

Clinical exploration of filiform needle acupuncture in treating adolescent internet addiction

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Abstract: Objective: To investigate the therapeutic efficacy of acupuncture in treating adolescent internet addiction. Methods: A total of 17 adolescents with internet addiction admitted to the clinical department were enrolled as study subjects. They received combined acupuncture therapy targeting acupoints including Nei guan, Shen men, Sayajirao, Susanti, Guan yuan, and Taichung for a duration of 4 weeks. The therapeutic efficacy was assessed using the Internet Addiction Disorder Diagnostic Scale (IADSS) and the SCL-90 scale; psychological assessment data before and after treatment were analyzed. Results: The IADSS score in the treatment group post-treatment (54.76 ± 6.71) was significantly lower than the pre-treatment score (64.12 ± 3.22), with a statistically significant difference ($t = 6.899$, $P < 0.001$). Prior to treatment, all factor scores on the SCL-90 in the treatment group were significantly higher than those in the control group ($P < 0.01$). At the conclusion of the treatment, the scores for five factors—somatic symptoms, depression, anxiety, hostility, and other symptoms—on the SCL-90 were lower compared to pre-treatment levels ($P < 0.05$); however, the scores for the depression and anxiety factors did not differ significantly from those in the control group ($P > 0.05$). Conclusion: Acupuncture therapy demonstrates favorable efficacy in treating adolescent internet addiction.

Keywords: Internet addiction, adolescents, acupuncture, 90-Item Symptom Checklist

1. Introduction

Internet addiction disorder (IAD) refers to a phenomenon in which an individual experiences significant social and psychological dysfunction because of excessive Internet use [1]; its primary symptoms are like those observed in substance use disorders, such as drug or alcohol addiction. Internet addiction has caused severe impairment to the physical, psychological, and social functioning of adolescents, and has also exerted a significant impact on family stability and social harmony. Therefore, exploring effective intervention strategies for Internet addiction holds important practical significance. In recent years, acupuncture therapy has garnered increasing attention from researchers due to its advantages, namely its safety, efficacy, simplicity, low cost, minimal adverse effects, and minimal discomfort [2-3]. This study aims to apply acupuncture therapy as an intervention for Internet addiction and to investigate the efficacy of fine needle acupuncture in treating adolescent Internet addiction.

2. Subjects and methods

2.1. Diagnostic criteria

The Internet Addiction Test (IAT) is used for diagnosing internet addiction; this scale consists of 20 items, each with five response options scored from 1 to 5 points. A total score of ≥ 60 indicates a diagnosis of internet addiction. The IAT demonstrates good reliability and validity and has been widely cited in both domestic and international research [4].

2.2. Study subjects

Enrollment criteria: Participants must be aged between 14 and 25 years, meet the aforementioned diagnostic criteria for internet addiction; have had internet use for at least one year; have not received any prior treatment specifically for internet addiction; have no other psychiatric or neurological disorders, nor a history of use of psychoactive substances; have no severe cardiac, hepatic, or renal diseases; have no

contraindications to acupuncture, such as coagulation disorders or skin infections; and the participant or their legal guardian must have been informed of the study protocol and signed an informed consent form, thereby voluntarily agreeing to participate in the study.

According to the aforementioned criteria, 23 adolescents diagnosed with internet addiction who sought medical care at our hospital between 2010 and 2011 were enrolled in a needling therapy intervention; among them, 6 participants discontinued the treatment prematurely, while 17 participants who completed the entire treatment course were included in the study group (13 males and 4 females; mean age: 16.9 ± 2.38 years). Using a random sampling method, 33 adolescents with a history of internet use but who had been excluded from the diagnosis by standardized screening instruments were selected from primary and secondary school students in Ganzhou City and assigned to the control group. There were no significant differences between the two groups in terms of age or gender distribution ($P > 0.05$). Due to ethical and professional ethics considerations, no blank control group was established for this study.

2.3. Treatment methods

The intervention group received acupuncture treatment based on the therapeutic principle of "promoting the free flow of qi and calming the mind and spirit"; the acupoints Nei guan, Shen men, Sayajirao, Susanti, Guan yuan, and Taichung were selected and combined for treatment. Filiform needles were inserted into these acupoints; once the "qi attainment" sensation was perceived, the needles were retained for 30 minutes, with needling performed every 10 minutes. Treatment was administered once daily, for a total of 6 consecutive days per week, followed by a 1-day rest period; this regimen was repeated over a total of 4 weeks. The control group did not receive any treatment.

