

A Study of Self-help Intervention System for Social Anxiety in Vitiligo Based on Cognitive Behavioral Therapy

Tong Yin *

Xiamen Academy of Arts and Design, Fuzhou University, Xiamen, China

* Corresponding Author Email: 172109074@fzu.edu.cn

Abstract. Vitiligo is a common depigmented skin disease. Changes in appearance and unstable treatment outcomes have a negative impact on the physical and mental health of patients. Not only can it cause psychological problems such as social anxiety and depression, but it can also affect the effectiveness of disease treatment. Aim of the study: In order to help vitiligo patients reduce social anxiety and improve the applicability and practicality of psychotherapy, this article proposes a self-help intervention system based on cognitive-behavioral therapy (CBT) to help vitiligo patients establish correct cognitive and social behavior patterns. Method: Firstly, the psychological characteristics and existing treatment methods of vitiligo patients were analyzed. Secondly, the feasibility of CBT in human-computer interaction applications was explored. Negative cognition, social avoidance, and constructing psychological models for vitiligo patients have been comprehensively designed. Finally, summarize the information framework and core functions of the self-help intervention system. Results: An app as a carrier establishes a psychological intervention system that combines the patient's own characteristics, including three main modules: cognitive training, social simulation, and psychological evaluation. Conclusion: The self-help intervention form of Internet CBT has innovated the method of psychotherapy for vitiligo, providing effective and cost-effective psychological treatment options.

Keywords: Vitiligo; Social anxiety; Psychological intervention; Cognitive-behavioral therapy.

1. Introduction

Vitiligo is a common depigmented skin disease. Changes in skin condition bring serious psychological pressure to many patients, leading to social anxiety, depression, and other psychological problems [1]. Especially for patients with damaged exposed areas such as the face, they are more likely to develop social anxiety [2]. Abnormal appearance makes patients feel inferior. Patients may experience situations where they do not know how to respond to external attention and are unable to accept their own changes. The enthusiasm for life will also decrease. Damage to the appearance of patients can have negative impacts on social, marital, academic, and other aspects, thereby affecting their quality of life. Studies have shown that patients with skin lesions on exposed areas have higher levels of social anxiety and depression [2]. There is a correlation between skin diseases and psychological factors. The psychological symptoms caused by skin diseases can exacerbate the condition of skin diseases due to their stress response [1]. In treatment, doctors should pay attention to the mental and psychological aspects of vitiligo patients, incorporate psychological intervention, and pay attention to external support to help slow down the progression of the condition [1]. Therefore, paying attention to psychological issues such as social avoidance and social anxiety is of great significance for personal development and improvement of the condition.

Cognitive behavioral therapy is one of the psychological treatment methods for vitiligo. It guides patients to reflect and explore at the cognitive level, improving self-awareness and rethinking self-worth. It helps patients learn good constructive behaviors, eliminate negative psychology, and alleviate physical and mental anxiety [3]. Previous studies have found that Tian Jun et al. found a significant correlation between subjective disease severity and quality of life [2]. The assessment of patients' self-awareness can affect their social anxiety and quality of life levels. Professional psychologists will use cognitive-behavioral therapy to intervene in patients during face-to-face visits.

During the treatment process, language guidance, emotional comfort, and other methods are used to achieve therapeutic effects. As a traditional treatment method, it requires innovation in terms of treatment approach and cost to provide patients with more convenient and effective methods.

This article analyzes the psychological characteristics of vitiligo patients and proposes an interactive form based on digital training and treatment, aiming to innovate the psychological treatment methods for vitiligo patients. Cognitive behavioral therapy as a foundation can ensure the scientific and effective nature of treatment. It can expand the treatment scenarios of patients, innovate their treatment forms, and enhance the fun of the treatment process. System design analyzes existing cognitive habits, constructs and optimizes patients' self-awareness models, helping vitiligo patients establish correct cognition and develop new social behavior patterns.

