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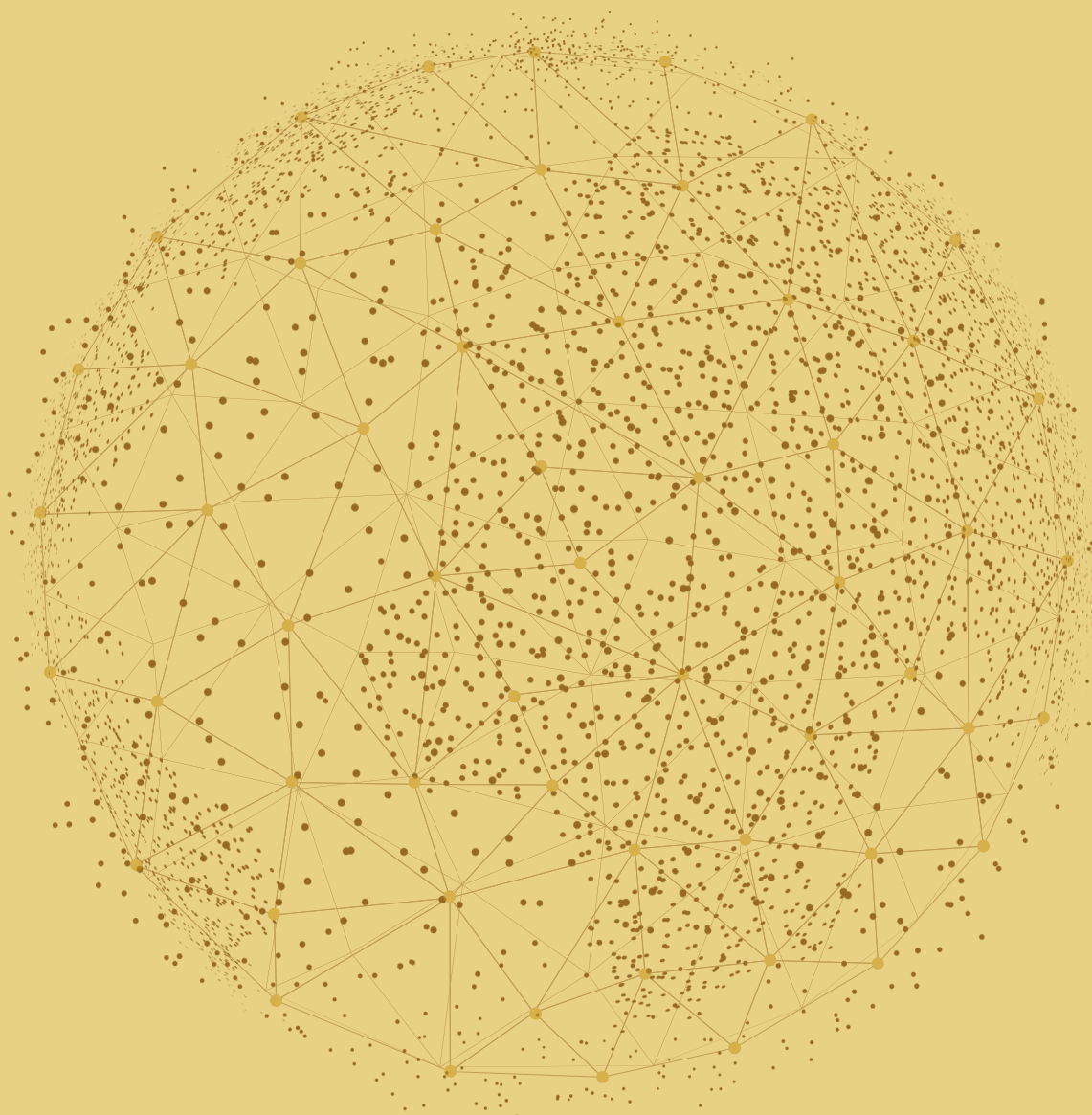


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GLOBAL TRENDS

Youth Perspectives on the Future of Development



Global Trends: Youth Perspectives on the Future of Development

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About

Global Trends: Future Researcher Incubation Project

The Project is dedicated to shaping future researchers through interdisciplinary academic learning and practice. Organized by Hong Kong Youth Culture Exchange Association and delivered by Shanghai-Hong Kong Development Institute at the Chinese University of Hong Kong, the Project gathers leading scholars and experts to explore global issues, such as technological advancement, climate change, and economic development. Students benefit from theoretical lectures and practical workshops offered by the University, providing a comprehensive research experience. Our research areas encompass data science, environmental science, social sciences, life sciences, technological innovation, and other interdisciplinary fields. Through personalized programme design, teamwork, and independent learning focused on real-world challenges, students will gain profound understanding of research methods and academic collaboration. This experience significantly enhances their problem-solving, critical thinking, and innovation skills, laying a strong foundation for future academic and career success.

