Coping Strategy and Its Correlation With Psychological Discomfort: Stressors Perceived by Patients with Diabetic Ulcers

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Abstract

Objective: Diabetic ulcers are a complication that frequently manifest in patients with diabetes. These ulcers can cause both physical and psychological discomfort in the form of stress. The aim of this study was to identify the correlation between coping strategy and stress in patients with diabetic ulcers at the RUMAT Wound Care Center.

Methods: This research was quantitative with a cross-sectional design that used purposive sampling with 93 patients. Ninety-three patients with diabetic ulcers were interviewed using the Brief COPE scale to measure coping strategies and the Perceived Stress Scale to measure stress. Data were analyzed using independent t-tests.

Results: There was a significant correlation between emotion-focused coping and stress (p = 0.003, α: 0.05), and there was no correlation between problem-focused coping and stress (p = 0.996, α: 0.05).

Conclusion: Diabetic ulcer care, performed by RUMAT Wound Care, helps control the patients’ perceived stress. Further research is needed on the psychological aspects of patients with diabetic ulcers.

Keywords: coping strategies, diabetic ulcer, stress

Introduction

Diabetes is the eighth leading cause of death in the world 1. Over the last three decades, the prevalence of diabetes has increased, especially in low- and middle-income countries 2. In 2013, Riskesdas found that the proportion of Indonesian population with diabetes mellitus, who were older than 15 years of age, had nearly doubled 3.

If not well-controlled, diabetes can cause various complications. Diabetic ulcers are one of the most serious diabetes-related complications. Incidence of diabetic ulcers in patients with diabetes mellitus reached 25% 4. Ulcers destroy dermal tissue with widespread erosion of underlying subcutaneous tissues. This erosion can extend to the muscles and bones as a result of hyperglycemia. Later, these ulcers may cause pain and infection 5, 6.

Diabetic ulcer-related pain and infection can cause physical and psychological discomfort in patients. One study found that pain caused by the injury itself, pain when the wound is treated, and anticipative pain due to negative past experiences may cause stress in patients 8. The stress experienced by patients with diabetic ulcers can delay the wound recovery process by impairing immune system function 9.

Stress-related effects on the wound recovery process make it necessary for patients with diabetic ulcers to develop effective coping. Coping is how individuals deal with psychological stress 10. Common coping strategies include problem-focused and emotion-focused coping. There is a positive correlation between psychological distress and coping behaviors in patients with chronic diseases, where patients with active coping skills feel better and assess their disease less negatively 11.

Pain felt by the patient may trigger anxiety, which can become a psychological stressor. Effective coping strategies can decrease anxiety and help reduce perceived pain intensity, and contribute to better wound recovery 12.
Methods

This research used a quantitative and cross-sectional approach. The study participants (n = 93) were patients with diabetic ulcers who were undergoing treatment at Wound Care House (RUMAT). We used a purposive sample technique and a three-part data collection tool, including a respondent characteristic questionnaire, the Brief COPE questionnaire, and the Perceived Stress Scale.

The data analysis in this study consisted of univariate analysis to quantify the patient's characteristics. The independent (coping strategy), and dependent (stress) variables were analyzed using t-independent tests. We used bivariate analyses to determine the correlation between respondent characteristics, coping strategies, and stress using independent t-tests and Pearson correlations.

Results

As shown in Table 1, the duration of ulcer symptoms in patients with diabetes ranged from 4.13 up to 8.08 months. The average stress score was 14.54 ± 6.29.

Table 1. Univariate Analysis of Frequency Distribution on Diabetic Ulcers Respondent in RUMAT Wound Care May 2017 (n = 93)

<table>
<thead>
<tr>
<th>No. Variable</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Duration ulcer</td>
<td>of6.11</td>
<td>3</td>
<td>9.57</td>
<td>1–72</td>
</tr>
</tbody>
</table>

As presented in Table 2, 77% of patients were older and 29% were younger, than 60 years of age. The majority (57%) of patients was female, and 43% were male. This patient cohort had a high average education level, with 62.4% reporting a senior high school or college education. Low grade ulcers (0-2) and mild pain were reported by 72% of patients. Most (88.2%) patients reported low perceived odor and the most widely-used coping strategy was problem-focused coping (63.4%), while 36.6% practiced emotion-focused coping.

