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Application of a Multidisciplinary Collaborative Standardized Management Process for Children's Burn Injuries Throughout Their Lifelong Mental Health

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Abstract

To investigate the effectiveness of a multidisciplinary, standardized, full-lifecycle mental health management process for pediatric burn and scald injuries, a total of 86 pediatric burn patients admitted to the Burn Department of a tertiary hospital in a prefecture-level city, Sichuan Province in China, between January 2025 and November 2025 were enrolled. Participants were divided into a control group (n=43) and an intervention group (n=43) based on admission sequence. The control group received conventional psychological interventions, while the intervention group received multidisciplinary collaborative, full-lifecycle mental health intervention nursing for pediatric burn injuries. The effects of both nursing interventions on children's post-traumatic stress disorder (PTSD), anxiety, depression, and parental satisfaction were compared. Results showed that before pre-intervention, there was no significant difference existed between groups in PTSD-RI scores, SCARED and CDI scores ($P > 0.05$). After post-intervention, the intervention group exhibited significantly lower PTSD-R, SCARED and CDI scores than the control group ($P < 0.05$). Meanwhile, post-intervention parental satisfaction scores were significantly higher in the intervention group ($P < 0.05$). In conclusion, the multidisciplinary collaborative, full-lifecycle mental health management process for pediatric burns could effectively reduce post-traumatic stress, anxiety, and depression levels through phased, differentiated interventions while enhancing parental satisfaction. This provides a comprehensive, multidimensional, and highly collaborative practice model for pediatric trauma psychological intervention, warranting clinical implementation in the future.

Keywords: multidisciplinary collaborative management, psychological care for pediatric burn injuries, full-lifecycle mental health care, childhood post-traumatic stress disorder, patient satisfaction

1. Introduction

Pediatric burns and scalds represent accidental injuries caused by thermal energy, chemicals, electricity, radiation, or other agents affecting children's skin, subcutaneous tissues, and mucous membranes. Among these, scalds from hot liquids, flame burns, and contact burns are the most prevalent (Cordero et al., 2024; Olawoye et al., 2024; Ruan et al., 2021). Relevant studies (Jordan et al., 2022; Nassar et al., 2023) indicate that pediatric burns rank fifth among the most prevalent non-fatal childhood injuries globally, resulting in approximately 96,000 to 190,000 child deaths annually. In China, the annual incidence rate of childhood scald injuries is approximately 12.7%, making it one of the primary causes of accidental disability among children (Shi et al., 2016). Following scald injuries, most affected children develop facial disfigurement or localized deformities. Severe cases may also result in physiological dysfunction, impairing growth and development while inducing significant psychological stress.

Post-traumatic stress disorder (PTSD) refers to a delayed-onset, persistent psychological disorder that develops after an individual experiences, witnesses, or is exposed to an unusually threatening or catastrophic traumatic event (Meneses et al., 2021). Children are highly susceptible to developing PTSD following burn injurie, whose vulnerability stems primarily from the sudden, uncontrollable, and life-threatening nature of such accidents, which inflict intense and persistent pain. Post-healing scars and resulting functional impairments further exacerbate psychological trauma (Stoddard et al., 2006). Besides, children's brains are still developing and lack the capacity for rational thinking and emotional regulation. This directly leads to the forced fixation and recurrent flashbacks of fearful and painful memories associated with the burn injury, ultimately resulting in post-burn PTSD (Campbell, 2022). Research (Saxe et al., 2005) indicates that approximately 31% of burned children experience acute stress disorder (ASD). Among burned children who develop PTSD, 40% exhibit symptoms within one-month post-injury, while 10%-20% of children develop ASD, PTSD, anxiety, depression, or post-traumatic stress syndrome within six months of the burn injury. Adolescents with childhood trauma experiences are more prone to emotional and behavioral problems than their non-traumatized peers, potentially leading to autistic tendencies or even personality disorders in later developmental stages (Huang & Su, 2021). However, psychological intervention for burn-injured children remains underemphasized in China. Few hospitals conduct psychological assessments or implement proactive interventions for inpatients, and post-discharge psychological follow-up and intervention are even rarer. Therefore, this study applies a multidisciplinary, full-lifecycle psychological health management process for pediatric burn patients to psychological interventions within our department to observe its specific application outcomes.

