European Review for Medical and Pharmacological Sciences 2015; 19: 4227-4234

Do urban and rural residents living in Poland differ in their ways of coping with chronic diseases?

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Abstract. – OBJECTIVE: Chronic disease is a critical life event which demands significant psychological adjustment. Coping strategies and resources such as sense of coherence, self-efficacy, etc. remain factors affecting stress response.

PATIENTS AND METHODS: The examined group included patients with ischemic heart disease (n = 134), type 1 diabetes mellitus (n = 109) or rheumatoid arthritis (n = 92). 159 patients came from urban area whereas 176 came from rural setting. All patients filled up inventories of life satisfaction, severity of depression, coping strategies, self-efficacy, social support and sense of coherence.

RESULTS: The analysis showed that patients from rural areas had higher levels of well-being i.e. were characterized by lower severity of depression. The predictors of satisfaction with life included two types of resources i.e. self-efficacy, social support and two coping strategies i.e. turning to religion and self-distraction (R^2 = 0.39; F = 26.87). Life satisfaction was determined by social support, sense of coherence and positive reappraisal (R^2 = 0.36; F = 29.11**).**

CONCLUSIONS: Rural/urban differences in the use of coping strategies may be associated with environmental or lifestyle differences. Patients with IHD, T1D or RA in Polish rural areas are high risk for depression so they may need help in finding systematic contact with specialists of healthcare.

Key Words:
Chronic disease, Depressive disorder, Coping, Rural population, Urban population.

Introduction

Chronic diseases, which include ischemic heart disease, type 1 diabetes, rheumatoid arthritis or neoplasm, remain one of the most important health concerns in developed societies. According to epidemiological data, recurring diseases are the main cause of mortality in these societies. In line with this finding, the World Health Organization[1] reports they account for more than 60% of all deaths. These health conditions are defined by a long duration and gradual progression[2]. Since chronic diseases negatively affect patients' well-being, cause their serious inconvenience and persist till the end of their lifetime, they present a major challenge to patients' psychological functioning. As an example, Falvo[3] assumed chronically ill patients face many dangers connected with loss including (1) loss of life and physical well-being; (2) loss of body integrity and a sense of comfort related to the disease and its treatment; (3) loss of independence, privacy, autonomy and a sense of control; (4) loss of a sense of cohesion and inability to fulfill one's social roles; (5) loss of opportunities to fulfill one's developmental tasks and plans for the future, lost relationships with family and friends; (6) loss of one's friendly environment, and (7) loss of economic security. Consequently, patients with recurring diseases have to adjust to the new situation with its many limitations resulting from the character of the disease. This is a very difficult task to accomplish indeed[4]. In psychological research, a chronic condition is thought to be a critical life event, which may be analyzed based on transactional model of stress. Lazarus and Folkman[5] assumed that stress transaction is a process, which is divided into a number of phases such as stressful situation or event, appraisal of the stressor, coping with the stressor and appraisal of its outcomes. Additionally, the course of stressful transaction could be modified by several internal and external determinants defined as resources[6]. When the general model of coping with critical life events is being

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referred to the chronically ill patient's situation, a hypothesis may arise that, because of chronicity, main problems relate to the ways and effects of coping and the role of resources in the process of tackling a chronic condition. In the classical approach coping is understood as "cognitive and behavioral efforts made to master, tolerate or reduce external and internal demands, which are perceived as exceeding subject's personal resources"[5]. This definition emphasizes the fact that coping does not have to remove the stressor or to solve the problem. In the early papers[5,6] only very general distinctions were made so coping strategies were described as, for example, either emotion-focused, problem-focused, problem-confronting or avoidant ones.

