Original Article

Effect of psychological intervention on health-related quality of life in people with systemic lupus erythematosus: A systematic review

Hui Liang a, Xu Tian b, Lan-Yu Cao a, Yan-Yan Chen a, Chun-Mei Wang a, *

a School of Nursing, Tianjin Medical University, No.22, Qixiangtai Road, Heping District, Tianjin 300070, China
b Graduate College, Tianjin University of Traditional Chinese Medicine, No.312, Anshan West Road, Nankai District, Tianjin 300193, China

ABSTRACT

Objective: To objectively evaluate the effectiveness of psychological interventions for improving health-related quality of life in patients with systemic lupus erythematosus (SLE).

Design and review methods: Databases including Ovid-Medline, PubMed, Web of Science, EBSCOhost, the Cochrane Library and Embase were electronically searched to identify randomized controlled trials published from inception through November 2013 involving psychological intervention in SLE patients. Studies that measured physiological function, life vitality, depression, pain degree, disease activity, severity of fatigue, and physical and mental component summaries as outcomes were included. Trials involving patients with multiple diseases or received simultaneous psychological interventions or combinations of other interventions were excluded. Two independent investigators screened the identified articles, extracted the data, and assessed the methodological quality of the included studies. Qualitative descriptions were conducted and quantitative analysis was performed with RevMan software (version 5.2).

Results: A total of six randomized controlled trials comprising 394 participants were included in the study. Meta-analyses showed that psychological interventions significantly reduced the degree of depression (standard mean difference \( \bar{d} = -0.44 \), 95% confidence interval \( [CI] = -0.78 \text{ to } -0.10; P = 0.01 \)) and improved the status of the physical health component summary (mean difference = 8.85, 95%CI: 3.69–14.00; \( P = 0.00 \)) in SLE patients. However, there was no significant effect of psychological intervention on disease activity, degree of pain, fatigue or the mental health component summary.

Conclusions: The results show that psychological interventions can effectively improve the health-related quality of life in patients with SLE. The full benefit and clinical performance of psychological care requires further investigation by a series of multicenter, large-sample size randomized controlled trials.

Copyright © 2014, Chinese Nursing Association. Production and hosting by Elsevier (Singapore) Pte Ltd. All rights reserved.
1. Introduction

Systemic lupus erythematosus (SLE) is a common, heterogeneous, multi-system autoimmune disease that is persistent and recurrent [1,2]. The clinical symptoms of SLE are difficult to predict, and include neurological symptoms (e.g., anxiety and depression, cognitive disorders and psychosis), fatigue, skin rashes, joint pain, headaches, epilepsy, cerebral vascular accidents, and movement disorders [3]. SLE is more frequent among women and individuals of African ancestry [4,5], with an incidence of 4.8–8.7 cases per 100,000 inhabitants in Brazil [6,7]. There is no known specific etiology of SLE, though its development is likely influenced by genetic, hormonal, environmental, and drug factors.

Although SLE is not a fatal condition, the lack of a curative therapy leaves most patients with a long-term sickness, which can negatively affect their emotional, psychological and social functioning and quality of life. The disease activity status and the incidence of organ damage correlate with SLE patient quality of life, which is thus a key focus of ongoing research [8]. Furthermore, a poor psychological status may aggravate the clinical manifestation of SLE and promote disease progression [9]. There is accumulating evidence that psychological intervention is effective for improving the health-related quality of life (HRQOL) in inpatients with Parkinson’s disease, pediatric malignancy, and cancer [10–12], as well as those who have undergone liver transplantation [13]. Moreover, psychological intervention is reported to be the most effective method to improve HRQOL in adolescents with juvenile idiopathic arthritis [14]. A study conducted of patients in Sweden found that patients with SLE are likely to report a low HRQOL and high medical costs that correspond with disease activity [15]. However, additional studies that used the Systemic Lupus Disease Activity Index (SLEDAI), which reports on 24 descriptors with pre-assigned severity weights to evaluate lupus activity, found no correlation between HRQOL and disease activity, suggesting that disease activity, cumulative damage and QOL are independent outcome indicators [16,17].