1.1 General Information

This study is a prospective cohort study. The research subjects were pediatric burn patients admitted to the Burn Department of a tertiary-level hospital in a prefecture-level city in Sichuan Province between January 2025 and November 2025. Inclusion Criteria: (1) Patients meeting burn-related diagnostic criteria (Yoshino et al., 2016) and confirmed through clinical examination and auxiliary tests; (2) Age ≤ 14 years; (3) Completion of baseline assessments

using the Child Assessment of Post-Traumatic Stress Disorder (CAPS-CA), Screening Checklist for Anxiety and Related Emotional Disorders in Children (SCARED), and the Children's Depression Rating Scale (DSRSC) within 48 hours of admission (for infants under 3 years old, primarily based on caregiver reports or behavioral observations), indicating varying degrees of anxiety, depression, or post-traumatic stress reactions (any scale score exceeding the cutoff); (4) The child is hospitalized for burn/scald injury treatment with an anticipated or actual hospitalization duration ≥7 days; (5) The child's legal guardian (parent or primary caregiver) voluntarily signs the research informed consent form, agreeing to participate in multidisciplinary collaborative intervention and full-course follow-up. Exclusion Criteria: (1) The child has a documented history of mental health disorders such as intellectual developmental disorders, schizophrenia, depression, or post-traumatic stress disorder (PTSD); (2) The child has concomitant severe traumatic brain injury, spinal cord injury, or other injuries likely to cause permanent neurological dysfunction; (3) The child is unable to cooperate with psychological assessment and intervention due to factors such as intellectual disability or severe visual/auditory impairment; (4) Patients with a history of burns or severe trauma; (5) Patients who experienced major traumatic events within 3 months prior to enrollment (e.g., parental divorce, death of a loved one, diagnosis of a serious illness) that may interfere with burn-related psychological assessments; (6) Patients who are unlikely to complete 3 months or more of follow-up due to family relocation, financial constraints, or anticipated transfer to another hospital for continued treatment; (7) Children concurrently participating in other psychological or pharmacological clinical trials that may influence the results of this study. The 86 children meeting the inclusion and exclusion criteria were then equally divided into a control group (n=43) and an intervention group (n=43) based on admission sequence. The control group had a mean age of (6.34±2.65) years (range: 1–12 years), comprising 22 males (51.16%) and 21 females (48.84%). Age distribution was as follows: 9 cases (20.93%) aged 1–3 years, 14 cases (32.55%) aged 4–6 years, 10 cases (23.26%) aged 7–9 years, and 10 cases (23.26%) aged 10–12 years. The mean total body surface area (TBSA) burned was (20.78 ± 9.45) %. Among these, 21 cases (48.84%) had minor burns (<10% TBSA), moderate burns (10%-29% TBSA) in 16 cases (37.21%), and severe burns (≥30% TBSA) in 6 cases (13.95%). Burn depth was predominantly second-degree (32 cases, 74.42%), with third-degree burns in 11 cases (25.58%). Injury causes primarily included scalding from hot liquids (25 cases, 58.14%), flame burns (11 cases, 25.58%), steam or hot gas burns (5 cases, 11.63%), and others (e.g., electrical injuries, 7 cases, 4.65%). The observation group had a mean age of (7.03 ± 3.21) years (range: 1–12 years), comprising 18 males (41.86%) and 25 females (58.14%); Age distribution: 1–3 years: 8 cases (18.60%); 4–6 years: 12 cases (27.91%); 7–9 years: 12 cases (27.91%); 10–12 years: 11 cases (25.58%). The mean total body surface area (TBSA) burned was (21.24 ± 8.75) %. Among these: moderate burns (10%-29% TBSA) in 18 cases (41.86%), and severe burns (≥30% TBSA) in 5 cases (11.63%). Burn depth was predominantly second-degree (30 cases, 69.77%), with third-degree burns in 13 cases (30.23%). Injury causes primarily included scalding from hot liquids (24 cases, 55.81%), flame burns (9 cases, 20.93%), steam or hot gas burns (6 cases, 13.95%), and other causes (e.g., electrical injuries, 4 cases, 9.30%). All pediatric patients completed at least 3 months of follow-up.