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A Study on the Impact of Community Cultural Activities on the Mental Health of Empty-Nest Elderly: A Questionnaire Survey in Anbu Town, Chaozhou City

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Abstract

Driven by the dual forces of population aging and changes in family structure, the population of empty-nest elderly continues to grow. As of 2025, the number of empty-nest elderly in China has exceeded 160 million, accounting for 58% of the elderly population. Empty-nest elderly face a prominent mental health crisis — Meta-analysis reports show that the incidence of depression among empty-nest elderly in China is as high as 39%, and 26.4% of elderly people experience varying degrees of depressive symptoms. Social isolation and loneliness are important factors contributing to the psychological problems of empty-nest elderly, while community cultural activities are regarded as an important way to alleviate this problem.

This study is based on a questionnaire survey conducted in Anbu Town, Chaoan District, Chaozhou City, Guangdong Province in June 2026. Using 30 elderly people as samples, descriptive statistics and correlation analysis were applied to examine the relationship between participation in community cultural activities and the mental health level of empty-nest elderly. The questionnaire covers four dimensions: basic information, mental health status, community activity participation, and perceived impact of activities on mental health.

The study found that 80% of the surveyed empty-nest elderly have participated in community cultural activities, but 66.67% of participants have an activity frequency of only once a month or less, and 63.33% of participants feel "lively and not lonely" during activities. Regarding the perceived impact of activities on mental health, 60% of respondents believe that after activities, loneliness is "relatively" alleviated, social interaction is "relatively" increased, and life is "relatively" fulfilling; 76.66% of respondents believe that community cultural activities are "relatively" or "very" beneficial to the mental health of empty-nest elderly. However, 43.33% of respondents reported that "inappropriate activity timing" is the main barrier to participation, and 56.67% of respondents hope to increase the activity frequency to 2-3 times per month.

The study indicates that community cultural activities have positive effects on alleviating loneliness and enhancing social connection among empty-nest elderly, but there are still deficiencies in the current frequency and coverage of activities. It is recommended that communities optimize activity scheduling, increase activity frequency, and provide home-based or nearby participation channels for empty-nest elderly with mobility difficulties, to more effectively exhibit the promoting role of community cultural activities on the mental health of empty-nest elderly.

1. Introduction

1.1. Research Background

Against the backdrop of population aging and the miniaturization of family structures, the separation of intergenerational living has made empty-nest elderly one of the most concerning groups among China's elderly population. In 2025, the scale of empty-nest elderly in China has exceeded 160 million, accounting for 58% of the elderly population. The mental health status of this group is not optimistic — according to Meta analysis reports, the detection rate of depressive symptoms among empty-nest elderly in China is as high as 39.0%, and 26.4% of elderly people experience varying degrees of depressive symptoms. Social isolation and emotional deprivation are important risk factors. In this context, community cultural activities (such as calligraphy and painting, opera and chorus, tea parties, health lectures, etc.) are regarded as feasible ways to enrich the spiritual life of the elderly, alleviate loneliness, and enhance social connection. However, existing activities still have limitations in terms of frequency, scheduling, and coverage, and their actual intervention effects need to be empirically tested based on frontline data. To this end, this study conducted a questionnaire survey in Anbu Town, Chaoan District, Chaozhou City, Guangdong Province in June 2026, using 30 empty-nest elderly as samples to systematically examine the current status of participation in community cultural activities and their impact on mental health, with the aim of providing empirical evidence for optimizing community elderly-friendly services and improving the well-being of empty-nest elderly.

1.2. Research Questions and Significance

1.2.1. Research Questions

The above macro data and local survey results present a tension worthy of in-depth discussion: on the one hand, national-level data indicate that empty-nest elderly are a high-risk group for mental illness — the 39.0% detection rate of depressive symptoms, 26.4% of elderly people with varying degrees of depressive symptoms, and the widespread loneliness and social isolation dilemmas among the empty-nest elderly population all point to the severity of the mental health status of this group; on the other hand, this survey in Anbu Town, Chaoan District, Chaozhou City shows that 80% of the surveyed empty-nest elderly have participated in community cultural activities, 63.33% of participants feel "lively and not lonely" during activities, 60% of respondents believe that after activities, loneliness is "relatively" alleviated and social interaction is "relatively" increased, and 76.66% of respondents believe that community cultural activities are "relatively" or "very" beneficial to the mental health of empty-nest elderly. This comparison raises the core question of this study: are community cultural activities an effective path to alleviate the psychological dilemmas of empty-nest elderly, or do they only provide temporary emotional comfort without touching the deep structure of mental health?

