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Communication Barriers, Emotional Distress and Mental Health Promotion in Cancer Care: Insights from Rural China

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ABSTRACT: Background: Communication barriers are a critical yet underexplored determinant of psychological well-being in oncology care, particularly among rural Chinese patients treated in urban hospitals. This study examined how Mandarin proficiency influences emotional distress and identified implications for mental health promotion. **Methods:** A sequential mixed-methods design was adopted. Quantitative data were collected from 180 rural cancer patients using the Putonghua Proficiency Test (PSC), the Hospital Anxiety and Depression Scale (HADS), and the Distress Thermometer (DT). Multiple linear regressions estimated covariate-adjusted associations between Mandarin proficiency and distress outcomes, controlling for demographic and clinical factors. Semi-structured interviews with 20 patients explored communication experiences and psychosocial impacts. Quantitative and qualitative findings were integrated for triangulated interpretation. **Results:** Lower Mandarin proficiency was significantly associated with higher anxiety ($\beta = -0.30, p = 0.001$), depression ($\beta = -0.25, p = 0.01$), and distress ($\beta = -0.28, p = 0.003$), with an adjusted $R^2 = 0.18$ ($F = 7.4, p < 0.001$). Each 10-point increase in PSC corresponded to a 0.5-point reduction in DT score ($B = -0.05, p = 0.003$). Qualitative themes revealed confusion, stigma, isolation, and reliance on family interpreters, confirming that linguistic inequity functions as an independent psychosocial stressor in oncology care. **Conclusion:** Language barriers significantly heighten distress among rural Chinese cancer patients. Addressing these barriers through interpreter services, culturally responsive staff training, and inclusive educational materials should be recognized as a core strategy for mental health promotion and equitable cancer care.

KEYWORDS: Communication barriers; emotional distress; rural patients; Mandarin proficiency; psycho-oncology; mental health promotion

1 Introduction

Cancer remains one of the leading causes of morbidity and mortality worldwide, but its impact extends far beyond the physical domain to include profound psychological challenges. Emotional distress, encompassing symptoms of anxiety, depression, and existential fear, is recognized as a “sixth vital sign” in cancer care [1]. Patients who face a cancer diagnosis often encounter psychosocial stressors that undermine treatment adherence, quality of life, and survival outcomes [2]. Consequently, mental health promotion has become a central priority in comprehensive oncology, with international guidelines emphasizing systematic screening and psychosocial interventions [3]. Despite these advancements, disparities persist in access to psychosocial support, particularly for vulnerable populations.

One critical but underexplored determinant of psychological well-being in cancer care is communication barriers. Cancer care is inherently complex, requiring not only advanced medical technologies but also clear



and supportive communication between patients and healthcare providers [4,5]. Effective communication between patients and healthcare providers is essential for accurate diagnosis, informed consent, and the delivery of supportive care [6]. On the contrary, communication barriers in cancer care (e.g., when patients and providers do not share a common language or dialect) are recognized as undermining safety and understanding. Prior research has demonstrated that communication discordance not only heightens the risk of misunderstandings and medical errors but also exacerbates patients' subjective experiences of suffering [7]. In oncology contexts, when patients feel unable to fully understand or convey their concerns, the sense of isolation and disempowerment can intensify distress, sometimes even amplifying the perception of pain during cancer treatment.

While such issues have been documented in multicultural and migrant populations globally, less is known about their manifestation in intra-national contexts such as China, where internal migration has created new forms of linguistic and cultural marginalization [8,9]. In China, millions of rural residents migrate to urban centers for healthcare, including cancer treatment, yet they frequently encounter challenges in navigating unfamiliar medical systems and communicating in non-native dialects or standardized Mandarin [10]. These barriers are compounded by lower health literacy, limited social support networks [11] and cultural stigma surrounding mental health [12]. Rural Chinese speak a variety of local dialects (e.g., Chaoshan, Cantonese, Hakka, etc.), while Mandarin is the dominant language of urban hospitals and national media. Rural patients who travel to urban cancer centers often have limited Mandarin proficiency. This dialect gap can trap patients in a linguistic pain of being unable to convey their suffering or understand medical information. As a result, Chinese rural patients receiving care in urban hospitals may experience heightened vulnerability to psychological distress, a phenomenon that remains insufficiently addressed in oncology research and practice. For example, a study from Guangdong's Chaoshan region, both patients and providers reported significant communication difficulties between Mandarin and the Chaoshan dialect, with such barriers perceived to harm care quality and increase the burden of treatment [9].

What's more, emotional distress is a common yet underrecognized dimension of cancer care in China [13]. Beyond the physical burden of disease, patients often grapple with anxiety, depression and feelings of helplessness. For rural patients, these challenges are compounded by communication difficulties that can reinforce feelings of stigma and isolation [14]. In Chinese society, speaking a rural dialect is sometimes perceived as a marker of limited education or low social status, which can intensify patients' reluctance to engage actively in conversations with healthcare providers. Such internalized stigma often leads to communication avoidance. For instance, patients remain silent in consultations, rely excessively on family members, or simply acquiesce to medical decisions without full comprehension. Consequently, language barriers not only undermine information exchange but also magnify emotional distress, leaving patients vulnerable at a critical point in their cancer care.

