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ORIGINAL RESEARCH

Journey Mapping for Symptom Management in Adolescents with Depression: A Longitudinal Qualitative Study of Dynamic Patient-Centered Pathways

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Purpose: This longitudinal qualitative study aimed to explore the dynamic symptom management journeys of adolescents with depression, integrate Symptom Management Theory (SMT) with journey mapping, and identify stage-specific characteristics, emotional experiences, and unmet needs across the illness trajectory to inform targeted interventions.

Methods: A longitudinal qualitative design with reflexive thematic analysis (RTA) was adopted. Twelve adolescents with depression (aged 12–18 years) were recruited from a tertiary psychiatric hospital in Zhejiang Province, China. Data were collected through semi-structured interviews at three time points: baseline, 1-month, and 3-month follow-ups, supplemented by observation notes and self-management diaries. Journey mapping was used to visualize dynamic interactions across four phases (symptom recognition, help-seeking, treatment engagement, and daily management), with longitudinal integration of data to track temporal changes.

Results: The symptom management journey was non-linear, characterized by distinct emotional and behavioral patterns across phases: numbness and self-loathing during symptom recognition (eg, self-harm as emotional outlet, somatization like headaches); fear and shame in help-seeking (eg, passive medical-seeking due to family coercion, reliance on online support); oscillating hope and skepticism during treatment (eg, selective adherence to preferred therapies like hypnotherapy over Modified Electroconvulsive Therapy) and fluctuating recovery confidence in daily management (eg, re-engaging with interests such as painting or running, forming peer support networks). Key barriers included familial misunderstanding, academic stigma, and inadequate relapse prevention tools, while facilitators involved personalized coping strategies and incremental family adaptation.

Conclusion: This study captures the dynamic, contextually embedded nature of symptom management in adolescent depression through longitudinal journey mapping, revealing critical tensions between individual agency and multi-level contextual influences (family, school, healthcare). The findings contribute in-depth qualitative insights into stage-specific needs, supporting the development of patient-centered, phase-adapted interventions.

Keywords: adolescent depression, symptom management, journey mapping, qualitative research, longitudinal study, patient-centered pathway

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Introduction

Adolescent depression has emerged as a global public health crisis, with its escalating prevalence intertwined with complex sociocultural contexts, posing dual threats to individual development and societal stability. According to the World Health Organization (WHO), approximately 14.3% of adolescents worldwide suffer from mental disorders, with depression dominating as the fourth leading cause of disability in this population.[1] In China, recent national reports indicate heightened severity: 14.8% of surveyed adolescents exhibit varying degrees of depressive risk,[2] while students account for 50% of depression cases.[3] This disorder not only disrupts academic performance, fractures family relationships, and degrades social functioning but is also significantly associated with long-term suicide risks, with approximately 38.2% of adolescents with depression reporting suicidal ideation.[4–6]

Current research predominantly focuses on biological mechanisms (eg, neuroimaging, inflammatory-immune pathways) and standardized diagnostic protocols, yet overlooks patients' dynamic lived experiences and contextual barriers in symptom management.[7–9] Symptom management theory (SMT, which emphasizes the dynamic interaction between individuals, their symptoms, and the environment in the process of coping with illness, provides a critical framework here. It highlights that effective symptom management is not merely a matter of medical intervention but involves a complex interplay of behavioral adjustments, emotional regulation, and contextual adaptation. This includes how individuals perceive and interpret their symptoms, the strategies they adopt to alleviate distress, and the influence of social and cultural factors on these processes.[10] Quantitative approaches, while effective for measuring severity, fail to capture how critical life events (eg, academic failure, family conflict) and cultural factors (such as Confucian academic pressures) trigger emotional transitions,[11,12] or how temperamental vulnerabilities interact with environmental stressors.[13] In addition, the biomedical paradigm often leads to low treatment adherence and relapse due to neglected patient heterogeneity.[14,15] For instance, adolescents frequently delay treatment due to stigma[16] or adopt maladaptive coping strategies (eg, self-harm or internet addiction to alleviate distress),[17,18] while fragmented healthcare resources and culturally shaped family dynamics (eg, parental misconceptions) further disrupt continuity.[19–21] Such challenges align with the core tenets of symptom management theory, which posits that without accounting for the multifaceted nature of symptom experience and management, interventions are likely to be ineffective in addressing the real-world complexities faced by adolescents with depression.[22,23]

To address these problems, the study innovatively integrates symptom management theory with journey mapping. Originating from service design, journey mapping visualizes timelines, critical events, and emotional curves to dynamically depict patients' interactions with their illness, families, and healthcare systems.[24,25] While used in chronic disease management,[26–29] its application to mental health, particularly for capturing nonlinear symptom evolution and culturally embedded barriers (eg, academic stigma) in adolescents, remains nascent. The study constructs a "journey map" of symptom management in adolescents with depression and systematically analyzes key behaviors, emotional experiences, unmet needs, and external interaction patterns across four phases: symptom recognition, help-seeking, treatment engagement, and daily management. By incorporating symptom management theory, which offers insights into the psychological and social dimensions of symptom handling, journey mapping can be enhanced to better capture the nuanced processes through which adolescents manage their depressive symptoms across different stages.[30] By revealing stage-specific characteristics and evolving challenges in symptom management, this research aims to inform the development and personalized adjustment of interventions.

Methods

Design

This longitudinal qualitative study employed reflexive thematic analysis (RTA)[31] to explore adolescents' lived experiences of depression symptom management, adhering to the Reflexive Thematic Analysis Reporting Guidelines (RTARG).[32] RTA is grounded in a constructivist epistemology, emphasizing co-construction of meaning between researchers and participants to identify patterned experiences within symptom management journeys. Journey mapping served as a visual narrative tool to capture non-linear decision trajectories and critical turning points, enhancing multidimensional contextual richness.

The study was theoretically framed by the Symptom Management Theory (SMT), which posits dynamic interactions between three core dimensions—symptom experience, management strategies, and contextual influences—over time. This framework guided the exploration of how adolescents navigate their depression symptom management processes, informing the identification of key phases and thematic elements in their journeys.[33]

Setting

The study was conducted in the outpatient and inpatient departments of a tertiary grade-A psychiatric specialty hospital in Zhejiang Province, China. The research period spanned from August 2024 to February 2025, encompassing seasonal transitions from summer vacation through autumn-winter seasons to winter vacation. This temporal scope aimed to assess potential seasonal variations and vacation-related impacts on patients' emotional fluctuations.

Participants

A combined purposeful sampling and maximum variation sampling strategy was employed.

Inclusion criteria: (1) Aged 12–18 years; (2) Meeting the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) diagnostic criteria for depression,[34] with confirmation by two board-certified psychiatrists holding attending physician or higher qualifications.

Exclusion criteria: Individuals with severe physical comorbidities or concurrent diagnoses of bipolar disorder, schizophrenia, or other severe psychiatric disorders.

Maximum variation sampling was conducted by controlling for key contextual factors: Family support structure (intact/single-parent/grandparent-headed households); Illness duration stages (initial diagnosis phase <6 months/ongoing Phase 6–24 months/chronic phase >24 months); Educational engagement status (actively enrolled/temporary leave/extended withdrawal); Try to keep the proportion of urban and rural populations balanced among the participants.

Sample size was determined by information power, ceasing recruitment when data sufficiently addressed research questions with diminishing new insights.[35]

The present study ultimately enrolled 12 adolescents diagnosed with depression. The demographic and clinical characteristics of the participants are summarized in Table 1.

