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Research on the Psychological Decision-making Mechanism of AA Treatment from the Perspective of Tumor Psychology

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Abstract: Although aplastic anemia is not a malignant tumor, the treatment intensity, prognosis uncertainty and psychosocial distress experienced by its patients during the long course of the disease are essentially highly similar to those of patients with hematological malignancies. This study is based on the theory of tumor psychology and adopts a combination of quantitative and qualitative methods to systematically explore the anxiety conflicts, participation intentions and cognitive feelings exhibited by patients in the treatment decision-making process, and analyze the behavioral biases in compliance behaviors and the communication mechanisms and social support structures behind them. Through the measurement and empirical analysis of multi-source psychological variables, the tension between patient autonomy and family will in ethical dilemmas is revealed, as well as the issue of life value ranking faced in the palliative care stage. Research indicates that intervention strategies related to decision support, emotion regulation, and doctor-patient communication in tumor psychology can also provide theoretical guidance and practical paths for severe non-tumor diseases such as patients with aplastic anemia, and have significant cross-disciplinary promotion and reference value.

Keywords: aplastic anemia Therapeutic decision-making Psychological pain; Compliance Quality of life

1. Introduction

Tumor psychology, as an interdisciplinary subject, has been playing an increasingly crucial role throughout the entire process of tumor treatment in recent years. A large number of studies have shown that patients' emotional regulation, decision-making ability, compliance behavior and the quality of doctor-patient communication all directly affect their treatment outcomes and quality of life. Against this backdrop, tumor psychology has gradually expanded from a single focus on negative emotions such as anxiety and depression to cover multi-dimensional issues including decision support, ethical dilemma intervention, and quality of life reconstruction. However, current research still mainly focuses on patients diagnosed with malignant tumors, especially solid tumors or hematological tumors, while there is a serious lack of attention to certain groups of severe diseases that are not tumors but have extremely similar disease courses. Aplastic

anemia is a typical representative case. Such patients often face high-intensity medical interventions such as immunosuppressive therapy and hematopoietic stem cell transplantation. The uncertainty of their disease, the ambiguity of prognosis and the risk of recurrence make their psychological and social stress highly similar to that of cancer patients. Regrettably, the existing psychological and medical literature lacks systematic exploration of the psychological and behavioral patterns and ethical decision-making dilemmas of patients with aplastic anemia, creating a research "blind spot" from the perspective of tumor psychology. Based on this, this paper intends to incorporate the AA patient group into the analytical perspective of tumor psychology research, exploring their psychological characteristics and regulatory mechanisms in treatment decisions, compliance behaviors, and ethical dilemmas, with the aim of providing an empirical basis and cross-disease perspective for the construction of a more inclusive theoretical system and intervention strategies in tumor psychology.

2. Literature Review

The psychological predicament experienced by patients with aplastic anemia (AA) during the treatment process, although differentiated from malignant tumors at the pathological level, the high uncertainty and long-term dependence brought about by the immunosuppressive therapy, hematopoietic stem cell transplantation and other processes they face make their psychosocial state significantly similar to that of patients with hematological malignancies. However, psychosocial research on patients with AA remains extremely limited. The relevant literature mainly focuses on patients with other chronic hematological diseases, such as thalassemia and sickle cell anemia, with the emphasis mostly on psychological adaptation, self-efficacy, quality of life and social support factors during adolescence. For instance, the research conducted by Behera et al. [1], Sari et al. [2], and Pandji et al. [3] on patients with thalassemia indicates that long-term reliance on blood transfusion and disease branding significantly increases the risk of depression and anxiety for individuals. The review by Aniekan et al. [4] also highlighted the structural weaknesses of patients with chronic hematological diseases in terms of social roles, educational participation, and family support.

Although these studies provide a certain reference framework for understanding patients with AA, those whose disease course is closer should be patients with hematological malignancies who have received intensive therapy or stem cell transplantation. Research on tumor psychology has become relatively mature, especially in the dimensions of participation in treatment decision-making, quality of doctor-patient communication, management of psychological distress, and handling of ethical conflicts, a complete theoretical system has been formed. For instance, Karolus et al. [5] explored the psychological burden caused by the absence of a sense of "dignity" among patients dependent on blood transfusion, an issue highly correlated with the ethical tensions of AA patients during

the palliative care stage; Arbor[6], starting from ethical practice, analyzed the decision-making conflicts and the limits of medical intervention in patients with severe anemia under the background of "blood contraindications", suggesting that the value differences and decision-making difficulties in treatment should not be ignored.

Based on the empirical finding in tumor psychology that "the quality of doctor-patient communication is a key predictor of satisfaction with treatment decisions", the following research hypothesis is proposed: In patients with AA, the sufficiency of doctor-patient communication, information transparency and the degree of emotional support will significantly affect their anxiety level and satisfaction with treatment decisions; Meanwhile, there may also be a moderating relationship between the social support system and patients' compliance behaviors. These hypotheses not only respond to the theoretical logic of tumor psychology but also fill the gap in the lack of behavioral mechanism analysis in AA research. The next step of the research will be verified with empirical data and attempt to bridge and implement the theories of hematology and tumor psychology in actual intervention.