Table 2. Univariate Analysis of Patient Characteristics Proportion of Diabetic Ulcers in RUMAT Wound Care May 2017 (n = 93)

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;60 years old</td>
<td>66</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>&gt;60 years old</td>
<td>27</td>
<td>29</td>
</tr>
<tr>
<td>2</td>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>40</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>53</td>
<td>57</td>
</tr>
<tr>
<td>3</td>
<td>Education Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never/No schooling, elementary school, junior high school</td>
<td>35</td>
<td>37.6</td>
</tr>
<tr>
<td></td>
<td>Senior high school, college</td>
<td>58</td>
<td>62.4</td>
</tr>
</tbody>
</table>


- Low grade (0–2) 67 72
- High grade (3–5) 26 28

5 Pain Level
- Mild Pain (0–5) 67 72
- Strong Pain (6–10) 26 28

6 Odor
- Mild Odor (0–3) 82 88.2
- Strong Odor (4–6) 11 11.8

7 Coping Strategy
- Problem-focused coping 59 63.4
- Emotion-focused coping 34 36.6

There was no significant relationship between ulcer duration and stress (p = 0.211). Pearson correlation value of 0.131 shows a positive correlation with very weak correlation strength, meaning that the longer the duration of diabetic ulcers, the more the stress experienced by the patient, although the correlation was very weak.

Table 3. Bivariate Analysis of the Relationship between Diabetic Ulcer Duration and Stress in Participants with Diabetic Ulcers who attended RUMAT Wound Care during May 2017 (n = 93)

<table>
<thead>
<tr>
<th>Ulcer Duration</th>
<th>Stress Score</th>
<th>r</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.131</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Table 4. shows that based on age, the mean stress score was higher in patients <60 years of age (mean = 17.30). Further analyses showed that there was a significant relationship between age and perceived stress (p = 0.019; α: 0.05). Female patients also had higher mean stress scores (16.25) than males (12.28). A significant relationship between gender and the patient’s perceived stress (p = 0.05; α: 0.05) was also observed.

Table 4. Bivariate Analysis of the Relationship between Respondent Characteristics and Perceived Stress

<table>
<thead>
<tr>
<th>No</th>
<th>Stress</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt; 60 years old</td>
<td>66</td>
<td>13.43</td>
<td>6.01</td>
<td>11.94–14.92</td>
<td>0.019*</td>
</tr>
<tr>
<td></td>
<td>&gt; 60 years old</td>
<td>27</td>
<td>17.30</td>
<td>6.29</td>
<td>14.80–</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>40</td>
<td>12.28</td>
<td>559</td>
<td>10.47–14.10</td>
<td>0.005*</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>53</td>
<td>16.25</td>
<td>6.33</td>
<td>14.50–</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Education Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never go to school, elementary school, junior high</td>
<td>35</td>
<td>15.00</td>
<td>5.90</td>
<td>12.94–17.06</td>
<td>0.506</td>
</tr>
<tr>
<td></td>
<td>Senior high</td>
<td>58</td>
<td>14.31</td>
<td>6.58</td>
<td>12.58–</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Ulcers Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low Grade (0–2)</td>
<td>67</td>
<td>14.42</td>
<td>5.95</td>
<td>12.97–15.87</td>
<td>0.948</td>
</tr>
<tr>
<td></td>
<td>High Grade (3–5)</td>
<td>25</td>
<td>14.96</td>
<td>7.32</td>
<td>11.93–17.99</td>
<td></td>
</tr>
</tbody>
</table>
The level of stress in poorly-educated patients (no school, elementary, junior high), tended to be higher (mean = 15.00) than highly-educated patients (senior high, college) (mean = 14.31). Further analysis showed no significant relationship between education level and stress (p = 0.506; α: 0.05). Patients with low grade ulcers had a mean stress score of 14.42, whereas patients with high grade ulcers had a slightly higher stress score of 14.96. Further analysis showed that there was no significant relationship between severity of ulcer and stress (p = 0.948; α: 0.05).

