STUDY ON THE IMPACT OF PSORIASIS ON QUALITY OF LIFE: PSYCHOLOGICAL, SOCIAL AND FINANCIAL IMPLICATIONS

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SUMMARY

Background: Psoriasis is a chronic and stigmatising disease with significant and hard to meet clinical needs in patient management. Psoriasis is a relatively common disease, affecting up to 2% of the population. The impact of psoriasis on quality of life is significant given its chronicity and visibility. Psychological stress is a well-established systemic triggering factor in psoriasis. It has been associated with initial presentation of the disease as well as exacerbations of pre-existing psoriasis. The purpose of this study is to assess the psychological, social and financial implications of psoriasis.

Subjects and methods: 51 patients participated in this study. After dermatological examination and determination of Psoriasis Area and Severity Index score, patients were referred to a psychological consult. Assessment was done through questionnaires concerning quality of life, depression, anxiety, illness perception, financial domain and personal data.

Results: Results of our study indicate that psoriasis has a strong impact on patients’ life. It influences working habits, poses a significant financial burden, but most of all, significantly impairs their quality of life and psychological status.

Conclusion: Psoriasis poses a substantial threat to several dimensions in patient’s quality of life. Patients feel that the current treatment, although often effective, does not provide a satisfactory long-term solution. Thus, long-term psychologic support for patients with psoriasis is desirable.

Key words: psoriasis - quality of life - illness perception - anxiety - depression

INTRODUCTION

Psoriasis is a complex, inflammatory, long term chronic disease involving interaction of genetic predisposition, environment, altered immunological functions, and psychological influences (Kerkhof et al. 2008). Psoriasis is probably one of the longest-known and at the same time, most misjudged illnesses in humans. In recent times psoriasis was frequently perceived as a variety of leprosy. The most common clinical variant of psoriasis vulgaris is chronic plaque psoriasis, which is characterized by sharply demarcated and erythematous papulosquamous lesions on the scalp, elbows, knees and presacral area (Walsh et al. 2004).

Clinical symptoms of psoriasis are presented as itching, pain and scaling and are associated with increased disease severity, reduced quality of life and work productivity (Korman et al. 2015). Guidelines for treating psoriasis include – as the first line - topical therapy and non-biologic systemic agents (metotrexat, aprepitant, cyclosporine) and as second line biological therapy (Nast et al 2012). Psoriasis can manifest at any age, from infancy to the eight decade of life. According to the World Health Organization (WHO) data, about 3% of the global population has psoriasis, (Golpour et al. 2012, Villanova et al. 2013).

Moderate to severe psoriasis is associated with a dose – dependent risk for metabolic and cardiovascular disease (Hägg et al. 2017), cancer development and other chronic and debilitating diseases (Møller et al. 2015, Bhutani et al. 2013). Psoriasis has recently been classified into a group of psychosomatic diseases, with stress as a major well-known trigger (Buljan et al. 2008a). Increased incidence of psoriasis and posttraumatic stress disorder (PTSD) was noticed during the War in Croatia (1990-1996) (Šitum 2003). Psoriasis is accompanied by substantial physical, psychological, social and financial distress, which does not necessarily correlate to the extent of the disease. People with greater disease severity are more prone to think about the chronicity of the disease, its negative consequences and its emotional impact (Wahl et al. 2014).

Many dermatological conditions, that influence cosmetic disfigurements, including psoriasis, can be associated with significant psychiatric morbidity (Gupta 2005). Psoriasis patients report that the severity of disease has a strong impact on their health-related quality of life (HRQoL) and work productivity (Hamzavi et al. 2017), especially because of its chronic relapsing nature (Fink et al. 2017). Comparing psoriasis patients’ quality of life with hidradenitis suppurativa (HS), HS patients have higher HRQoL. It is well known that...
patients suffering from psoriasis are in increased risk for depressive symptoms (Strober et al. 2018). Numerous studies have demonstrated high rates of depression among psoriatic patients, regardless of psoriasis severity (Cohen et al. 2016). Psoriasis is also linked to social interaction and audience anxiety, as well as to poor sleep quality. The quality of life among psoriatic patients is not just affected by “psychological handicap” but also with physical symptoms. The physical appearance of psoriasis lesions has a negative impact on patients’ self-esteem, making them feel stigmatised, embarrassed, disabled in profession and compromising their quality of life (Gupta & Gupta 2000, Kouris et al. 2017, Schneider et al. 2013, Rabin et al. 2012, Augustin & Radtke 2014). As a result, they change their lifestyle. They are more prone to obesity (Dediol et al. 2009). Both cardiovascular comorbidities and lifestyle factors are associated with persisting moderate to severe psoriasis (Sobchak et al. 2017). In a study of coronary heart disease by Aalto et al., those with a more severe illness reported stronger illness identity, weaker belief in the controllability of the disease, more severe consequences due to the disease and a longer chronic timeline (Aalto et al. 2005).