3. Measurement paths and experimental protocols for the main psychological variables

3.1 Investigation and Design of Psychological Variables for Treatment Decisions

To deeply explore the core psychological variables exhibited by patients with aplastic anemia (AA) in the treatment decision-making process, this paper adopts a structured questionnaire combined with standardized scales for measurement design. Firstly, based on the decision-making psychological model in tumor psychology and the analysis of previous literature, five key variables were determined: risk perception, sense of information control, willingness to participate, intensity of decision conflict and decision satisfaction. The logic of variable selection is based on the three-stage path of "cognition - attitude - behavior", emphasizing the mediating role of information processing in decision formation.

In terms of tool selection, the Perceived Risk Scale (PRS) was used for assessment of risk perception. After bilingual translation and backtranslation of the scale, localized semantic correction was carried out. The measurement of information Control perception relies on the "information transparency" dimension module in Decisional Control Inventory (DCI). The intensity of decision Conflict is introduced by the Validated Decisional Conflict Scale (DCS), which has been widely used in the patient groups of hematological diseases and tumors and has high reliability and validity. The willingness to participate was evaluated through a self-developed three-item scale to assess the intention and frequency of patients to actively ask questions, consult information, and participate in the selection of

treatment plans during the treatment process. Ultimately, the satisfaction of treatment decisions was reverse-coded and quantified using the Decision Regret Scale (DRS).

To ensure the reliability of the data, the survey design was first tested among 10 non-sample patients to analyze Cronbach's α coefficient and the discrimination of items. After eliminating two ambiguous items, the formal questionnaire was formed. All variables were scored on a five-level Likert scale, with a higher score indicating a greater psychological load or degree of interference. The questionnaires were conducted in both paper and electronic formats. After ethical approval by the research team, they were distributed and collected at three blood disease diagnosis and treatment institutions. The average filling time was 15 minutes. Throughout the research process, psychological counselors were assigned to deal with high-pressure emotional responses. The entire process is shown in **Figure 3.1**, demonstrating the variable measurement path and its structural logic.

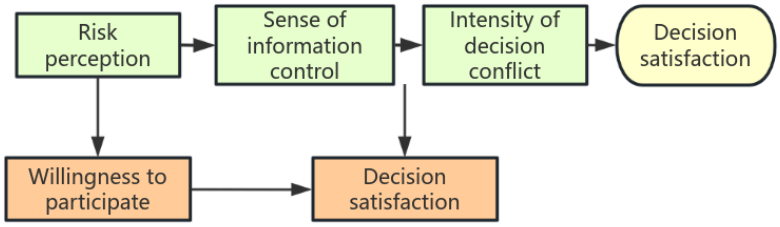

Figure 3.1 shows the measurement path diagram of psychological variables in therapeutic decision-making

3.2 Measurement Methods for Compliance Behavior and Communication Factors

To systematically evaluate the compliance behavior characteristics of AA patients during the treatment process and the quality of doctor-patient communication behind them, this study adopted a three-in-one quantitative design of "structured questionnaire + behavior tracking + interaction quality evaluation". Firstly, in terms of the measurement of compliance behavior, the Chinese version of Morisky Medication Adherence scale-8 (MMAS-8) was selected as the main Scale, covering dimensions such as medication frequency, amnesia, and dose adjustment. To enhance the behavioral orientation of the measurement, the research team separately designed a "Treatment Behavior Deviation Record Form" to collect self-reported data on patients' compliance with medical orders during hospitalization and outpatient visits in the past three months. The content includes whether they have stopped medication on their own, delayed treatment, or changed treatment plans, etc. Family members also assisted in verification to improve the accuracy of the retrospective data.

In terms of the measurement of Communication factors, the Patient-Doctor Communication Scale (PDCS) is mainly adopted. This scale consists of four

dimensions: information clarity, emotional support, decision participation, and communication frequency. All items are presented on a five-level Likert score. The scale was revised by an expert panel before the official implementation to ensure cultural compatibility of the content and accuracy of the terminology. To capture the dynamic quality of communication in actual treatment scenarios, this study set up "Follow-up communication cards for visits" in three cooperating hospitals. Patients were required to fill them out on the spot after each visit to subjectively score the sufficiency of communication with the doctor this time, covering the data of the four visits before and after.

Furthermore, to further verify the potential interaction between communication variables and compliance behaviors, a structural path diagram was designed as shown in **Figure 3.2**. It is hypothesized that communication quality indirectly affects the stability of compliance behaviors by influencing patients' level of knowledge and emotional feelings. Subsequently, the above paths will be estimated and the model fitted based on the partial least squares structural equation model (PLS-SEM). The entire process has passed ethical approval and a standard operating manual has been established to ensure the consistency of multi-center data collection.