2.4. Therapeutic efficacy assessment

Therapeutic efficacy was assessed using the self-administered pre-and post-treatment comparison method. Before treatment, both study groups were evaluated using the Internet Addiction Disorder Diagnostic Scale (IAT) and the 90-Item Symptom Checklist (SCL-90) [5]. At the end of the 4-week treatment period, the same IAT and SCL-90 were again administered to assess the study group.

2.5. Statistical analysis

The data were analyzed using SPSS 14.0 software; the paired-t test was employed to compare the study group's baseline and post-treatment values, while the independent-sample t-test was used to compare the study group and the control group before and after treatment, respectively.

3. Results

3.1. IAT scale assessment results

Before treatment, there was a significant difference in IAT scale scores between the study group (64.12 ± 3.22) and the control group (30.55 ± 6.11) ($P < 0.01$); at the end of the 4-week active treatment period, a significant difference in IAT scale scores remained between the study group (54.76 ± 6.71) and the control group (30.55 ± 6.11) ($P < 0.01$).

The post-treatment IAT scale score (54.76 ± 6.71) was lower than the pre-treatment score (64.12 ± 3.22), and this difference was statistically significant ($t = 6.899$, $P < 0.001$).

3.2. SCL-90 scale assessment results

Before treatment, there were significant differences in factor scores between the study group and the control group ($P < 0.01$); at the end of the 4-week active treatment period, the factor scores for somatization ($t = 4.747$, $P < 0.01$), depression ($t = 2.223$, $P < 0.05$), anxiety ($t = 4.243$, $P < 0.01$), hostility ($t = 3.043$, $P < 0.01$), and other factors in the study group were lower than those before treatment; at the end of the treatment period, the factor scores for somatization ($t = 2.449$, $P < 0.05$), hostility ($t = 4.866$, $P < 0.01$), and other factors in the study group still differed significantly from those in the control group, whereas the factor scores for depression and anxiety did not differ significantly from those in the control group ($P > 0.05$). See Table 1.

Table 1: Comparison of SCL-90 scale scores before and after treatment among study participants

SCL-90 Items	Study Group(n=17)		Control Group (n=33)
	Pre-treatment	Post-treatment	
Somatization	2.99±0.71△△	2.24±0.83**	1.69±0.68▲
Interpersonal Sensitivity	2.82±0.73△△	2.65±0.61	1.39±0.75
Obsession-Compulsion	2.47±0.80△△	2.35±0.79	1.58±0.83
Depression	1.94±0.75△△	1.65±0.70*	1.41±0.56
Anxiety	2.65±0.61△△	2.12±0.60**	1.94±0.75
Hostility	3.01±0.71△△	2.47±0.72**	1.36±0.78▲▲
Phobic Anxiety	2.29±0.47△△	2.06±0.75	1.45±0.62
Paranoid Ideation	2.65±0.49△△	2.53±0.51	1.33±0.73
Psychoticism	2.41±0.23△△	2.29±0.47	1.42±0.61
Others	2.76±0.66△△	2.53±0.72*	1.52±0.91▲▲

3.3. Clinical observation and individual interviews

Through clinical observations and individual interviews with patients and their parents, it was found that adolescents with internet addiction exhibited significant improvement in somatic symptoms—such as insomnia, poor appetite, and dizziness—following treatment. During the initial phase of treatment, the participants displayed prominent withdrawal symptoms, including significant emotional anxiety, restlessness, and physical discomfort; these symptoms gradually subsided throughout the treatment course, and by the end of the treatment, anxiety and depressive symptoms had markedly alleviated. After treatment, the addicted individuals still demonstrated poor self-regulatory capacity, unable to effectively control their internet usage behavior or duration and had not yet achieved normal internet usage patterns. No significant adverse reactions were observed in the study participants during the treatment process. An investigation of six patients who discontinued participation in the study revealed that their withdrawal was due to the severity of their internet addiction and their inability to comply with the treatment regimen, rather than being attributable to the treatment itself.