Feelings of shame and guilt lead to suicidal thoughts (Kouris et al. 2017). Psoriasis patients are more prone to alcohol abuse, smoking and use of sedatives, antidepressants and tranquilizers. More severe the disease is, more mentally affected patients are, and their mental health also aggravates clinical symptoms which leads to vicious circle difficult to manage (Kouris et al. 2017). Mentally affected patients are more resistant to medical treatment, non-compliant, which leads to prolonged and expensive treatment (Kouris et al. 2017). The illness perception paradigm has demonstrated that the way patients think about their illness, the cognitive model they develop about their illness can influence their experience and their emotional reaction which is very important for their health outcome (Buljan & Vurnek Živković 2008b). However, patients’ understanding of the illness is limited and support lacking. The understanding of the illness helps patients’ to cope with it. For that reason, high quality, theory-based psoriasis materials are desirable and useful in improving patients’ understanding of psoriasis and reducing their anxiety (Nelson et al. 2017).

Aim of this survey is to evaluate the psychological, social and financial implications of psoriasis. Quality of life, anxiety, depression and illness perception in patients with psoriasis have been assessed.

SUBJECTS AND METHODS

This study was approved by the Ethics Committee of the University Hospital Center »Sestre milosrdnice«, Zagreb, where the study was conducted from February until August 2017. This was an open prospective study including 51 patients, with varying demographics and severity of psoriasis, representing the range of hospital-based outpatient population.

We interviewed 83 patients of whom 51 fulfilled the inclusion criteria, being patients of either sex, aged 18 to 65 years, with conclusive diagnosis of psoriasis; managed by topical, phototherapy or combined treatment; with ability to give informed consent. Pregnant or lactating women and patients with associated disease were excluded. During one of the regular follow-ups, patients were invited to participate in the study. Consenting participants completed the following standardized psychological questionnaires: Subjective Quality of Life (SQoL), Dermatology-Specific Quality of Life (DSQL), Brief Illness Perceptions Questionnaire (brief IPQ), Back Depression Inventor (BDI) and State-Trait Anxiety Inventory (STAI). SQoL scale is a Likert-type scale, measuring satisfaction in life (“How satisfied are you with your life as a whole?”) where 1 represents complete dissatisfaction and 5 represents complete satisfaction (Cummins 2003). DSQL is a questionnaire designed by Rajagopalan, aimed to assess the effects of skin disease and its treatment on physical and social functioning and self-perception (Kivelevitch 2017). It assesses 5 dimensions of quality of life: condition of the skin, personal choice, behaviour, social aspect and psychological aspect of QoL. It is scored on a 5-point Likert scale from 0, indicated never, to 4 indicating all of the time/almost always. Despite DSQI/DLQI is commonly used for psoriatic patients, there is no gold standard for the QoL assessment (Anderson 1997).

Brief IPQ is a questionnaire designed by Broadbent, Petrie, Main and Weinman is a nine–item, self-administered questionnaire designed to rapidly assess cognitive and emotional representations of illness, with good reliability and validity (Broadbent 2006). It is a quantitative questionnaire scored on a scale from 0 to 10, with exception of one qualitative question which requires patients to list three possible causes of their illness.

BDI is a clinical and research instrument, widely used to assess depressive symptoms, developed by A. T. Beck in 1961, revised in 1996 (Beck et al. 1961). It is a 21 item self-report rating (inventory measuring) characteristic attitudes and symptoms of depression. Scores ranges from 0 to 63, with higher scores indicating a higher level of depression. Scores over 30 indicate a clinical depressive disorder.

