

Research on APP Design for Albinism Family Psychological Therapy Based on User Needs

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Abstract: Albinism is a rare genetic disorder caused by genetic mutations that result in impaired melanin synthesis, often accompanied by significant skin, hair, and eye pigment loss. Due to the unique appearance characteristics, individuals with albinism and their families often face prejudice, discrimination, and isolation from society, which not only affects their physical and mental health, but also causes long-term and profound psychological pressure on their family members. Research has shown that families with sick children generally suffer from psychological problems such as anxiety, depression, self blame, and feelings of isolation, and there is an urgent need for professional and systematic psychological support and intervention measures. However, current psychological healing resources for families with albinism are extremely limited, and related service platforms lack specificity, accessibility, and continuity, making it difficult to meet the actual needs of this special group. With the rapid development of mobile Internet and digital health technology, the application of APP in mental health intervention has gradually become an important trend. By relying on mobile applications, we can provide users with readily accessible, personalized, and privacy protected psychological therapy.

Keywords: Albinism; Psychological Therapy; User Demand; App Design

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1.Introduction

Albinism is a rare genetic disorder caused by genetic mutations that result in impaired melanin synthesis, often accompanied by significant skin, hair, and eye pigment loss^[1]. Due to the unique appearance characteristics, individuals with albinism and their families often face prejudice, discrimination, and isolation from society, which not only affects their physical and mental health, but also causes long-term and profound psychological pressure on their family members. Research has shown that families with sick children generally suffer from psychological problems such as anxiety, depression, self blame, and feelings of isolation, and there is an urgent need for professional and systematic psychological support and intervention measures. However, current psychological healing resources for families with albinism are extremely limited, and related service platforms lack specificity, accessibility, and continuity, making it difficult to meet the actual needs of this special group. With the rapid development of mobile Internet and digital health technology, the application of APP in mental health intervention has gradually become an important trend. By relying on mobile applications, we can provide users with readily accessible, personalized, and privacy protected psychological therapy.

2. Research on User Psychological Analysis

Stigma of Illness refers to a series of psychological and behavioral reactions, such as shame, inferiority, exclusion, and social isolation, caused by individuals or families being labeled negatively by social groups due to illness^[2]. Erving Goffman first systematically elucidated the social psychological mechanism of disease shame in his book “Stigma: Notes on Managing Impaired Identity”, pointing out that disease is not only an abnormality in physical condition, but also evolves into the “stigma” of individual identity in social cognition. In the field of rare diseases, the phenomenon of disease shame is particularly prominent, and patients and their family members often experience stronger social exclusion and psychological pressure due to differences in appearance, social misunderstandings, or lack of information.

2.1 Characteristics of psychological needs of albino families

In families with albinism, shame of illness exhibits unique and complex characteristics. Due to the obvious physical features of albinos, they often attract the attention, misunderstanding, and even discrimination of bystanders. Family members (especially parents and direct relatives) are prone to internalizing social biases, forming emotional experiences of self blame, shame, or avoidance. This sense of shame not only exacerbates the psychological burden within the family, but also weakens their enthusiasm for seeking social support and medical resources, further plunging them into a situation of isolation and helplessness.

From the perspective of psychological needs, families with albinism urgently need to break the negative cognitive cycle caused by shame and rebuild their sense of self-esteem and social identity. Effective psychological therapy interventions should focus on the deep needs of family members in emotional adjustment, social adaptation, and information cognition, helping them understand the scientific nature of the disease, resist external biases, and enhance their self acceptance and social communication abilities. Therefore, when designing a psychological therapy app for families with albinism, the influence mechanism of shame theory should be fully considered, and targeted functional modules such as emotional counseling, mindfulness training, peer assistance, and knowledge dissemination should be established to achieve comprehensive and progressive psychological support^[3].

