Original Article

Effects of TimeSlips on Cornell Scale for Depression in Dementia scores of senile dementia patients

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ABSTRACT

Objective: To investigate the influences of TimeSlips on the Cornell Scale for Depression in Dementia (CSDD) scores of mild or moderate senile dementia patients.

Methods: Forty-three cases of mild or moderate senile dementia patients were selected locally for convenience sake and given the TimeSlips intervention. The patients were assessed using the scales of CSDD and the Observed Emotion Rating Scale (OERS).

Results: The differences of the patients’ CSDD scores between before and after the intervention were statistically significant (P < 0.05). The differences of the patients’ OERS scores on positive and negative emotions between before and after the intervention were also statistically significant (P < 0.05).

Conclusion: TimeSlips is beneficial to relieve depressive symptoms and ameliorate the emotions of mild or moderate senile dementia patients, thus improving their life quality and reducing the burden of their caregivers. A large-scale experimental research on TimeSlips with rigorous design is proposed for further studies.

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Population aging, which generates many challenges, exists in every country. Chinese population over 60 years of age is expected to increase from 12% in 2009–31% in 2050 [1]. Senile dementia refers to the relatively long-term intelligence damage of the elderly (above 60 years), characterized by disorders of memory, calculation, thinking, language, orientation, emotion, and personality changes, along with deterioration of the ability to perform everyday social activities and living independently [2]. Approximately 36.5 million people suffer from dementia worldwide, which threatens the health of the elderly. Depression is common in patients with dementia [3], and it is one of the independent factors that affect their quality of life [4]. The prevalence of depression in patients with dementia reaches 87% [5]. Therefore, the depressive symptoms of senile dementia patients should be relieved to promote their life quality and slow down the progress of the illness. TimeSlips is a storytelling intervention on dementia patients abroad that focuses on creative expression [6]. Given the simplicity, economy, practicality, and efficacy of TimeSlips, it has been adopted by dementia care units in numerous countries. However, the understanding and application of this intervention are still at the preliminary stage. The Cornell Scale for Depression in Dementia (CSDD) is an instrument directed at the depressive symptoms of dementia patients [7]. The Observed Emotion Rating Scale (OERS) is an observational tool for rating two positive emotions (pleasure and general...
alertness) and three negative emotions (anger, anxiety or fear, and sadness) [8]. This thesis aims to investigate the effects of TimeSlips on CSDD and OERS scores of mild or moderate senile dementia patients.

1. Data and methods

1.1. General data

Forty-nine patients with mild or moderate senile dementia were selected from two comprehensive hospitals and one social welfare institute in the local region for convenience sake. Among the 49 patients, 6 withdrew from the study during the process and 3 quit for disease progression on weeks 1, 3, and 4 during the intervention. Another three patients did not continue to participate and dropped out on weeks 1, 2, and 4. Thus, the drop-out rate is 12%, and the actual number of sample cases is 43.

1.1.1. All patients met the following requirements

1.1.1.1. Inclusion criteria

a. Met the diagnostic criteria of the International Classification of Diseases (ICD-10) of the World Health Organization [9];

b. Clinically evaluated with mild or moderate dementia or obtained a score of 10–26 according to the mini-mental state examination (MMSE) scale;

c. Above 60 years old;

d. Ability to understand and speak Mandarin or dialects of Fuzhou City, hear the program dialogue, and view the program stimulus picture;

e. Willingness to participate in the study and provide informed consent (patients and their family members).

1.1.1.2. Exclusion criteria

a. With advanced terminal illness;

b. Displaying behavior that would make interview impossible, such as constant wandering, shouting, or aggression;

c. Diagnosed with learning disability.

The average age of the patients is $85.30 \pm 5.886$, with a minimum age of 69 and a maximum age of 94. Table 1 shows general information of the patients.

1.2. Methods

1.2.1. Intervention

The patients received a 0.5–1 h intervention, twice a week, for 6 weeks. The period of treatment and nursing for the patients were avoided. The intervention was conducted at the most convenient and comfortable time for the patients. The selected place was quiet and spacious, with a limited number of patients (~6-10) each time.

With an interesting and dramatic picture, the host attempted to inspire the patients’ thinking and imagination and encouraged them to speak out their created stories and imagination. The host led the patients to think by raising open-ended questions about the picture and tried to avoid suspension. Meanwhile, the assistants of the project recorded the process of the entire activity and the answers of the patients in detail. The questions have no right or wrong answers. In addition, the host retold the stories shared by the patients timely to maintain their attention and enthusiasm to continue and develop the stories further. The specific steps of intervention are shown in Table 2. The host and assistants of the project have a Master of Medicine degree. The host previously worked in neurological nursing for 2 years, and the three assistants had a clinical nursing work experience for more than 3 years.