Currently more complex approaches to classification of coping strategies have been introduced. For instance, Carver et al[7] identified as many as fourteen coping strategies such as: positive reinterpretation and growth, acceptance, humor, turning to religion, seeking of emotional social support, seeking of instrumental social support, self-distraction, denial, focus on and venting of emotions, substance use, suppression of competing activities and self-blame. So far, the results of research indicated chronically ill patients who employed problem-focused strategies usually adapted well to the disease[8], whereas patients who utilized avoidant strategies often adjusted poorly to the demands of the disease. Findings also suggested that information-seeking strategies, creating one's own concept of the disease and solving problems resulting from the disease played a role in patient's adjustment to the disease[6]. Additionally, strategies aimed at emotion regulation or maintaining and increasing positive emotions positively influenced adjustment to chronic disease[6]. The effects of critical life event such as a lifelong disease are usually analyzed in the time context so they can be divided into imminent and remote outcomes. The former include emotional states and physiological changes which take place during the stressor's action. In contrast, remote effects refer to various aspects of chronically ill patent's functioning. The outcomes of a chronic disease can be divided into physiological, psychological and social ones[9]. Chronic disease is also associated with cognitive and emotional changes in psychological functioning. The latter are often identified as levels of well-being. The studies on emotional effects of a chronic disease are concentrated on negative emotions as a predominant affective reaction to the disease. Falvo[3] noted that prevalent emotional reactions to a chronic disease and associated limitations comprised restlessness, anxiety, sadness, helplessness, shame, anger, and guilty feelings. Recent studies[10] in positive psychology paid attention to positive emotions evoked by the disease, such as hope and trust and the roles they are playing. One of the basic assumptions of theories of psychological stress holds that the course of a stressful transaction is modified by a range of external and internal factors described as resources[11]. Resources are defined as "attributes of individuals, groups, environment or culture which may facilitate avoidance of stressors and/or foster abilities of coping with the demands by way of preventing tension from becoming stress"[12]. In this approach, resources as a category comprise a range of human and environmental characteristics which are advantageous in neutralizing stressors. The analysis of literature shows that social support, self-efficacy and sense of coherence remain play an important role in individual's adjustment to a chronic disease. Because of inequality in access to resources between inhabitants of rural areas and city dwellers we wanted to assess whether rural and urban dwellers with chronic disease vary in their levels of well-being and to find out the determinants of these differences. Consequently, the aim of this work was estimation does the long-term disease influence on the patients' functioning in urban and rural areas.

Patients and Methods

Participants of the Study

The study involved 335 subjects with a chronic disease. 134 (40%) of all participants had ischemic heart disease (IHD), 109 (32.5%) of them had type 1 diabetes (T1D) whereas 92 (27.5%) of them had rheumatoid arthritis (RA). The research was carried out during a hospitalization for relapse of the disease. Subjects with ischemic heart disease were admitted to the Cardiac Rehabilitation Unit of the Provincial Hospital in Poznan, subjects with diabetes mellitus were admitted at Poznan Franciszek Raszeja Hospital Diabetology and Internal Medicine Ward while rheumatoid arthritis (RA) patients were admitted at the Clinic of Orthopedics and Rehabilitation at Wiktor Dega Orthopedics & Rehabilitation Clinical Hospital in Poznan. 176 subjects came from a village whereas 159 of them permanently lived in a large

city with population of more than 500,000 inhabitants. Statistically significant differences in morbidity between the two groups were found because the former more frequently suffered from ischemic heart disease (68.7%) whereas the latter were more likely to have Type 1 diabetes (63.3%) or rheumatoid arthritis (70.7% chi-square = 42.312; *df* = 2; $p < 0.000$). Women remained the majority of participants (n=178; 53.1%). Females, as compared to males, were also more likely to have rheumatoid arthritis (81.5%) or Type 1 diabetes (60.6%) but they were less likely to have ischemic heart disease (27.6%) (chi-square = 67.232; df = 2; $p < 0.000$). Also, females more often came from a village (60.8%) than from a city (44,7%) (chi-square = 8.74; df = 2; $p = 0.003$). The respondents were 18-84 years old (mean age = 46.73 years; SD = 16.50). Significant age differences were found between the three subsamples of patients (F = 183.789; *df* = 2; $p < 0.000$). Participants with diabetes remained the youngest (M = 29.72; SD = 9.25) while subjects with ischemic heart disease were found to be the oldest (M = 56.66; SD = 9.78) in the analyzed sample. Also, RA patients were 53-43 years old on average (SD = 15.26). City dwellers were also older (M = 50.02; SD = 15.59) than the inhabitants of rural areas (M = 43.78; SD = 16.78). The above mentioned differences in age and gender reflect epidemiology of each analyzed health condition.

Instruments

The research study was based on six validated questionnaires, which measured the following variables: satisfaction with life, severity of depression, coping, self-efficacy, social support and sense of coherence. Firstly, Diener's Satisfaction with Life Scale[13] was used to evaluate life satisfaction. This scale consists of five statements. Subjects select the most suitable answer on the 0-7 scale with the "strongly disagree" response on the left side and the "strongly agree" response on the right side (Cronbach's alpha = 0.82). Secondly, severity of depression was estimated with the Polish version of Radloff's Self-Report Depression Scale (CES-D)[14,15]. This scale comprises twenty statements and was developed to estimate depressive symptomatology during the week before the examination. Its components include statements on depressed mood, guilty feelings, hopelessness, psychomotor retardation and disturbed sleep. Participants rate each item on a scale from 0 to 3 with the "rarely or none of the time (less than 1 day)" response on the left side and the "most or all of the time (5-7 days)" response on the right side (Cronbach's alpha = 0.92).