4. Discussion

4.1. Theoretical basis of acupuncture in traditional Chinese medicine

An Analysis of the Feasibility of Acupuncture Therapy for Internet Addiction: Although Internet addiction primarily manifests as psychological symptoms, according to Traditional Chinese Medicine (TCM) theory, its development involves the entire system of internal organs. When first encountering a computer, Internet users engage in online activities through the "five senses" – including vision and hearing – and derive satisfaction and a sense of achievement from these activities. To repeatedly experience this euphoric sensation, users tend to increase their online activity levels; over time, this can adversely affect the heart. As the heart is the master of the entire body, damage to the heart impacts the functions of all the internal organs, leading to symptoms such as dizziness, blurred vision, emotional depression, and slowed thinking [6]. Based on the TCM etiology and pathogenesis of Internet addiction, this study explored the use of acupuncture therapy for adolescents with Internet addiction and observed favorable outcomes.

4.2. Clinical efficacy and limitations of acupuncture

The study findings are consistent with previous reports [7]. The SCL-90 assessment following acupuncture treatment demonstrated that acupuncture exerted a significant beneficial effect on symptoms associated with internet addiction—namely, somatization, depression, anxiety, hostility, and other symptoms; however, the scores for somatization, hostility, and other factors did not yet return to normal levels after

treatment. In contrast, improvements in aspects such as interpersonal relationships, obsessive-compulsive symptoms, fear, paranoia, and psychotic symptoms were not substantial. When the IAT scale was administered at the follow-up visit, a decrease in scores was observed; nonetheless, a significant difference remained compared to the control group, indicating that acupuncture treatment is highly effective for treating internet addiction, although a single treatment course was not yet sufficient to achieve complete resolution. These findings are consistent with those reported in other related studies [8], suggesting that short-term, single-session acupuncture therapy may have limitations.

4.3. Limitations of acupuncture treatment for internet addiction

The study findings indicate that although acupuncture therapy has partially alleviated patients' symptoms, it was unable to fully correct internet addiction behaviors. This suggests, on one hand, that the mechanisms underlying internet addiction are complex and the condition is often refractory; insufficient duration of acupuncture treatment may result in suboptimal outcomes. On the other hand, the development of internet addiction involves multifaceted etiological factors—including physiological, psychological, and social contributors [9]; therefore, standalone acupuncture therapy cannot address all these underlying causes. Future research should consider the integrated use of traditional Chinese medicine alongside other intervention approaches. Additionally, six patients with severe clinical conditions withdrew from the study, indicating that individuals with more severe symptoms exhibit poorer compliance with acupuncture therapy. Consequently, when employing acupuncture therapy for treating internet addiction, its suitability should be carefully evaluated.

4.4. Limitations of this study and future research directions

The findings of this study confirm that acupuncture therapy is feasible, safe, and effective for treating adolescent internet addiction; however, certain limitations remain. This study only compared pre-and post-treatment outcomes and did not assess the long-term efficacy of acupuncture therapy for internet addiction. Future research should expand the sample size, incorporate consolidation therapy, and conduct follow-up assessments at multiple time points after treatment completion to evaluate the long-term effects of acupuncture therapy.

5. Conclusion

In conclusion, this study demonstrates that acupuncture therapy—guided by the therapeutic principle of "regulating qi movement and calming the mind and spirit" can significantly reduce IAT scores in adolescents with internet addiction disorder and effectively alleviate their psychological symptoms—including somatization, depression, anxiety, and hostility—while demonstrating a favorable safety profile. However, a single treatment course of acupuncture may not fully correct addictive behaviors, and its efficacy in improving interpersonal relationships or obsessive-compulsive symptoms is limited. These findings suggest that the pathogenesis of internet addiction is complex and its underlying mechanisms are entrenched, indicating the limitations of single-intervention approaches. Future clinical practice should consider extending treatment duration, integrating comprehensive psychological and social interventions, and conducting large-sample, long-term follow-up studies to further validate the long-term efficacy of acupuncture therapy and identify the optimal patient populations for this treatment modality, thereby providing a scientific basis for the standardized application of Traditional Chinese Medicine in the management of adolescent internet addiction.

6. References.

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