonstrated the presence of depressive disorders among 83.49% of people, including 54.85% with mild depression, and 28.64% with moderate depression. In the subgroup of peritoneal dialysed patients, moderate depression was identified in 15.63% of respondents. The least people affected by moderate depression were in the subgroup of patients after renal transplantation (5.66%). This group also gained the lowest results indicating mild depression (37.74%). Prevalence of depressive disorders measured by the BDI scale among the kidney transplant patients turned out to be smaller than in Family Physician Outpatients (43.4% vs. 45.77) (Tab. 3).

**Table 3.** Severity of depression symptoms in the group of patients after renal transplantation (T) as compared with the group of Family Physician Outpatients (GB 2)

	Lack of depression symptoms	Mild depression	Moderate depression	Acute depression
GB 2	109	92	0	0
	54.23%	45.77%	0.00%	0.00%
T	30	20	3	0
	56.60%	37.74%	5.66%	0.00%
Total	139	112	3	0
	54.72%	44.09%	1.18%	0.00%

Statistical analysis of the results between the subgroups showed that there is a correlation between severity of depression and the respondents belonging to one of the subgroups (correlation strength  $0.3 \leq C_{kon} < 0.5$ ; the average correlation).

## DISCUSSION

Our research has shown a high prevalence of depression in the population assessed by us. Similar research using the Beck Depression Inventory to assess the severity of depressive symptoms among patients undergoing dialysis has shown that it applies to 30%-50% of patients, a result significantly lower than that obtained in our group of patients [5, 22, 23]. Also the prevalence of depressive symptoms among the Family Doctor Outpatients in our study, as compared with those of other authors, is high. Nearly 46% of the group experienced depressive symptoms. Similarly, a high score was achieved in Portuguese studies, where among 343 primary health care patients, depression was diagnosed in 40.52%, of which at 12.24% in the severe or very severe degree [24]. Simha et al. studied a group of nearly five thousand primary health care patients in America and found that depressive symptoms affected 20.1% of them, the majority presented mild depressive symptoms [17]. A British study by Marlow et al. showed that the prevalence of at least mild depressive symptoms measured with the Patient Health Questionnaire (PHQ – 9) in a group of primary care patients, concerned 29% of the individuals. This group comprised patients experiencing such acute and chronic somatic diseases as hypertension, cough, diabetes, back pain, dysuric ailments, asthma, fever, arthralgia, diarrhoea and abdominal pain. In the same study patients reporting headaches in as many as 63% of cases experienced depression symptoms measured with the same scale [25]. Agüera et al. similarly showed a high prevalence of mood disorders among primary health care patients reporting unrecognised pains [26]. References report that severe depression can be identified among approximately 10% of patients in primary health care [15, 16].

Among patients responding after renal transplantation, depression affected 43.4% of the subgroup- a lower result than that achieved by a group of Family Physician Outpatients. Patients after renal transplant however experienced moderate degree depression. The literature shows that kidney transplant is beneficial to the mental health of patients in end stage renal disease: the disease is no longer such a big restriction, physical well-being is improved, patients present

higher daily activity, lower levels of depression and anxiety compared with people still under dialysis. But there are other problems, such as fear of rejection or inconvenience arising from the need for immunosuppressive therapy and its adverse effects on mood [27, 28, 29, 30].

Compared to patients undergoing kidney transplantation, dialysis exposes patients to higher risk of developing depression. Literature gives divergent data as to which method of treatment is more detrimental to mental health: haemodialysis or peritoneal dialysis. Our studies indicate that treatment with peritoneal dialysis exposes patients to increased risk of depressive symptoms, which is also confirmed in the work of Mittal et al, although the difference shown in these studies was small (26.1% vs. 25.4%) [31]. The work of Zimmermann et al. remains in contradiction to our and Mittal et al. results. [32], in which haemodialysed patients had higher depression levels than the patients experiencing peritoneal dialysis, but also in this case no statistically significant difference was confirmed. Studies of Noshad et al. [33] and Ginieri-Coccosis et al. [34] comparing patients undergoing peritoneal dialysis and haemodialysis, have shown a higher quality of life of the subjects with peritoneal dialysis also through lower prevalence of depressive symptoms in these patients. Also the work of Panagopoulou et al. showed that people on haemodialysis have more anxiety and depressive symptoms compared to patients on peritoneal dialysis [35].

## CONCLUSIONS

Analysis of the results allows us formulate the following conclusions:

- among patients with ESRD there is a high prevalence of depressive disorders, the results obtained in the BDI indicate the mild and moderate severity of depressive symptoms in this group;
- most patients affected by depression were in a subgroup of peritoneal dialysis patients, a little less in the subgroup of haemodialysis patients; patients after renal transplantation were significantly at a lower risk of mood disorders compared to those remaining on dial-

- ysis; a moderate depression was often experienced by people subjected to haemodialysis;
- among Family Physician outpatients there is a high prevalence of depression measured by the BDI scale, the results indicate a mild worsening of depressive symptoms.

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