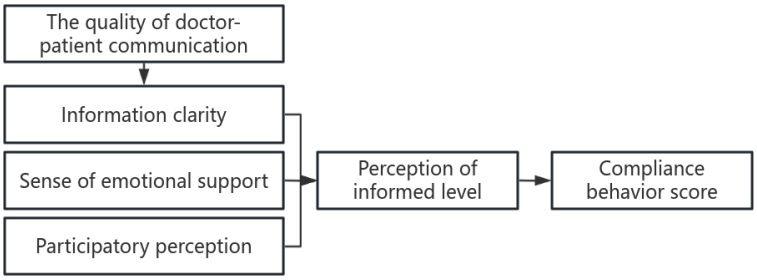

Figure 3.2 shows the path model of communication factors influencing compliance behavior

4. Analysis of Psychological Characteristics and InfvSAAl-uencing Factors of Therapeutic Decision-making

4.1 Decision-making Anxiety and Conflict Experience under high-risk cognition

To explore the psychological response characteristics of patients with aplastic anemia () in high-risk cognitive situations, this study focused on analyzing the changes in anxiety levels and decision conflict perception of patients before and after the decision to receive hematopoietic stem cell transplantation or intensive immunotherapy. In the research design, the "high risk - high uncertainty - high emotional load" model in decision psychology was borrowed, and a joint assessment was conducted using the State Anxiety Scale (STAI-S) and the Decision Conflict Scale (DCS). First, patients are required to subjectively assess their future prognosis based on their own condition and quantitatively score

treatment-related risks (such as rejection reactions, infection risks, and long-term recurrence probabilities), which constitute the "risk perception" variable. On this basis, their anxiety levels and conflict scores were measured respectively before the initial decision-making, after doctor-patient communication, and after the decision was formed. Experimental data indicate that at the high-risk cognitive level, patients generally show a significant increase in state anxiety. The average STAI-S score rose from 42.5 before communication to 55.1 after communication, and the total DCS score also increased simultaneously, reflecting an intensified sense of decision-making conflict. Further analysis revealed a significant positive correlation between risk perception and the variables of anxiety and conflict ($r=0.61$, $p<0.01$), suggesting a direct driving effect of the cognitive level on emotional responses. **Figure 4.1** shows the changing trends of anxiety and conflict scores of patients under different levels of risk perception.

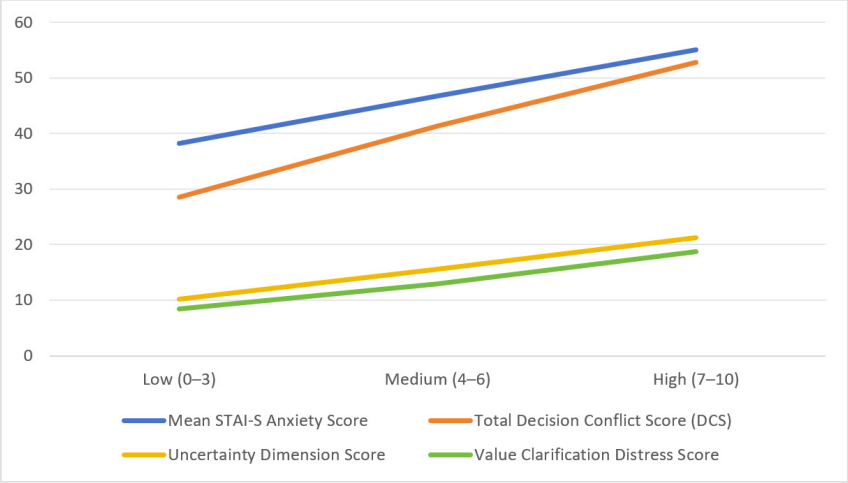

Figure 4.1 shows the anxiety and decision conflict scores of patients under different risk perception levels

Overall, the higher the level of risk awareness, the heavier the psychological burden on patients when making major treatment choices, presenting a typical state of "knowing but finding it difficult to decide". This discovery echoes the description of the "decision paralysis" phenomenon in patients before high-risk treatment regimens in tumor psychology and also provides empirical evidence for the targeted positioning of subsequent intervention strategies.

4.2 Analysis of the Correlation between Decision-making Participation and Information Mastery Status

To explore whether the participation degree of AA patients in treatment decision-making is significantly affected by their information possession status, the "information integrity" variable was introduced in the research design, and a group comparative analysis was conducted in combination with semi-structured interviews and quantitative questionnaires. Patients were classified into the "High Mastery group" (those who understood the treatment principle, side effects, success rate and alternative options) and the "low mastery group" (those who

only knew the main diagnosis and initial treatment suggestions) based on their self-assessed degree of information acquisition. Subsequently, the key behavioral indicators of the two groups during the medical treatment process, such as the frequency of active questioning, the number of times they spoke about the option selection, and the satisfaction with the decision review, were compared.