2. Research Status and Foundation

2.1. Overview of Psychological Issues in Vitiligo Patients

Vitiligo is a common skin disease characterized by depigmentation. The onset time is mostly in adolescence or childhood. For adolescent patients with immature psychology, vitiligo has a more severe and persistent negative psychological impact [4]. Vitiligo can reduce the patient's motivation for daily activities, including social and leisure activities, work or study [5]. The social anxiety or avoidance caused by vitiligo can also affect the emotional connection between patients and the outside world, causing emotional distress and affecting the happiness index of life [5]. After research, it has been found that excessive tension in patients can cause hormonal imbalances, which in turn affect melanin synthesis and affect disease treatment [6]. Therefore, the negative psychological impact of vitiligo on patients should be given attention. Currently, some studies have shown that using psychological nursing interventions can improve negative emotions and increase confidence in healing [7]. Implementing health education can improve patients' disease awareness and treatment compliance [8]. Psychological nursing intervention is more effective and has higher application value than conventional nursing [6].

2.2. Analysis of Existing Treatment Methods

Ahmed et al.'s study identified increasing acceptance, enhancing self-esteem, managing awkwardness, and addressing social anxiety as key components of intervention measures [9]. Healthcare professionals believe that cognitive-behavioral therapy (CBT) is the main effective intervention measure [9]. This study provides basic information for the development of psychological intervention measures for vitiligo patients. CBT can serve as a basic therapy for psychological treatment of vitiligo patients. Shah et al.'s study suggests that vitiligo is associated with high levels of social anxiety, leading to depression and reduced quality of life [10]. This study also demonstrates that providing CBT based self-help interventions can effectively reduce social anxiety associated with vitiligo [10]. Therefore, this article will discuss CBT self-help intervention therapy that combines individual characteristics, exploring more tailored and effective psychological nursing interventions for vitiligo patients.

3. Analysis of Human-computer Interaction Design

The research of Revankar et al. shows that CBT intervention based on Internet can be applied to telemedicine [11]. Its flexibility makes CBT cost-effective and easy to use. Due to the chronic and recurrent process of curing vitiligo [12] and the limited number of doctors who have received CBT training [11], the acceptable social support and psychological treatment options for vitiligo patients are limited. The high difficulty of work during the intervention process reduces the treatment options for psychological intervention in vitiligo. The professionalism and cost of treatment are the main considerations for vitiligo patients. Therefore, the form of Internet CBT intervention can complete

the psychological intervention nursing of patients to a certain extent, providing patients with comprehensive quality training and psychological assessment.

4. Design of Social Training App

4.1. App Design Positioning and Information Architecture

The core function of this app is to help vitiligo patients establish correct cognition, build social confidence, and relieve psychological pressure. This intervention is based on a cognitive behavioral model of social anxiety, combining CBT technology presented in the form of situational interaction. It includes personalized functions such as cognitive education, social simulation, and psychological assessment. Meanwhile, the target audience for this app is vitiligo patients. Based on the previous research on this group of people, the collected psychological needs will be clustered and integrated into the functional design of the APP.

The main needs of vitiligo patients are to protect privacy, maintain dignity, and reduce the sense of shame during treatment. This design transforms one-on-one psychotherapy into a virtual situational experience. The interaction between patients and the app can alleviate psychological stress. Patients will receive feedback on their interactions in front of the screen. Encouragement mechanisms are added during the interaction process. When patients show positive and correct reactions, they will receive language encouragement and achievement rewards.

4.2. The Core Functions of Interactive Process Design

4.2.1. Design of human-computer interaction interface

After completing the first login, the user needs to fill in the patient's basic information, including specific information such as the time of illness, treatment time, etc. Afterwards, the SES (Self Esteem Scale) and SSRS (Social Support Rating Scale) can be filled out to obtain initial psychological assessment results [13, 14]. The system will display relevant social activities or educational resources for users based on their different characteristics and needs. After completing the above operations, users can operate on the core functions, namely cognitive training education and social motivation games.

In the main displayed pages, the design style tends to be neat and simple, making it easy for users to identify information. When users first experience the app, there will be beginner navigation to help them learn how to use it, ensuring that users can complete operations smoothly. The emotional IP images are designed to strengthen the emotional connection between the app and users. Images with affinity can enhance the attractiveness of interactive operations. In terms of interface design, the main functions of the APP, including "Training", "Reporting", and "Community", are distributed in the bottom toolbar. The operation process is clear and easy to understand. The specific usage process includes First use--Login interface--Information improvement--Selection of training items--Community communication--Training reports--Testing and evaluation.