2. Methodology

2.1 Traditional Psychological Interventions Implemented in the Control Group

(1) Psychological intervention during the admission adjustment period:

Initial psychological assessments were completed within 24 hours of admission, focusing on evaluating levels of fear, anxiety, separation resistance, and emotional reactions. Actively establish trust with patients and families by introducing the ward environment, nursing staff, and treatment procedures using gentle, concise language to reduce stress from unfamiliar surroundings. Encourage continuous bedside family presence and permit patients to bring familiar comfort items to rapidly build hospital security.

(2) Age-Specific Psychological Interventions:

1 Infants and toddlers (1-3 years): Centered on stabilizing emotions and alleviating separation anxiety. Implement assigned nursing care to minimize stimulation from staff changes. Provide gentle touch and soothing words before nursing procedures; allow family members to hold the child's hand during procedures to alleviate fear and crying through physical contact. 2 Preschoolers (4-6 years): Employ concrete interventions like play therapy and storytelling therapy. Use dolls and picture books to simulate treatment processes, explaining wound care objectives with personified language to avoid negative connotations. Provide advance notice before procedures to reduce psychological impact from unexpected interventions. 3 School-age children (7–12 years): Prioritize protecting self-esteem and alleviating concerns about appearance and physical changes. Ensure privacy during care and respect the child's subjective feelings. Encourage open expression of negative emotions like pain and fear. Provide objective explanations of the condition and prognosis to reduce unnecessary worries. Support communication with the outside world to alleviate loneliness and academic anxiety.

(3) Pain-Psychological Synergy Intervention During Treatment Procedures:

Integrate pain management with psychological support. Administer analgesia as prescribed before invasive procedures like dressing changes or wound care. Distract children through animations, nursery rhymes, or interactive games, and guide them in simple deep-breathing relaxation techniques. Perform procedures gently and swiftly while offering continuous positive reinforcement. Provide immediate reassurance afterward to reinforce cooperative behavior and mitigate traumatic psychological experiences.

(4) Psychological Guidance During Rehabilitation:

Address issues like wound healing, scar formation, and limb function limitations through positive reinforcement. Help children accept bodily changes and build confidence in recovery. Encourage active participation in basic self-care to enhance autonomy. Provide individualized counseling for children exhibiting low self-esteem, withdrawal, or irritability to prevent negative emotions from becoming entrenched.

(5) Continuity of Psychological Intervention During Discharge Preparation:

Conduct pre-discharge counseling to explain home care essentials, follow-up procedures, and

rehabilitation expectations to patients and families, alleviating post-discharge anxiety. Teach families home-based psychological comfort techniques, emphasizing the critical role of family support in the child's psychological recovery to ensure a smooth transition from inpatient psychological care to home-based care.

(6) Psychological Optimization of the Ward Environment:

Create a soft, comfortable, and low-stimulus ward environment by minimizing visual stimuli from sharp instruments and medical equipment. Avoid discussing sensitive topics like medical conditions, scars, or surgeries at the child's bedside. Play soothing music or children's programs based on the child's preferences to enhance the psychological experience of hospitalization.