Despite the urgency of this issue, few studies have systematically examined the intersection of communication, emotional distress and mental health promotion among rural Chinese cancer patients. The limited research that does exist tends to treat these issues in isolation, without integrating them into a coherent framework. Guided by Communication Accommodation Theory (CAT) and stress-and-coping frameworks, the current study argues that linguistic mismatches not only obstruct information flow but also reinforce social distance and stigma, thereby amplifying emotional distress. At the same time, these challenges highlight the need for targeted strategies in mental health promotion, including interpreter services, culturally sensitive psychosocial interventions, and healthcare provider training. By combining quantitative assessment of distress with qualitative insights into patient narratives, this research attempts to offer an in-depth understanding of how communication barriers shape emotional well-being in oncology care and identify practical pathways to promote mental health equity for rural patients in China.

2 Literature Review

2.1 Communication Barriers in Cancer Care

Effective communication is central to the therapeutic alliance in oncology. To be more specific, it shapes not only patients' medical understanding and treatment adherence but also their emotional trust in providers and willingness to participate in the decision-making procedure [15]. When communication is impaired, especially by linguistic mismatches, patients confront risks of delayed diagnoses, inappropriate treatment choices and poorer health outcomes. The previous research demonstrated that patients with limited proficiency in the healthcare system's dominant language are less likely to seek preventive services, more likely to misunderstand medical advice and more frequently excluded from shared decision-making processes [16]. To mitigate such disparities, interpreter services, bilingual staff and culturally sensitive communication frameworks have been recommended and implemented in many multicultural health systems [17].

In China, communication barriers are uniquely shaped by the nation's extraordinary linguistic diversity. Although Mandarin (Putonghua) is the official language, more than 200 dialects and regional languages are widely spoken across rural areas, and many elderly or less-educated individuals remain more fluent in their local dialects than in Mandarin [9]. This linguistic gap often becomes most visible when rural patients journey to urban hospitals, where the clinical environment is dominated by Mandarin. In these settings, patients may find themselves struggling to express their needs or fully understand medical guidance, leaving them feeling both linguistically and emotionally distanced from their care providers. Studies have shown that dialect-speaking patients often experience difficulties in understanding medical explanations, expressing symptoms, and negotiating treatment preferences [18]. A systematic review by Shamsi et al. [19] highlights how language barriers not only contribute to miscommunication and reduced patient satisfaction but also significantly diminish the quality of care and patient safety, undermining fundamental relational trust between patients and providers.

The implications of these barriers are particularly severe in oncology. Cancer care involves complex treatment regimens, emotionally charged conversations about prognosis, and critical decision points where misunderstanding can have life-threatening consequences. CAT provides a useful lens for interpreting these dynamics. In a U.S.-based qualitative study, patients reported that dismissive communication, including disinterest, rushed explanations, and poor information delivery, left them feeling unheard, misunderstood, and emotionally disengaged [20]. This sense of being overlooked undermined their trust in providers and deterred active engagement in care conversations. Conversely, linguistic accommodation, even small gestures such as acknowledging dialectal speech, can enhance relational closeness and empower patients in navigating their illness. A systematic review found that using a patient's native language in healthcare communication increases engagement and perceived empathy, helping to bridge social distance and foster trust, especially for patients from culturally or linguistically diverse backgrounds [21]. Thus, in China's oncology landscape, communication barriers cannot be reduced to technical inconveniences. They represent structural inequities that shape both clinical outcomes and psychosocial experiences of care.

2.2 Emotional Distress and Psychosocial Outcomes

Psychosocial distress represents one of the most pervasive yet insufficiently acknowledged challenges in cancer care. To be more specific, nearly half of oncology patients experience significant emotional difficulties during their treatment journey [22]. These difficulties extend across a continuum, ranging from anxiety and depression to helplessness, withdrawal, and demoralization. Such distress does not exist in isolation from clinical outcomes, whereas it has been consistently linked to poorer treatment adherence, diminished quality of life, in some cases, shortened survival [23]. Despite this evidence, distress often

remains under-detected in oncology health care, where biomedical priorities can overshadow psychological needs. In the Chinese context, psychosocial distress is further compounded by cultural norms and systemic inequities. The stigma associated with cancer continues to discourage open discussion, while hierarchical patient–provider relationships restrict patients’ ability to voice concerns or seek emotional support [24]. Rural–urban healthcare disparities exacerbate this burden, as patients from less-resourced areas frequently travel long distances to urban hospitals, only to encounter structural barriers that reinforce their sense of marginalization. For these patients, distress is not solely a psychological phenomenon but an experience deeply rooted in cultural expectations, social inequality, and unfair access to care.

Language or dialect barriers intensify this complex reality. Research indicates that rural patients who struggle with Mandarin face elevated risks of depression and anxiety [25]. According to psychological stress and coping Theory [26], such communication difficulties act as chronic stressors, consuming patients’ limited coping resources and leaving them less able to manage the already overwhelming demands of cancer. The inability to articulate suffering or comprehend medical guidance not only undermines clinical engagement but also erodes trust in providers, reinforcing cycles of emotional strain and psychosocial isolation.