Data Collection

Semi-Structured Interview Guide Development

The semi-structured interview guide was iteratively developed in three phases:

a) Literature synthesis and team brainstorming; b) Pilot interviews (n = 2 patients) refining age-appropriate language; c) Expert consultation (3 clinicians + 2 psychologists) optimizing thematic coverage. The specific development process and content of the finalized semi-structured interview guide are detailed in Appendix A.

Data Collection Process

The initial interviews were conducted in private consultation rooms (outpatient clinics) or dedicated treatment rooms (inpatient wards), ensuring acoustic privacy and confidentiality. Prior to each session, researchers thoroughly explained the study objectives to participants and their family members, emphasizing confidentiality protocols and the voluntary nature of participation. Written informed consent was obtained from all participants and their legal guardians after full disclosure of the audio-recording procedure and robust data protection measures.

Each participant underwent the face-to-face initial interview with a licensed psychiatrist present. Researchers employed active listening techniques—including progressive questioning, clarification requests, behavioral shaping interventions, and dynamic feedback loops—to facilitate the authentic expression of thoughts and emotions. Non-verbal cues (eg, facial micro-expressions, gestural patterns) were systematically documented to enhance data richness.

All research outputs were anonymized to protect participant identities. Immediate psychological intervention was administered by qualified staff when emotional distress occurred during interviews, with subsequent session termination if necessary. Participants retained unconditional withdrawal rights throughout the study duration. Stringent ethical safeguards and emotional safety protocols were implemented throughout:

Table 1 Demographic and Clinical Characteristics of the Study Participants

Patient ID	Sex	Age	Residence	Birth Order	School Enrollment Status	Duration of Illness	Main Symptom	Primary Caregiver	Parental Marital Status
N1	Female	13 years 4 months	Rural	Second-born	Grade 7	>2 years	Persistent low mood; sudden crying spells; hypoactivity; anhedonia; multiple razor wrist cuts	Parents	Married
N2	Female	13 years 8 months	Urban	Second-born	Grade 8	>1 year	Depressed mood; impaired classroom concentration; insomnia; transient hallucinations; superficial knife wrist cuts	Parents	Married
N3	Female	12 years 1 month	Rural	Second-born	Grade 7	<6 months	Persistent low mood; insomnia; self-inflicted hand cuts (knife/mirror fragments)	Parents	Married
N4	Female	14 years 10 months	Urban	Only child	Grade 9	>2 years	Anhedonia; depressed mood with anxiety; recurrent forearm/thigh lacerations; negative self-appraisal	Parents	Separated
N5	Male	13 years 11 months	Rural	Second-born	Grade 8	>2 years	Persistent depressive symptoms; severe insomnia; self-harm wounds (hands/neck); pill ingestion; low self-esteem	Grandparents	Married
N6	Female	15 years 8 months	Urban	Only child	Grade 10	>1 years	Depressed mood; impaired learning attention; self-harm (cutting, pinching); low self-esteem; fatigue	Parents	Married
N7	Female	14 years 3 months	Rural	Only child	Grade 8 (frequent absences)	10 months	Depressed mood; reduced activity; decreased appetite/weight loss; self-harm (hair-pulling, wrist/thigh cutting); negative speech	Grandparents	Divorced
N8	Male	17 years 1 month	Urban	Only child	Grade 11 (suspended)	3 years	Persistent sadness; anxiety/tension; hallucinations; impaired concentration/memory; self-harm (cutting, head-banging)	Parents	Separated
N9	Female	18 years	Urban	Eldest-born	Grade 12	>4 years	Depressed mood; reduced activity; somatic complaints (headache, stomachache, chest tightness, palpitations); negative thoughts; helplessness	Parents	Married
N10	Male	16 years 5 months	Rural	Only child	Vocational high school	>1 year	Persistent depressed mood; poor sleep quality; loss of interest/pleasure; self-harm (wall-banging)	Maternal Grandparents	Divorced
N11	Female	15 years 4 months	Urban	Eldest-born	Grade 9 (frequent absences)	>3 years	Loss of interest/pleasure; impaired concentration/memory; sleep disturbances; negative thoughts; drug ingestion; self-harm (cutting); binge eating/weight gain	Parents	Married
N12	Male	12 years 7 months	Urban	Only child	Grade 7	<6 months	Impaired concentration; irritability; loss of interest/pleasure; somatic complaints (headache, stomachache, nausea)	Parents	Married

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a. Anonymization: All research outputs were rigorously anonymized to protect participant identities. This included the specific anonymization of highly sensitive content (eg, details of self-harm) during the transcription process.
b. Psychological Support & Participant Autonomy: Qualified staff provided immediate psychological intervention if emotional distress arose during interviews, with session termination if necessary. Participants retained the unconditional right to withdraw at any point without penalty.
c. Crisis Management Protocol: A specific protocol was in place to manage interview-triggered crises (eg, emergent self-harm ideation or severe emotional distress). All research staff involved in interviewing were trained in psychological first aid and crisis de-escalation techniques. This training explicitly covered adaptations for remote settings.

1. Immediate On-site Support (In-person): For in-person interviews: Support included ensuring participant safety within the physical environment, implementing calming strategies (eg, grounding exercises), and conducting a brief risk assessment. The interviewing psychiatrist was always present and authorized to initiate emergency psychiatric protocols if imminent risk was identified.
2. Immediate Remote Support (Online Interviews): For interviews conducted remotely via video consultation: i) Safety Confirmation: The interviewer immediately asked the participant to confirm their current location and the presence of any immediate hazards. They inquired if a trusted adult (eg, parent, guardian) was physically present or nearby. If no responsible adult was immediately available and risk was assessed as high, the interviewer requested the participant's explicit permission to contact a pre-identified emergency contact listed in their consent form. ii) Calming Strategies & Risk Assessment: Calming strategies (eg, guided breathing, grounding techniques) were verbally guided by the interviewer. Risk assessment was conducted through focused questioning and observation of verbal/non-verbal cues (within the limits of the video platform). iii) Psychiatrist Involvement: The interviewing psychiatrist was available on standby via a dedicated secure communication channel (eg, encrypted messaging within the platform or separate secure line) during all remote interviews. The interviewer could instantly alert the psychiatrist if significant risk emerged. The psychiatrist could then join the call (if feasible and consented to) or provide immediate remote guidance to the interviewer and participant. iv) Local Emergency Activation: If imminent risk requiring physical intervention was identified and a trusted adult was not immediately available on-site, the interviewer, with the participant's consent (or if consent could not be obtained due to incapacity, based on ethical override for imminent danger), activated local emergency services (eg, 110, 120 in China) using the participant's disclosed location. The research team maintained a database of national and local mental health crisis hotlines/resources to provide to the participant immediately.
3. Referral Pathways: Clear referral pathways to the hospital's emergency psychiatric services were established and readily activated for participants physically located near the study site or able to travel there safely. For remote participants, the protocol included providing immediate contact information for local psychiatric emergency services, crisis hotlines (eg, national or regional suicide prevention lifelines), and facilitating warm handoffs where possible.
4. Post-Crisis Debriefing: Post-crisis, a mandatory debriefing procedure was followed, involving the research team and relevant clinical staff to review the incident, provide support to the participant (including arranging immediate local follow-up care for remote participants), and document the event and actions taken.

d. Trauma-Informed Approach: Research staff involved in data collection, handling, and analysis received specialized training in trauma-informed practices. This training equipped them to recognize signs of distress, respond appropriately, and employ sensitive communication strategies, thereby minimizing the risk of re-traumatization for participants and ensuring the ethical management of sensitive data throughout the research process.