STAI is an original questionnaire for measuring state (STAI)s and trait (STAI)t anxiety (Spielberg et al. 1983). It consists of two questionnaires with 20 statements. State anxiety estimates tension, anxiety and stress. Trait anxiety measures the degree of anxiety as a relatively stable personal characteristic and long-lasting anxiety, unrelated to the specific situations. Score on each of questionnaires is given on a 5-point Likert scale. Minimum result is 0, and maximum is 80.
Patients also filled out our internal questionnaire, designed at our Clinic for the purpose of this study. That questionnaire included questions concerning personal data, disease history, current treatment of psoriasis and associated symptoms such as pain and pruritus and their everyday problems. Financial domain included questions concerning the patients’ overall perception of their financial situation, medication-related expenses, and treatment-related transportation issues. Ability to work, absenteeism due to psoriasis, and amount of help required in psoriasis care were assessed.

All questionnaires were administered by a psychologist and patients were examined by dermatologist who determined their Psoriasis Area and Severity Index (PASI) scores.

Statistical Analysis

Statistical analyses were calculated using SPSS 12.0 statistical package. Descriptive statistics for all used measures and Pearson’s correlation coefficient were calculated. Student’s t test was used to draw simple comparisons, subsequently confirmed with a more appropriate nonparametric test: The Spearman rank correlation test.

RESULTS

Fifty-one (51) patients, 23 male and 28 female, suffering from psoriasis participated in this study. Participants were 18 to 65 years old, with the mean age being 40 years. The duration of illness ranged from 1 to 45 years, with the average duration of 16 years. Topical therapy was applied in 49% of cases, phototherapy was used in 16% of patients with moderate disease and combined regimen was used in 35% of patients with more severe disease. Dermatological examination was used to determine PASI scores which ranged from 3.6 to 34 with average score 17.85. Demographic data and medical history data are shown in Table 1 and Table 2.

Patients with psoriasis are at risk for absenteeism from school and work. Out of 47% of patients employed at the time of the interview, 59.3% reported absence from work in the preceding year because of their psoriasis. Of the unemployed or retired patients, 33.9% attributed their employment status to their condition. Patients perceived criticism for taking time off work or school to seek medical attention and were more afraid of job loss.

76% of patients felt as their financial situation was adversely affected by psoriasis. Expenses included costs of medical care, time lost from work, cost of topical preparations, and transportation fees.

81% of patients spent up to 10 hours per week on skin care, while the rest of the patients spent even more time on this activity. There was a strong correlation between time spent on skin care and feelings of anger and resentment (p<0.01). 41% of patients were living alone.

<table>
<thead>
<tr>
<th>Table 1. Demographic data of patients</th>
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<tbody>
<tr>
<td>Gender</td>
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<tr>
<td>Female</td>
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<tr>
<td>Male</td>
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<tr>
<td>Marital status</td>
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<tr>
<td>Married</td>
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<tr>
<td>Single</td>
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<tr>
<td>Widowed</td>
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<td>Divorced</td>
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<tr>
<td>Work status</td>
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<tr>
<td>Employed</td>
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<tr>
<td>Retired</td>
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<tr>
<td>Students</td>
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<tr>
<td>Unemployed</td>
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<tr>
<td>Education</td>
</tr>
<tr>
<td>Elementary</td>
</tr>
<tr>
<td>Secondary</td>
</tr>
<tr>
<td>Vocational</td>
</tr>
<tr>
<td>Higher</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2. Medical history of patients with psoriasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of the disease</td>
</tr>
<tr>
<td>Less than 3 years</td>
</tr>
<tr>
<td>Between 3 and 5 years</td>
</tr>
<tr>
<td>Between 6 and 10 years</td>
</tr>
<tr>
<td>More than 10 years</td>
</tr>
<tr>
<td>Number of hospitalisations</td>
</tr>
<tr>
<td>Less than 5 times</td>
</tr>
<tr>
<td>5 times or more</td>
</tr>
<tr>
<td>Never</td>
</tr>
<tr>
<td>Family history</td>
</tr>
<tr>
<td>Positive</td>
</tr>
<tr>
<td>Negative</td>
</tr>
</tbody>
</table>

Our study suggested that up to 88% of patients believe that psychological distress is a factor in manifestation of psoriasis and have experienced some emotional stress before the onset of skin disease.