2.2 Implementation of Multidisciplinary Collaborative Lifecycle Mental Health Intervention Nursing for Pediatric Burn Injuries in the Intervention Group

2.2.1 Establish a Specialized Psychological Management Team

Team members include psychotherapists, burn unit charge nurses, psychiatric nurses, burn unit attending physicians, pediatric trauma specialists, pediatric nutritionists, and medical personnel from relevant disciplines involved in diagnosis and treatment. This reinforces the collaborative healthcare management model for psychological care and the multidisciplinary team (MDT) treatment approach. Following team deliberation, psychological management interventions are categorized into acute phase, recovery phase, and transition phase. The ward-assigned nurse primarily manages wound care and PTSD reaction index assessments upon admission. Meanwhile, the psychotherapy physician from the psychosomatic department conducts initial screenings, in-hospital consultations, interventions, and treatment for high-risk patients. The burn unit's specialized psychiatric nurse performs regular follow-ups and screening assessments one week, one month, and three months post-discharge. Pediatric trauma specialists primarily conduct psychological interventions for children with extensive burns and scalds and their families.

2.2.2 Acute Phase Psychological Intervention

1 Standardized Psychological Assessment: Complete baseline psychological assessment within 24 hours of admission. Assessment tools include the Pediatric Posttraumatic Stress Disorder Reaction Index (PTSD-RI), the Screening Questionnaire for Anxiety in Children (SCARED), and the Children's Depression Inventory (CDI). Key evaluation areas include the child's fear of pain and wounds, separation anxiety symptoms (e.g., refusal to be separated from parents, nighttime awakenings), history of prior trauma (e.g., previous accidents), and family support system (e.g., emotional stability of primary caregivers). Assessment results must be documented in detail within the electronic medical record and categorized into low, moderate, or high-risk levels based on scoring. 2 High-Risk Patient Screening and Early Warning: Within 30 minutes of assessment completion, patients with moderate-to-high risk (PTSD-RI $\geq$ 25 points or SCARED/CDI scores exceeding critical thresholds) are flagged as “psychologically high-risk patients.” Simultaneously, an alert is sent to the Burn Department attending physician and the Psychosomatic Department's psychotherapist, accompanied by

brief clinical observations (e.g., persistent crying, refusal of wound dressing changes, sleep disturbances). This triggers a multidisciplinary consultation process. 3 Crisis Psychological Intervention: Within 24 hours of receiving the alert, the psychotherapist from the Psychosomatic Medicine Department conducts a bedside consultation. They employ play therapy techniques—such as sand-play therapy—to guide the child in expressing fears, and utilize art therapy to externalize traumatic experiences, thereby alleviating acute stress reactions. Simultaneously, they explain to family members the potential causes of the child's emotional and behavioral responses, such as the pain amplification effect and environmental unfamiliarity. Teach foundational soothing techniques: designate one consistent caregiver to reduce separation anxiety, permit familiar comfort objects like toys or blankets, and respond to the child's needs with brief, affirmative language. The short-term goal is to reduce the child's fear of the medical environment and establish an initial doctor-patient trust relationship. 4 Wound Management and Pain Control Synergy: During daily wound care, the assigned nurse adjusts pain management strategies based on psychological assessment results: For anxious children, prioritize non-pharmacological pain relief methods such as playing preferred music or using storytelling to distract attention, thereby reducing fear memories exacerbated by pain. Before dressing changes, use simple language to pre-explain steps: “First we'll apply the medicine, then gently wrap it with gauze. It might feel a little cool.” This prevents resistance triggered by uncertainty.

2.2.3 Recovery Phase Mental Health Interventions

(1) Tiered Psychological Intervention:

Psychotherapists implement differentiated interventions based on risk assessment results. For moderate-risk patients (PTSD-RI score 25-35): receive weekly individual cognitive behavioral therapy (CBT) to foster positive expectations through cognitive restructuring of traumatic events. For high-risk patients (PTSD-RI >35 points or extensive burns), collaborate with child trauma specialists to incorporate eye movement desensitization and reprocessing (EMDR) therapy or parent-child synchronized therapy (guiding parents to participate in the child's emotional regulation process), thereby deepening intervention intensity.