The semi-structured follow-up interviews were conducted at 1-month and 3-month intervals post-initial assessment. While in-person interviews were the primary modality, remote video consultations were permitted for participants in geographically remote locations or when logistical constraints (eg, transportation difficulties, health status) precluded in-person attendance. Interview duration was typically maintained within 40–60 minutes, with flexibility granted based on the participant's clinical presentation and needs.

Data Analysis

Interviews were transcribed verbatim by the interviewers within 24 hours post-interview. Two researchers independently cross-checked the consistency between audio recordings and transcripts (discrepancy rate <2%) and embedded non-verbal annotations (eg, pauses, tone shifts) into the transcripts to ensure timeliness, accuracy, and completeness of primary data processing. Thematic analysis of the data was rigorously conducted following Braun & Clarke's six-phase Reflexive Thematic Analysis framework, with interpretation guided by the Symptom Management Theory to examine interactions between symptom experience, management strategies, and contextual influences across participants' journeys.[32]

Data Familiarization

We initiated the analysis by thoroughly immersing ourselves in the interview transcripts through repeated reading. Alongside this immersion, we actively engaged in reflexive memoing to document our initial thoughts, observations, and potential researcher biases that arose during this deep engagement with the data (eg, noting the reflexive memo: "As clinicians, we may overpathologize academic stress"). This phase was crucial for developing an intimate understanding of the dataset and fostering initial analytical insights.

Initial Coding

Semantic, open coding was systematically performed on the entire dataset using NVivo 15 software to identify and label meaningful features relevant to the research questions. While initial coding involved individual work, the process of finalizing codes was collaborative. Instead of independent double-blind coding, we employed consensus-based team coding meetings. In these structured discussions, the research team collectively reviewed, compared, and refined the initial codes, resolving discrepancies through dialogue to ensure a shared understanding and robust foundation for theme development.

Theme Development

Coded data were then analytically clustered based on conceptual similarities and patterns to form coherent candidate themes. Crucially, this phase incorporated longitudinal integration. We specifically examined and compared data from multiple timepoints for each individual participant to identify patterns, shifts, or consistencies in their experiences and perspectives over time, enriching the thematic structure with a temporal dimension.

Theme Review

Candidate themes underwent rigorous scrutiny. This involved checking theme-data coherence by critically reviewing the themes against the entire dataset and relevant coded extracts to ensure they accurately represented the data and formed a meaningful pattern. Additionally, journey mapping visualizations (Figure 1) were developed to depict individual participant experiences across timepoints. These visualizations served as a powerful validation tool, allowing the team to assess whether the identified themes effectively captured the nuances and trajectories evident in participants' narratives.

Theme Naming

Once the themes were refined and validated, we focused on defining their essence and scope. Thematic labels were crafted to be concise yet evocative. Using metaphorical labels was a deliberate choice to capture the core meaning and lived experience encapsulated within each theme in a vivid and resonant manner.

Reporting

The final phase involved preparing the analysis for dissemination. To enhance the trustworthiness and interpretive credibility of the findings, member reflections were actively sought. Specifically, all participants were invited to provide feedback on the preliminary thematic framework and its interpretive plausibility. Their valuable insights were carefully considered, leading to the revision of some thematic wording and descriptions to better reflect participants' experiences and enhance the resonance and accuracy of the final analysis presented in the report.

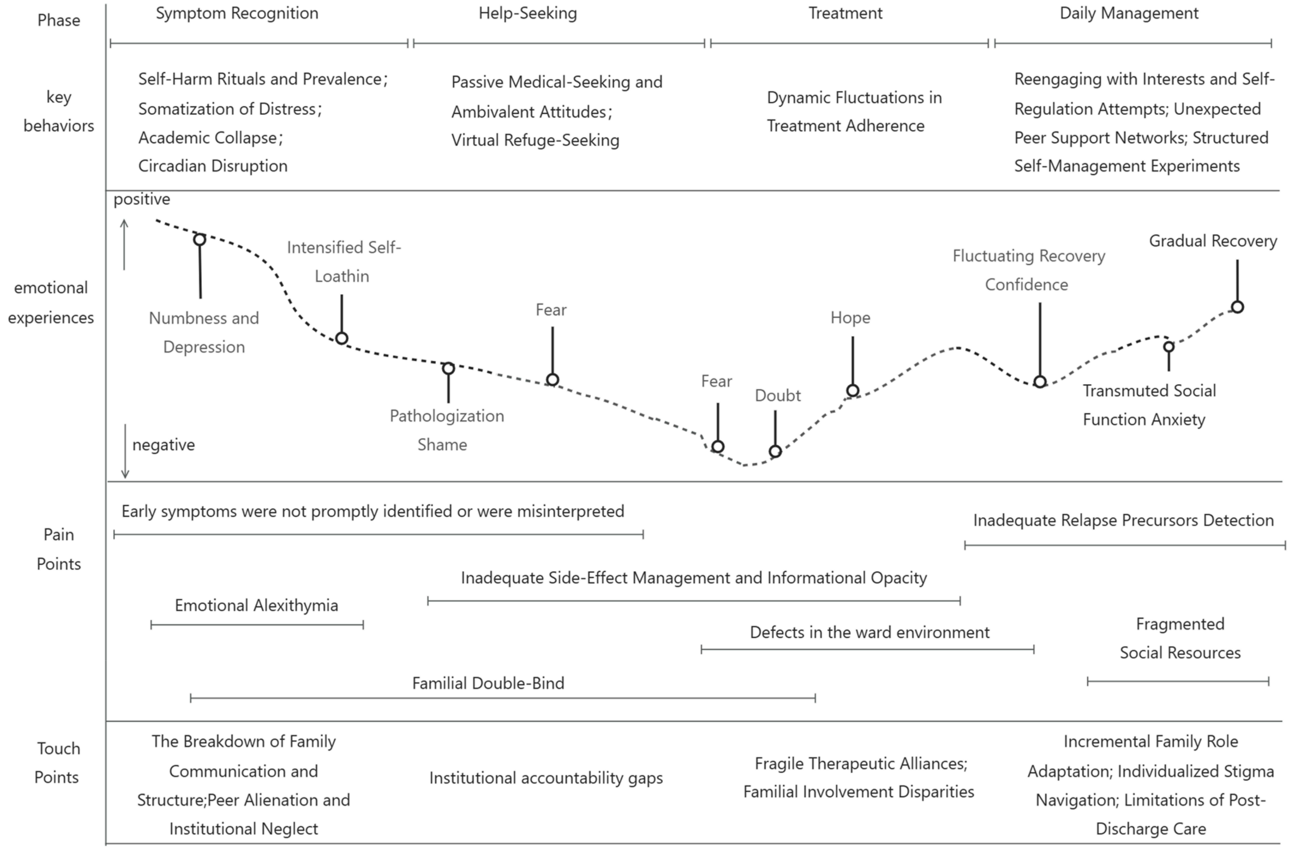

Figure 1 Journey map of symptom management for adolescents with depression.
Notes: The Y-axis represents emotional experience, where higher positions indicate more positive states and lower positions indicate more negative states.