Using SQoL questionnaire, average quality of life of our patients (evaluated on a scale from 1 to 5) was 3.14, somewhat lower than the quality of life in the general population at 3.75. Other dimensions of SQoL are shown in Table 3.

Satisfaction with health was 2.8, thus indicating patients were neither satisfied nor dissatisfied with their health. This result is expected since psoriasis is not a life-threatening disease, but still has a strong impact on a patient’s life. In our study, patients showed lowest results in psychological aspects of quality of life, followed by the social aspect in terms of general satisfaction with support from family and friends. In our survey, 56.8% of patients reported that psoriasis had a significant influence on their sexual life, resulting in reduced sexual potency, while 36% of patients reported impaired emotional attachment with their partner.
Table 3. Descriptive statistics for Subjective Quality of Life scale

<table>
<thead>
<tr>
<th>Dimensions of QoL</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspect of health</td>
<td>51</td>
<td>1</td>
<td>5</td>
<td>2.80</td>
<td>0.980</td>
</tr>
<tr>
<td>Physical aspect</td>
<td>51</td>
<td>1.00</td>
<td>4.71</td>
<td>2.99</td>
<td>0.973</td>
</tr>
<tr>
<td>Psychological aspect</td>
<td>51</td>
<td>1.33</td>
<td>4.33</td>
<td>2.83</td>
<td>0.901</td>
</tr>
<tr>
<td>Environment's factors</td>
<td>51</td>
<td>1.50</td>
<td>4.38</td>
<td>2.86</td>
<td>0.861</td>
</tr>
<tr>
<td>Social aspect</td>
<td>51</td>
<td>1.67</td>
<td>5.00</td>
<td>3.10</td>
<td>0.825</td>
</tr>
</tbody>
</table>

Table 4. Descriptive statistics for 5 dimensions of DQoL

<table>
<thead>
<tr>
<th>DSQL</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition of the skin</td>
<td>51</td>
<td>0.46</td>
<td>4.00</td>
<td>1.97</td>
<td>0.713</td>
</tr>
<tr>
<td>Personal choice</td>
<td>49</td>
<td>0.20</td>
<td>4.00</td>
<td>1.86</td>
<td>1.052</td>
</tr>
<tr>
<td>Behavior</td>
<td>43</td>
<td>0.40</td>
<td>4.00</td>
<td>2.05</td>
<td>1.248</td>
</tr>
<tr>
<td>Social aspect</td>
<td>37</td>
<td>0.14</td>
<td>4.00</td>
<td>1.84</td>
<td>1.294</td>
</tr>
<tr>
<td>Psychological aspect</td>
<td>48</td>
<td>0.20</td>
<td>4.00</td>
<td>2.32</td>
<td>1.269</td>
</tr>
</tbody>
</table>

Table 5. Descriptive statistics for STAI and BDI questionnaire

<table>
<thead>
<tr>
<th>STAI - state</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAI - trait</td>
<td>51</td>
<td>23</td>
<td>73</td>
<td>51.84</td>
<td>14.610</td>
</tr>
<tr>
<td>BDI</td>
<td>48</td>
<td>4</td>
<td>30</td>
<td>18.52</td>
<td>7.635</td>
</tr>
</tbody>
</table>

Table 6. Descriptive statistics for IPQ

<table>
<thead>
<tr>
<th>IPQ</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consequence of illness</td>
<td>51</td>
<td>2</td>
<td>10</td>
<td>6.88</td>
<td>2.762</td>
</tr>
<tr>
<td>Duration of illness</td>
<td>51</td>
<td>1</td>
<td>10</td>
<td>9.16</td>
<td>1.994</td>
</tr>
<tr>
<td>Control</td>
<td>36</td>
<td>1</td>
<td>10</td>
<td>3.56</td>
<td>2.568</td>
</tr>
<tr>
<td>Treatment</td>
<td>47</td>
<td>1</td>
<td>10</td>
<td>4.96</td>
<td>2.702</td>
</tr>
<tr>
<td>Symptoms</td>
<td>50</td>
<td>1</td>
<td>10</td>
<td>6.98</td>
<td>2.699</td>
</tr>
<tr>
<td>Worry</td>
<td>51</td>
<td>2</td>
<td>10</td>
<td>7.33</td>
<td>2.636</td>
</tr>
<tr>
<td>Understanding</td>
<td>49</td>
<td>1</td>
<td>10</td>
<td>5.08</td>
<td>2.999</td>
</tr>
<tr>
<td>Emotional reaction</td>
<td>51</td>
<td>0</td>
<td>10</td>
<td>6.88</td>
<td>2.991</td>
</tr>
</tbody>
</table>