The research results show that the high-mastery group actively raised an average of 3.7 treatment-related questions during the interviews, which was much higher than 1.1 in the low-mastery group. The frequency of expressing their own preferences or rejection opinions during the decision-making process also increased significantly ($p<0.01$). Further through the scoring of the Decision Participation Index, it was found that the average score of the high mastery group was 84.5 points, while that of the low mastery group was only 59.3 points, and the difference was statistically significant. To verify the influence path of information acquisition on engagement, the study introduced the interaction model shown in **Figure 4.2**, hypothesizing that information acquisition promotes individual behavioral participation and cognitive engagement in medical decision-making by enhancing a sense of control and risk assessment ability.

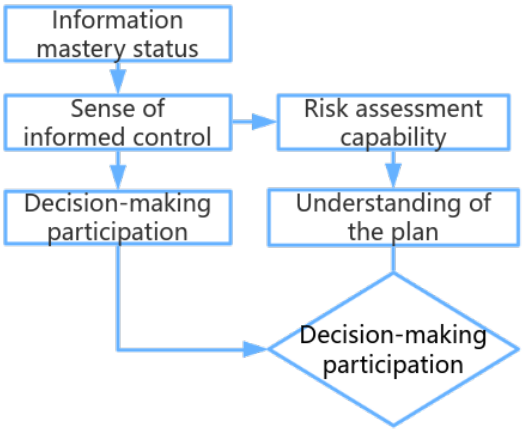

Figure 4.2 Correlation model between decision participation and information mastery status

This analysis indicates that in patients with AA, being informed is not a passive process of receiving information, but a necessary prerequisite for the initiative of decision-making behavior. This discovery is highly consistent with the intervention logic of "information - control - participation" in tumor psychology, suggesting that informed communication should be regarded as a key intervention node for enhancing patients' autonomous decision-making ability in the future.

5. Research on the Manifestations and Regulatory Factors of Patients' Treatment Compliance Behaviors

5.1 Behavioral Deviations and Compliance Patterns in Medical Order Execution

To deeply analyze the compliance characteristics and behavioral deviation patterns of AA patients during the long-term treatment process, this study combined the assessment results of the MMAS-8 compliance scale and the phased medical order tracking records to construct a three-level analysis framework of "compliance performance - deviation type - behavioral impact". All the research subjects received standard immunosuppressive therapy based on cyclosporine A and anti-thymocyte immunoglobulin (ATG), and the treatment compliance needed to maintain a high degree of consistency in the outpatient, inpatient and home self-management links. The scale data shows that 34.6% of the patients have moderate or severe compliance problems. Common behavioral deviations include missing medication, extending the interval without authorization, reducing the dosage or stopping the medication prematurely. Further analysis reveals that those with poor compliance often have excessive concerns about the side effects of medication, a vague understanding of medical advice, and emotional distress that has not been intervened in a timely manner. **Table 5.1** shows the frequency distribution of deviant behaviors in patients with different compliance levels, demonstrating a typical gradient from "complete compliance" to "active withdrawal".

Table 5.1 Statistical Table of behavioral deviation frequencies under Different Compliance Levels

Adherence Level	Avg. Missed Doses per Week	Self-Reduction Ratio (%)	Early Discontinuation Ratio (%)	Overall Deviation from Medical Advice (%)
High Adherence Group (n=21)	0.3	4.8	0	5.1
Moderate Adherence Group (n=26)	1.7	23.1	11.5	24.6
Low Adherence Group (n=18)	3.5	38.9	27.8	41.2

In addition, among patients with impaired compliance, 76.5% reported having experienced phased "treatment burnout" manifestations, which were manifested as weakened cognition of treatment purposes and doubts about the significance of medical order execution and other psychological states. This was closely related to their significantly lower decision satisfaction scores ($p<0.01$). Cross-analysis of behavioral data and psychological scales indicates that compliance is not a single behavioral outcome, but a dynamic process regulated by multiple variables such as information understanding, risk perception, and doctor-patient communication. The above findings emphasize that the intervention path needs to expand from "behavior correction" to a systematic intervention framework of "cognitive-emotion-interaction", drawing on the concept of constructing a "compliance ecosystem" in tumor psychology, which has high adaptation value

for patients with AA.

5.2 The interactive influence of social support, disease attitude and compliance behavior

During the long-term treatment process of patients with aplastic anemia (AA), their compliance behaviors are jointly influenced by multiple psychosocial factors, among which the strength of the social support system and the patients' own attitudes towards the disease are the most crucial. From relevant research in tumor psychology, it is known that social support not only helps to buffer the stress response brought by treatment, but also indirectly improves the stability of following medical advice by enhancing an individual's sense of control and purpose. In this study, it was found that patients with good family care, medical assistance and emotional support had significantly higher compliance behavior scores than those with lower support levels, and the difference was statistically significant ($p<0.01$). On the other hand, as a comprehensive reflection of cognition, emotion and motivation, the regulatory effect of disease attitude on compliance cannot be ignored either. Data shows that patients with a positive attitude of "controllable treatment and promising outcomes" are more inclined to take medicine proactively, attend follow-up appointments on time and cooperate with examinations. However, the pessimistic attitude group is prone to non-compliant behaviors such as phased dropout, voluntary drug reduction, and evading examinations. What is more worthy of attention is that there is a significant interaction between social support and attitudes towards diseases.