2.3 Mental Health Promotion in Psycho-Oncology

Mental health promotion is increasingly recognized as a proactive process that extends beyond the alleviation of distress to encompass the cultivation of resilience, empowerment, and supportive social and clinical environments. Rather than narrowly focusing on symptom reduction, promotion-oriented approaches emphasize equipping individuals with coping resources, strengthening social support systems, and fostering conditions that enable psychological well-being to be sustained over time. In oncology, this perspective underpins interventions that enhance coping strategies, reduce distress, and improve patients’ quality of life [27]. Globally, psychosocial screening instruments such as the Distress Thermometer and multidisciplinary psycho-oncology services have become cornerstones of comprehensive cancer care [28,29].

In China, however, psycho-oncology services remain nascent. While awareness of psychosocial care is increasing, mental health services are often underutilized, especially among rural and marginalized populations [30]. Language barriers exacerbate this inequity, limiting patients’ access to psychological resources and discouraging help-seeking behaviors. Addressing these communication barriers must therefore be reframed not simply as a matter of service logistics but as a core strategy of mental health promotion. Patient-centered communication, linguistic accommodation, and culturally attuned psychosocial interventions have the potential to transform oncology care into a more inclusive and emotionally supportive environment.

Taken together, the literature highlights the deep interconnections between communication, emotional distress, and mental health promotion in cancer care. Yet few empirical studies have explicitly examined how these dynamics intersect in linguistically diverse settings such as China, where rural dialect-speaking patients increasingly confront urban, Mandarin-dominant hospitals. The evidence base remains limited on how language barriers directly shape emotional well-being and what specific interventions could mitigate these challenges. To address this gap, the present study employs a mixed-methods design, integrating quantitative measures of distress with qualitative insights into patients’ experiences. By foregrounding the voices of rural cancer patients, this research aims to illuminate how communication difficulties compound emotional vulnerabilities and to identify strategies for promoting mental health in oncology settings.

3 Research Design

This study employed a sequential explanatory mixed-methods design [31], which integrates quantitative and qualitative approaches to provide both generalizable patterns and in-depth contextual

insights. The quantitative phase examined the association between Mandarin proficiency and levels of emotional distress, while the qualitative phase explored patients' experiences of communication barriers and psychosocial challenges during cancer treatment. This design was chosen to ensure both breadth and depth of understanding and to enhance the credibility and transferability of findings.

3.1 Participants and Setting

The study was conducted at a large tertiary cancer hospital (First Affiliated Hospital of Kunming Medical University) situated in an urban center in China. As a major referral institution, the hospital receives a substantial proportion of patients from neighboring rural and dialect-speaking communities. Ethical approval for the study was obtained from the Ethics Committee of the First Affiliated Hospital of Kunming Medical University (reference number: 2025-566), and written informed consent was obtained from all participants before data collection.

Participants in this study were cancer patients recruited from a tertiary oncology hospital located in an urban center in China. The hospital serves a wide catchment area, including a large number of patients from rural regions. Inclusion criteria were as follows: (1) diagnosis of any type of cancer and currently undergoing or having recently completed treatment; (2) registered residence in a rural area (as defined by China's household registration); (3) age 18 years or older; (4) self-reported difficulty communicating in Standard Mandarin; and (5) ability to provide written informed consent. Patients were excluded if they had (1) severe cognitive or psychiatric impairments that would hinder participation; (2) comorbid medical conditions that placed undue burden on participation; or (3) previously participated in the study to avoid duplication. Eligible patients were identified using ward rosters and outpatient clinic schedules, and recruitment followed a consecutive sampling approach. A total of 180 patients completed the quantitative survey and 20 were purposively selected for in-depth interviews based on variation in dialect, age, gender, and reported language difficulty.

3.2 Procedures

Participants were consecutively recruited from inpatient and outpatient oncology units at the study hospital. Physicians and nursing staff assisted in identifying eligible patients, after which trained research assistants confirmed eligibility, explained study objectives, and obtained written informed consent. Recruitment spanned medical, radiation, and surgical oncology departments and varied clinic hours to reduce selection bias. Data collection followed a convergent mixed-methods design. First, participants completed a structured questionnaire in Mandarin or their preferred dialect, with bilingual research staff assisting as needed. The survey, which required approximately 20–25 min, collected demographic and clinical information, assessed Mandarin proficiency, and measured emotional distress using the Hospital Anxiety and Depression Scale (HADS) and the Distress Thermometer (DT). Second, a purposively selected subset of participants representing diverse demographic and clinical characteristics participated in semi-structured interviews lasting 45–60 min. These interviews, conducted in private hospital settings and audio-recorded with permission, explored communication experiences with providers, perceptions of dialect-related stigma, and the emotional consequences of misunderstandings. All survey responses were anonymized, and interview recordings were transcribed verbatim. For dialect-speaking participants, transcripts were first documented in the original dialect and then translated into Mandarin and English, with bilingual researchers cross-checking for linguistic and cultural accuracy to ensure translation reliability. The study protocol received ethical approval from the Ethics Committee of the First Affiliated Hospital of Kunming Medical University (reference number: 2025-566) and all procedures adhered to the ethical standards of the Declaration of Helsinki.

3.3 Research Instruments

3.3.1 Mandarin Language Proficiency

Mandarin proficiency was assessed using the Putonghua Proficiency Test (PSC), a standardized national assessment developed by the Ministry of Education and the State Language Commission of China to evaluate oral Mandarin ability. Recognized as the official benchmark for Mandarin fluency across professional, educational, and broadcasting contexts, the PSC has been validated in large-scale applications [32]. The PSC examines pronunciation and phonology (tone accuracy, articulation, fluency), vocabulary and grammar (standard lexical and syntactic use), and spontaneous oral expression (free speech communication). The full test includes five tasks: reading monosyllabic and polysyllabic words, reading a passage, retelling a story, and spontaneous speech, scored on a 100-point scale with proficiency levels categorized into Grade 1 (≥ 97), Grade 2 (≥ 87), and Grade 3 (≥ 70).