The HRQOL of SLE patients can be evaluated by a variety of assessment methods, of which the Medical Outcomes Survey Short Form 36 (SF-36) is the most common [18]. Additionally, LupusPRO is a disease-targeted, patient-reported outcome measure developed for and validated in American patients with SLE [19,20] with adequate psychometric properties for SLE patients in the Philippines [21], and was translated and adapted for use in Spanish-speaking patients [22]. The LupusQOL(c) and SF-36 were useful for assessing HRQOL in Mexican female patients with SLE, though the LupusQOL(c) should be evaluated for use in patients with moderately severe disease activity [23].

With these assessment methods in hand, the effects of psychological intervention on HRQOL in SLE patients can be evaluated. Furthermore, the patient’s psychological, personality or behavioral problems can be examined, such that the most effective intervention can be identified. The present study followed the population, intervention, comparison and outcome method to evaluate psychological interventions in patients with SLE. Psychological interventions provided regardless of health-care setting were compared with conventional therapy, and the outcomes of interest included disease activity, degree of pain, severity of fatigue, depression, physical component summary (PCS) and mental component summary (MCS).

2. Methods

2.1. Search strategy

The electronic databases Ovid-Medline, PubMed, Web of Science, EBSCOhost, the Cochrane Library and Embase were searched for English-language randomized controlled trials using combinations of the following terms: psychotherapy, psychology, psychological, psycho-education, behavior therapy, cognitive therapy, cognitive behavioral therapy, health-related quality of life, HRQOL, QOL, systemic lupus erythematosus, lupus, SLE. In addition, references from related systematic reviews and meta-analyses retrieved from these databases were searched for relevant publications.

2.2. Selection criteria

Each trial identified in the search was evaluated for design, patient eligibility criteria, and outcome measures. Randomized controlled trials were eligible for inclusion in the systematic review if they utilized psychological interventions (such as psychotherapy, psycho-education, behavioral or cognitive therapies) for SLE patients (adults aged over 18 years with a clinical diagnosis of SLE according to the American College of Rheumatology (ACR) criteria [24]) and measured physiological function, life vitality, depression, pain degree, disease activity, severity of fatigue, PCS or MCS as outcomes.
<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Age, y (mean ± SD)</th>
<th>Study duration</th>
<th>Intervention (intervention/control)</th>
<th>Outcome</th>
<th>Measurement scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dobkin et al. (2002)</td>
<td>Canada Women with a diagnosis of SLE according to ACR criteria</td>
<td>42.0 ± 11.2 n = 64</td>
<td>12 months</td>
<td>Psychosocial measures/Standard medical care</td>
<td>PCS</td>
<td>SF-36</td>
</tr>
<tr>
<td></td>
<td>South Korea Patients (&gt;18 y) with at least four of the ACR criteria for SLE</td>
<td>32.9 ± 11.8 n = 21</td>
<td>6 weeks</td>
<td>SMS/Placebo</td>
<td>MCS</td>
<td></td>
</tr>
<tr>
<td>Sohng (2003)</td>
<td>South Korea Patients (&gt;18 y) with at least four of the ACR criteria for SLE</td>
<td>32.9 ± 11.8 n = 21</td>
<td>6 weeks</td>
<td>SMS/Placebo</td>
<td>PCS</td>
<td></td>
</tr>
<tr>
<td>Greco et al. (2004)</td>
<td>United States Patients who met the 1982 revised ACR criteria for SLE</td>
<td>48.2 ± 9.1 n = 32 (baseline), 26 (3/9 months)</td>
<td>9 months</td>
<td>SMS (standardized 6-session protocol)/Placebo</td>
<td>PCS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>United States Patients (&gt;18 y) who met the ACR criteria for SLE</td>
<td>42.7 ± 22.8 n = 64 (baseline), 46 (6 months), 41 (12 months)</td>
<td>12 months</td>
<td>One-hour education session with a nurse/Placebo</td>
<td>PCS</td>
<td>SF-36</td>
</tr>
<tr>
<td>Karlson et al. (2004)</td>
<td>United States Patients (&gt;18 y) who met the ACR criteria for SLE</td>
<td>43.8 ± 9.9 n = 21</td>
<td>15 months</td>
<td>Cognitive behavioral therapy/Standard medical care</td>
<td>PCS</td>
<td>SF-36</td>
</tr>
<tr>
<td>Navarrete–Navarrete et al. (2010a)</td>
<td>Spain Patients with at least four of the ACR criteria for SLE</td>
<td>43.3 ± 10.7 n = 18</td>
<td>3/9/15 months</td>
<td>Cognitive behavioral therapy/Standard medical care</td>
<td>PCS</td>
<td>SF-36</td>
</tr>
<tr>
<td>Navarrete–Navarrete et al. (2010b)</td>
<td>Spain Patients with at least four of the ACR criteria for SLE</td>
<td>43.3 ± 10.7 n = 18</td>
<td>3/9/15 months</td>
<td>Cognitive behavioral therapy/Standard medical care</td>
<td>PCS</td>
<td>SF-36</td>
</tr>
</tbody>
</table>