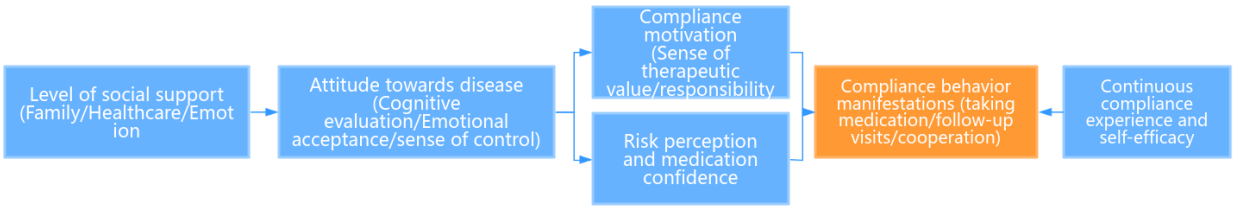

Figure 5.1 Interaction model of social support, disease attitude and compliance behavior

In the model shown in **Figure 5.1**, it is found that a high level of support can partially neutralize the inhibitory effect of negative disease attitudes on compliance. However, when patients lack both external support and hold pessimistic perceptions, compliance behaviors show a systematic downward trend. This discovery suggests that the treatment and management of AA patients should not only focus on behavioral reminders and constraints, but also require a three-dimensional linkage of family, society and the medical system to stimulate their positive attitudes, and enhance their intrinsic motivation for compliance and external guarantee mechanisms through supportive environments, forming a closed-loop psycho-behavioral regulation chain.

6. Ethical dilemmas and value conflicts in the treatment process

6.1 The tension between patient autonomy and family decision-making willingness in treatment options

In the treatment process of aplastic anemia (AA), there is often a significant tension between the individual treatment willingness of patients and the collective decision-making tendency of family members. This ethical conflict is manifested as patients' desire to participate in and lead treatment choices, while families, based on a caring and risk-averse mentality, tend to "make decisions on behalf of others" or "strongly intervene". This study, through interviews and questionnaires with 48 groups of patients and their families, found that in high-risk treatment scenarios (such as hematopoietic stem cell transplantation), more than 62.5% of the patients indicated that their true intentions were not fully expressed, especially during the initial plan formulation stage. Further analysis shows that the stronger the autonomy of patients, the higher their information demands and the clearer their willingness to participate in decision-making. The stronger the family's dominant will is, the more likely it is to suppress the patient's expression and simplify information transmission, leading to the occurrence of the phenomenon of "information deprivation decision-making". In the joint communication scenario, the average expression frequency of autonomous patients was 3.8 times per meeting, while that of the family-led group was only 1.6 times. **Table 6.1** shows the interaction curve between the degree of patient autonomy and the intensity of family intervention, reflecting a significant negative correlation trend between the two.

Table 6.1 Interaction Analysis Table of Social Support × Disease Attitude on Compliance Behavior Score

Disease Attitude	Level of Social Support	Mean Adherence Score (out of 100)	Standard Deviation
Positive Attitude Group	High Support	89.2	4.3
Positive Attitude Group	Low Support	74.6	5.7
Negative Attitude Group	High Support	68.3	6.1
Negative Attitude Group	Low Support	52.4	7.5

This tension mechanism is extremely similar to the "family-autonomous" dual decision-making structure in cancer patients, especially more prominent in high-intensity treatment choices. Research suggests that under the dual pressure of insufficient information and restricted expression, patients are prone to feelings of helplessness and decision-making fatigue, which in turn affects their compliance behavior and satisfaction with subsequent treatment. Therefore, the rational allocation of neutral guidance from medical staff and the establishment of a family communication intermediary mechanism have significant practical value for alleviating the imbalance in the distribution of decision-making power between patients and families and improving the quality of ethical handling.

6.2 Ethical Conflicts in Prioritizing Life in Palliative Care

When AA treatment enters the terminal stage, patients often face a value choice between "prolongs life" and "maintains quality of life", forming an ethical conflict centered on palliative care. Research has found that when the condition no longer responds to standard immunosuppressive treatment or transplantation regimens, doctors usually recommend a palliative approach, such as reducing invasive tests and using symptomatic medication intervention. However, most patients and their families have a misunderstanding of the term "palliative care", often equating it with "giving up treatment", which leads to emotional resistance and ethical tension. The questionnaire data shows that 65.8% of the patients expressed a sense of "being abandoned" or "value devaluation" when they first came into contact with palliative care advice. Among them, the Emotional Conflict Index (ECS) significantly increased, with an average score of 78.3 (49.6 in the control group). Furthermore, family members often tend to emphasize the willingness to "rescue to the end", especially in contexts where only children or the eldest son are being cared for. **Table 6.2** shows the changing trend of the value ranking of patients and their families before and after the proposal of palliative care advice. Among them, the scores of "life length priority" and "quality of life priority" fluctuate significantly in opposite directions, suggesting a conflict between the dual values.