Specifically, this study focuses on the following three progressive questions:

First, the question of participation status. What is the actual situation of empty-nest elderly participation in community cultural activities in Anbu Town? The questionnaire shows that although the activity participation rate reaches 80%, 66.67% of participants have a frequency of only once a month or less, and 50% of participants spend less than 30 minutes per activity.

Is this participation pattern of "high participation rate, low frequency, short duration" sufficient to produce significant mental health effects?

Second, the question of impact mechanisms. Through what paths do community cultural activities affect the mental health of empty-nest elderly? The survey found that 56.67% of respondent's main motivation for participating in activities is "to pass time and alleviate loneliness," 63.33% feel "lively and not lonely," and 60% believe that after activities, they "have met more friends and socialized more frequently." This indicates that the enhancement of social connection may be the core mediating mechanism, but it needs further testing whether different types of activities (cultural learning, cultural and entertainment interaction, emotional connection) produce differentiated effects through different paths.

Third, the question of supply-demand matching. Does the current supply of community cultural activities effectively respond to the actual needs of empty-nest elderly? 43.33% of respondents listed "inappropriate activity timing" as the primary barrier to participation, 56.67% hope to increase the activity frequency to 2-3 times per month (while currently 63.33% of communities only carry out activities once a month), and 46.67% most hope to add cultural learning and cultural and entertainment interaction activities. The gap between supply and demand may weaken the mental health promotion effects that activities could have played.

1.2.2. Research Significance

Academic significance. Through frontline survey data, this study examines the multi-dimensional correlation between the frequency, type, and duration of participation in community cultural activities and the mental health of empty-nest elderly, providing empirical testing from the less developed areas of eastern Guangdong, China for the theoretical path of "social participation - mental health," which helps enrich the empirical accumulation in this field under different regional and cultural backgrounds. At the same time, the study correlates activity participation characteristics (frequency, duration, type) with mental health indicators, which can provide more operational variable references for subsequent intervention research.

Practical significance. The research results can directly serve the optimization of community elderly-friendly services in Anbu Town and similar areas. By identifying key factors that hinder participation (such as unreasonable activity timing, physical inconvenience and travel difficulties, etc.) and the types of activities preferred by the elderly, data support can be provided for communities to adjust activity plans. In addition, the "high willingness to participate - low frequency participation" gap revealed by the study suggests that communities need to take targeted measures to increase activity frequency and optimize scheduling to convert participation willingness into actual mental health benefits.

Table 1-1 Analysis Results

Dimension	Specific Indicators	Data Results
Mental Health Status	Feeling lonely ("often + always")	53.34%
Mental Health Status	Difficulty falling asleep or easily awakened ("often + always")	86.66%
Activity Participation	Participation rate	80%
Activity Participation	Low-frequency participation (≤ 1 time/month)	66.67%
Activity Participation	Short-duration participation (≤ 30 minutes)	50%
Activity Experience	Feeling "lively and not lonely"	63.33%
Perceived Impact	Loneliness "relatively" alleviated	60%
Perceived Impact	Believe activities are "relatively/very beneficial"	76.66%
Participation Barriers	"Inappropriate activity timing"	43.33%
Demand Preferences	Hope activity frequency reaches 2-3 times per month	56.67%

2. Literature Review

2.1. Population Aging and Characteristics of Empty-Nest Elderly Population

Population aging is the basic national condition of China for the current and future long period. As of the end of 2025, the population aged 60 and above in China has reached 323 million, accounting for 23.0% of the total population, and China has officially entered a moderately aging society. Among them, the population aged 65 and above is 224 million, accounting for 15.87% of the national population (see Table 2-1). The average annual growth rate of the elderly population reaches 3.6%, and it is expected that during the "15th Five-Year Plan" period, the aging level will increase from 23.0% to 27.8%, and the elderly dependency ratio will exceed 40%. At the same time, China's population aging is intertwined with negative population growth, low birth rate, advanced aging, and getting old before getting rich, making the task complex and arduous.

While population aging is accelerating, the trend of miniaturization and empty nesting of family structures is becoming increasingly prominent. Tao et al. (2023) based on the Seventh National Population Census data found that the level of empty nesting of urban and rural elderly families has continued to increase since 2000. Among households with people aged 65 and above, the proportion of elderly empty-nest households increased from 22.80% in 2000 to 43.60% in 2020, and the family type of elderly living alone has grown rapidly in the past decade (see Table 2-2). In 2020, the number of elderly households reached 174 million, among which households of elderly living alone and empty-nest elderly couples accounted for

more than 40%. The trends of miniaturization, aging, and solo living of family structures mean that the traditional form of mutual help among family members is further weakened. In this context, empty-nest elderly have become one of the most prominent social groups in China's aging process.