Patients with mild pain tended to have lower stress scores (mean = 13.53) than patients with strong pain (mean = 17.19). Further analysis showed that there was a significant relationship between the severity of pain and the patient's perceived stress (p = 0.035; α: 0.05). Patients who reported a mild ulcer-related odor had a mean stress score of 14.33, whereas patients who perceived a strong ulcer-related odor had higher mean stress scores (mean = 16.50). Further analysis showed that there was no significant relationship between perceived odor and stress (p = 0.168; α: 0.05).

The mean stress score of patients with positive problem-focused coping was 14.17 and the mean stress score of patients with negative problem-focused coping was 15.18 (Table 5). This suggested that stress scores were higher in patients who did not use problem-focused coping than those who used it. Further analysis showed that there is no significant correlation between problem-focused coping and the patient's perceived stress (p = 0.996; α: 0.05).

The mean stress score of patients with positive emotion-focused coping was 16.81, while the mean stress score of patients with negative emotion-focused coping was 12.58. This suggested that the use of emotion-focused coping was associated with higher stress scores. Further analysis showed that there was a significant correlation between use of emotion-focused coping and the patient's perceived stress (p = 0.003; α: 0.05).

<table>
<thead>
<tr>
<th>5</th>
<th>Pain Level</th>
<th>Mean</th>
<th>SD</th>
<th>MD (95% CI)</th>
<th>T</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Mild Pain (0–5)</td>
<td>67</td>
<td>13.53</td>
<td>6.08</td>
<td>12.03–15.03</td>
<td>0.035*</td>
<td></td>
</tr>
</tbody>
</table>

*Significant value of t-independent test <0.05

Discussion

According to the research conducted by Park et al., neither problem-focused coping nor emotion-focused coping can be considered as the main coping strategy used for coping with stress. When a direct action can be taken, a problem-focused coping strategy is selected. However, when no direct action can be taken, the emotion-focused coping strategy tends to be selected. Another study found that cancer survivors who practiced emotion-focused coping had higher stress scores than those who practiced problem-focused coping. Higher stress levels tend to encourage emotion-focused coping. The patients in our study believed that emotion-focused coping reduced negative feelings that arose from stressful experiences. Emotion-focused coping may help distract the patient and help him or her feel better during stressful conditions.

In our study, most patients applied problem-focused coping, in the form of problem solving or behavioral changes, in an effort to manage stressors. Our results were; therefore, in agreement with previous research that found that coping strategies were selected on the basis of the conditions experienced by individuals. Patients in this study were actively involved in the scheduled maintenance modules, with clear-cut results at each meeting, since the start of treatment. Following regular maintenance schedules allowed patients to take immediate actions addressing problems. Therefore, the patients in our study applied problem-focused coping according to the treatment conducted; hence, problem-focused coping did not correlate significantly with the stress perceived by the patient.

Problem-focused coping focuses on addressing the problems at hand, and emotion-focused coping focuses on managing emotions, in an effort to avoid problems. While the patients’ wounds were being treated, it is possible that sickness could still have caused psychological changes. Emotion-focused coping is influenced by many things, such as individual personality variations, types of coping used, and external sources. Most of the patients in our study were females, who tend to be more emotional than...
above factors have more effects on stress felt by the respondents than the problem-solving strategies currently pursued through care.

Patients with chronic wounds, especially diabetic ulcers, require prolonged treatments. This triggers stress that can lead to negative emotions, such as depression, anger, resentment, and anxiety. Patients who experienced these emotions perceived higher stress and applied emotion-focused coping in an effort to overcome the stressors. Thus, the use of emotion-focused coping is significantly associated with stress because it may reduce negative feelings that occur secondary to discomfort felt during a treatment.