Table 6.2 Ranking scores of life value of patients and their families before and after palliative care recommendations (0-100 points)

Evaluation Subject	Time Point	Life-Length Priority Score	Quality-of-Life Priority Score
Patient	Before Consultation	82.4	61.3
Patient	After Consultation	67.9	77.1
Family Member	Before Consultation	88.7	52.6
Family Member	After Consultation	81.2	58.4

Ethical interviews further revealed that the lack of a systematic "Advance Care Planning" (ACP) discussion mechanism in clinical practice led to the delay in the initiation of the palliative care pathway and the inability to express patients' value preferences in advance. In such circumstances, doctors are often forced to "make quick decisions" amid emotional and ethical dilemmas, which increases their moral burden and weakens patients' sovereignty. Therefore, drawing on the ACP practice path of tumor psychology in the care of advanced patients can help alleviate the ethical conflicts in the palliative transition process of AA patients and promote the shift of "life prioritization" from conflict and opposition to individual respect and value coordination.

7. Research Methods and Data Analysis

7.1 Research Subjects and Data Collection

This study selected patients with aplastic anemia (AA) who received hematopoietic stem cell transplantation or immunosuppressive therapy as the research subjects, and conducted a systematic investigation on their treatment decision-making psychology, compliance behavior performance, and ethical conflict experience. To ensure the diversity of the sample and the external validity of the data, the study adopted a multi-center stratified sampling method and recruited patients from three tertiary grade A specialized hospitals for hematological diseases respectively. The inclusion criteria include: ① Clinically confirmed as AA, meeting the standards of the "Guidelines for the Diagnosis and Treatment of Aplastic Anemia (2023 Edition)"; ② The disease course has exceeded three months and has entered a critical stage of treatment; ③ Possess basic communication skills and be capable of completing questionnaire filling and interviews. ④ Sign the informed consent form. The exclusion criteria include patients with severe mental disorders, serious cognitive deficits, or those in the acute rescue period. Data collection includes three types of materials: First, structured questionnaires are used to obtain basic demographic data, background information such as treatment stages and disease perception; Second, use standardized psychological scales (such as DCS, MMAS-8, STAI-S, PDCS) to quantify treatment decision-making anxiety, compliance behavior and communication experience; Thirdly, obtain the subjective accounts of patients and their family members regarding treatment choices and ethical dilemmas through semi-structured interviews. All scales were entered by two people and cross-checked to ensure the accuracy of the data. All interviews were conducted by trained researchers, recorded, transcribed and encoded. The overall data collection period was from January 2021 to May 2025,and 63 valid questionnaires were retrieved, with an effective rate of 96.9%. Subsequently, multi-dimensional statistical analysis and structural modeling will be conducted on this basis to construct a psychological mechanism chain model of treatment decision-making - compliance behavior - ethical conflict for patients with AA.

7.2 Data Encoding and Quantitative Analysis Process

In the data analysis stage of this study, SPSS 26.0 and AMOS 24.0 software were mainly used to conduct quantitative analysis and structural modeling of psychological variables. All questionnaire data were double-entered by two independent researchers, and the code consistency check method was used to ensure the accuracy of the data. Quantitative data included variables such as treatment decision conflict perception (DCS), state anxiety (STAI-S), compliance behavior (MMAS-8), doctor-patient communication quality (PDCS), and social support score, all of which were converted into standardized scores for subsequent statis-

tical processing. Based on descriptive statistical analysis, One-way ANOVA was first used to test the differences in compliance behavior under different levels of information mastery. A P value <0.05 was regarded as statistically significant. Subsequently, Pearson correlation analysis (Pearson r) was used to explore the linear relationships among core variables, such as the association strength between doctor-patient communication and compliance behavior, and between risk perception and decision-making anxiety. At the path analysis level, a structural equation model (SEM) is constructed to verify the mediating effect mechanism of "information mastery - decision conflict - compliance behavior", and multiple sets of moderating effect tests are conducted in combination with social support variables. Model fitting indicators (such as CFI, RMSEA) are used to evaluate path stability and theoretical fit.