1.2.2. Evaluation of the effects

The scales used for evaluation include general social data and MMSE, CSDD, and OERS scales on week 0 (one week before the intervention). The scales employed for evaluation include CSDD and OERS scales on week 7 (one week after the intervention) and CSDD on week 10 (one month after the intervention). MMSE is a brief and widely used test of cognitive function, with good reliability and validity [10]. This study employed the Chinese version of this test by Zhang Mingyuan. The test covers a variety of cognitive domains, such as orientation to time and place, short- and long-term memory, registration, recall, constructional ability, language, and the ability to understand and follow commands. The five factors in CSDD scale are as

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**Table 1** General information of research objects.

<table>
<thead>
<tr>
<th>Types</th>
<th>n</th>
<th>Constituent ratio (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>19</td>
<td>44.19</td>
</tr>
<tr>
<td>Female</td>
<td>24</td>
<td>55.81</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiteracy</td>
<td>1</td>
<td>2.32</td>
</tr>
<tr>
<td>Primary School</td>
<td>9</td>
<td>20.93</td>
</tr>
<tr>
<td>Secondary School</td>
<td>23</td>
<td>53.49</td>
</tr>
<tr>
<td>Technological Academy or above</td>
<td>10</td>
<td>23.26</td>
</tr>
<tr>
<td>Marriage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>10</td>
<td>23.26</td>
</tr>
<tr>
<td>Widowed</td>
<td>33</td>
<td>76.74</td>
</tr>
<tr>
<td>Self-care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Self-care</td>
<td>13</td>
<td>30.24</td>
</tr>
<tr>
<td>Partial Self-care</td>
<td>22</td>
<td>51.16</td>
</tr>
<tr>
<td>Totally Incapacitated</td>
<td>8</td>
<td>18.60</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above 0 yuan</td>
<td>7</td>
<td>16.28</td>
</tr>
<tr>
<td>Above 1000 yuan</td>
<td>3</td>
<td>6.98</td>
</tr>
<tr>
<td>Above 3000 yuan</td>
<td>33</td>
<td>76.74</td>
</tr>
</tbody>
</table>

**Table 2** Steps of TimeSlips intervention.

<table>
<thead>
<tr>
<th>Stages</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>¶ Create a special and suitable environment ¶ Invite the patients to take part in this activity ¶ Review the stories last time ¶ Choose a new picture ¶ Raise open-ended questions and lead the discussion ¶ Respond to and write down all the answers ¶ Repeat after every 4–5 answers ¶ Fully retell all the stories and give them a topic ¶ Give thanks to all the participants</td>
</tr>
<tr>
<td>Central section</td>
<td>¶ Create a special and suitable environment ¶ Invite the patients to take part in this activity ¶ Review the stories last time ¶ Choose a new picture ¶ Raise open-ended questions and lead the discussion ¶ Respond to and write down all the answers ¶ Repeat after every 4–5 answers ¶ Fully retell all the stories and give them a topic ¶ Give thanks to all the participants</td>
</tr>
<tr>
<td>Ending</td>
<td>¶ Create a special and suitable environment ¶ Invite the patients to take part in this activity ¶ Review the stories last time ¶ Choose a new picture ¶ Raise open-ended questions and lead the discussion ¶ Respond to and write down all the answers ¶ Repeat after every 4–5 answers ¶ Fully retell all the stories and give them a topic ¶ Give thanks to all the participants</td>
</tr>
</tbody>
</table>
follows: emotion-related symptoms, abnormal behaviors, body symptoms, rhythm function disorders, and thinking disorders. The scale includes 19 items with a total score that ranges from 0 to 38, each of which is scored in three levels according to the severity of the symptoms (0 score for “no symptom,” 1 score for “mild or intermittent symptoms,” and 2 scores for “severe symptoms”). Higher score indicates more severe depression [11]. OERS scale, a scale for observation, includes five items, namely, pleasure, anger, anxiety/fear, sadness, and general alertness, of which pleasure and general alertness belong to the positive emotions, whereas the remaining three are negative ones [8]. The emotional states of patients during their eating before and after the intervention are observed for more than 10 min in this research, with OERS scale used in assessment. Questionnaire data were collected by the same individual who mastered the questionnaire content and application method.

2. Results

The MMSE scores of the patients were initially 18.721 ± 4.847. A significant difference (P < 0.05) in CSDD scores was observed on week 0 (one week before the intervention) and week 7 (one week after the intervention), of which the latter is lower than the former. A significant difference (P < 0.05) in CSDD scores was also found on week 0 (one week before the intervention) and week 10 (one month after the intervention), of which the latter is lower than the former. For OERS scores, significant difference existed (P < 0.05) with regard to positive emotions before and after the intervention, of which the latter is higher than the former. A significant difference (P < 0.05) was observed with regard to negative emotions before and after the intervention, of which the latter is lower than the former (see Table 3).