2.2 Family System Theory

The Family Systems Theory was proposed by psychologist Murray Bowen, emphasizing that family members are a interconnected and interacting whole system^[4]. According to this theory, an individual's emotions and behaviors are not only a reflection of their personal traits, but also deeply influenced by the internal relationship structure, interaction patterns, and emotional communication methods within the family system. When a member of the family experiences a special problem, such as a major illness, the entire family system will be impacted and make corresponding adaptive or defensive responses.

In families with albinism, the rare disease characteristics of patients often become an important source of stress within the family system, affecting the emotional state, role division, and intimate relationships of family members. Research has shown that in the face of disease pressure, families are prone to the following typical response patterns: overprotection, avoidance of responsibility, emotional alienation, or escalation of conflicts. If these reactions cannot be effectively regulated, they will further deteriorate the family atmosphere, increase the psychological burden on family members, and form a vicious cycle.

From the perspective of needs analysis, albino families not only need support for individual psychological issues, but also need to promote emotional communication, role identification, and resource sharing among members from the perspective of the family as a whole. Effective psychological therapy interventions should be based on the theory of family systems, helping families establish a positive interaction mechanism, such as improving parenting education, strengthening family cohesion, and supporting emotional adjustment within the family. Therefore, in app design, it is necessary to introduce a family system perspective and set up functional modules such as family emotional exercises, parent-child communication guidance, and family task management to enhance the systematicity and overall effectiveness of the healing process, truly achieving comprehensive support for albino families.

2.3 Deduction of Core Needs for Psychological Healing

2.3.1 Security Requirements

In the process of psychological therapy for families with albinism, a sense of security is an important prerequisite for users to

actively participate in healing activities and continue using the platform. According to Maslow's hierarchy of needs theory, safety needs are located within basic psychological needs and encompass individuals' basic expectations for their privacy, dignity, and personal security. For individuals with albinism and their families, the social prejudice and shame caused by the characteristics of the disease make them more sensitive and defensive when seeking psychological support, particularly emphasizing the protection of personal information and the anonymity of the communication environment.

Anonymity, as an important manifestation of security requirements, is a key factor in reducing user psychological vigilance and promoting authentic expression. If users can ensure that their identity information is not leaked during open communication, self disclosure, or emotional release, it can significantly reduce shame and exposure anxiety, and enhance their willingness to participate in healing activities. At the same time, privacy protection is also an indispensable basic element in the design of psychological healing apps. It is necessary to ensure that users' personal information, communication records, psychological assessment data, and other information are encrypted and strictly protected to avoid the risk of leakage and safeguard users' trust in the platform.

Therefore, when designing a psychological therapy app for families with albinism, safety needs must be given top priority. Specific measures include providing anonymous registration and usage mechanisms, strengthening data encryption technology, setting up privacy protocol prompts, allowing users to independently control the scope of information disclosure, and establishing secure exit functions. By creating a safe, private, and controllable healing environment, we can effectively break down users' psychological defense barriers and promote their active and continuous participation in the healing process on the platform.

2.3.2 Attribution Requirements

Sense of belonging is an important support for individual mental health and is also the core content of Maslow's hierarchy of needs theory's social needs hierarchy^[5]. For individuals with albinism and their families, long-term exposure to social prejudice, isolation, and misunderstanding, as well as a lack of sense of belonging, can easily lead to negative psychological states such as loneliness, helplessness, and self denial. Therefore, rebuilding a sense of belonging and promoting recognition and support for patients and family members within the group are essential core needs in the process of psychological healing.

The establishment of patient communities is an important path to meet the need for belonging. By building an online community platform exclusively for albinos and their families, users can establish emotional connections, share experiences, support each other, and reduce the impact of isolation and shame. Patient communities not only provide users with a space for emotional release and empathetic communication, but also stimulate the motivation to actively respond to disease challenges and enhance psychological resilience through the role model effect and mutual assistance mechanism.