Results from the DSQL questionnaire show that psoriasis has mild influence on patient’s QoL (Table 4). Patients were relatively satisfied with their condition of the skin. Their illness had a mild influence on their personal choice of make-up, clothes, shaving, hair style, nutrition or sport activity. Relative influence is exerted on their behaviour at work or school, as well as their efficacy and punctuality. Social activities were mildly affected by psoriasis, while the greatest impact is shown on psychological aspect of QoL.

Average results of STAI and STAT were 51.84 and 52.35, respectively, which is significantly higher with respect to the general population (28 on average) (Table 5). Our results indicate that patients with psoriasis suffered from severe anxiety.

The average result of BDI was 18.52 which is significantly higher with respect to the general population (8 on average). Our results indicate that patients with psoriasis suffered from moderate depression.

Psoriasis has a great influence on patients’ lives. Patients believe psoriasis is going to last for a long time. They don’t understand their illness well, which leaves a strong emotional impact.

There was no statistically significant correlation between age, gender, level of education and quality of life. There was also no statistically significant correlation between age, gender, level of education and illness perception.

PASI scores negatively correlated with health satisfaction - higher PASI score was associated with lower health satisfaction ($r=-0.32$). Higher PASI score correlated with stronger influence of illness on the choice of food, drinks, clothing, make-up, and hair style ($r=0.57$). Higher PASI score negatively influenced social behaviour ($r=0.46$) and had a significant impact on psychological aspect of quality of life in patients with psoriasis ($r=0.41$). Significant positive correlations were shown between PASI score and perception of illness-related consequences ($r=0.30$), perception of symptoms ($r=0.42$), concern about the illness ($r=0.31$).
and emotional representation (r=0.35). Also, higher PASI score correlated with stronger anxiety (current and in general) and depression (r=0.33, r=0.35, r=0.35).

Illness duration negatively correlated with subjective quality of life (r=-0.29) - quality of life decreases with illness duration. Longer illness duration was associated with poorer physical aspects of the quality of live (r=-0.31), with worse general appearance of skin (r=0.35) and stronger influence on the choice of food, drinks, clothing, make-up, and hair style (r=0.34). No correlation was found between illness duration and illness perception except perception of symptoms – the longer illness duration strongly influenced experience of their symptoms (r=0.34) and positively correlated with anxiety and depression (r=0.44, r=0.38).

**DISCUSSION**

Impact of psoriasis on patients’ quality of life is profound and has been well-documented in the scientific literature (Misery et al. 2008, Hong et al. 2008, Choi & Koo 2003, DeKorte et al. 2005). One-half of patients with psoriasis, women more often than men, reported a significant change in their quality of life (Çakmur & Derviş 2015, Palota et al. 2010, Kyriakou et al. 2014). A European consensus report suggests that patients with psoriasis are both undertreated and underserved (Mrowietz et al. 2011). According to the results of this survey, psoriasis has a significant influence on various dimensions in patients’ quality of life. Seeking psychological or psychiatric help is still unpopular in the Republic of Croatia, resulting in significant undertreatment.