Abbreviations: ACR, American College of Rheumatology; AIMS2-Pain, Arthritis Impact Measurement Scale-Pain Subscale; BDI, Beck Depression Inventory; CES-D, Center for Epidemiological Study-Depression; FSS, Fatigue Severity Scale; MPI-I, Multidimensional Pain Inventory; MCS, mental component summary; PCS, physical component summary; SD, standard deviation; SF-36, Short Form 36-item; SLE, systemic lupus erythematosusSLEDAI, SLE Disease Activity Index; SMS, self-management session; VAS, Visual Analog Scale.
Fig. 2 – Meta-analyses. Results showing A) disease activity, B) pain, C) fatigue, D) depression, E) PCS, and F) MCS between control and intervention groups.
Trials involving simultaneous psychological interventions or combinations of other interventions were excluded. Studies reporting on patients with multiple disease diagnoses were also excluded.

### 2.3. Data extraction and quality assessment

Searches were conducted and data extracted by two independent investigators. Any discrepancy concerning the eligibility of a trial was resolved via consulting a third investigator. Duplicate studies and records were excluded based on screening of titles and abstracts. The full text of all remaining articles were then screened. The quality assessment of the included trials was conducted by each investigator according to the modified Jadad scale [25].

### 2.4. Statistical analysis

Outcome measures were compared between participants who were treated with psychological intervention and the control group within each study. The homogeneity among trials was evaluated using I², and a fixed effects model was used to compare homogeneous trials (I² < 50%), otherwise a random effects model was used. Pooled differences in ratios or means were calculated and a two-tailed P value < 0.05 was considered to indicate statistical significance. Sensitivity analyses were conducted using the leave-one-out approach, and publication bias was assessed from Begg’s and Egger’s funnel plots. All analyses were performed using Review Manager Software (RevMan 5.2).

### 3. Results

#### 3.1. Study selection and characteristics

A total of 465 trials were identified by the initial literature search (Fig. 1). Of these, six trials comprising 394 participants were deemed eligible for inclusion in further analyses (Table 1). Two of the eligible studies were conducted in the United States [26,27], two studies were conducted in Spain [29,30], one in Canada [31] and one study was from South Korea [28]. Psychological interventions employed in these studies included cognitive behavioral treatment (CBT), theory-based educational, self-management, or psychosocial interventions, and biofeedback-CBT. The duration of the interventional programs ranged from 6 weeks to 15 months.

#### 3.2. Disease activity

Two studies involving 96 participants [26,29] reported on disease activity after the intervention was initiated. A fixed effects model evaluation revealed no significant differences between CBT and control groups in disease activity after three or nine months of intervention (Fig. 2A).

#### 3.3. Degree of pain

Four studies involving 171 SLE patients [26,28-30] reported on the degree of pain. Because differing evaluations of pain were used in the four trials, qualitative descriptions were compared. Evaluation with a random effects model showed that there was no statistically significant difference in pain reported by participants receiving intervention compared with controls (Fig. 2B).

#### 3.4. Severity of fatigue

Three studies involving 182 SLE patients [26-28] reported on fatigue. The use of varying evaluation methods among these studies required that a narrative synthesis be conducted for comparison. Analysis with a fixed effects model showed that there was no statistically significant difference between patients receiving intervention or control treatment in level of fatigue (Fig. 2C).

#### 3.5. Depression

Three studies involving 137 SLE patients [26,28,29] evaluated depression. Analysis using a fixed effects model revealed that intervention with CBT significantly reduced measures of depression (P = 0.01) (Fig. 2D).

