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Analysis of the Effect of Mindfulness Meditation on Patients with Burning Mouth Syndrome

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Abstract: *Objective:* To explore the effect of mindfulness meditation on patients with burning mouth syndrome. *Methods:* 60 patients with burning mouth syndrome in our hospital who were treated from January 2021 to December 2022 were selected for this study. The patients were divided into two groups of thirty cases each using the randomized numerical table method. The observation underwent psychological intervention and mindfulness meditation training, while the control group only received symptomatic care. The condition of the patients of both groups was observed and compared. *Results*: Upon receiving treatment, the patients in the observation group had lower Hamilton Anxiety (HAM-A) scores, and Hamilton Depression (HAMD) scores compared to the control group ($P < 0.05$). The visual analog scale (VAS) scores of the observation group were also lower than those of the control group ($P < 0.05$). Moreover, the efficacy of the nursing intervention in the observation group was higher than that of the control group ($P < 0.05$). *Conclusion*: Psychological intervention and mindfulness meditation training can effectively improve the clinical symptoms of patients with burning mouth syndrome. Therefore, this treatment method should be popularized.

Keywords: Burning mouth syndrome; Psychological intervention; Mindfulness meditation training

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1. Introduction

Burning mouth syndrome is a complex condition characterized by a predominant symptom of burning pain. It is called “burning mouth syndrome” because it primarily affects the oral mucosa, with the tongue being the most common site of onset. It is also referred to as glossodynia, tongue paresthesia, and oral mucosal paresthesia, among other names. Typically, this condition does not show significant clinical signs of damage or characteristic histological changes [1]. Besides, intraoral examinations do not reveal any abnormalities despite the burning pain in the tongue. The pathological mechanism of this condition is rather complex [2]. The disease is not uncommon, with about 2–3.7% of the population suffering from the disease. Besides, this disease is seven times more prevalent among women than men, with postmenopausal women accounting for the vast majority. Because the symptoms of burning mouth syndrome are persistent and recurrent, many patients experience psychological problems that can hinder their ability to cooperate with and benefit from treatment [3]. Therefore, for such

patients, in addition to active symptomatic treatment, it is also essential to use scientific and effective nursing measures to help alleviate the patients' physical and mental burden. Therefore, this study aimed to evaluate the effectiveness of mindfulness meditation training as a psychological intervention for treating burning mouth syndrome and compare its efficacy with conventional symptomatic care.

2. Materials and methods

2.1. General information

Sixty patients with burning mouth syndrome who were admitted to our hospital between January 2021 and December 2022 were selected for this study. The patients were divided into two groups using the random number table method, with 30 cases in each group. The observation group received psychological intervention and mindfulness meditation training, while the control group received routine symptomatic care (control group). The observation group consisted of 5 males and 25 females, aged 38–58 years old, with an average age of 45.56 ± 3.44 years, and the course of disease ranged from 5.2 months to 18.8 months, with an average duration of 12.91 ± 0.52 months. The control group consisted of 4 males and 24 females, aged 38–55 years old, with an average age of 45.50 ± 3.60 years. The course of disease ranged from 6.0 to 18.5 months, with an average duration of 12.53 ± 1.01 months.

According to the International Headache Society (IHS) Diagnostic Criteria (3rd edition, ICHD-3), the diagnostic criteria for BMS are as follows: Oral and tongue pain, orolingual-related symptoms, and other symptoms lasting more than 2 hours, persisting for over 3 months. The pain is characterized by a burning sensation and is limited to the superficial oral mucosa [4].

Inclusion criteria: (1) complete baseline and follow-up data, (2) diagnosed with burning mouth syndrome, (3) compliant and voluntarily participated in this study.

Exclusion criteria: (1) presence of severe heart, liver, or kidney dysfunction, (2) pregnant or lactating women, (3) presence of blood system diseases, (4) presence of malignant tumors and diabetes, (5) non-compliant, (6) other conditions deemed unsuitable.

2.2. Method

The observation group underwent psychological intervention and mindfulness meditation training. (1) Psychological intervention: Through active communication and interaction with patients, the patients' inner thoughts were understood, and they were encouraged to express their negative emotions. The reasons for the negative emotions were understood and alleviated with the help of the patients' family members. The patients were comforted, and they were educated on the fundamental pathological knowledge and treatment plans of burning mouth syndrome through videos and other methods. In this process, the patient queries were answered, and patients were reminded to be mindful of avoiding detrimental habits in daily life, such as the consumption of spicy foods and excessive tongue extension. Successful treatment cases were also introduced to patients to enhance their confidence in the treatment process. (2) Meditation training: A meditation audio was prepared in advance before the training, which would act as guidance for the training program. The content of the audio is as follows: "Relax your shoulders and let them droop naturally, lower your feet and lie flat on the ground. Then, close your eyes and inhale slowly, then exhale. Listen to the music and empty your mind, and focus on your breathing." This audio was repeated as many times as possible for 15 minutes. The audio is paired with soothing music throughout. Before each meditation session, the patient must be in a warm and quiet environment with loose, comfortable clothing. These meditation exercises were done twice a day.