According to Gupta et al., patients considered the general appearance of their skin to be the worst aspect of having psoriasis; which is consistent with results from our survey (Gupta & Gupta 2000). Pruritus was the second most distressing physical symptom in our patients with psoriasis. Reported prevalence of pruritus in psoriasis is ≤ 85% (Kerkhof et al. 2008). More intensive pruritus was associated with increased severity of depression reported by Devrimci-Ozguven et al. (2000). In our survey, patients with psoriasis are more anxious than the general population and suffer from moderate depression which is in accordance with study on psoriasis by Schmitt (Schmitt 2007). Reviews show increased rates of comorbid mental disorders, especially anxiety and depression, in addition to a range of psychosocial problems, such as poor self-esteem, social stigmatization, social rejection physical limitations, sexual dysfunction, and suicidal ideations (Choi & Koo 2003, Griffiths & Richards 2001, Kimball et al. 2005, Russo et al. 2004, Kouris et al. 2015, Augustin et al. 2008, Lin et al. 2011). Localization of lesions on parts of body difficult to hide by clothing (back of hands) is related to higher stigmatization levels. Stigmatization is the strongest predictor of quality of life impairment (Hawro et al. 2017). Pain, itching and visibility of psoriatic plaques may lead to embarrassment, social discomfort and anxiety that ultimately places patients at a higher risk for depression and anxiety (Bronckers et al. 2015, Akay 2002). In Kouris et al. study women psoriatic patient reported higher levels of depression (2017). In Hgg survey, women showed lower median PASI scores than men in all areas of the body, except for the head, which is the fact that can explain the dominance of males in systemic treatment of psoriasis (2017). The risk for mental disorders is higher in younger patients for whom physical appearance plays a significant role in life (Kouris et al. 2017).

We suggest that specific problems in everyday life and altered quality of life of patients with psoriasis may induce anxiety and depression. This is supported by biological data; Langerhans cells (LCs), specialized antigen-presenting cells that sample epidermal and dermal antigens and generating immune response, are intimately associated with nerve fibers, which through the release of neuropeptide mediators, such as calcitonin gene-related peptide (CGRP), can modulate LCs function. LCs are important in the initial stage of psoriasis (Boulais & Misery 2008).

Psoriasis has often been associated with myths surrounding lack of hygiene and contagion. Time spent on personal care (more than 10 hours) also had a significant emotional effect on patients, correlating strongly with anger. Inexpensive, simple-to-use treatments that do not require frequent modifications should be used whenever possible (Smith & Baker 2006).

Patients with psoriasis are at risk for absenteeism from school and work. Out of 47% of patients employed at the time of the interview, 59.3% reported absence from work in the preceding year because of their psoriasis. According to Kawalec et al., the mean number of days off work was 2.88 days per month and mean on-the-job productivity loss was 24.1%. Total indirect costs were negatively correlated with utility (2016).

36% of subjects experienced instances of social rejection, mostly while at the beach, or at hairdressers. Patients tended to avoid interpersonal situations or public places where they might encounter rejection. They may feel humiliated when exposing their bodies; while swimming or using public showers, or living in conditions that do not offer adequate privacy (Ginsburg & Link 1993). Most of the patients who reported exacerbated episodes precipitated by stress described disease-related stress resulting from cosmetic disfigurement and the social stigma of psoriasis (Griffiths & Barker 2004).

Sexual life of more than half of our patients was negatively affected. Sampogna et al. have also found that sexual enjoyment and sexual activities were negatively affected by psoriasis (2007). According Krueger et al. 81% patients have reported feeling embarrassment and shame, whereas 75% reported feeling physically
unattractive or sexually undesirable (2001). Psychological aspect of the illness regarding sexual behaviour represents a very important segment in patient counselling, thus health care providers should be more aware of this issue.

For everyday clinical practice, it is very important to assess the impact of disease severity on quality of life (QOL), respectively comparing the association between PASI and QOL. It appeared that PASI has a large impact on QOL among Swedish population (Geale et al. 2017), so routine collection of QOL/DLQI should be encouraged. On the other hand, Garcia- Sánchez et al. showed that quality of life is independent of the degree of disease in patients with psoriasis (2017).

However, psoriasis affecting special regions – nails, genital regions and scalp can affect patients’ QOL in a greater extend and is also, very resistant to treatment. Biologics (seucinumab) reduces scalp pain, itching and scaling and improves patients’ QOL (Feldman et al. 2017).

Psoriasis patient are also very often unsatisfied with traditional medical treatments and try to find better therapeutical options for themselves – alternative treatments and dietary supplements – folic acid, fish oil, herbs, vitamin E. No significant differences in PASI and DLQI were found among patients with consumption of different supplements (Yousefzadeh et al. 2017).