At the same time, family collaboration is also an important dimension in the need for belonging. As the most direct support system for patients, the quality of communication and collaboration among family members directly affects the effectiveness of treatment. APP design should encourage family members to participate in the healing process together, such as setting up functions such as family task check-in, emotional recording and mutual assistance, parent-child communication training, etc., to promote emotional connection and support network construction within the family, form a small "belonging system", and help patients and families grow and recover together.

Therefore, in the design of psychological healing apps, the need for belonging should be fully considered. By building a collaborative mechanism between patient communities and families, a warm and belonging digital environment should be created, allowing users to receive continuous companionship, understanding, and support psychologically, further enhancing the depth and effectiveness of healing.

2.3.3 Self actualization needs

Self actualization needs are located at the highest level of Maslow's hierarchy of needs theory, referring to the internal motivation of individuals to pursue personal potential and value realization after meeting basic survival, safety, and belonging needs. For individuals with albinism and their family members, gradually establishing self-identity and actively facing life challenges after experiencing initial emotional fluctuations and social adaptation becomes a deep-seated goal in the process

of psychological healing. Therefore, meeting self actualization needs is an important way to promote long-term psychological recovery and improve quality of life.

Psychological education, as an important means of achieving self growth, can help users deepen their understanding of albinism related knowledge, master psychological strategies for coping with stress and negative emotions, and enhance their self-awareness and emotional regulation abilities. Through systematic and hierarchical psychological education content, users can not only correct misunderstandings about diseases and reduce shame, but also gain cognitive growth, enhance psychological resilience and autonomous coping abilities.

Empowering tools are the key to helping users realize their self-worth at the practical level. By setting up functional modules such as emotion management exercises, mindfulness meditation guidance, self goal setting and tracking, and small achievement recording, the app can provide users with actionable psychological self-help paths, inspiring them to actively practice psychological adjustment skills in daily life and gradually achieve a transition from passive acceptance to active healing. The existence of empowerment tools not only meets the individual's need for autonomy in the process of psychological healing, but also promotes lasting and deep psychological growth.

Therefore, in the design of psychological therapy apps for families with albinism, full attention should be paid to self actualization needs. By building a systematic psychological education system and diversified empowerment tools, users can explore their potential, achieve psychological independence and positive living goals, and ultimately promote the transition from emotional healing to self growth.

2.4 Theoretical Model of Requirement Priority

In the design process of psychological therapy apps, facing multi-level and multi-dimensional user needs, determining the priority of needs reasonably is a key step to ensure the effectiveness of product functions and optimize user experience. Based on Maslow's hierarchy of needs theory and practical research results, this study divides the psychological healing needs of albino families into three levels: safety needs, belonging needs, and self actualization needs. Based on their importance and implementation order, a needs priority theory model is constructed.

Firstly, security requirements are at the most fundamental and prioritized level of satisfaction. For families with albinism, ensuring anonymity and privacy security is a prerequisite for users to dare to enter the platform, open their hearts, and participate in interactions. If there is a lack of sufficient guarantee for a sense of security, other levels of needs will be difficult to effectively expand. Therefore, APP design should first invest key resources and development efforts in information security protection, anonymous usage mechanisms, and privacy management functions.

Secondly, as a mid-level requirement, the need for belonging becomes a key factor affecting users' continued use of the app and the formation of emotional stickiness once they have gained a basic sense of security. By building patient communities and promoting family collaboration, the app can help users establish emotional connections and support networks, alleviate feelings of loneliness and isolation, and further enhance the platform's activity and user loyalty.

Finally, as a high-level developmental need, self actualization needs may not constitute a usage threshold in the early stages, but they are of great significance in the later stages of user psychological healing and personal growth. By continuously building a psychological education system and empowering tools, users can achieve cognitive enhancement, emotional regulation, and self-worth exploration, which can effectively prolong their life cycle and promote the depth and breadth of psychological rehabilitation.