Thirdly, Carver's Brief COPE scale was utilized to assess coping skills[16,17]. This inventory is composed of 28 statements and was designed to evaluate 14 strategies of coping i.e. active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance use, behavioral disengagement and self-blame. Subjects choose the best answer on a scale from 1 to 4 with the "I haven't been doing this at all" response on the left side and the "I've been doing this a lot" response on the right side (Pearson's correlation coefficients ranged from 0.55 to 0.86 for each item of the scale).

Also, each subject's self-efficacy was measured by way of General Self-Efficacy Scale[18,19]. This psychometric scale was designed to assess personal agency i.e. the belief that one's actions are responsible for successful outcomes and consists of 10 test items. Subjects choose the best answer on a four-point scale with the "No" response on the left side and the "Yes" response on the right side (Cronbach's alpha = 0.88).

To add, social support levels were estimated by Scale of Social Support[20], which is used to estimate perceived social support and includes 14 statements. Subjects choose the best answer on a five-point scale with the "does not apply to me" response on the left side and the "applies to me" response on the right side (Cronbach's alpha = 0.93).

Additionally, the manageability levels were evaluated using Antonovsky's Orientation to Life Questionnaire (OLQ-29)[12]. This inventory consists of 29 questions and measures the three dimensions of the sense-of-coherence construct i.e. comprehensibility and manageability and meaningfulness. All items are presented on a 7-point Likert scale but their descriptions vary depending on the contents of the item (Cronbach's alpha = 0.83).

Statistical Analysis

Two methods of data analysis were employed to test the hypotheses. Firstly, Student's t-test was employed to find rural/urban differences in the analyzed variables. Secondly, step-up regression analysis was applied to identify predictors of satisfaction with life and depression in the aforementioned groups. $p < 0.05$ was considered statistically significant.

Results

The comparison of indicators of well-being showed that subjects from regional settings were characterized by greater levels of life satisfaction and lower levels of depression than their urban counterparts (t = -2.170; df = 333; d = 0.24 at p = 0.031). A relatively high Cohen's d value (d = 0.39) was obtained for satisfaction with life, what may indicate that the observed difference is huge (statistics for satisfaction with life: t = 3.536; df = 333; d = 0.34 at p = 0.002).

As for coping strategies, differences were found in three out of fourteen strategies. Urban dwellers significantly more often used active coping (t = 3.536; df = 333; d = 0.34 at p = 0.002) and planning but significantly less frequently used strategy of denial (t = 3.015; df = 333; d = 0.33 at p = 0.003). Also, differences in resources were observed. Rural participants varied from their urban respondents in all estimated resources. They were characterized by lower levels of self-efficacy (t = -2.856; df = 317.804; d = 0.31 at p=0.005), perceived social support (t = -2.084; df = 332.226; d = 0.23 at p = 0.038) and sense of coherence (t = -4.045; df = 333; d = 0.44 at p = 0.001) respectively. The observed differences were statistically significant. Taking group size into account, the two groups differed most in their levels of sense of coherence (Cohen's d value of d = 0.44). The comparison with the use of t-test showed similar level of factors in rheumatic and other long term disease. There were two important differences. Rural residents are less likely to use the strategy of self-distraction. There were no significant differences in the groups of patients with ischemic diseases. Ischemic patients persons from rural regions revealed higher level of depression and used the strategy of turning to religion more frequently. Eight differences were found in group with type 1 diabetes. Patients with diabetes living in rural areas rarely used active coping with stress, had lower level of the social support, level of coherence, and self-efficacy. On the other hand, the same group of patients often denied they had any problems and had higher level of depression. To find out determinants of emotional well-being equations of regression were designed with the levels of satisfaction with life as the dependent variable in the first equation and the severity of depression as the dependent variable in the second equation respectively while all fourteen coping strategies and resources were independent variables. The solution of the equation of regression shows that life satisfaction of subjects from regional setting was determined by two strategies of coping i.e. religion (β = 0.19; p = 0.003) and self-distraction (β = 0.13; p = 0.046) (see Table II for details) and two resources i.e. self-efficacy (β = 0.45; p < 0.001) and social support (β = 0.18; p = 0.007). This set of variables explained 39% of variance of life satisfaction (F = 26.87; p < 0.000). In contrast, life satisfaction of urban inhabitants was determined by social support (β = 0.29; p < 0.001), sense of coherence (β = 0.34; p = 0.000) and positive reframing (β = 0.21; p = 0.002). These variables explained 36% of variance of life satisfaction (F = 29.11; p < 0.000) (see Table I for details). Also, seven predictors of severity of depression were found for participants living in rural areas. Use of coping strate-