(2) Family System Intervention:

Child psychological trauma specialists conduct family trauma coping workshops for relatives of children with extensive burns/scalds, totaling 2-3 sessions. Content covers three areas: First, identifying signs of caregiver emotional exhaustion (e.g., excessive self-blame, avoiding discussions about the condition) and alleviating caregiving stress through mindful breathing exercises; Second, learning nonjudgmental listening techniques—e.g., replacing “Stop crying, be strong” with “I see you're feeling very sad today. Would you like to talk about it?” Third, establishing family support networks by connecting with peer support groups for similar conditions to reduce isolation. Following the workshop, families sign a Family Psychological Support Commitment Letter outlining parental responsibilities during follow-up care.

(3) Nutrition and Psychological Synergistic Support:

Pediatric nutritionists conduct weekly nutritional assessments, designing therapeutic meals based on taste preferences—e.g., using molds to shape food into cartoon figures to enhance visual appeal and eating interest; For patients with eating disorders caused by scar-related anxiety, offer small, frequent meals. Collaborate with psychotherapists for body image reconstruction counseling—e.g., drawing "future self" portraits—emphasizing that scars do not diminish health or worth.

(4) Peer Support Activities:

Burn unit psychiatric nurses organize 1-2 monthly "Little Warriors Sharing Sessions" and "Art Therapy Workshops." The former invites recovered burn/scald patients (with parental consent) to interact with current patients, reducing loneliness through peer experiences. The latter uses painting and crafts—such as modeling clay to create "Brave Me"—enabling emotional expression through creation. Artwork can be taken home as a "recovery memento," boosting self-worth.

(5) Pre-discharge Preparation:

Three days prior to discharge, the primary nurse and psychiatric nurse collaborate with the family to develop a Post-Discharge Psychological Support Plan. This plan specifies follow-up appointments (1 week, 1 month, and 3 months post-discharge), emergency contacts, and key family observation points such as nightmare frequency and social avoidance behaviors. Concurrently, the Child Burn Injury Psychological Rehabilitation Handbook is distributed. It includes a symptom recognition checklist and links to relaxation training audio files, ensuring families acquire foundational psychological care skills.

2.2.4 Transitional Period Psychological Care Intervention

(1) Standardized Follow-up Assessment:

Burn unit psychological specialty nurses conduct follow-ups as scheduled at 1 week, 1 month, and 3 months post-discharge. At 1 week: Primarily telephone follow-up (15 minutes), focusing on family adaptation (e.g., child's reluctance to go out, family members' emotional state). At 1 month and 3 months: In-person outpatient visits (30 minutes) + retesting of scales. Tools include PTSD-RI, SCARED, CDI, and the Child Behavior Checklist (SDQ). Baseline data are compared to assess intervention effectiveness, while monitoring secondary psychological impacts from wound healing. (2) Tiered Intervention Adjustment:

Psychiatric psychotherapists dynamically modify protocols based on follow-up results. For effective groups showing ≥20% score reduction, maintain family support protocols with bi-monthly telephone follow-ups. For ineffective groups with stable or increased scores, initiate secondary consultations to evaluate whether to add pharmacological intervention or extend individual therapy duration.

(3) Community Resource Linkage:

Within 1 month post-discharge, specialized psychiatric nurses connect families residing in

remote areas with local child mental health service providers, offering remote consultation channels such as video therapy. They also recommend joining online support communities for burn-injured children to facilitate peer interaction and ongoing social support.

2.3 Observation Indicators

2.3.1 Pediatric Posttraumatic Stress Disorder

The Pediatric Posttraumatic Stress Disorder Reaction Index (PTSD-RI) (Li et al., 2023) was used to assess PTSD in both groups before intervention and 3 months post-intervention. This widely used tool for assessing PTSD in children and adolescents has a Cronbach's α of 0.88–0.92, which comprises 20 items scored on a Likert scale, yielding a total score ranging from 0 to 80 points, which positively correlates with the severity of PTSD symptoms.