In summary, based on the priority theory model of demand hierarchy, this study proposes that the order of demand implementation for albino family psychological therapy APP should follow the logical path of "safety guarantee → belonging establishment → self realization". By gradually meeting the psychological needs of different levels, the user experience can be effectively improved, and the systematicity and sustainability of psychological therapy can be enhanced, providing theoretical basis for subsequent functional design and service strategies.

3.Design Strategy for Psychological Healing APP

3.1 Inclusive Design

The principle of inclusive design is crucial when designing psychological therapy apps for families with albinism^[6]. Inclusive design emphasizes providing equal, accessible, and user-friendly experiences for all user groups under different physiological, psychological, and cognitive conditions. Considering that albino patients generally have a certain degree of visual impairment, such as low visual acuity, sensitivity to strong light, and abnormal color vision, APP design needs to be optimized in terms of visual adaptation, color usage, interface layout, etc., to ensure their convenience and comfort in use.

In terms of visual impairment adaptation, interface design should focus on clear information hierarchy, sufficient contrast between text and background, moderate and adjustable font size, avoiding the use of low contrast or high-frequency flickering elements, and reducing visual fatigue^[7]. In addition, strong light stimuli such as large areas of pure white background or high brightness color blocks should be minimized as much as possible to prevent visual discomfort. At the same time, the interface interaction process should be concise and intuitive, reducing complex operation steps, improving usability, and helping visually impaired users smoothly complete various functional operations.

In terms of color strategy, the overall visual tone of the app is recommended to be mainly orange yellow. The orange yellow color scheme not only has good visibility and recognition, which can adapt to the sensitivity of albinos to light, but also has a warm, positive, and healing emotional symbol, which helps to convey a caring and supportive psychological atmosphere. The application of orange yellow color in the interface should be paired with soft and neutral auxiliary colors to ensure overall visual comfort and coordination, avoiding colors that are too bright or fatigued. At the same time, the application of color in functional areas should be combined with color block partitioning, icon prompts, and text assistance to improve the readability and operational accuracy of the interface through multi-channel information prompts.

In summary, based on the principle of inclusive design, through visual barrier adaptation and reasonable color usage, not only can the user experience of albinism patients and their family members be improved, but also the brand concept of caring and inclusiveness of the APP can be conveyed, further enhancing users' psychological security and sense of belonging, laying the foundation for the effective development of subsequent psychological healing functions.

3.2 Lowering the threshold for use

Barrier free design is an important principle in the design of psychological therapy apps to increase users' willingness to engage and continue using them for the first time^[8]. Especially for people with albinism and their family groups, they already bear a lot of physical, psychological, and social pressure in their daily lives. If the APP operation process is cumbersome and complex, it can easily cause cognitive burden, reduce user experience, and even lead to user churn. Therefore, simplifying the operation process and reducing learning costs are the fundamental guarantees for ensuring the effective transmission of healing functions. In terms of simplifying the operation process, the APP should follow the Minimum Steps Principle, which means using concise and intuitive interactive design as much as possible to help users complete the required operations with the least number of clicks and thoughts. For example, for commonly used functions such as emotion recording, community communication, and psychological exercises, a one click direct entrance should be set up to reduce hierarchical jumps; When users first use it, necessary information can be presented in stages through a guided interface (Onboarding) to avoid information overload.

In addition, the interface layout should follow the principles of consistency and predictability, maintaining clear logic and stable positioning of functional modules, allowing users to form operational habits in a short period of time, and reducing learning difficulty. When entering content, try to minimize the burden of free input and use simple interactive methods such as multiple-choice, slider, and icon clicking to improve filling efficiency and operational comfort. In order to further reduce the threshold for use, the APP should also support personalized and simplified settings, such as intelligently recommending commonly used functions based on user usage frequency, or providing custom shortcut entrances on the interface to help users with different needs optimize their operation paths according to personal habits, truly achieving a "user centered" convenient experience.