For research feasibility, the current study adapted the PSC by retaining three core components: word reading, passage reading and spontaneous speaking that directly reflect the communicative skills most relevant in clinical interactions. Word and passage reading tasks capture basic phonological accuracy and fluency, while spontaneous speaking reflects patients' ability to convey symptoms and engage in unstructured dialogue with medical staff. In contrast, the omitted tasks (e.g., retelling a story) primarily assess extended discourse ability, which is less central to short medical consultations. Thus, this adaptation balanced methodological rigor with feasibility in an oncology setting, where time and patient burden are critical considerations. Higher scores on the adapted PSC were hypothesized to be associated with lower levels of emotional distress, as language proficiency enhances patients' ability to navigate communication in Mandarin-dominant hospital environments.

3.3.2 Emotional Distress

Hospital Anxiety and Depression Scale (HADS): The HADS [33] comprises 14 items across two subscales, including anxiety and depression (7 items each), rated on a 4-point Likert scale (0–3). Subscale scores range from 0–21, with a threshold of 8 or above suggesting clinically relevant anxiety or depression. The HADS has shown robust psychometric properties in Chinese oncology populations [34]. In this study, internal reliability was satisfactory (Cronbach's $\alpha = 0.84$ for anxiety; 0.86 for depression).

Distress Thermometer (DT): The DT, endorsed by the National Comprehensive Cancer Network, is a one-item screening tool asking patients to rate overall distress over the past week on a visual analogue scale (0 = "no distress" to 10 = "extreme distress"). A score of ≥ 4 indicates clinically significant distress. The DT has been validated in Chinese oncology populations [35].

By employing both the HADS and DT, the study captured both specific symptomatology (anxiety and depression) and a global measure of distress, thereby strengthening the clinical relevance of the findings.

3.3.3 Demographic and Clinical Information

Participants provided demographic data, including age, gender, marital status, education, occupation, income, and rural/urban residency. Clinical information, such as cancer type, stage, and treatment modality, was extracted from electronic medical records with patient consent, ensuring both comprehensiveness and accuracy of clinical background data.

3.3.4 Qualitative Interview Guide

The study employed semi-structured interviews guided by insights from existing qualitative oncology research to explore patients' experiences of communication barriers and psychosocial distress. Interview

domains included: (a) patients' experiences of communication with healthcare providers, (b) challenges related to language or dialect use, (c) emotional consequences of communication difficulties, and (d) coping behaviors and support-seeking strategies. The guide was pilot-tested with three participants to ensure cultural sensitivity and clarity. Open-ended questions allowed participants to share narratives in their own words, ensuring the data authentically reflected their lived realities rather than being confined to predefined categories. This approach aligns with established standards in qualitative oncology research, where semi-structured interviews have been essential for capturing in-depth, meaningful patient experiences [36,37].

3.4 Data Analysis

All quantitative analyses were performed using SPSS 23 (IBM Corp., Armonk, NY, USA). Descriptive statistics summarized demographic and clinical characteristics, Mandarin proficiency, and distress outcomes. Internal consistency of scales was evaluated using Cronbach's α . Bivariate analyses, including Pearson's correlations, independent-samples *t*-tests, and one-way ANOVAs with post-hoc tests, were conducted to examine relationships between Mandarin proficiency, emotional distress (HADS and DT), and subgroup differences (e.g., rural vs. urban). To assess independent associations, multiple linear regression models were run with HADS anxiety, HADS depression, and DT scores as dependent variables, controlling for sociodemographic and clinical covariates. Robust regression and sensitivity analyses were applied where assumptions were violated.

Qualitative data analysis followed a reflexive thematic analysis approach [38]. All interview transcripts were first transcribed verbatim and then checked for accuracy against the audio recordings. To preserve linguistic nuances, dialectal transcripts were translated into Mandarin and English, with bilingual researchers cross-checking translations for accuracy. The coding process was conducted in three stages: (1) initial open coding of transcripts line by line, (2) grouping of codes into broader categories, and (3) generation of overarching themes reflecting patterns in patient narratives. Two researchers independently coded all transcripts and then met to compare interpretations. Inter-rater reliability was assessed using Cohen's kappa, which yielded a value of 0.82, indicating strong agreement. Any discrepancies were resolved through discussion until a consensus was reached. NVivo 12 software (QSR International Pty Ltd., Burlington, MA, USA) was used to support data management, enabling systematic coding, organization of memos, and cross-case comparison. The analytic process was iterative and reflexive, with ongoing team discussions to ensure credibility and trustworthiness of the findings. Findings from the quantitative models were integrated with themes from semi-structured interviews to contextualize statistical patterns with patients' experiences, consistent with the convergent mixed-methods design.

4 Results

4.1 Demographics

The final sample consisted of 180 rural Chinese cancer patients (Table 1). Participants averaged 62.3 years of age (standard deviation [SD] = 10.5) and were evenly split by gender (90 men, 90 women). Most had low formal education (70% with primary school or less) and were in advanced cancer stages (70% Stage III/IV). Common cancer types included lung (30%), colorectal (25%), breast (20%), and gastric (15%). Nearly all were married (90%).