4.2.2. Cognitive Education

Establishing correct cognition is the main purpose of psychological intervention for vitiligo patients. In traditional psychological nursing interventions, nursing staff use communication and listening to alleviate negative emotions in patients and improve their awareness of vitiligo [6]. This design summarizes the core points of cognitive training and integrates the interaction form with the APP. It innovates the model of "simulated scenario interactive response". Patients adapt and accept their symptoms through continuous training. New media dissemination methods such as tweets and videos provide patients with relevant knowledge dissemination. It helps to exercise the patient's social skills in daily life and enhance confidence.

4.2.3. Social Simulation

The main needs of vitiligo patients to cope with social anxiety are learning to manage awkwardness and overcoming psychological barriers. Normalizing special psychotherapy and combining it with real-life problems can help patients recover. Therefore, the app design should be combined with interactive life scenarios. It enables patients to undergo effective and authentic training. Based on the patient's own situation, it can set personalized situational experiences, guiding patients to interact with others in different scenarios through the APP. Some opportunities and scenes are created for them to practice expressing themselves and dealing with awkwardness. They gradually adapt to interacting with others in each game. In addition, the app will also record the patient's interaction and psychological state. The data is fed back to physicians for timely adjustment of treatment plans.

4.2.4. Testing and Evaluation

The APP will record patients' interaction operations. The psychological changes of patients were analyzed based on the key components of psychological intervention proposed by Ahmed et al, namely acceptance, self-esteem, management embarrassment, stress, social support, and social anxiety [9]. Professional and standardized quantitative standards are provided for users. After each training session, users can view the training progress and continuously monitor changes in their psychological state.

5. Results

The APP has three main functional modules, including daily training, testing and evaluation, and

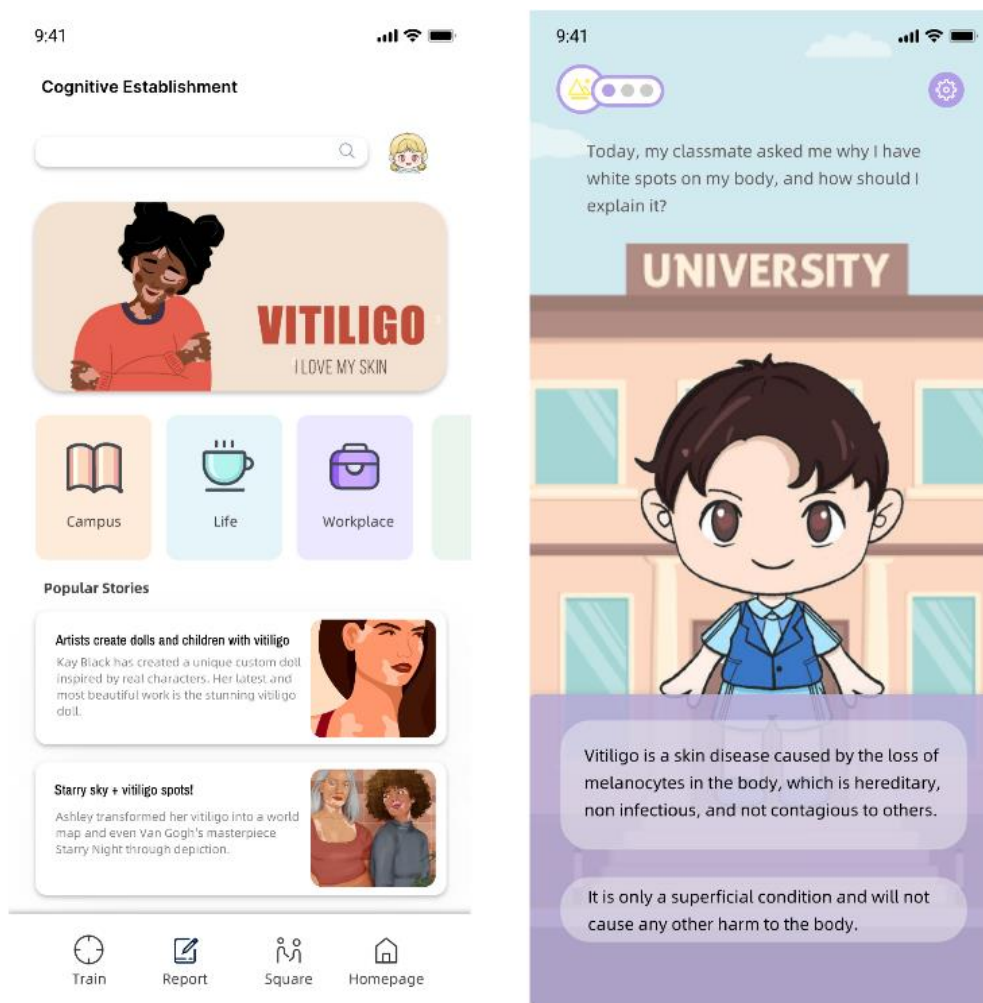


Figure 1. The interfaces of cognitive education and social simulation (Photo credited: Original)