In summary, by simplifying the operation process and optimizing the interface interaction, the psychological therapy APP can not only meet the actual usage needs of the albino family user group, but also effectively improve the overall user experience, reduce psychological and cognitive burden, and thus assist in the smooth achievement of psychological therapy goals.

3.3 Emotional Design

Emotional design emphasizes that products should not only meet functional needs, but also actively connect with users on an emotional level, evoking joy, trust, and a sense of belonging^[9]. For albino family psychological therapy apps, a good emotional experience is an important factor in enhancing user stickiness and promoting the smooth progress of psychological therapy. Therefore, in the design process, Norman's three-level theory should be systematically introduced, starting from the instinctive level, behavioral level, and reflective level, to construct a comprehensive emotional design system. At the intuitive level, design should immediately evoke a sense of pleasure and security in users through sensory elements such as visual and auditory senses. For example, the interface color is mainly warm orange yellow, with soft auxiliary tones to create a warm and inclusive visual atmosphere; The interface animation and prompt sound effects should be gentle and soothing, avoiding abruptness and stimulation, and enhancing the overall sensory experience's friendliness.

At the behavioral level, design should focus on the user's operational experience and functional feedback during use. The interface interaction should be intuitive and smooth, with timely and accurate feedback, allowing users to feel a sense of control and achievement during use. For example, after completing an emotional recording, providing positive psychological feedback in a timely manner through warm animated feedback or small reward prompts can enhance the user's motivation to continue using. At the Reflective Level, design should inspire users to deeply identify with and emotionally resonate with the meaning of the product. Through elements such as emotional stories, user case sharing, and achievement medal systems, guide users to continuously perceive their own growth and changes during use, and establish emotional identification with the APP brand concept. At the same time, personalized ritual experiences can be set up, such as important date reminders (rehabilitation anniversaries, emotional improvement days), to help users generate positive self-identity and a sense of value during the review process.

In summary, through the emotional design strategy based on Norman's three-level theory, the psychological therapy app can establish a sustained and warm relationship with albino family users in three dimensions: sensory experience, behavioral interaction, and deep emotional connection, injecting positive emotional motivation into the psychological therapy process and enhancing overall healing effectiveness and user loyalty.