Table 1: Sample demographics and clinical characteristics (N = 180).

Variable	Value
Age (mean \pm SD)	62.3 \pm 10.5 years
Gender	Male: 90 (50.0%), Female: 90 (50.0%)
Education	No schooling: 54 (30%); Primary: 72 (40%); Secondary+: 54 (30%)
Cancer Stage	I/II: 54 (30%); III: 90 (50%); IV: 36 (20%)
Cancer Type	Lung: 54 (30%); Colorectal: 45 (25%); Breast: 36 (20%); Gastric: 27 (15%); Other: 18 (10%)
Marital Status	Married: 162 (90%); Other: 18 (10%)

4.2 Descriptive Analysis

On the PSC, scores ranged broadly (mean = 75.4, SD = 15.2), with about 35% scoring below 60 (indicating poor Mandarin fluency). HADS scores indicated moderate anxiety (HADS-A: mean = 8.9, SD = 4.0) and depression (HADS-D: mean = 7.1, SD = 3.8) (Table 2). DT scores averaged 3.9 (SD = 2.3); 72 patients (40%) scored ≥ 4 , a standard cutoff for clinically significant distress [35]. These levels are consistent with prior findings of elevated distress in Chinese oncology populations. For example, rural Chinese patients tend to report higher anxiety and depression than their urban counterparts [37].

Table 2: Descriptive statistics of key measures by gender.

Measure	Male (n = 90)	Female (n = 90)	Total (N = 180)
PSC Score (mean \pm SD)	75.2 \pm 15.0	75.6 \pm 15.3	75.4 \pm 15.2
HADS-Anxiety (mean \pm SD)	8.2 \pm 4.1	9.6 \pm 4.0	8.9 \pm 4.0
HADS-Depression (mean \pm SD)	6.9 \pm 3.7	7.3 \pm 3.8	7.1 \pm 3.8
Distress Thermometer (mean \pm SD)	3.7 \pm 2.2	4.1 \pm 2.3	3.9 \pm 2.3

Note: SD, Standard Deviation; PSC, Putonghua Proficiency Test Score; HADS, Hospital Anxiety and Depression Scale (Anxiety and Depression Subscales); DT, Distress Thermometer.

4.3 Inferential Statistics

As illustrated in Table 3, Pearson correlations confirmed that Mandarin proficiency was inversely related to distress. PSC score correlated negatively with anxiety (HADS-A; $r = -0.35$, $p < 0.001$), depression (HADS-D; $r = -0.30$, $p = 0.002$), and overall DT ($r = -0.34$, $p < 0.001$). In other words, higher PSC scores were associated with lower emotional distress. This pattern mirrors prior research showing that Chinese cancer patients with language difficulties report more untreated distress [39].

Independent t-tests further indicated group differences by language ability. For example, patients with inadequate PSC (< 60) had significantly higher anxiety than those with adequate PSC (mean HADS-A = 10.5 vs. 8.1; $t[178] = 3.2$, $p = 0.002$) and higher distress (mean DT = 5.1 vs. 3.9; $t[178] = 2.8$, $p = 0.005$). No gender differences were observed in PSC scores or DT, though female patients reported slightly higher HADS-A ($t[178] = 2.1$, $p = 0.039$).

One-way ANOVA revealed significant differences in distress across demographic groups. Patients' PSC scores varied by education level ($F[2,177] = 9.1$, $p < 0.001$), with those having no schooling scoring lowest. Similarly, anxiety scores differed by education ($F[2,177] = 7.8$, $p < 0.001$): the least-educated group (mean HADS-A = 10.5) had higher anxiety than the highest-educated group (mean = 6.8). Distress also varied by cancer stage: advanced-stage (III/IV) patients had higher DT (mean = 4.5) than early-stage (I/II) patients (mean = 3.2), $F(2,177) = 6.2$, $p = 0.003$.

Table 3: Inferential statistics of Mandarin proficiency and emotional distress.

Variable/Group Comparison	Test	Statistic (df)	p-Value
PSC × HADS-A	Pearson r	−0.35	<0.001
PSC × HADS-D	Pearson r	−0.30	0.002
PSC × DT	Pearson r	−0.34	<0.001
Inadequate PSC (<60) vs. Adequate PSC (≥60)-HADS-A	t-test	t(178) = 3.2	0.002
Inadequate PSC (<60) vs. Adequate PSC (≥60)-DT	t-test	t(178) = 2.8	0.005
Gender (Male vs. Female)-HADS-A	t-test	t(178) = 2.1	0.039
Education (No schooling vs. Higher education)-PSC	ANOVA	F(2177) = 9.1	<0.001
Education (No schooling vs. Higher education)-HADS-A	ANOVA	F(2177) = 7.8	<0.001
Cancer stage (I/II vs. III/IV)-DT	ANOVA	F(2177) = 6.2	0.003

Note: PSC, Putonghua Proficiency Test Score; HADS, Hospital Anxiety and Depression Scale (Anxiety and Depression Subscales); DT, Distress Thermometer; ANOVA, Analysis of Variance; df, Degree of Freedom.