Rigor

The research team comprised frontline clinical psychiatric nurses with experience in psychiatric care (n = 2), Master's-level psychologists with clinical backgrounds (n = 2), and psychiatric specialist physicians (n = 2). All members had a minimum of 10 years of experience in adolescent mental health services and had received systematic training in qualitative research. None had established prior clinician–patient relationships with participants or their families before the interviews. To mitigate potential biases, the research protocol incorporated the following measures:

Potential Biases

Researchers documented potential biases in the research log (eg, "As mental health practitioners, researchers may hold preconceived assumptions about symptom management").

To mitigate clinicians' potential tendency to over-pathologize normal behaviors (ie, interpreting non-pathological phenomena as clinically significant), this bias was actively balanced through maintaining reflexivity memos documenting subjective judgments and facilitating structured team debates to challenge preconceptions.

To address researchers' possible oversight of somatic symptoms due to disciplinary background limitations, systematic corrections were implemented by inviting input from a consulting physician who specifically reviewed data for physical health indicators.

Rigor Practices

Peer Debriefing

Weekly research position reflection meetings were held to record how researcher roles and positioning might influence data collection. Rigor was enhanced through biweekly critical discussions with experts in Reflexive Thematic Analysis methodology, focusing on examining coding frameworks, interpretive consistency, and potential researcher assumptions.

Data Diversity

Methodological triangulation was ensured by systematically cross-examining points of convergence and divergence across three distinct data sources—transcribed interviews, clinical observation notes, and patient self-report diaries—to identify thematic patterns and contradictory evidence.

Ethics Considerations

This study was approved by the Ethics Review Committee of Hangzhou Seventh People's Hospital (Approval No.: Research [2024] Ethics Review No. 060) and adhered to the ethical principles of the Declaration of Helsinki. All participants, including minors and their legal guardians, were fully informed of the research objectives, procedures, and the necessity of textual/audio recordings before interviews. Written informed consent was obtained from both adult participants and legal guardians of minors, with explicit emphasis on voluntary participation and confidentiality.

All interview data were anonymized using alphanumeric codes (eg, N1-N12), with sensitive information accessible exclusively to the core research team. Data were encrypted using AES-256 standard during storage and transmitted via secure VPN channels. A predefined protocol ensures physical destruction of storage devices and digital shredding of files upon study completion.

Results

A total of 12 participants (coded as N1–N12; identifiers are anonymized alphanumeric codes to protect identities) were included in this study. Initial interviews were conducted with 10 participants in inpatient wards, while two participants (N9 and N12) were recruited from outpatient clinics. At 1-month post-discharge, interviews with N2–N6 were conducted face-to-face during outpatient follow-up visits, whereas the remaining participants completed interviews online via WeChat (a widely used social networking application in mainland China) video calls. At 3-month post-discharge, all follow-up interviews were administered online through WeChat video calls. The final dataset comprised semi-structured interview transcripts (401,702 words), observation notes (9006 words), and patient self-management diaries (3508 words).

We employed Braun & Clarke's six-phase Reflexive Thematic Analysis framework (see the Methods section) to analyze materials. Guided by the Symptom Management Theory—which emphasizes dynamic interactions between symptom experience, management strategies, and contextual influences over time—adolescents' symptom management journeys were organized into four phases: (1) Symptom Recognition, (2) Help-Seeking, (3) Treatment, and (4) Daily Management. Emotional experiences shifted across phases: from numbness and self-loathing during Symptom Recognition, through fear and shame in Help-Seeking, to oscillating hope and skepticism during Treatment, and fluctuating recovery confidence in Daily Management.

From the perspectives of key behaviors, emotional experiences, pain points, and touch points, we identified 40 thematic elements that collectively constructed a journey map. To enhance clarity, we condensed Figure 1 to highlight salient indicators within each phase. All 12 participants confirmed their recognition of the thematic framework and journey map.

Stage I: Symptom Recognition Phase – Hidden Suffering and Multiple Misinterpretations

Key Behaviors

Ritualization and Pervasiveness of Self-Harm

Self-injurious behaviors served not only as emotional outlets but also carried covert symbolic meanings. During interviews, N1 repeatedly rubbed the scars on her wrist, stating,

> Cutting my wrist feels satisfying, like splitting open the stones in my heart

Her fingers unconsciously twisted her clothes during the first interview (from the Observation Notes).

> N4 linked self-harm frequency to academic stress:
>
> I cut more often during monthly exams

N6 stated,

> The pain becomes unbearable; cutting makes it better

N10 described engaging in head-banging against hard surfaces, stating it served to generate a sensation that " feels real."

N7 described acquiring and storing self-harm tools privately, attributing a specific significance to the process.

N8 engaged in frequent self-injury, calling it "normal venting" while exhibiting agitated behaviors.

Somatization of Distress

Alongside self-harm, participants frequently reported physical manifestations of distress. Somatization of distress refers specifically to the externalization of emotional agony through physical symptoms (eg, headaches, chest tightness), which is distinct from misinterpretation of symptoms (a feature of delayed intervention). N9 curled into a chair, clutching her chest:

> It feels like a boulder crushing me—headaches, nausea, a pounding heart… Moving makes me cry

During the interview, N12 admitted to the researcher that he would get headaches and feel nauseous when he felt unwell.

N6 reported feeling disoriented during classes, describing the experience as "walking through fog."

N11 complained of severe headaches, describing the sensation as "tap-dancing steel needles in my temples".

Academic Collapse

Declining grades and lost interests formed dual shackles. N3 recounted a significant academic decline, falling from "top 5 to bottom of the class" which she reported as contributing to a negative self-perception.

N1 recounted abandoning dance in low spirits, stating,

> I can never get into the top ranks of the class again, and I've even given up the dance I used to love

This academic decline was often accompanied by disruptions in basic biological rhythms, particularly sleep.

Circadian Disruption

Most participants reported experiencing chronic sleep deprivation. During her hospitalization, N4 admitted that she used to go to bed at 1 a.m. N6 stated that she often stayed up until 3 or 4 a.m., sometimes because she could not fall asleep, and sometimes because she stayed up to catch up on homework that she had not finished. When asked about the time he went to bed, N12 also explicitly mentioned to the researchers that he often did his homework until midnight.

Emotional Experiences

Numbness and Depression

A state of emotional detachment or blunting, where patients experience a profound inability to feel emotions normally, often described as feeling empty, disconnected, or mechanically going through motions, despite underlying distress evident in physical symptoms. N6 shared a 3 AM selfie:

> My eyes look like fogged windows, right?

N1 dug splinters from a table while recounting bullying, knees trembling (from the Observation Notes).

N8 described emotions as "depression" repeating,

> I feel nothing, then suddenly…

N4 wept silently, insisting, "No reason—just sad", shoulders shaking under invisible weight (from the Observation Notes).

During the first interview, N10 did not punch the table hard; he just tapped it lightly, his knuckles slightly reddened: "Tapping proves I'm alive!" (from the Observation Notes).

Intensified Self-Loathing

A deepened sense of personal worthlessness or self-hatred, fueled by internalizing negative experiences into pervasive, critical beliefs about oneself. For example, N3, who internalized familial comparisons, wrote in the diary: "I'll never match my sister." N11 fixated on maternal neglect post-sibling birth: "Mom stopped caring about me".

Pain Points

Early Symptoms Were Not Promptly Identified or Were Misinterpreted

Early symptoms were mislabeled as “character flaws” or adolescent rebellion, which differs from emotional alexithymia (inability to articulate feelings).

For instance, N12’s self-harm was dismissed as “rebellion” by his parents. He rolled up his sleeves, revealing scars: “They think I am faking—but I am in real pain!” (from the Observation Notes).