2.3.2 Child Psychological Status

Using the Screening Children's Anxiety Rating Scale (SCARED) (Jacob et al., 2023) and the Children's Depression Inventory (CDI) (Ivarsson et al., 2006) to assess the psychological status of both groups of children before intervention and 3 months after intervention. For children under 7 years old, the questionnaires were completed by their parents. The SCARED scale was developed by Birnhammer in 1997 revised in 1999 to 41 items with a Cronbach's α of 0.89, which employs a 0–2 point rating scale, yielding total scores ranging from 0 to 82, where higher scores indicate more severe anxiety symptoms. The CDI scale, developed by Kocacs in 1981, is a classic self-report tool for assessing depressive symptoms in children and adolescents. It has a Cronbach's α of 0.87 and employs a three-level rating scale (0–2 points), yielding a total score range of 0–54 points. A total score ≥19 indicates high risk for depression in the child.

2.3.3 Parental Satisfaction

A department-developed satisfaction assessment tool was used to survey parents of children in both groups. The satisfaction scale scored out of 100 points, with higher scores indicating greater parental satisfaction.

2.4 Statistical Methods

Data were analyzed using SPSS 26.0 statistical software. Quantitative data—including age, total burn area, PTSD-RI score, SCARED score, CDI score, and satisfaction score—were expressed as mean ± standard deviation ($\bar{x} \pm s$) for normally distributed variables. Intergroup comparisons employed independent t-tests. For variables not meeting normality assumptions, data were expressed as median (interquartile range) [M (P25, P75)], and intergroup comparisons were performed using the Mann-Whitney U test. Categorical data: Gender, burn depth, and cause of injury were expressed as counts (percentages) [n (%)]. Intergroup comparisons were performed using the chi-square test or Fisher's exact test (when theoretical frequency < 5). The significance level was set at $\alpha = 0.05$, $P < 0.05$ was considered statistically significant.

3. Results

Comparison of Children's Post-Traumatic Stress Disorder Reaction Index (PTSD-RI) scores between the two groups before intervention and 3 months after intervention showed no significant difference in PTSD-RI scores before intervention ($P > 0.05$). After intervention, the PTSD-RI scores of the intervention group were significantly lower than those of the control group ($P < 0.05$), as shown in Table 1.

Table 1. Comparison of PTSD-RI Scores Between Groups Before Intervention and 3 Months After Intervention ($\bar{x} \pm s$): Points

Group	Number of Cases	PTSD-RI Score Before Intervention	PTSD-RI Score 3 Months After Intervention
Control group	43	46.78±2.76	32.78±2.83
Intervention group	43	46.03±3.08	26.76±2.49
t		1.189	10.472
P		0.238	0.000

Comparison of SCARED and CDI Scores Between Groups Before and 3 Months After Intervention Before intervention, there was no significant difference in SCARED and CDI scores between the two groups ($P > 0.05$). After the intervention, the SCARED and CDI scores of the intervention group were significantly lower than those of the control group ($P < 0.05$), as shown in Table 2.

Table 2. Comparison of SCARED and CDI Scores Between Groups Before Intervention and 3 Months After Intervention ($\bar{x} \pm s$): Points

Group	Number of Cases	SCARE Score		CDI Score	
		Pre-intervention	3 months post-intervention	Pre-intervention	3 months post-intervention
Control group	43	46.89±3.26	34.75±3.48	28.67±2.74	19.87±2.09
Intervention group	43	45.27±3.57	29.54±2.64	29.04±3.24	17.55±2.32
t		2.197	7.821	0.572	4.872
P		0.031	0.000	0.569	0.000

Comparison of satisfaction scores between the two groups of parents after intervention showed that the satisfaction scores of parents in the intervention group were significantly higher than those in the control group ($P < 0.05$), as shown in Table 3.