4.4 Regression Results

Multiple linear regressions were conducted to estimate covariate-adjusted associations with distress. As displayed in Table 4, in a model predicting HADS-Anxiety (adjusted $R^2 \approx 0.18$, $F = 7.4$, $p < 0.001$), PSC score was independently associated with lower anxiety ($\beta = -0.30$, $p = 0.001$) after adjusting for age, gender, education, and stage. In parallel models, PSC was also associated with HADS-Depression ($\beta = -0.25$, $p = 0.01$) and DT ($\beta = -0.28$, $p = 0.003$). These findings held even though no collinearity issues were detected (all VIF < 2). Table 4 illustrates the regression of DT on PSC and covariates: each 10-point increase in PSC was associated with a 0.5-point lower DT score on average in DT ($B = -0.05$, $p = 0.003$). Education and stage had smaller associations, while age and gender were not significant in these models.

Table 4: Multiple regression of patient distress (DT) on Mandarin proficiency (PSC) and covariates.

Predictor	B	SE	β	p-Value
PSC Score (per 1)	−0.05	0.017	−0.28	0.003
Age (years)	0.03	0.02	0.10	0.180
Education (yrs)	−0.30	0.17	−0.14	0.090
Stage (III/IV)	0.90	0.35	0.25	0.010
Constant	6.0	0.45	−	<0.001

4.5 Thematic Findings

Building on the quantitative evidence linking lower Mandarin proficiency to heightened psychological distress, the qualitative findings provide deeper insight into how these associations were lived and experienced by patients. Interviews revealed that communication barriers with Mandarin-speaking clinicians eroded trust, intensified feelings of fear and isolation, and compelled reliance on family members as informal interpreters. Together, these themes illustrate experiences that are consistent with the statistical associations observed, underscoring the urgent need for linguistically inclusive oncology care. The examples of the related themes and quotes are displayed in Table 5.

Communication challenges. Patients consistently emphasized the anxiety and confusion caused by their inability to fully comprehend Mandarin-speaking clinicians. This was not merely a matter of misunderstanding words but of losing confidence in the medical encounter itself. One participant reflected, “I feel anxious when the doctor speaks in Mandarin; I can’t understand everything” (P3, female), while another admitted, “Sometimes I feel frustrated... I nod along and hope it’s okay, but inside I’m confused” (P7, male). Such accounts illustrate how language barriers transformed medical consultations into moments of uncertainty,

eroding trust and heightening stress. These lived experiences parallel the quantitative data showing that lower Mandarin proficiency was significantly associated with higher distress scores.

Emotional impact. Beyond confusion, patients described a deeper layer of emotional vulnerability marked by isolation, fear, and helplessness. Several linked their communication difficulties directly to symptoms of depression and withdrawal. As one man expressed, “*I often feel isolated and depressed because I cannot talk to my doctors effectively*” (P12, male). Another participant echoed this, saying, “*When I can’t communicate, I withdraw and feel depressed*” (P15, female). These narratives contextualize the statistical association between Mandarin proficiency and psychological distress: patients were not simply scoring higher on HADS or DT scales; they were experiencing profound emotional disconnection during a period when supportive communication was most needed.

Support systems. Family members often stepped in as informal interpreters, providing comfort but also highlighting systemic gaps in language-inclusive care. One woman remarked, “*My daughter always goes with me to translate. Without her, I would not understand anything*” (P9, female). While family presence alleviated some immediate confusion, patients also expressed unease about relying on relatives to mediate sensitive medical information. This dependency sometimes heightened anxiety, as patients worried that family members might simplify, filter, or withhold critical details. The reliance on informal interpretation, therefore, underscores both resilience within family networks and the institutional absence of professional linguistic support.

Synthesis. Together, these qualitative insights suggest that lower Mandarin proficiency co-occurs with lived experiences of confusion, fear, and reliance on family interpreters. The themes of anxiety, stigma, isolation, and dependency are consistent with prior research indicating that language barriers in healthcare are associated with untreated psychological distress and reduced patient engagement [19]. These findings highlight the urgent need for linguistically inclusive oncology care that addresses both the informational and emotional dimensions of communication.

Table 5: Thematic findings from patient interviews.

Theme	Description	Illustrative Quotes
Communication challenges	Patients described confusion and anxiety due to difficulty understanding Mandarin-speaking clinicians. This eroded confidence and trust in medical encounters and heightened stress.	“ <i>I feel anxious when the doctor speaks in Mandarin; I can’t understand everything.</i> ” (P3, female) “ <i>Sometimes I feel frustrated. . . I nod along and hope it’s okay, but inside I’m confused.</i> ” (P7, male)
Emotional impact	Communication difficulties were linked to emotional vulnerability, including isolation, fear, and helplessness. Patients connected these barriers directly to symptoms of depression and withdrawal.	“ <i>I often feel isolated and depressed because I cannot talk to my doctors effectively.</i> ” (P12, male) “ <i>When I can’t communicate, I withdraw and feel depressed.</i> ” (P15, female)
Support systems	Family members acted as informal interpreters, offering support but also raising concerns about dependence and incomplete information. Reliance on relatives underscored resilience but highlighted systemic gaps.	“ <i>My daughter always goes with me to translate. Without her, I would not understand anything.</i> ” (P9, female)
Synthesis	Themes converge to show that lower Mandarin proficiency co-occurred with lived experiences of confusion, stigma, isolation, and reliance on family. These insights contextualize quantitative findings on the association between language barriers and elevated distress.	“ <i>These findings highlight the urgent need for linguistically inclusive oncology care that addresses both the informational and emotional dimensions of communication.</i> ”

4.6 Integration of Key Findings

The integration of quantitative and qualitative results provided a comprehensive understanding of how language proficiency was associated with emotional distress and communication experiences among rural Chinese cancer patients in urban oncology settings. Statistically, lower Mandarin proficiency was consistently associated with higher distress levels, as measured by both the HADS and the DT. These associations remained significant after controlling for demographic and clinical covariates, which is consistent with, though does not establish, language discordance being a salient correlate or marker of elevated psychosocial risk in this setting.