During the interview, N2 stated that since the first year of junior high school, she had felt that her attention in class was not as focused as before. She could not keep up with the teacher’s progress in class and could not finish her homework at night. Her mother, at first, blamed her for being lazy and deliberately refusing to do her homework.

N1 lamented, “No one noticed my fading interests.”

In her first interview, N6 said,

> I started feeling unhappy back in elementary school; when it got really bad, I’d have stomachaches. But no one cared what I thought—my mom even said I was faking it.

Emotional Alexithymia

Many adolescent participants have difficulty in recognizing, understanding, and expressing their own emotions, often manifesting as emotional detachment or an inability to put feelings into words, and responding with “Do not know” or silence.

For example, during the first interview, when the topic of emotions was brought up, N1 gulped water violently and paused for a moment, then she said, “I don’t know.” (from the Observation Notes).

N9 claimed ignorance about her sadness. During the first interview, N8 scratched sofa leather, muttering, “It just happens.” (from the Observation Notes).

Touch Points

The Breakdown of Family Communication and Structure

Some parents believe that when a child speaks of pain, it’s merely talk—once the words are spoken, the pain will simply fade away. In that moment, the child senses their parent’s indifference, and the pain grows even heavier.

For instance, N3 admitted to the researchers that every conversation with her parents had broken down: they simply could not understand her. “Talking to them is pointless” she said.

> All they ever do is tell me, ‘It’s nothing—just go to sleep and you’ll feel better.’ They don’t even know I have nightmares all the time!

N12 muffled cries into a pillow: “They just sigh or scold”. (from patient diaries).

Most participants craved genuine, nonjudgmental support, yet their families often resorted to dismissive platitudes—N6’s mother, for instance, insisted that “sleep fixes everything.” Simple prohibitions (eg, N5’s grandmother ordering “Stop that!”) replaced empathy.

In addition, differences in family structures can also have an impact on the emotions of adolescent patients. Adolescents from separated families reported reduced parental availability, leaving their distress unrecognized, and grandparent-raised youth confronted additional generational gaps in understanding mental health, thereby delaying timely intervention. For example, N4, from a separated household, noted that

> Dad only calls monthly—he never notices my scars.

Meanwhile, N5, raised by his grandparents, recorded in his diary that his grandmother attributed his depression to “ghost possession.”

Peer Alienation and Institutional Neglect

The interplay of social rejection and systemic indifference exacerbates the psychological burden on adolescents with depression. Peer alienation manifests as exclusion, betrayal, or stigmatization by classmates, while institutional neglect reflects educators' failure to intervene in bullying or provide emotional support. These dual forces, as illustrated below, deepen adolescents' sense of isolation and hopelessness.

N1 picked scabs while recalling bullying:

> Classmates ostracized me; teachers looked away.

N6 dismissed peers as "fake friends." (from patient diaries).

N4 repeatedly stated,

> There is always a persistent barrier between me and my classmates.

Stage II: Help-Seeking Phase – Passive Dependency, Trust Fracture, and Initial Engagement

Key Behaviors

Passive Medical-Seeking and Ambivalent Attitudes

Half of the participants initiated help-seeking under coercion from crisis events. N5 was hospitalized after a drug overdose, exhibiting withdrawn body language during the interview:

> I don't want to die, but I can't bear living

he murmured while avoiding eye contact, fingers compulsively rubbing his pant legs (from the Observation Notes).

Patients demonstrated treatment resistance. Standardized interventions provoked visceral rejection. N2 described inpatient care as

> Being trapped in a resonating iron cage with her speech accelerated (from the Observation Notes).

N12 confided to the researchers,

> I don't want to attend those therapy sessions; I feel they are of no use.

During the first interview with N11, when psychological therapy was mentioned, N11 suddenly crossed her arms and said defensively,

> I don't like this; it makes me very uncomfortable.

Besides, adolescents from single-parent households reported greater delays in help-seeking due to caregivers' limited time and financial resources, while those with married parents faced conflicts between parental insistence on treatment and their own resistance. For instance, N8, from a separated household, delayed help-seeking due to financial constraints:

> Mom's salary couldn't cover therapy.

N1, from married-parent cases, experienced parent–child conflict:

> They dragged me to the emergency department —I fought like a cornered animal.

Virtual Refuge-Seeking

Many participants prioritized informal online support over familial channels. N4 shared seeking support online, stating, "Strangers online do not understand my illness, but they do not call me dramatic.

N7's tearful disclosure about self-harm concealment with a friend highlighted systemic support gaps: "She knew about the blade stash but feared adult intervention" she said, crushing tissues into a damp ball (from patient diaries).

Emotional Experiences

Pathologization Shame

Clinical interactions intensified self-stigma. N2 refers to a situation upon admission where the patient felt ashamed when asked about her condition by doctors and nurses, such as why she had engaged in self-harm. During the interview segment discussing this content, the patient kept her head bowed (from the Observation Notes). Similarly, N7 described her initial outpatient visit experience: *although only she and the doctor were present in the consultation room, she also felt intense shame when asked about the reasons for her self-harm.*

Fear

Many patients mentioned feeling frightened during their hospitalization in the interviews. N11 described her experience during the early days of hospitalization, stating:

> The ward door couldn't be locked, and I always felt like someone was watching me.

N3 expressed during the first interview that she felt terrified during her hospital stay due to hearing constant footsteps in the hallway and the occasional sudden scream from somewhere else.

Pain Points

Familial Double-Bind

Generational conflicts compounded suffering. In her N6 diary, she wrote: *"Mom slammed the mock exam papers on the table and said*, "What kind of face do you have to show me after scoring so poorly?" "N6 mentioned that her mother only cares about her grades and shows no concern for anything else. Her father is the same, completely following her mother's lead. She has repeatedly stated, "No one can understand me—I don't even expect anything from my parents."

Touch Points

Institutional Accountability Gaps

The mutual shifting of responsibility between families and schools exacerbates psychological trauma among patients. For instance, N1 described the homeroom teacher's words: "She said my leave of absence was just pretending to be sick, my poor grades are dragging down the class!"

N9, mimicking the mother's tone while gesturing vaguely towards the air, stated:

> Rest briefly after discharge, but hurry back to school soon. Take your medicine with you and take it on time; otherwise, you'll fall behind in your lessons and your grades will get even worse.

Stage III: Treatment Engagement Phase – Struggle, Compromise, and Ongoing Distress within the System

Key Behaviors

Dynamic Fluctuations in Treatment Adherence

Patients exhibited ambivalence toward pharmacotherapy. Tactics such as hiding medication in the mouth or refusing medication were reported as strategies to avoid side effects. Participant N4 rolled up their sleeve during the interview to reveal tremors induced by sertraline side effects.

N9 demonstrated medication avoidance by retrieving a crumpled blister pack from their pocket, stating,

> The pills make me gain weight, but spitting them out risks getting caught by mother. (from the Observation Notes).

Resistance extended to physical therapies. N2 rejected Transcranial Magnetic Stimulation (TMS) due to its "numbing invasiveness." When referring to Modified Electroconvulsive Therapy (MECT), N5 admitted to the researcher,

> I don't want to undergo MECT in fact, because after having it, many things become unclear to me.

N10 also declined MECT, citing severe fear as the primary reason.