3. Discussion

3.1. Significance of TimeSlips to senile dementia patients

TimeSlips, as one of non-pharmacologic treatments, is a group storytelling program for dementia patients that encourages open storytelling in people with dementia by stimulating imagination rather than relying on factual reminiscence [6]. Since 2006, researchers have used TimeSlips to improve the quality of care and life of dementia patients in long-term care settings [12]. TimeSlips emphasizes the uniqueness of persons and enables them to feel included, supported, and valued. This treatment has been shown to be effective for engagement of both dementia patients and their caregivers to communicate in the USA.

Several non-pharmacological therapies have been used in Chinese patients with dementia, but patients’ imagination ability, learning ability, and social role are rarely focused. This study is the first to investigate the use of TimeSlips on dementia patients in China.

3.2. Effects of TimeSlips to relieve the depressive symptoms of mild or moderate senile dementia patients

The incidence of depression is high among the elderly [13]. A meta-analysis study of Barua et al. showed that the incidence of depression is 10.3% among the elderly patients [14]. Moreover, this rate is even higher in patients with chronic diseases, especially neurodegenerative diseases. Dementia patients suffer from a higher incidence of depression than those without dementia. A study suggests that the incidence of depression in AD patients can be up to 87% [15], and another local research indicates a finding of 70.8% [16]. In recent years, an increasing number of studies have been conducted on the effects of depression on prognosis of dementia. Depression delays the recovery of nerve function defect and cognitive impairment, as well as increases the mortality of cerebrovascular diseases and reduces the patients’ life qualities and degrees of life satisfaction. Research about dementia aims to relieve depressive symptoms of the patients, which is also a premise to ensure that patients are compliant and the work can be carried out smoothly. In this study, TimeSlips can significantly relieve the depressive symptoms of mild or moderate senile dementia patients, similar to the results of other non-drug therapies [16,17], thus improving life quality.

However, the possibility that depressive symptoms are relieved because of the generality of non-drug therapies, rather than the particularity of TimeSlips, cannot be ruled out. The scores are given subjectively, which depend on the nursing assistants, nursing workers, or family members.

Meanwhile, the improvement of the patients with depressive symptoms has a great influence on the caregivers, possibly resulting in non-objective scores. Therefore, a slight patient improvement after the intervention can provide positive effect on caregivers, further enhancing their tendency to give higher scores. Although this possibility exists, it does not affect the overall evaluation of intervention effects. Other

| Table 3 – Comparisons of CSDD scores and OERS scores. Before and after the intervention |
|----------------------------------------|------------|--------------|--------------|----------------|----------------|----------------|
| Scales      | M(QR) Week 0 | M(QR) Week 7 | M(QR) Week 10 | Z(P) Week 7 – Week 0 | Z(P) Week 10 – Week 0 |
| CSDD        | 4.00 (4.00)  | 1.00 (4.00)  | 3.00 (3.00)  | -3.789 (0.000)  | -2.416 (0.016)  |
| OERS1       | 3.00 (0.13)  | 4.50 (1.13)  | 4.799 (0.000) | -3.020 (0.003)  |
| OERS2       | 1.00 (0.42)  | 1.00 (0.00)  |               |                |

Notes: The data are non-normality and checked by Wilcoxon Rank Sum Test. OERS1 is for positive emotions and OERS2 is for negative emotions.
non-drug therapies can be conducted in further studies as a comparison to confirm the positive effects of TimeSlips on depressive symptoms in patients with dementia.

3.3. Effects of TimeSlips to improve the emotional states of mild or moderate senile dementia patients

Dementia patients are often not understood or even repelled by others, especially those with depression. If these patients are noticed and shown concern, they will show positive emotions naturally [18]. Dementia patients are paid attention to and cared for in TimeSlips, similar to other non-drug therapies. Moreover, patients also obtain the initiative in TimeSlips. During the activity process, the host and assistants of the project only act as listeners, while the dementia patients are the storytellers. Meanwhile, the host gives positive responses promptly, making the patients feel that they are respected and welcome. Therefore, the patients’ negative emotions fade away gradually, replaced by the positive ones.

In conclusion, the creativity and potential of patients with dementia are emphasized in TimeSlips, rather than on the losing or the lost abilities. Patients with dementia are speculated to still have creativity and the ability to continue to grow, learn, and share [19]. Studies abroad also suggest that TimeSlips plays a positive role in relieving the depressive symptoms and improving the emotional states of patients with dementia [20]. TimeSlips can also improve the communication abilities and social interactions of dementia patients, as well as the attitudes of nursing staff toward them [6,21]. Although many non-drug therapies are available for people with dementia locally [22,23], no TimeSlips-related research exists. Therefore, a large-scale experimental research on TimeSlips with rigorous design is proposed for further studies.

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References