Although this research did not include patients on biologic therapy, other researches showed the differences between the biologics, phototherapy and topical therapy in terms of DLQI score change. Patients with moderate to severe chronic plaque psoriasis treated with biologics show the greatest reduction in DLQI score (Strober et al. 2018, Norris et al. 2017). After one year of treatment, biologics are superior in improving the subjective disease burden compared to conventional therapy (Jungo et al. 2016). Patients also show poor adherence to topical therapy only which leads to poor treatment outcomes (Calderola et al. 2017). Combination therapy (topical and systemic) is more effective and notes a significant improvement in QOL in comparison to topical therapy only (Karamata et al. 2017). Nevertheless, if patient is on topical therapy only, individualized medication training and 20 minutes of doctor’s time dedicated to a patient improves patients’ adherence and clinical outcomes (Calderola et al. 2017).

Since epidemiologic data of psoriasis remains poorly documented, it is impossible to predict the national costs imposed by this chronic disease. The financial burden of psoriasis appears to be substantial, both to the patients and their families. 87% of our patients claimed to pay approximately 34% of their average personal income for the cost of care. Considering the inadequacies of average income to cover the expenses of a consumer basket reported by the Croatian Independent Unions (average salary for June 2017 covers only 69.11% of the consumer expenses in Croatia, whilst more than 40% of the income is consumed on food alone) it is obvious how financially burdened patients who suffer from psoriasis are, which makes their disease even more difficult to endure, and more prone to social exclusion on the basis of social status. Also, according to our study, psoriasis appears to severely affect participation in the work environment. Out of 47% of patients employed at the time of the interview, 59.3% reported absence from work in the preceding year due to their psoriasis. This fact brings additional threat to the financial and social status of patients. Other recent studies have also confirmed that expenses of medical treatment of psoriasis are very high and add up to the stress-factor of the disease (Hong et al. 2008, Schmitt & Ford 2006).

Patients in our study show moderate understanding of their disease, which only intensifies their emotional problems. This indicates that more information should be available to the patients, perhaps through special educational training courses during hospitalization. Nevertheless, in the past decades we witness a better prevention of chronic diseases as a result of developed medical network and organisation (Sprangersa et al. 2000). Stigmatization is defined as having a discrediting mark that leads to social discrimination and alienation (Hrehorów et al. 2012).

The majority of patients expressed pessimism with regard to their ultimate prognosis (Koo 2000). The possible explanation may lie in the fact that mean duration of the psoriasis in our patients was 16 years. Treatment of psoriasis is long-lasting, with frequent recurrences and demands lots of patience and personal control (Lebwohl & Callen 2006). In recent decades, studies have shed light on patients’ subjective experiences of medical diseases and their impact on patient’s life, as captured by the construct of health-related quality of life (Rapley 2003). The extreme importance of personality factors, namely optimism versus pessimism is widely accepted.

CONCLUSION

In our survey, the majority of psoriatic patients indicated serious impairment in their quality of life, with feeling that the current treatments, although often effective, do not provide a satisfactory long-term solution. Thus, long-term psychological support for patients with psoriasis is desirable, especially if we take into consideration that emotional distress is a likely to become the trigger for mental health hazards such as depression and suicidal thoughts.

Emotional and social consequences are greatest for economically deprived individuals, who already bear the burden of difference and discrimination. Therefore, education and psychological interventions need to be more recognized and prioritized as public health needs in order to help patients cope with their illness more
effectively. Psoriatic patients should be assessed from a holistic point of view, in order to identify associated disorders that could benefit from targeted treatments. The collaboration between the dermatologists, psychiatrists and psychologists is fundamental for addressing this issue.

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Contribution of individual authors:

Vedrana Bulat: conceived and developed the study design, collected and analyzed the data and wrote the manuscript.

Mirna Šitum: supervised development of the study design and analyzed the data.

Marija Delaš Aždajić: contributed to literature review and to the interpretation of the results.

Ivana Lovrić: helped with theoretical background of the study.

Iva Dediol: contributed to the development of the study design and statistical analysis.

All authors contributed to manuscript drafts, provided comments, read and approved the final version.

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