In addition, patients selected therapeutic modalities to reclaim autonomy. Initially, N10 resisted all proposed treatments; however, after undergoing a trial of hypnotherapy, his attitude became noticeably more receptive. N7 told the researchers,

> I refuse to participate in group therapy because I feel afraid in crowded settings. However, I am willing to accept one-on-one counseling.

Emotional Experiences

Hope, Doubt, and Fear

Initial treatment phases evoked conflicted expectations. N7 admitted herself to the hospital. She said,

> I really can't stand it anymore. I hope that receiving treatment in the hospital can relieve my pain.

N8 gulped water compulsively while discussing antidepressants:

> Doctors promise recovery, yet I can't fathom tomorrow.

N12 plucked at clothing seams, whispering,

> Mom claims the pills work, but they just make me vomit. (from the Observation Notes).

Many participants (N4, N5, etc) reported treatment-related terror; N4 rubbed their arms compulsively while recalling a peer's restraint:

> I'd rather die than be strapped to that bed.

Pain Points

Inadequate Side-Effect Management and Informational Opacity

Patients lacked strategies to mitigate adverse drug reactions. N4 admitted to the researchers that she had appearance anxiety, and she found that the medicines she was taking would make her gain weight, which made her extremely anxious and fearful of the side effects of these drugs.

During his hospitalization, N8 disclosed to the researcher in an interview:

> These medications do provide some relief, but they often cause excessive drowsiness and impair my ability to concentrate. I also harbor significant concerns regarding the potential for long-term dependency

The doctor failed to explain the patient's treatment plan in a timely manner. N10, while describing their medical visit experiences, leaned forward with intense eyes:

> Blood tests, questionnaires—endless series of forms to fill out. It was so annoying. No one ever explained to me what was happening. (from the Observation Notes).

When discussing the treatment plan, N6 complained to the researchers:

> The doctor just told me to listen to them, to take medication, and to undergo treatment, but didn't explain what exactly the medications were or why these treatments were necessary. It's annoying!

Defects in the Ward Environment

The Ward designs intensified psychological destabilization. Spatial design flaws exacerbated distress. For example, female patients universally condemned curtain-less beds and non-lockable bathrooms. N1 complained to the researchers multiple times:

> The bathroom has no mirror and can't be locked from the inside, which makes me feel extremely insecure.

N11 also grumbled,

> The bathroom can't be locked from the inside, so I'm on tenterhooks when taking a shower, which affects my mood.

Touch Points

Fragile Therapeutic Alliances

The fragile thread of trust between doctors and patients is illuminated by rare moments of warmth. N11's lips curled into a smile for the first time as she recalled the nurse:

> She slipped me a lollipop secretly and whispered, 'Suck on it for comfort when life gets bitter.'

Her fingers gently rubbed the candy wrapper, producing a soft rustling sound (from the Observation Notes).

N8, reminiscing about the psychotherapist teaching him breathing techniques, mimicked a deep inhalation motion, his chest heaving violently:

> Her hands were warm, just like my mother's when she used to soothe me to sleep as a child. (from the Observation Notes).

However, such positive interactions were not the norm. N8 criticized clinicians *for* "deafness to nuance" and N6 likened medical dialogue to "prerecorded scripts."

Familial Involvement Disparities

Adolescents with married parents often reported fluctuating support—caregivers oscillated between over-involvement and neglect—whereas those from divorced families more commonly faced a persistent absence of parental engagement. N8's parents are separated. He currently lives with his mother, and his father rarely comes to play with him. N10, who came from a divorced family, acknowledged that his father had remained absent. N11, raised by married parents, described inconsistent support:

> Mom oscillated between hugging me and ignoring me for days.

Stage IV: Daily Management Phase – Glimmers of Hope Amid Challenges

Key Behaviors

Reengaging with Interests and Self-Regulation Attempts

Patients reconstructed their life meaning through renewed interests. N10 maintained running routines, noting,

> The rhythm of footsteps echoes my heartbeat, reminding me I am alive.

N6 sought solace in painting, presenting illustrations during interviews:

> These hues heal better than pills.

At the 1-month follow-up, N6 mentioned starting to doodle with colored pencils,

> which feels better than cutting my wrist

by 3 months, she showed an album where one page depicted a scarred wrist surrounded by flowers, stating,

> Now I draw when I'm upset, and it doesn't hurt anymore.

In the second interview, N1 mentioned to the researcher that she had been gradually resuming dancing, and despite diminished motor control, she was still persisting with this hobby.

Unexpected Peer Support Networks

Trans-hospitalization bonds persisted post-discharge. N7 maintained video calls with a former wardmate:

> She alone knows where blades hide, yet we vow abstinence.

N4 joined online depression support groups, describing notification alerts as

> Tidal waves of validation—strangers misunderstand illness but never dismiss fragility.

At the 3-month follow-up, N4 told the researchers:

> Someone in the group taught me to use ice packs instead of blades. Now when I'm stressed during monthly exams, I ice my wrist, and it's much better than before.

Structured Self-Management Experiments

Quantitative tracking of "hope markers" emerged. N7 documented emotional states using a 1–10 scale, showing improved stability: mean scores rose from 2.4 to 4.7 over three months. She displayed a "hope bracelet" during interviews:

> Each knot memorializes a self-harm-free day.

N12 practiced "*normality performances"* via front-camera smile drills: "*Eyes must crinkle, lest Mother weep."* Follow-up revealed that

> The feigned smiles gradually became genuine, fostering unexpected resilience.

At the 1-month follow-up, N12 stated that "smiling feels stiff" but he practiced in front of a mirror; by 3 months, he mentioned a classmate commenting, "You look happy today" *adding*,

> Turns out I don't have to fake it—I can actually feel a little smile.

Emotional Experiences

Fluctuating Recovery Confidence

Patients exhibited "*two steps forward, one step back"* rehabilitation cognition. Many participants reported using personalized strategies to stabilize moods. N5 disclosed persistent post-discharge self-harm ideation countered by

> An internal voice pulling me from abyssal thoughts.

N2 adopted diaphragmatic breathing, asserting:

> Each breath fortifies me against despair.

In addition, treatment trust and confidence deepen with experience. For instance, N10 transitioned from refusing every intervention during the inpatient phase to showing improved receptiveness after an initial trial of hypnosis-based therapy, subsequently requesting its extension at follow-up visits.

Transmuted Social Function Anxiety

Academic uncertainties and future anxieties permeated patients yet catalyzed adaptation. During hospitalization, N4 lamented

> Academic ruin tempts self-sabotage

but later embraced remedial classes:

> Mathematical formulae now outweigh scars.

At the 1-month follow-up, N4 worried,

> I'm afraid classmates will laugh at me for falling behind

by 3 months, she showed a passing math exam paper, stating,

> The teacher praised my progress, and their eyes felt better than when they saw my scars.

N6 initially fixated on

> Being perceived as ugly, dark, and mentally ill

yet follow-ups revealed growing confidence:

> Mother's foundation gift lets me sculpt beauty anew.

Pain Points

Inadequate Relapse Precursors Detection

Patients lacked tools to anticipate symptom recurrence. N2 disclosed near-relapse during follow-up:

> Last month's urge resurged silently—no safety net caught me.

Fragmented Social Resources

Systemic gaps hindered recovery. N1's proposed "*art therapy group*" remained unimplemented. She remarked,

> Those who once aligned with my perspective merely acknowledged it without ever translating their agreement into meaningful action.

N3 faced rigid academic policies at school:

> Peer whispers pierce like needles

Schools remain entrenched in prioritizing academic performance under systemic pressures to enhance college admission rates.