The control group received routine symptomatic care, which involved guiding the patients to undergo

treatment prescribed by the doctor based on their condition. The patients were informed about relevant treatment precautions and were reminded to maintain physical and mental relaxation. Several drugs were also prescribed to the patients. (1) Antidepressants: Oral administration of 20 mg Prozac (Eli Lilly Suzhou Pharmaceutical Co., Ltd., National Drug Approval Number: J20160029), once/d for six weeks. (2) Vitamin supplementation: Vitamin B1 and Vitamin C. (3) Sleeping pills: 0.8 mg oral alprazolam (Shandong Xinyi Pharmaceutical Co., Ltd., National Drug Approval No.: H37021444), before sleeping. (4) Alpha lipoic acid supplements, low-level laser therapy, saliva substitutes, etc., were used depending on the patients' condition.

2.3. Observation indicators

(1) Mental state

The patients' mental states were assessed before and after nursing intervention. The mental state included two dimensions: anxiety and depression [5]. The degree of anxiety was assessed using the Hamilton Anxiety Scale (HAM-A). The HAM-A scale consists of 14 items, with each item ranging from 0–4 points. A higher score indicates a higher severity. The depression state was evaluated with the Hamilton Depression Rating Scale (HAM-D). The scale contains 17 items, with each item ranging from 0–4 points. A higher score indicates a higher severity.

(2) Pain level

The patients' pain levels were measured on a scale from 0 to 10, taking into account their main complaints and overall condition. A mental feedback approach was employed to assign a pain score, where a higher score indicated more severe pain [6].

(3) Efficacy of nursing intervention

The efficacy of nursing intervention and the overall treatment effect was evaluated [7]. Following the nursing intervention, if the patient's clinical symptoms had completely disappeared, and their physical signs had returned to normal with no relevant complications, the outcome was considered "markedly effective." If the patient's clinical symptoms had significantly improved, their physical indicators had approached normal, and no relevant complications had occurred, it was considered "effective." If the above standards were not met, the intervention was deemed "ineffective." The total effective rate was calculated as the sum of "markedly effective" and "effective" cases.

2.4. Statistical analysis

The degree of symptom reduction of both groups was analyzed and compared. Statistical analysis was completed by SPSS20.00; the count data was analyzed using the χ^2-test, while the measurement data was analyzed using the *t*-test, with $P < 0.05$ indicating statistical significance.

3. Results

3.1. Mental state

The HAM-A and HAM-D scores of the patients in the observation group were lower than in the control group ($P < 0.05$), as shown in **Table 1**.

3.2. Pain level

The VAS scores of the patients in the observation group were lower than those in the control group ($P < 0.05$), as shown in **Table 2**.

Table 1. HAM-A and HAM-D scores of both groups

Group	HAM-A score (points)		HAM-D score (points)	
	Before care	After care	Before care	After care
Observation group (n = 30)	26.95 ± 7.14	11.78 ± 5.15	28.63 ± 7.48	12.15 ± 5.23
Control group (n = 30)	26.29 ± 7.02	20.56 ± 5.22	28.76 ± 7.34	22.65 ± 6.15
t	0.3610	6.5581	0.0679	7.1237
P	0.7194	0.0000	0.9461	0.0000

Table 2. VAS scores of both groups

Group	VAS score (points)		t	P
	Before treatment	After treatment		
Observation group (n = 30)	6.72 ± 1.83	2.34 ± 0.72	12.1991	0.0000
Control group (n = 30)	6.77 ± 1.62	3.13 ± 0.96	10.5874	0.0000
t	0.1120	3.6058	-	-
P	0.9112	0.0006	-	-

3.3. Efficacy of nursing intervention

The total efficacy of the nursing intervention in the observation group was higher than that in the control group ($P < 0.05$), as shown in **Table 3**.

Table 3. Efficacy of nursing intervention

Group	Markedly effective	Effective	Ineffective	Total efficacy
Observation group (n = 30)	20 (66.67%)	9 (30.00%)	1 (3.33%)	96.67% (29/30)
Control group (n = 30)	16 (53.33%)	8 (26.67%)	6 (20.00%)	80.00% (24/30)
χ^2	-	-	-	4.0431
P	-	-	-	0.0443

4. Discussion

The pathological mechanism of burning mouth syndrome is rather complex, and the triggering factors include local, systemic, mental, and neurological factors. Local factors include residual roots and crowns, fungal infections, etc. Systemic factors include menopausal syndrome, diabetes, iatrogenic flora imbalance, vitamin deficiency, etc. There is a certain relationship between the severity of the symptoms and the emotional state of the patient. The greater the physical and mental burden on the patient, the more intense the pain will be [8]. Therefore, to reduce the patient's clinical symptoms and improve patient outcome, it is essential to strengthen the psychological intervention for patients. Meditation is type of psychotherapy that can help patients relieve stress and anxiety by allowing them to temporarily isolate themselves from the surrounding environment [9].

In this study, psychological intervention combined with meditation training was given to patients in the observation group. Psychological intervention involved a comprehensive assessment of the patient's mental state, encouraging them to express their negative emotions, and strengthening health education to enhance their understanding of the condition and treatment. This improved treatment compliance and cooperation, laying the

foundation for enhancing the overall intervention effect [10]. Meditation training guided patients to adjust their breathing rhythm, relax, and focus on their inner world, helping to alleviate clinical symptoms by reducing sensitivity to pain [11].

5. Conclusion

In conclusion, the combination of psychological intervention and meditation training is effective in helping patients with burning mouth syndrome reduce physical and mental stress, improve medical care outcomes, and alleviate clinical symptoms [12]. This approach is highly applicable, well-received by patients, and clinically feasible.

Disclosure statement

The authors declare no conflict of interest.

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