The results of the age and stress analysis showed a significant relationship (p = 0.019; α: 0.05). For patients <60 years old, the mean stress score was 13.43, while for patients >60 years old, the mean stress score was 17.30. A person aged >60 years old, experiencing sub-optimal fulfillment of developmental tasks may experience more severe stress. This is supported by the research by Aldwin, which revealed that the older the patient, the lower his/her ability to exert environmental control. Thus, old age may well relate to higher perceived stress. Conversely, younger individuals tend to experience less stress, especially if their demographic, social, and motivational conditions support the treatment process.

Male patients tended to experience lower stress scores (mean = 12.28) than female patients (mean = 16.25). This might be because of the influence of individual personalities, in which females tend to judge something more negatively, susceptible to emotion-focused coping than males who tend to think rationally and are less easily affected. Thus, characteristics endemic to females can become stress triggers that are disproportionally experienced by females.

The level of education relates to the patient’s knowledge of care, in which the level of education will help the patient understand how his/her body works during the treatment process and increase the effective use of coping mechanisms. Social factors, such as low socioeconomic levels, poor access to health care, and low education have been shown to be associated with more frequent or severe cases of diabetic ulcers. Further analysis showed that there was no significant relationship between education level and stress (p = 0.506; α: 0.05). In general, poor health is associated with low socioeconomic status. However, good health outcomes cannot be separated from individual habits in maintaining one’s health and certain biological factors. In our study, it was believed that education was not a major factor affecting stress because in addition to the level of education, there are other factors that are more influential to the stress level of respondents.

Most diabetic ulcers (60%–80%) recover within 6–18 months from the first examination. Long-term natural treatments cause stress and stress significantly increases due to increase in pain levels during the treatment, frustration, inadequate care, and sometimes negligence. However, stress is affected by various factors, including physical, psychological, and social. In our study, the correlation between ulcer duration and stress was very weak; therefore, patient’ stress levels could have been influenced by social support, available treatment resources, and other factors, but not by the duration of diabetic ulcer.

Injury (ulcer) severity can also be a stressor to patients. More severe injuries impose more severe movement restrictions, leading to stress. Stress can be affected by the individual’s personality, the type of coping strategy used, as well as external influences, such as environmental conditions and social support. We observed that during the treatment at RUMAT, patients were handled professionally, and were repeatedly informed that the wound would improve by the nurse. This received social support helped patients feel less psychological tension. This may be the reason why the average stress score among patients with high grade and low-grade ulcers did not significantly differ.

Patients who perceived their pain to be tolerable had a mean stress score of 13.53, while patients with severe pain had a higher mean stress score of 17.19. Pain is considered to be stressful and can cause psychological disturbances. Patients with chronic injuries tend to perceive their experience during treatment as something negative due to the pain. Negative emotions can affect patient’s biological and behavioral responses. Increased stress and anxiety can lower an individual’s pain tolerance threshold, which causes a person to be more aware of the somatic stimuli that will be received. Pain itself triggers stress because of anticipation of, and exposure to, negative experiences. Thus, severe pain experienced by the patient triggers stress due to anticipation and experience assessed negatively by the patient. This process may be further exacerbated by repeated exposure to painful treatments and use of ineffective coping strategies.

Patients who perceived that their ulcer emitted a mild odor had a mean stress score of 14.33 while patients who perceived a strong odor had a higher mean stress score of 16.50. Ulcer-wound odor usually results from exudates that seep into the bandage. Patients with this condition tend to feel anxious, shameful, fearful, and guilty leading to decreased self-confidence and quality of life. However, in our study, there was no correlation between odor and stress. We observed that RUMAT uses moist wound healing method with modern dressing; therefore, helping prevent excessive odor and exudate.
Conclusion

Based on the results of this research, it can be concluded that there is a significant correlation between use of an emotion-focused coping strategy and stress level (p=0.003, α: 0.05). We believe the process of care performed by RUMAT Wound Care nurses helps control the patients’ perceived stress. Assessment of the psychological status of patients with diabetic ulcers should be undertaken to support patient comfort and improve the quality of wound care and recovery. Future studies should investigate the psychological characteristics of patients with diabetic ulcers, with particular attention to variables that were not used in this research, such as variations in the type of bandage, odor, and other socioeconomic factors.

Acknowledgments

References