Touch Points

Incremental Family Role Adaptation

Caregivers transitioned from judgment to supportive presence. N6's mother shifted

> From blame to silent companionship, mastering my favorite soups yet averting eyes from scars

At the 3-month follow-up, N6 smiled and said:

> Mom bought me art supplies yesterday and didn't mention my grades.

N2's mother also underwent a significant attitudinal transformation: initially blaming the child for perceived laziness and academic disengagement, she later shifted toward self-reflection and proactively visited libraries to consult psychology literature, explicitly stating,

> I'm learning to see her world through her eyes.

However, this adaptation was more pronounced in families with married parents (eg, N6) than in those with separated or divorced parents, where resource constraints limited caregivers' capacity to change. N5 is primarily cared for by his grandmother, but limited by his grandmother's cognitive constraints, he shared with the researchers:

> There are things I try to talk about with her, but she never understands me. My parents don't care about me either. Truthfully, there are times when I feel utterly distressed, yet have no one to confide in.

Individualized Stigma Navigation

Patients have their own ways of coping when faced with the stigma of illness. When confronted with curious gazes from peers, N4 adopted a deliberate strategy of wearing long sleeves while consciously ignoring their attention. During her conversation with the researchers, her eyes sparkled with renewed confidence as she stated:

> Previously, I wore long sleeves out of fear of being seen, but I've transformed significantly. I've become more courageous—no longer concerned about others' opinions. Even when emotional distress arises, I no longer resort to self-harm. I will be the queen of my own world!

Similarly, N3 described her coping mechanism during disease recurrence: "I put on my headphones and immerse myself in favorite songs. The ridicule simply fades into background noise that I can no longer hear."

Limitations of Post-Discharge Care

Follow-ups paradoxically exacerbated stress. The continuity of medical services has limitations, and regular follow-up visits have become a psychological burden for some patients, particularly evident among children in rural areas and those from divorced families. For instance, N7, whose parents are divorced and who is cared for by her grandfather, complains about the cumbersome follow-up process. Due to living in a rural area, each trip to the city hospital for a follow-up requires arranging, specifically, around her grandfather's schedule, and appointments need to be booked many days in advance.

N10 is another child from a divorced family, living with his mother but actually being cared for by his maternal grandmother. In a post-discharge interview, he told the researchers,

> Sometimes I really don't want to continue taking the medicine. It feels like there's no difference whether I take it or not—when the discomfort hits, I still have thoughts of self-harm. But my grandmother keeps reminding me to take the medicine on time, and I don't want to make her sad.

Discussion

Longitudinal Insights Into Symptom Trajectories Through the Lens of Symptom Management Theory

Research reveals that the symptom management journey in adolescent depression, as conceptualized through the Symptom Management Theory (SMT) framework, emphasizing the dynamic interplay of symptom experience, management strategies, and contextual influences over time, is not a linear progression but a complex, often cyclical process. This journey is driven by multiple conflicting tensions inherent in the SMT dimensions: the struggle between individuals and their symptom experience (eg, numbness, self-loathing, somatic distress), the search for and implementation of management strategies (both adaptive and maladaptive, like self-harm vs painting/running), and navigating the profound impact of contextual influences (eg, family communication breakdown, institutional neglect, peer alienation, academic pressures, cultural stigma). Crucially, our longitudinal design has captured intra-participant evolution across the four identified phases (Symptom Recognition, Help-Seeking, Treatment, Daily Management), demonstrating how shifts occur within these SMT dimensions. For instance, Participant N6 transitioned from using self-harm as a primary management strategy for unbearable symptom experience ("The pain becomes unbearable; cutting makes it better") to adopting painting for emotional regulation ("These hues heal better than pills") over three months. This shift reflects a fundamental change in management strategy, moving from distress externalization to structured self-management, facilitated by evolving contextual influences like trust-building with clinicians and peer support. Similarly, N1's transition from "abandoning beloved dance" (loss of a positive management strategy and contextual influence) to "resuming practice" (re-engagement with a positive management strategy) and N7's documented improvement in mood scale scores (quantitative tracking of symptom experience) from a mean of 2.4 to 4.7 provide concrete evidence of intra-individual changes within the SMT framework over time. These longitudinal case analyses underscore the utility of SMT in understanding the non-linear, dynamic nature of symptom management in adolescents with depression, highlighting how interventions targeting specific SMT dimensions (eg, improving management skills, modifying negative contextual influences) can facilitate positive trajectories.

Culturally Embedded Symptom Expression and Contextual Influences

Early symptoms in Chinese adolescents, as captured in the Symptom Recognition phase, often manifest as a distinct complex of "somatization, self-harm behaviors, and social/academic functioning deterioration." This externalization of internalized symptom experience resonates with findings in other cultures (eg, Zubrick in Australia, where similar externalization of internalized distress was observed).[36] However, within the East Asian context, Confucian academic pressures exert a uniquely powerful contextual influence, amplifying this dynamic and shaping the symptom experience (eg, intense self-loathing linked to academic failure) and limiting access to or effectiveness of management strategies (eg, prioritizing studying over sleep or seeking help). Our findings strongly align with Wang and Jiang, who identified both financial strain ($\beta = 0.102$, $p < 0.001$) and, more significantly, academic strain ($\beta = 0.261$, $p < 0.001$) as potent predictors of depressive symptoms in Chinese adolescents, with academic strain exerting a stronger effect.[37] Notably, the interaction between "academic functioning collapse" (a key indicator of symptom experience and compromised management strategy) and "familial attribution bias" (a critical negative contextual influence) is deeply rooted in the cultural emphasis on academic achievement as a core identity marker.[38] This underscores the necessity of incorporating culturally sensitive indicators (eg, abrupt declines in exam rankings, teacher-reported disengagement) into early screening protocols, recognizing them as potential red flags within the Symptom Recognition phase influenced by specific contextual factors.

Trust as the Foundation of Treatment Engagement

The study identifies a core "hope-doubt" emotional ambivalence during the Treatment Engagement phase, reflecting adolescents' active negotiation within biomedical frameworks. This ambivalence is a key aspect of their symptom experience when confronting treatment. Fears of medication side effects (negative symptom experience or anticipated negative outcome of a management strategy) and resistance to physical therapies lead to "selective treatment engagement" (eg, N7 rejecting group therapy but accepting individual counseling). Viewed through the SMT lens, this selective engagement is not merely non-compliance but an active, autonomy-seeking management strategy employed by adolescents to exert control over their treatment within a system where they often feel powerless. This reframing offers crucial new insights for adapting shared decision-making (SDM) models in adolescent mental healthcare.[39] Effective SDM must explicitly address the core dimensions of SMT: understanding the adolescent's current symptom experience and fears, collaboratively exploring acceptable and effective management strategies, and navigating relevant contextual influences (eg, family dynamics, school pressures). Proposals include co-designing treatment plans that integrate preferred modalities (eg, art therapy, hypnotherapy as seen with N10) while transparently addressing side-effect concerns via AI-assisted visualizations. Trust-building between clinician and patient is paramount, acting as the most critical positive contextual influence not only for initial treatment adherence but also as the bedrock for developing recovery confidence, a vital element for sustained management in the Daily Management phase. Thus, enhancing clinicians' emotional communication skills and developing culturally tailored, AI-enhanced SDM tools grounded in SMT principles could significantly improve personalization, transparency, and ultimately, the effectiveness of the treatment management strategy.