community communication. Firstly, daily training includes establishment of correct cognition and social simulation. The educational methods of knowledge popularization and the digital presentation of social scenes are used to provide correct cognition and exercise social skills (see Figure 1). Secondly, testing and evaluation, combined with daily training data, are used to assess the patient's psychological state based on the Self Rating Anxiety Scale (see Figure 2). Furthermore, the communication community is used for pushing articles, posting inquiries, making friends, recording the condition, and sharing experiences.

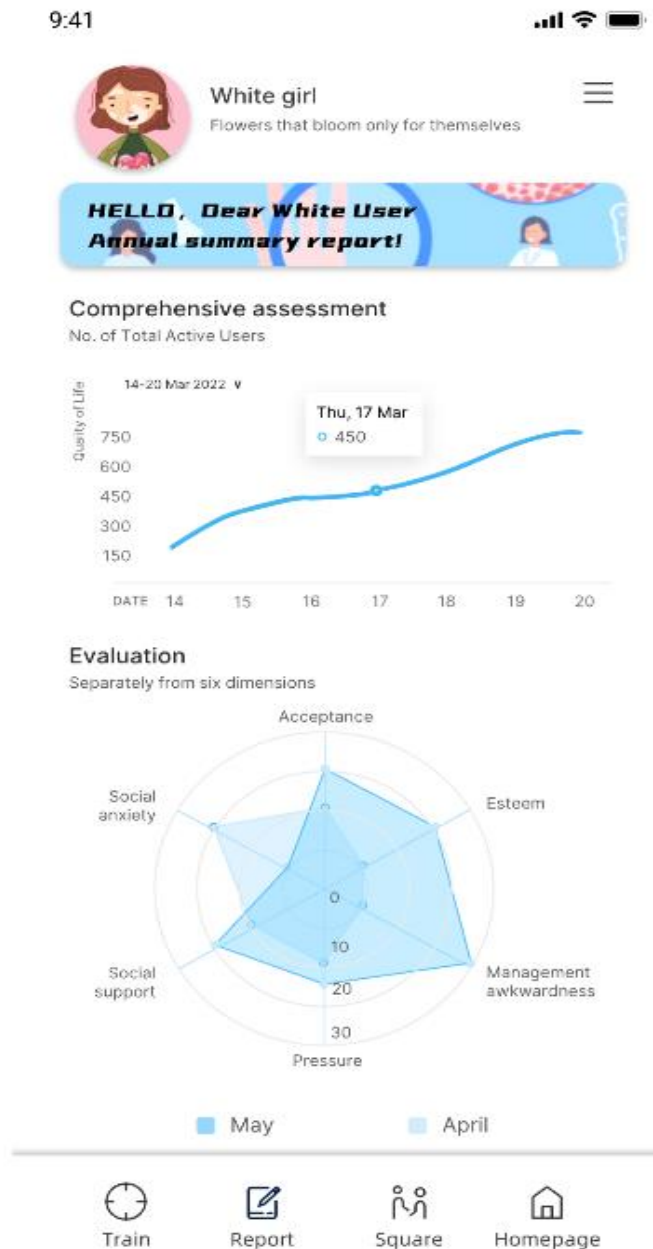


Figure 2. Interface for detection and evaluation (Photo credited: Original)

Based on this interactive approach, vitiligo patients can receive diverse treatments, effectively protecting their privacy and reducing their sense of shame and resistance. Repeated practice helps them transition from virtual scenes to real life. There are two main intervention methods, namely cognitive training education and social motivation games. Firstly, cognitive education helps patients enhance their understanding of diseases, change their views on diseases, and improve multidimensional cognition; Secondly, social motivation game, with features including setting social scenes according to personal needs and encouraging voice dialogue and interaction. It guides patients to make positive responses and exercises their social initiative