7.3 Reliability Verification and Result Presentation

During the data analysis stage, this study evaluated the reliability and verified the structural validity of various psychometric tools to ensure that the obtained data had high internal consistency and statistical reliability. All psychological variables were collected through standardized scales, including: Decision Conflict Scale (DCS), State Anxiety Scale (STAI-S), Compliance Behavior Assessment Scale (MMAS-8), and Doctor-Patient Communication Quality Scale (PDCS). The reliability test was conducted using Cronbach's α coefficient to evaluate the overall consistency of the scale. Meanwhile, the structural stability was further analyzed in combination with the split-half reliability and the item-total score correlation. The results show that each scale presents a good reliability performance in the sample data. The α coefficient of the DCS total scale was 0.882. Among the five dimensions, the α value of the "insufficient knowledge" dimension was the highest (0.904), indicating that the internal consistency of patients' information mastery was the strongest. The α coefficients of STAI-S and MMAS-8 were 0.869 and 0.842 respectively, which were also higher than the psychological reliability critical standard of 0.8. Among the four dimensions of PDCS, the "Emotional Support" dimension is slightly lower at 0.793, but it is still within an acceptable range. Meanwhile, to present the correlation trends and grouping differences among key variables, this paper selects the relationship between "information mastery level" and "compliance behavior" for inter-group analysis. An independent sample t-test was conducted on the MMAS-8 scores of the high information mastery group and the low information mastery group. The results showed that there was a significant difference in compliance performance between the two groups ($p<0.01$). The results are detailed in **Table 7.1**.

Table 7.1 Analysis of Differences in Compliance Behavior Scores under Different Levels of Information Mastery (n=63)

Group	Sample Size (n)	MMAS-8 Mean Score	Standard Deviation	Cronbach's α
High Information Mastery Group	31	7.26	0.61	0.846
Low Information Mastery Group	32	5.83	0.74	0.849
t-value / p-value	—	4.72 / 0.000	—	—

The above analysis results support the core hypothesis of this study, that is, the level of information mastery is not only a significant factor influencing patients' compliance behavior, but also its measurement tools have good reliability at the statistical level, providing a solid foundation for subsequent path modeling and moderating effect analysis. The next step will be to further integrate reliable variables into the structural equation model to test the significance and stability of their action paths.

8. Discussion

This study conducts an empirical analysis on the psychological responses, compliance behaviors, and ethical conflicts of patients with aplastic anemia (AA) under the background of major treatment decisions. The results are in a confirmatory relationship with tumor psychology research at multiple levels, and also present the unique psychological manifestations of the AA group. Firstly, regarding the linkage mechanism between doctor-patient communication and treatment decisions, this paper finds that communication quality significantly predicts decision satisfaction and the intensity of decision conflicts. This result is highly consistent with existing studies in patients with hematological malignancies, further confirming the applicability of the intervention chain of "information transparency - psychological stress reduction - enhanced compliance" in patients with AA.

In terms of social support and compliance behavior, research results show that a weak support system can significantly aggravate patients' non-compliance tendencies, especially in situations where emotional support is lacking, patients are prone to experience phased treatment burnout or avoidance behavior. This trend is also highly consistent with the research results of tumors such as breast cancer and leukemia. However, patients with AA also exhibit some unique psychological patterns. For instance, after multiple rounds of treatment failure, they are more prone to emotional conflicts and a sense of being abandoned towards the "palliative approach", accompanied by stronger family decision-making intervention. This dual structure of "low information - high family control" is more typical in non-tumor severe cases. The intervention plan should particularly focus on "right to expression retention" and "risk re-assessment support". From a higher perspective, the manifestations of AA patients in terms of decision anxiety, compliance variation and ethical tension show highly common psycho-behavioral response patterns with those of cancer patients, further verifying the universality of the "critical care decision-making psychological mechanism". A series

of intervention tools in tumor psychology, such as decision support systems, psychological distress screening forms, and narrative medicine intervention, have clear adaptability in the population involved in this study and also possess practical application value for cross-disease transfer.

Therefore, this article suggests that research in tumor psychology should break through the limitations of diagnostic labels and expand its focus from "tumors" to the severe patient group with "tumor-like disease course experience". Future research and clinical intervention should focus more on the "psychological structure of the disease process" and the "cognitive-emotional regulation mechanism under high uncertainty", to achieve precise psychological support and ethical guarantee for more neglected patient groups.

9. Conclusions and Prospects

This study takes patients with aplastic anemia (AA) as the core research subjects, and constructs a systematic psychological measurement and behavioral mechanism analysis framework from three dimensions: treatment decision-making psychology, compliance behavior performance, and ethical conflict perception. The research results not only reveal the unique psychological response patterns of AA patients in high-risk treatment situations, but also verify the applicability of tumor psychology theories in such non-tumor critically ill patients, initially establishing a theoretical bridge connecting hematology and tumor psychology. Future research can further expand the comparative perspective, focusing on the differences in psychological adaptation pathways between patients with AA and those with hematological malignancies such as lymphoma and leukemia during the treatment process, and identify cross-mechanisms and specific patterns. Meanwhile, it is suggested that tumor psychological intervention models, such as decision support tools, psychological distress screening processes, and narrative medicine intervention, be piloted in the AA group to evaluate their intervention effects and transfer fit. Through the in-depth advancement of cross-disease psychological intervention research, it is expected to promote the development of tumor psychology towards a more universal and individualized direction.

References

[1] Behera M ,Jena K R ,Sethy S .Psychosocial Assessment of Thalassemia Major Patients in Adolescent Age Group[J].Blood,2024,144(S1):5269-5269.