Table I. Predictors of satisfaction with life of inhabitants of rural areas suffering from chronic diseases – step – up regression.

Variable	B	t	p
Inhabitants of rural areas (df = 174)			
Self – efficacy	0.45	60.754	< 0.001
Religion	0.19	20.970	0.003
Social support	0.18	20.718	0.007
Self- distraction	0.13	20.006	0.046
	R^2 = 0.39; F = 26.87**		
Urban inhabitants (df = 157)			
Social support	0.29	40.187	< 0.001
Sense of coherence	0.34	50.084	0.000
Positive reframing	0.21	30.152	0.002
	R^2 = 0.36; F = 29.11**		

Adjusted R squared was used.

Table II. Predictors of depression of inhabitants of rural areas suffering from chronic diseases – step – up regression.

Variable	B	*t*	*p*
Inhabitants of rural areas (df = 174)			
Behavioral disengagement	0.18	20.282	0.024
Social support	-0.24	-30.328	0.001
Sense of coherence	-0.21	-30.262	0.001
Religion	0.15	20.266	0.025
Venting	0.21	20.789	0.006
Positive reframing	-0.23	-20.997	0.003
Active coping	0.16	20.062	0.041
	$R^2 = 0.35$; F = 12.65**		
Urban inhabitants (df = 157)			
Sense of coherence	-0.43	-60.552	< 0.001
Self – blame	0.38	50.190	< 0.001
Humor	-0.16	-20.532	0.012
	$R^2 = 0.36$; F = 28.79**		

Source: authors' materials. Adjusted R squared was used.

gies such as behavioral disengagement (β = 0.18; $p = 0.024$), religion (β = 0.15; $p = 0.025$), venting (β = 0.21; $p = 0.006$) or positive reframing (β = 0.23; $p = 0.003$) would increase depression levels whereas social support (β = -0.24; $p = 0.001$), sense of coherence (β = -0.211; $p = 0.001$) or active coping (β = -0.16; $p = 0.041$) would prevent it. This set of variables explained 35% of variance of depression in inhabitants of rural areas ($F = 12.65$; $p < 0.000$). As for urban residents, their severity of depression was predicted by a smaller number of variables. High sense of coherence (β = -0.43; $p < 0.001$) or humor (β = -0.16; $p = 0.012$) would prevent depression but self-blame (β = 0.38; $p < 0.001$) would aggravate it. This set of variables explained 36% of variance of depression in inhabitants of urban areas ($F = 28.79$; $p < 0.000$) (see Table II for details)[21].

Discussion

Chronic diseases are long-term conditions that develop slowly. Their symptoms usually can't be cured and they may often become more severe over time. As a result, these diseases may compromise each individual's level of functioning and gradually lead to adverse changes in his/her professional and personal life. Also, in order to control the symptoms, the chronically ill have to implement changes in their daily activities. Firstly, they have to learn how to follow treatment regimen and comply with prescribed medical intervention. Secondly, in order to actively manage their condition they have to change their lifestyles and health-related behaviors (e.g. adequate exercise and rehabilitation, diet or meal planning, self injection, self-exams and self-control, or smoking cessation). In fact, commitment and compliance to therapy is essential for improving health outcomes. Literature suggests that in many chronic conditions patient's well-being and adequate response to chronic illness (adjustment, taking control and learning how much they can do) is associated with psychological factors such as acceptance of the disease, coping skills, self-efficacy or sense of coherence[22]. Here, it should be noted that chronically ill patients do not make a homogenous group e.g. they differ in their sociodemographic background or permanent (urban versus rural) place of residence. In fact, despite ongoing changes taking place in rural Poland following Poland's EU accession a considerable rural-urban gap in access to material (land, farms, savings), human (education, knowledge, skills) or social resources (trust-based bonds) has not diminished yet[23]. Also, one may point to a world-wide phenomenon of rural-urban divide in access to health services or health care providers (such as specialist physician visits)[24]. These differences may affect patient's well-being and the psychological process of coming to terms with the disease. Gaining insights into psychological agents affecting patient's well-being and adjustment to the disease would make it possible to prepare accurate guidelines for doctors, patients and their families