Table 3. Comparison of Satisfaction Scores Among Parents of Children in Two Groups After Intervention ($\bar{x} \pm s$): Points

Group	Number of Cases	Parental Satisfaction Score for Pediatric Patients
Control group	43	82.78±4.26
Intervention group	43	90.67±3.15
t		9.765
P		0.000

4. Discussion

This study established a standardized lifelong mental health management process for pediatric burn injuries based on multidisciplinary collaboration. Through a three-month intervention cycle integrating psychotherapists, burn unit medical staff, psychiatric nurses, and pediatric trauma specialists across acute, recovery, and transitional phases, it systematically improved children's post-traumatic stress reactions, anxiety/depression symptoms, and family support efficacy, yielding effective outcomes.

4.1 The Multidisciplinary Collaborative Model for Full-lifecycle Management Overcomes Limitations of Traditional Single-discipline Approaches, Effectively Improving Burn Patients' PTSD Symptoms

Pediatric PTSD often presents with insidious onset, complex symptoms, and developmental stage-specific influences, limiting the efficacy of conventional single-discipline interventions (Zilberstein, 2022). In contrast, a standardized, multidisciplinary, full-lifecycle mental health management model—by integrating multidimensional resources and addressing needs across all developmental stages—provides a more systematic and precise solution for improving pediatric PTSD (Dillon-Naftolin et al., 2017). This study demonstrates that implementing multidisciplinary, standardized lifelong mental health management could effectively improve pediatric PTSD. This efficacy stems primarily from integrating interventions delivered by psychotherapists, burn unit charge nurses, psychiatric nurses, burn unit attending physicians, pediatric trauma specialists, pediatric nutritionists, and medical personnel from all disciplines involved in diagnosis and treatment. This approach achieved a closed-loop management system spanning the entire process: from acute-phase screening and assessment, emotional stabilization interventions, and psychological counseling during recovery, to cognitive behavioral training, long-term follow-up, and relapse prevention. This effectively addressed the shortcomings of traditional fragmented interventions. Standardized protocols ensure uniform assessment criteria, precise intervention plans, and a comprehensive follow-up system, significantly enhancing intervention adherence and treatment consistency. Multidisciplinary collaboration simultaneously addresses neurophysiological regulation, emotional-cognitive restructuring, and family support system development, helping patients gradually repair traumatic memories, rebuild security, and improve stress responses and social adaptation. Consequently, this model fundamentally alleviates children's post-traumatic stress symptoms and reduces long-term relapse risks, demonstrating significant clinical value in improving their mental health outcomes and quality of life.

4.2 The Multidisciplinary Collaborative Model for Full-lifecycle Mental Health Management Aligns with the Psychological Development Patterns of Pediatric Burn Patients, Effectively Alleviating Their Anxiety and Depressive Symptoms

Psychological stress in pediatric burn victims exhibits phased evolution: the acute phase is characterized by acute fear, pain stress, separation anxiety, and sleep disturbances (Woolard et al., 2021); the recovery phase centers on negative cognitive fixation, body image disturbance, and family emotional exhaustion (Snider et al., 2021); while the transitional phase is prone to social avoidance, long-term trauma re-experiencing, and maladaptive behaviors (Zeitlin,

1997). Traditional single-care models suffer from limitations such as unsystematic assessment, fragmented interventions, and discontinuous follow-up, making it difficult to fundamentally improve children's negative emotional states. A standardized, lifecycle-based mental health management system grounded in multidisciplinary collaboration—with nursing interventions as its core implementation vehicle—integrates multidimensional resources including pediatric clinical care, psychotherapy, rehabilitation nursing, family support, and community follow-up. This establishes a standardized, continuous, and individualized emotional care system, providing scientific assurance for alleviating anxiety and depression symptoms in pediatric burn patients. This management model relies on standardized assessment protocols to achieve early identification, dynamic monitoring, and tiered interventions for children's emotional states. This ensures nursing measures are precisely tailored to the child's age characteristics and emotional needs. Furthermore, through multidisciplinary coordination mechanisms, nursing staff can collaborate with specialized teams to implement comprehensive interventions such as play therapy, cognitive nursing, relaxation training, and family psychological support. This effectively addresses the limitations of single-nursing approaches in emotional guidance, behavioral correction, and family empowerment. Furthermore, continuous care spanning the entire life cycle extends across hospital interventions, home care, and long-term follow-up. This approach persistently strengthens children's emotional regulation abilities, optimizes the home-care environment, and mitigates the adverse effects of negative life events on emotions. Consequently, it comprehensively alleviates anxiety and depression levels from physiological, psychological, and social dimensions. In summary, this model significantly enhances the systematicity and effectiveness of pediatric emotional care by standardizing nursing processes, integrating multidisciplinary resources, and extending the care continuum. It provides a reliable nursing practice foundation for improving children's mental health status and promoting physical and psychological recovery.