[2] Sari T T ,Rahmartani D L ,Wirahmadi A , et al.Psychological Burden among Pediatric Thalassemia Major Patients in Indonesia: A Review[J].Thalassemia Reports,2024,14(2):33-.

[3] Pandji F ,Anita R ,Indra W , et al.Gender Disparities in Psychological Disturbances and Quality of Life Among Adolescent and Adult Patients with Thalassemia: A Review.[J].Journal of multidisciplinary healthcare,2024,171663-1669.

[4] Aniekan E E ,F. B E W ,Uchechi C O , et al.Psychosocial challenges of persons with sickle cell anemia: A nar-

rative review[J].Medicine,2023,102(47):e36147-.

[5] Karolus W ,Barbara B ,Colin S .Psychosocial burden in transfusion dependent beta-thalassemia patients and its impact on the quality of life and the problem of dignity[J].Journal of Taibah University Medical Sciences,2023,18(6):1217-1219.

[6] Arbor J K .“Better than ever”: The ethical and pharmacologic management of a severely anemic bloodless medicine patient[J].Ethics, Medicine and Public Health,2024,32100973-.

[7] Mouhab A ,Fatima A ,Khawar S , et al.Hematopoietic stem cell transplantation in patients with Fanconi anemia: a report of late effects and psychosocial adjustment in life.[J].Bone marrow transplantation,2023,59(1):141-143.

[8] Amira A ,Eman I ,Nouran S , et al.P1462: NEUROCOGNITIVE FUNCTION AND PSYCHOLOGICAL ASSESSMENT IN TRANSFUSION-DEPENDENT BETA-THALASSEMIA PATIENTS: RELATION TO BRAIN IRON CONTENT[J].HemaSphere,2023,7(S3):e185302c-.

[9] Narenjbaghi H S ,Valizadeh L ,Zamanzadeh V , et al.Development and Psychometric Assessment of “Self-Efficacy Scale” for Patients With Beta Thalassemia Major: A Mixed-Methods Study.[J].Journal of nursing measurement,2024,DOI:10.1891/JNM-2023-0080.

[10] S M S ,G M S ,Jasem A , et al.The Effect of Happiness Training on Psychological Well-Being in Patients with Thalassaemia Major: A quasi-experimental study.[J].Sultan Qaboos University medical journal,2022,22(3):370-375.

[11] Wang M ,Ge M ,Fang L , et al.Thrombopoietin Receptor Agonist Added to Standard Immunosuppressive Therapy for Hepatitis-Associated Aplastic Anemia[J].Blood,2024,144(S1):5687-5687.DOI:10.1182/BLOOD-2024-207385.

[12]Wadhera S ,Sahni A ,Swain N R , et al.Emergency Hematopoietic Stem Cell Transplant (HSCT) in a Very Severe Aplastic Anemia (VSAA) Child with Acute Intracranial Hemorrhage and Platelet Alloimmunization.[J].Indian journal of pediatrics,2024,91(11):1-1.

[13]Li X ,Shangguan X ,Wang H , et al.Comparison of efficacy of eltrombopag combined with immunosuppression in the treatment of severe aplastic anemia and very severe aplastic anemia: real-world data and evidence.[J].Annals of hematology,2024,103(9):1-9.

[14]Qin C H ,Guan M X ,Hu N Y , et al.[The Efficacy and Influencing Factors of Cyclosporine Alone in the Treatment of Children with Acquired Aplastic Anemia].[J].Zhongguo shi yan xue ye xue za zhi,2024,32(3):841-846.

[15]Xiaotian Z ,Yanan Z ,Fengan L , et al.Red blood cell distribution width as a prognostic factor in patients with aplastic anemia treated with cyclosporin A plus androgen or cyclosporine A alone: a retrospective study.[J].Hematology (Amsterdam, Netherlands),2023,28(1):2240665-2240665.

[16]Ahmed A ,Ahmed A ,Anne M .Very Severe Aplastic Anemia in a 26-Year-Old Male: Implications for Prognosis and Treatment Options.[J].Cureus,2023,15(9):e45750-e45750.

[17]Hui C ,Xingjuan X ,Jie M , et al.Elevated TCR-αβ+ double-negative T cells in pediatric patients with acquired aplastic anemia.[J].Clinica chimica acta; international journal of clinical chemistry,2023,548117492-117492.

[18]M C ,L J Z ,C Y , et al.[Clinical characteristics and prediction model of early death in severe/very severe aplastic anemia with immunosuppressive therapy].[J].Zhonghua xue ye xue za zhi = Zhonghua xueyexue zazhi,2022,43(11):916-920.

[19]Wang ,Jian Z,Chen , et al.A New Immunosuppressive Therapy for Very Severe Aplastic Anemia in Children with Autoantibodies[J].Current Medical Science,2022,42(2):1-8.

[20]Worachaya P ,Pirun S .Efficacy of Oxymetholone in Severe and Nonsevere Acquired Aplastic Anemia: A Propensity Score Matching Analysis.[J].Journal of blood medicine,2022,13753-761.