#### 3.6. PCS

Three studies involving 257 SLE patients [27,30,31] reported on PCS. Analysis with a fixed effects model revealed that PCS measures were significantly increased among SLE patients receiving psychological intervention compared to control treatments (P = 0.00) (Fig. 2E).

#### 3.7. MCS

Three studies involving 257 SLE patients [27,30,31] reported on MCS. Analysis with a random effects model revealed that MCS values did not significantly differ between intervention and control groups (Fig. 2F).

#### 3.8. Quality assessment

All of the six studies included in this meta-analysis were randomized controlled trials. Although allocation concealment was unclear for all of the included articles, incomplete outcome data or other potential biases were addressed by each of the studies (Fig. 3).

#### 3.9. Publication bias

The four studies that reported on pain degree were used to assess publication bias. No bias was indicated by a rank correlation (Begg’s) test (Z = 1.02, P = 0.31) (Fig. 4A) or linear regression (Egger’s) test (t = 2.94, P = 0.10) (Fig. 4B).

### 4. Discussion

The results of this study show that psychological interventions can have a significant impact on physical but not mental component summaries, which is consistent with previous reports [32-34]. In another study, intervention consisting of psycho-educational elements produced a significant
and sustained improvement of QOL in SLE patients [35]. The improvements by CBT were observed in PCS and depression values, but not in assessments of disease activity, degree of pain, fatigue and MCS, though their trends were in the expected direction. These findings suggest that depression has a significant impact on the HRQOL in SLE patients. In the study, CBT had a greater effect compared with standard medical care on the frequency of depression symptoms over the past week in SLE patients, measured using the Center for Epidemiological Study Depression scale [26].

CBT intervention was reported to reduce the severity of pain in SLE patients as assessed by the Revised Arthritis Impact Measurement Scale-Pain Subscale and the Multidimensional Pain Inventory [26], as well as using the SF-36 [29,30]. However, comparison among the studies in our analysis indicated that the improvements observed did not reach significance. Similarly, psychological interventions have been reported to improve fatigue in SLE patients as assessed by a nine-item Fatigue Severity Scale [26], the SF-36 [27], and the Multidimensional Assessment of Fatigue Scale [28], which were not significant based on our meta-analysis.

Despite the insight into SLE patients’ HRQOL, further study is needed to confirm or clarify results in many areas [36]. Research has demonstrated that additional support and interventions are needed to reduce the symptom load in SLE patients and improve their HRQOL [37]. This is particularly important for pediatric cases, which comprise 15–20% of SLE patients [38,39], and can be significant during their transition to adult rheumatology care [40]. The enormous psychological and social impact of the disease and its treatments upon the child or young person and their family necessitates a comprehensive, holistic, specialized multidisciplinary approach [41]. Indeed, a specialized disease rating scale had been developed, the Simple Measure of Impact of Lupus Erythematosus in Youngsters scale, which was validated by a multi-center cross-sectional study of children and adolescents 5–18 years of age with SLE in Brazil [42]. Future studies should therefore include pediatric SLE patients.

5. Limitations

There are a number of limitations to this systematic review that should be acknowledged. First, and perhaps most notably, only a small number of trials met the inclusion criteria, thus reducing the power of the analyses. The inclusion of only English-language literature may also have restricted the number of available relevant articles.

6. Conclusion

In 1990, the quality of life was defined according to various cultures and value systems by the World Health Organization as encompassing personal goals, expectations, standards and concerns related to the living conditions, including physical and mental functions, role activities, social adaptability and the overall feeling of health [32]. With the development of a modern bio-psycho-social medical model, psychological care also became very important in clinical nursing practice.
Healthcare workers are increasingly aware that interventions, in addition to treating the physical damage caused by disease, also address the patient’s subjective feelings about living with it. Historically, the psychological intervention has been an adjunct treatment, and usually performed along with drug therapy. The results of our systematic review show that psychological intervention can effectively improve aspects of SLE patients’ QOL, and can enhance physiological function. In summary, psychological intervention should be administered to patients with SLE, which will not only provide beneficial effects to the patients, but also allow for opportunities to further evaluate specific effects in large-sample, multicenter studies.

**Conflict of interest**

LH and TX contributed equally to this article. There were no conflicts of interest to declare with regard to this work or its contents.

**References**