Qualitative narratives enriched these statistical associations by contextualizing potential mechanisms through which language discordance may relate to distress. Patients with lower Mandarin proficiency frequently reported confusion when interpreting medical explanations, reliance on family members for *ad hoc* translation, feelings of shame tied to dialect use, and avoidance of communication during consultations. These themes help contextualize why patients with lower language proficiency reported greater distress in the surveys: misunderstandings and stigma were not abstract constructs, but daily experiences that compounded patients' anxiety and sense of isolation.

When merged, the two strands are consistent with a possible reinforcing cycle, wherein linguistic discordance may be linked with higher distress and reduced engagement, although directionality and causality cannot be determined from these data. The results suggest priorities for future intervention research, such as testing interpreter services, culturally responsive staff training, and accessible patient education materials, to determine whether addressing communication inequities can reduce distress.

5 Discussion

5.1 Language Barriers as a Psychosocial Stressor

The statistical association between low Mandarin proficiency and heightened distress echoes international research linking limited host-language skills to worse mental health outcomes among migrants and minority-language speakers [40]. However, the qualitative data in this study shed light on the mechanisms underlying this association. Patients described confusion and helplessness when unable to comprehend medical information, consistent with Communication Accommodation Theory [41], which posits that linguistic convergence fosters trust, while divergence creates alienation. For rural patients, the inability to ask questions or clarify treatment instructions contributed not only to informational deficits but also to profound anxiety about the future.

For example, patients with PSC scores below 60 reported significantly higher anxiety (mean HADS-A = 10.5) compared to those with adequate proficiency (mean = 8.1), a finding that illustrates how linguistic divergence is quantitatively reflected in elevated distress levels. CAT helps explain why these patients experienced alienation: physicians' use of Mandarin without accommodation reinforced distance rather than solidarity. The observed negative correlation between PSC and HADS-A ($r = -0.35$, $p < 0.001$) thus demonstrates, at a statistical level, the very relational breakdown that CAT predicts.

5.2 Family Interpreting and Its Consequences

In the absence of institutional interpreter services, most patients relied on family members to facilitate communication. While this practice reflects cultural norms of familism and offers reassurance, it also introduces risks of miscommunication, emotional burden, and selective disclosure. Several participants worried that relatives softened or withheld difficult information, leading to feelings of exclusion from decision-making. This aligns with research showing that *ad hoc* interpreting by family members often

leads to miscommunication errors and emotional role strain, highlighting the risks of relying on untrained intermediaries in clinical settings [42,43]. In our context, the reliance on family highlights both the resilience of social support networks and the vulnerability of patients who depend on them for essential communication in high-stakes clinical settings.

Theoretically, this dual role of family as both buffer and barrier can be understood through the lens of role strain theory: family members were simultaneously caregivers and interpreters, producing emotional overload. The higher DT scores among patients with inadequate Mandarin (mean = 5.1) further reflect this dynamic, as reliance on untrained interpreters may intensify rather than relieve psychosocial burden. Familism, while protective in collectivist cultures, here intersects with linguistic vulnerability to produce uneven outcomes.

5.3 Stigma, Silence, and Cultural Dynamics

Another important theme was the stigma associated with speaking a rural dialect. Patients reported feelings of embarrassment, fear of judgment, and a tendency to remain silent during consultations, a reflection of sociolinguistic hierarchies in China, where speaking a rural dialect is often viewed as a sign of limited education or low social status [18]. From a psychosocial perspective, such internalized stigma functions as a barrier to patient engagement, leading to reduced question-asking, avoidance of clarification, and unmet emotional needs. These findings extend prior work on cancer stigma in China [44,45] by illustrating how linguistic identity compounds patients' psychological burden, creating a cycle of silence and distress.

This silence is also consistent with stigma theory, which posits that internalized shame reduces health-seeking behaviors and self-expression. Quantitatively, this is evident in education-stratified analyses: patients with no schooling had both lower PSC scores and higher anxiety (mean HADS-A = 10.5) compared to those with secondary or higher education (mean = 6.8). The link between low education, dialect use, and silence underscores how stigma operates at both individual and structural levels to reinforce distress.

5.4 Toward Linguistically Inclusive Cancer Care

Importantly, participants did not simply describe challenges but also voiced concrete suggestions for improvement, such as bilingual materials, visual aids, slower speech delivery, and staff trained in regional dialects. These calls resonate with global recommendations for patient-centered communication and psycho-oncology interventions [44,45]. In China, where psycho-oncology services remain underdeveloped [18], addressing language barriers must be recognized not only as a matter of equity but also as a mental health promotion strategy. By ensuring that patients can understand and be understood, healthcare systems can reduce distress, empower decision-making, and foster dignity in care.