Systemic Gaps as Contextual Barriers and the Promise of Hybrid Support Solutions

Families and schools, as the primary contextual environments for adolescent development, exhibit a potent "double-edged sword effect" within the SMT framework. Negative contextual influences like familial communication breakdowns (eg, Participant N3's "sleep it off" attitude, N6's mother's focus only on grades) and school-based covert violence or neglect (eg, Participant N1's bullying experience, teacher dismissal) significantly exacerbate patients' isolation and hinder effective symptom management. The "blame-shifting" phenomenon between families and schools starkly exposes fragmented multi-system collaboration, creating a detrimental contextual environment. The post-pandemic global surge in adolescent mental health crises underscores the urgency of addressing these systemic contextual barriers.[40] To counter this, China could adapt models like the UK's "whole-school mental health program" training teachers in stigma reduction (modifying a key contextual influence) and deploying digital peer-support platforms. This hybrid approach leverages technology as a novel management strategy and positive contextual influence, validated by our finding that 67% of participants relied on virtual networks (eg, N4's "tidal waves of validation" from online communities).[41] However, implementation must carefully consider sociopolitical barriers and contextual disparities, particularly the rural–urban divide in mental health resources. Our data confirms this: rural participants (N1, N3, N7, N10) faced greater institutional neglect and follow-up burdens due to limited counselor availability and geographic barriers, impacting the continuity of management strategies, while urban females (N7) navigated distinct gender-based academic expectations. This aligns with Feng et al's findings and highlights the need for contextually tailored solutions within the SMT framework.[42]

Artificial Intelligence-Driven Personalization: From Data to Action

Advances in digital health technologies offer unprecedented opportunities to operationalize SMT dimensions for personalized care.[43] The identified patient-driven demand for "structured self-management" (a proactive management strategy observed in the Daily Management phase, eg, N7's mood scale, N12's smile practice) aligns perfectly with the potential of artificial intelligence (AI)-assisted symptom tracking and intervention. Evidence supports the feasibility and efficacy of tools like conversational agents (eg, Woebot) in reducing depressive symptoms.[44] Building on this and grounded in SMT, we propose a culturally adapted AI system designed to monitor and support all three core dimensions:

1. Symptom Experience: Using physiological data from wearables (eg, heart rate variability to detect stress spikes, sleep patterns via actigraphy) and voice-tone analysis during audio diaries to identify emotional shifts.
2. Management Strategies: Integrating academic calendars to flag high-pressure periods (eg, midterms) potentially triggering maladaptive strategies, prompting the use of learned coping skills (eg, diaphragmatic breathing as used by N2, ice packs as learned by N4), and facilitating access to preferred support (eg, connecting to trusted online peers or mentors identified by the user).
3. Contextual Influences: Monitoring social interaction patterns (where feasible and ethical) and providing prompts for social engagement or communication support based on individual needs and identified pain points (eg, family communication breakdown).

Drawing on frameworks like Monaco et al's,[45] such a system could provide real-time, SMT-informed support. For example, when N7's self-reported mood scale or detected physiological indicators suggest a drop below a critical threshold (indicating worsening symptom experience), the system could automatically trigger a supportive message, suggest a specific coping management strategy (eg, "Try your painting app?"), prompt her to contact her trusted online peer mentor, and alert her clinician to potential relapse risk. This integrated approach directly addresses the tension between technology and human connection: AI handles routine monitoring and low-level support for symptom experience and management strategy reinforcement, freeing clinicians to focus on the complex, trust-building therapeutic relationship – the crucial positive contextual influence emphasized by participants as "feeling heard."

Study Limitations

This study's sample was predominantly drawn from specialist hospital populations, potentially overlooking non-clinical or community-managed mild cases where symptom experience and management strategies might differ. The gender imbalance (8 females vs 4 males) may limit generalizability, as males exhibited some distinct coping management strategies (eg, N10's head-banging vs females' cutting). Additionally, while urban–rural distribution was relatively balanced (7 urban vs 5 rural), rural participants faced significantly greater contextual barriers to follow-up (eg, N7's and N10's travel burdens), affecting data completeness and potentially limiting insights into the Daily Management phase within challenging contexts. The 6-month tracking period may be insufficient to capture long-term relapse patterns and the evolution of management strategies and contextual influences over extended recovery. Future studies should extend follow-up to 12 months or longer and stratify analyses by illness duration or baseline severity scales to clarify severity-specific trajectories within the SMT framework. Additionally, retrospective interviews risked social desirability bias (eg, minimizing self-harm narratives) and recall distortion regarding symptom experience and past management strategies. Future research could employ mobile ecological momentary assessment (EMA) techniques to enable real-time, dynamic monitoring of SMT dimensions.[46]

Conclusion

This study constructed a symptom management journey map for adolescents with depression by integrating timelines, key events, emotional curves, and interactive experiences with external environments, revealing a dynamic trajectory across four distinct phases. From the Symptom Recognition phase, a critical insight is that early symptoms—characterized by somatization (eg, headaches, chest tightness) and self-harm—are frequently misinterpreted as "character flaws" or adolescent rebellion, delaying intervention due to familial and institutional misunderstanding. In the Help-Seeking phase, adolescents predominantly exhibit passive engagement, often triggered by crises (eg, suicide attempts), with trust fractures arising from parental coercion and institutional blame-shifting (eg, schools dismissing symptoms as "pretending") becoming major barriers. The Treatment Engagement phase highlights that adherence fluctuates with adolescents' need for autonomy; strategies aligned with their preferences (eg, hypnotherapy over group therapy) improve cooperation, while side-effect opacity and paternalistic decision-making fuel resistance. In the Daily Management phase, re-engagement with interests (eg, painting, dancing) and peer support networks emerge as vital adaptive tools, yet systemic gaps (eg, inadequate relapse precursor mechanisms, rigid school policies) hinder sustained recovery. Synthesizing these insights, symptom management in adolescent depression is fundamentally an ongoing negotiation between patient agency and multi-level contextual influences (family, school, healthcare system), with cultural factors (eg, Confucian academic pressures) shaping strategy selection across all phases.

Future recommendations include: a) Establishing a "symptom-development-environment" three-dimensional assessment framework in clinical practice, with phase-specific indicators—such as screening for somatization and self-harm in recognition, assessing family coercion in help-seeking, monitoring autonomy needs in treatment, and evaluating relapse precursor awareness in daily management—to improve early intervention timing. b) Promoting a home-school-medical collaborative ecosystem at the policy level, including standardized protocols for sharing responsibility (eg, joint case conferences to address blame-shifting) and training for teachers in identifying early symptoms (eg, academic disengagement as a red flag) to reduce dropout risk. c) Prioritizing adolescent co-designed interventions in research, such as trauma-sensitive outpatient environments or inpatient ward settings and psychoeducation modules (developed with youth input) to enhance treatment engagement. These measures aim to strengthen early identification accuracy, optimize collaborative care continuity, and reduce treatment dropout, thereby improving symptom management outcomes and quality of life for adolescents with depression.

Data Sharing Statement

The data are not available due to privacy or ethical restrictions.

Ethics Approval and Informed Consent

The study protocol was approved by the Hangzhou Seventh People's Hospital (Approval No.: Research [2024] Ethics Review No. 060) and complied with the Declaration of Helsinki. Prior to participation, both adolescent subjects and their legal guardians received detailed explanations of the study's purpose and procedures from the research team. Written informed consent was obtained separately from all participants and their respective guardians, including consent for the publication of anonymized responses and direct quotes.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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