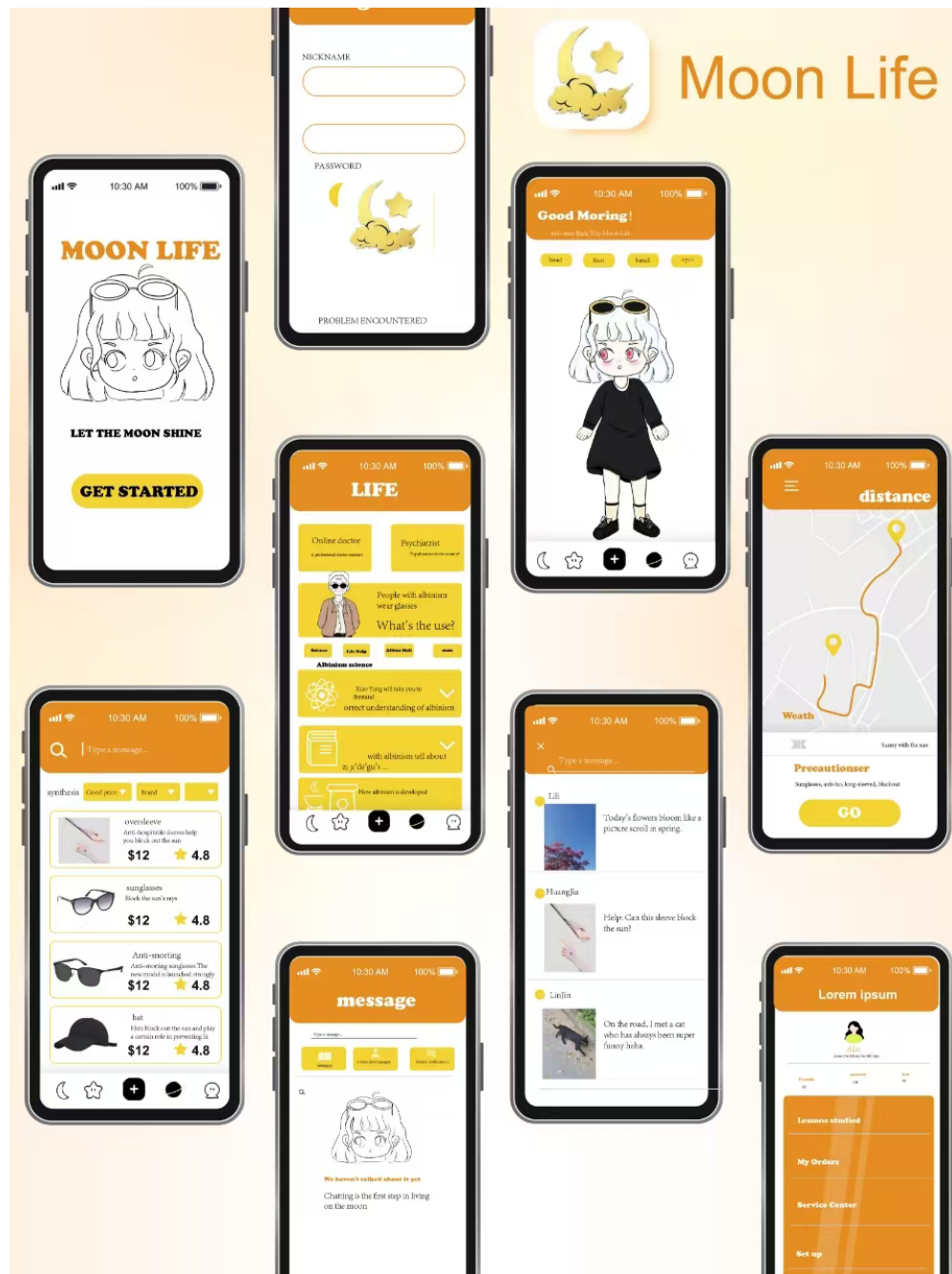
3.4 APP Design Practice

Based on the design strategies proposed in sections 3.1 to 3.3, the APP design practice for family psychotherapy for albinism combines inclusive design, low threshold interaction, and emotional design principles to construct a functional system centered on user needs. The interface adopts a high contrast layout and adjustable fonts to avoid strong light elements. The main color tone is orange yellow to meet the visual sensitivity needs of albino patients, supplemented by neutral and soft colors to ensure visual comfort. The functional modules are implemented around the core user requirements in a layered manner: ensuring security needs through anonymous registration, data encryption, and privacy protocols; Building patient community forums and family collaboration tools (such as shared task check-in and parent-child communication training) to meet the needs of belonging; Provide a structured psychological education resource library (disease knowledge, emotion regulation courses) and self empowerment tools (goal tracking, mindfulness meditation) to support self actualization needs. The specific design scheme is shown in Figure 1.

4. Conclusion

Based on the integration of user needs and design strategies, this psychological therapy app has built a multidimensional support platform with safety, belonging, and self realization as its core through inclusive visual design (high contrast interface, orange yellow tone adaptation for visual sensitivity), low threshold interaction process (simplified operation, preset input methods), and layered functional modules (anonymous security mechanism, patient community and family collaboration tools, psychological education resource library, and self empowerment tools). It combines emotional design elements (warm color tones, achievement feedback, personalized milestones) to enhance user participation and comprehensively respond to the multi-level needs of albino families in psychological rehabilitation, ensuring an effective balance between functional practicality and emotional connection.

Figure 1: APP Design for Families with Leukemia



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Conflict of Interests

The author(s) declare(s) that there is no conflict of interest regarding the publication of this paper.

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