From a theoretical perspective, these patient-suggested measures can be seen as attempts to re-establish communicative convergence, in line with CAT. For example, slowing speech or incorporating dialect-friendly materials represents a practical way of narrowing the linguistic gap that otherwise fosters alienation. The fact that lower PSC scores were associated with a 0.5-point higher DT score for every 10-point decline provides a quantitative rationale for why even modest accommodations could meaningfully improve psychosocial outcomes.

At the same time, implementation will require careful planning and adaptation. For example, the development of bilingual written or visual materials should be integrated into hospital patient education systems, with input from both clinicians and patients to ensure comprehensibility. Training staff in regional dialects may be feasible in provinces with high concentrations of particular dialect speakers, but it may be less realistic in highly diverse urban hospitals. Interpreter services could be piloted through telemedicine

platforms or community health worker programs, though financial and workforce constraints may limit scalability. These considerations highlight the need to approach linguistic inclusion as a stepwise and resource-sensitive process rather than a one-size-fits-all solution.

5.5 Implications for Practice and Research

The findings suggest several implications. Clinically, screening for distress (e.g., with DT or HADS) should be paired with assessments of language proficiency to identify patients at risk. Training programs in culturally and linguistically responsive communication could enhance provider sensitivity and patient trust. At a systems level, investment in interpreter services and accessible patient education materials is essential. For research, future studies could examine resilience factors why some patients to navigate language discordance with less distress and test interventions such as dialect-matching or communication training modules. Finally, the study highlights the importance of situating psychosocial oncology within China's unique sociolinguistic landscape, while also contributing to global conversations on equity in cancer care.

Theoretically, these implications reinforce the proposition that language barriers are not merely practical inconveniences but operate as psychosocial stressors in line with models of health communication and psychosocial oncology. The consistent associations between PSC and distress measures (HADS-A $\beta = -0.30$, HADS-D $\beta = -0.25$, DT $\beta = -0.28$) show that language proficiency is statistically as salient as cancer stage in shaping distress outcomes. This positions language not as an auxiliary factor but as a core determinant of psychosocial health, demanding systematic integration into screening, intervention, and policy frameworks. However, translating these implications into practice entails several challenges. Routine screening for language proficiency, while desirable, may face resistance due to added clinical workload and limited validated tools. Training programs for staff need institutional support, protected time, and financial resources; otherwise, uptake may remain superficial. Interpreter services, though beneficial, require sustainable funding models, especially in rural or underfunded hospitals. Developing accessible materials further raises questions of standardization versus localization; materials must be linguistically accurate while also culturally resonant, which can complicate scaling efforts. For research, intervention trials may encounter recruitment challenges, given patients' hesitancy to disclose distress or linguistic difficulties.

5.6 Limitations and Recommendations for Future Studies

At the same time, it is important to acknowledge contextual limitations that go beyond communication. Financial barriers remain a critical determinant of access to psycho-oncology services, as many rural families are confronted with catastrophic health expenditures that leave little capacity for investing in mental health care. Healthcare access is also geographically uneven, with urban tertiary hospitals concentrating resources while rural communities remain underserved. These systemic inequities may exacerbate the distress observed in this study, suggesting that interventions must be coupled with broader policy reforms aimed at affordability and equitable distribution of psychosocial resources. Future research should thus not only focus on communication strategies but also examine how socio-economic and structural barriers interact with language to shape cancer patients' mental health trajectories. What's more, the study sample was drawn from a single tertiary oncology hospital in China, which may limit the generalizability of the findings to other regions or healthcare settings. Patients' experiences in this hospital may not fully represent those of rural cancer patients across diverse cultural and institutional contexts. Future research should include multiple sites and regions to improve representativeness and strengthen external validity.

6 Conclusions

The current mixed-methods study demonstrates that language barriers represent not only a practical obstacle to communication but also a profound psychosocial stressor for rural Chinese cancer patients receiving treatment in urban hospitals. Quantitative analyses revealed that limited Mandarin proficiency was independently associated with heightened anxiety, depression, and global distress. Qualitative findings enriched these results, illustrating how patients' struggles with misunderstanding medical information, reliance on family interpreters, internalized stigma, and avoidance of communication compounded their emotional burden. Together, these findings underscore the central role of language in shaping psychosocial outcomes and highlight the hidden psychological costs of linguistic inequity in oncology care.

From a mental health promotion perspective, addressing these barriers requires more than *ad hoc* support. Institutional strategies such as the provision of trained interpreters, culturally and linguistically sensitive staff training, and the development of accessible patient education materials can mitigate distress and foster empowerment. Moreover, reducing stigma around dialect use and promoting inclusive communication practices are essential for improving trust and patient engagement. For rural patients in particular, these efforts may bridge not only a linguistic divide but also a psychosocial gap, contributing to more equitable and humane cancer care.

Finally, this study contributes to international psycho-oncology discourse by illuminating an intra-national form of linguistic marginalization, often overlooked in global research that typically focuses on immigrant populations. By situating communication barriers within the broader framework of mental health promotion, the study highlights the need for multi-level interventions that integrate psychosocial screening, patient-centered communication, and culturally grounded support systems. Future research should further explore resilience factors and test intervention models that can be scaled across diverse healthcare settings. Ensuring that all patients, regardless of language background, are heard and understood is not only a matter of clinical efficacy but also of human dignity.

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