and to develop efficient programs of psychological intervention, so the results of the analysis can be useful for both researchers and clinicians. Taking this into consideration, our study aimed to explore how chronically ill rural and urban residents vary in their levels of well-being and to find the determinants of these differences. We assessed a number of factors which, as we hypothesized, might influence our respondent's well-being, such as life satisfaction, severity of depressive symptoms, strategies of coping, self-efficacy, social support and sense of coherence. We used Student's *t*-test to find rural/urban differences in the analyzed variables and then applied step-up regression analysis to identify psychological predictors of satisfaction with life and depression in the two analyzed groups.

Our study confirmed a well-known fact that depressive symptoms are prevalent in a population of chronically ill patients. There are several explanations of this phenomenon.

Firstly, findings suggest that, at least in some chronic conditions like coronary heart disease, susceptibility to both depressive symptoms and the somatic disease might be genetically transmitted[25]. Secondly, depression can be attributed to the very effect of being diagnosed with life-long disease which is an important life event with serious implications for the future[26]. Thirdly, depression is linked to severe distress or pain connected with chronic disease. The mechanism underlying this relationship remains obscure but Cardin et al[27] believe that the relationship between chronic condition, pain and depression may have two possible explanations: (1) depressive symptoms are caused by the disease itself and its effects; (2) depressive symptoms are associated with patient's pre-morbid personality. In our study, subjects from regional settings had significantly lower levels of depression than participants who resided in urban areas. Our results are concordant with observations made by other authors who analyzed rural/urban differences in incidence of mental disorders and believed they could be attributed to the positive impact of nature on human psyche[28,29]. However, there are observations with contradictory results[30-32]. One may mention a U.S. study on chronically ill rural women where as many as 57% of respondents were depressive. The results were explained in the context of gender inequity (women's rural function), the analyzed women's poor health status, their physical inactivity, alcohol abuse or exposure to chronic strains such as poverty[24]. In the current study we employed Diener's Satisfaction with Life Scale to assess each participant's life satisfaction i.e. judgment of his/her life in comparison to standards[13]. Here, we were able to demonstrate that rural residents had significantly higher scores in their life satisfaction measurement than their urban counterparts. These findings can be interpreted in different ways. First, it can be hypothesized that chronic illness has less influence on villager's life (farmers who want to work will not lose their job on a farm because of their disease). Second, it is also probable that rural residents are more realistic in their expectations about life than their urban counterparts and developed commonsense standards for achievement in the chronic illness.

We also examined determinants of satisfaction with life and found that satisfaction with life in the rural group was determined by inertia (behavioral disengagement) as opposed to city dwellers whose satisfaction with life was closely associated with action. To our mind, this finding could be explained by cultural or lifestyle differences that exist between regional setting and urban area. As we all know, rural life in general is characterized by constant alertness and activity (lack of clearly defined working hours, obligatory work on weekends, holidays, heavy workload in the summertime) so inaction, or inertia, may have a different meaning for residents of regional settings. In contrast, because of a social pressure "to do something all the time" urban inhabitants may have a tendency to adapt task-oriented attitude to life and feel uncomfortable when they disengage. The research shows that type 1 diabetes is a burden for patients from rural areas. Patients from that group had lower social support, level of coherence and low level of self-efficacy. Additionally they had non-effective strategies of coping with stress (problem solution)[33-35]. To conclude, type 1 diabetes patients are at risk of compromised psycho-social functioning. Their problems may stem from lower access to health care professionals, who may help them i.e. psychologists, dieticians etc. They may need help in finding systematic contact with specialists of health care.

Conclusions

1. Chronically ill patients with IHD, T1D or RA are at a high risk for depression. They may need help in finding systematic contact with specialists of health care.

2. Rural inhabitants in the study were characterized by lower severity of depression and greater satisfaction with life than their counterparts from large cities.
3. Rural/urban differences in the use of coping strategies may be associated with environmental differences.

Acknowledgements

This study was funded in full by the Polish National Science Centre, grant number 2001/01/B/HS6/00423. English title: "Coping with a chronic disease: psychological determinants and consequences".

Conflict of Interest

The Authors declare that there are no conflicts of interest.

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