4.3 The Lifecycle Mental Health Management Model with Multidisciplinary Collaboration Could Effectively Enhance Satisfaction Among Parents of Burn-Injured Children

Parental satisfaction serves as a crucial indicator for evaluating nursing service quality and management effectiveness, influenced by multiple factors including the convenience of medical processes, continuity of care services, efficacy of professional support, and level of humanistic care. In post-traumatic psychological stress care for children, parents often face significant challenges such as high caregiving pressure, insufficient information access, pronounced psychological anxiety, and fragmented medical experiences (Leung et al., 2022; Williamson et al., 2019). Traditional, singular care models struggle to comprehensively address these diverse needs, often resulting in low satisfaction. However, a multidisciplinary, standardized, lifecycle-based mental health management approach—centered on nursing as the core link—optimizes the care experience through a standardized, systematic, and continuous care system. This system enhances satisfaction by improving service processes, professional support, humanistic care, and family empowerment. Besides, this model relies on standardized management processes to unify assessment criteria, intervention protocols, and communication pathways, reducing redundant medical procedures and information

asymmetry to provide parents with clear, efficient, and predictable care services. Through multidisciplinary team collaboration, it integrates clinical nursing, psychological intervention, health education, rehabilitation guidance, and follow-up management to deliver one-stop services for both the child's physical and mental care and parental psychological support, effectively alleviating the burden of medical travel and feelings of helplessness in caregiving. Additionally, continuous care spanning the entire life cycle covers in-hospital interventions, home guidance, and long-term follow-ups. Nursing staff consistently provide personalized psychological counseling and emotional support to parents, tangibly reducing their caregiving burden and psychological stress while enhancing their trust in and sense of fulfillment from the care services. In general, this management model comprehensively optimizes the medical and caregiving experience for parents by enhancing the standardization, professionalism, and continuity of nursing services, while strengthening humanistic care and family support. It serves as an effective nursing management strategy for improving parental satisfaction and provides practical support for the high-quality development of pediatric mental health nursing services.

5. Summary and Outlook

This study established a multidisciplinary collaborative psychological health management process for pediatric burn injuries throughout the entire life cycle. Through phased, differentiated interventions, it effectively reduced post-traumatic stress, anxiety, and depression levels in pediatric patients while enhancing parental satisfaction. This provides a comprehensive, multidimensional, and highly collaborative practical model for psychological trauma intervention in children. However, this study has the following limitations: First, the small sample size may introduce selection bias. Future research should expand the sample size and conduct multicenter randomized controlled trials to validate generalizability. Second, long-term effects require further validation: The intervention period was 3 months, lacking follow-up on children's psychological status 6 months or more post-injury, such as school reintegration adaptation and adult self-esteem levels. Extended follow-up periods are needed to validate its effects in future research. Third, the absence of a cost-benefit analysis: the establishment of multidisciplinary teams and follow-up visits increased healthcare resource consumption. Further evaluation of the input-output ratio is needed to provide evidence for policy implementation. Moving forward, we will expand the scope of validation to promote the standardization and widespread adoption of this model, thereby advancing comprehensive rehabilitation for pediatric burn injuries under the bio-psycho-social medical paradigm.

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