6. Conclusion

The article aims to propose innovative methods for treating psychological problems such as social anxiety in vitiligo populations. By analyzing the psychology of vitiligo patients and traditional psychotherapy methods, combined with human-computer interaction technology, CBT technology presented in virtual form is designed. It provides patients with diverse treatment methods and promotes the development of psychological therapy for vitiligo patients. However, research also has certain limitations. The characteristics of vitiligo patients are complex. Younger patients have lower language and social skills. They still need the assistance of other personnel to complete the task. In addition, the practice of CBT technology intervention in the form of the Internet is less. Further in-depth research is needed on its effectiveness and acceptance. The current research results have improved the intelligence level of vitiligo psychotherapy. The vitiligo user group needs to be sought to test the design interface, check the completeness of interaction logic, evaluate the trust and dependence of users on interaction methods. In future research, digital and intelligent forms of treatment can increase the fun of psychotherapy for vitiligo patients. The psychological feelings of vitiligo patients during the treatment process should be given attention. Standardized scale evaluation can intuitively reflect individual psychological development, helping patients adjust treatment plans in a timely manner.

References

- [1] Huilan Yang, Qingyong Yang, Zhongrong Liu. Vitiligo and psychological factors [J] Chinese Journal of Cosmetic Medicine, 15(3) (2006), 336-337.
- [2] Jun Tian, Zijian Cao, Ye Yang, etc. A preliminary clinical investigation on social anxiety and quality of life in patients with facial vitiligo [J] Chinese Journal of Cosmetic Medicine, 26(3) (2017), 31-34.
- [3] Xueling Zhang, Dongjun Mao, Ying Liu, etc. Evaluation of the psychological health level of vitiligo patients and the correlation between treatment and cellular immune function [J] Journal of Qiqihar Medical College, 31(14) (2010), 2220-2222.
- [4] Wu Zhu, Yunlian Yi. Analysis of self-esteem and related factors in vitiligo patients [J] International Journal of Dermatology, 34(5) (2008), 338-339.
- [5] A. H. Salama, L. Alnemr, A. R Khan, H. Alfakeer, Z. Aleem, & M. Ali-Alkhateeb. Unveiling the Unseen Struggles: A Comprehensive Review of Vitiligo's Psychological, Social, and Quality of Life Impacts. *Cureus*, 15(9) (2023), e45030.
- [6] Xiaohong Yang, Xue Bai. Analysis of the effects of psychological nursing intervention on vitiligo patients [J] Health Care Guidelines, 16 (2020), 98-99.
- [7] Lingling Li. The therapeutic effect of excimer laser therapy and systematic psychological nursing intervention in the care of vitiligo patients [J] Medical Information, 32(z2) (2019), 254-255.
- [8] Qian Zhong. Analysis of the application effect of health education combined with psychological care in vitiligo patients [J] Modern Health Preservation, 23(19) (2023), 1481-1483.
- [9] A. Ahmed, L. Steed, E. Burden-Teh, R. Shah, S. Sanyal, S. Tour, S. Dowey, M. Whitton, J.M. Batchelor, & A.P. Bewley. Identifying key components for a psychological intervention for people with vitiligo - a quantitative and qualitative study in the United Kingdom using web-based questionnaires of people with vitiligo and healthcare professionals. *Journal of the European Academy of Dermatology and Venereology: JEADV*, 32(12) (2018), 2275–2283.
- [10] R. Shah, J. Hunt, T. L. Webb, & A. R. Thompson. Starting to develop self-help for social anxiety associated with vitiligo: using clinical significance to measure the potential effectiveness of enhanced psychological self-help. *The British journal of dermatology*, 171(2) (2014), 332–337.
- [11] Rishab R. Revankar, Nikita R. Revankar, Esther A. Balogh, Heli A. Patel, Sebastian G. Kaplan, Steven R. Feldman. Cognitive behavior therapy as dermatological treatment: a narrative review. *International Journal of Women's Dermatology*, 8(4) (2022), p e068.
- [12] Xiujie Zhang, Aiping Wang, Tieying Shi, et al. The psychosocial adaptation of patients with skin disease: a scoping review. *BMC Public Health*, 19(2019), 1404.
- [13] Xiangdong Wang, Xilin Wang, Hong Ma. Handbook of Mental Health Assessment Scales. *Chinese Journal of Mental Health (Revised Edition)* (1999), 79-124.
- [14] Shuiyuan Xiao. Theoretical basis and research application of the Social Support Rating Scale [J]. *Journal of Clinical Psychiatry*, 4 (2) (1994), 98-100.