Table 2-1 Core Indicators of Population Aging in China (2020-2025)

Indicator	2020	2023	2025	Trend
Population aged 60 and above (100 million)	2.64	2.97	3.23	↑ 22.3%
Proportion of population aged 60 and above (%)	18.70	21.10	23.00	↑ 4.3 p.p.
Population aged 65 and above (100 million)	1.91	2.17	2.24	↑ 17.3%
Proportion of population aged 65 and above (%)	13.50	15.40	15.87	↑ 2.37 p.p.
Elderly dependency ratio (%)	29.50	34.80	40.00*	↑ 10.5 p.p.

Note: *Predicted value during the "15th Five-Year Plan" period. Data source: National Bureau of Statistics annual population data, Seventh National Population Census Bulletin (2021).

Figure 2-1 Trends in the Number and Proportion of Population Aged 60 and Above in China (2020-2025)

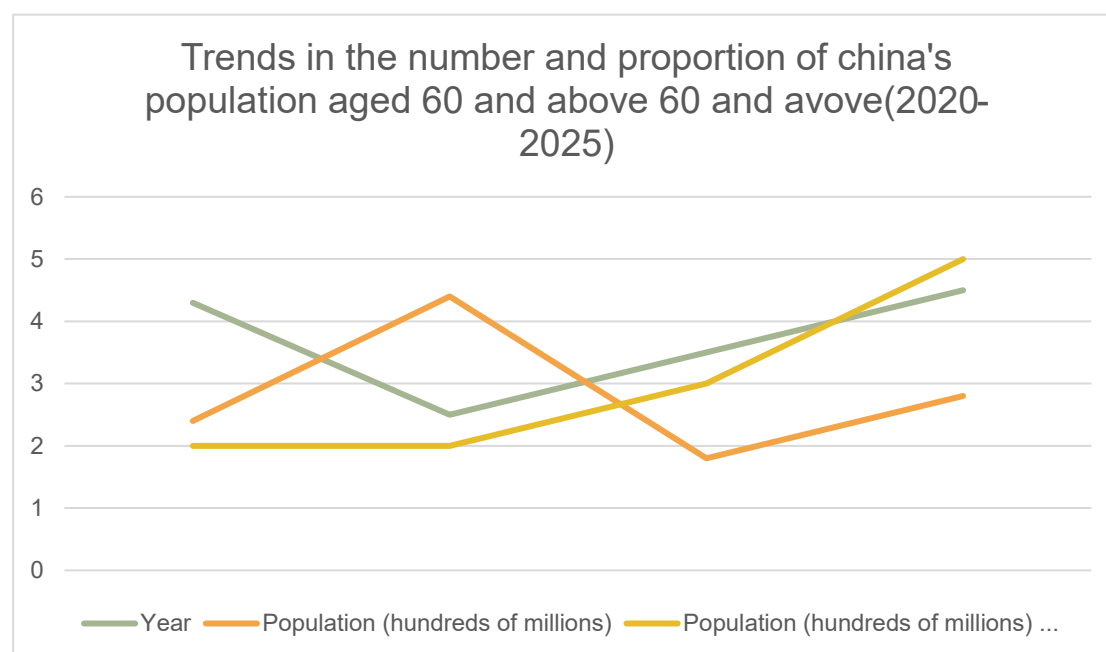


Table 2-2 Changes in the Structure of Elderly Households in China (2000-2020)

Household Type	2000	2010	2020	Change (2000-2020)
Proportion living with children (%)	77.20	67.30	56.40	↓ 20.8 p.p.
Proportion of empty-nest households (%)	22.80	32.70	43.60	↑ 20.8 p.p.
Among them: elderly living alone	—	13.21	16.37	↑ 3.16 p.p.
Among them: elderly couples	—	15.02	18.39	↑ 3.37 p.p.
Total elderly households (10,000 households)	—	—	17,424	—

Data source: Tao et al. (2023) based on the Seventh Census data; excluding household types of "living only with minor grandchildren".

Definition and scale of empty-nest elderly. According to the definition of civil affairs departments in aging statistics work, empty-nest elderly include elderly couple households and elderly living alone. Empty-nest elderly refer to elderly people aged 60 and above who have no children to take care of them or whose children are not around, living alone or as a couple. Data shows that in 2025, the proportion of empty-nest elderly in China reached 58%, with a scale exceeding 160 million (see Table 2-3); it is expected that by 2030, the number of empty-nest elderly will exceed 200 million. In urban areas, there are 31.118 million households with elderly population aged 60 and above, and the empty-nesting trend is significant; in rural areas, the proportion of empty-nest elderly has reached 65%, higher than 52% in urban areas. Ding Zhihong et al. (2025) using census data found that the scale of empty-nest families of the elderly aged 65 and above in rural areas is larger than in urban areas, the proportion is higher than in urban areas, and the growth is faster than in urban areas, among which empty-nest families living alone are particularly prominent.

Table 2-3 Scale and Urban-Rural Distribution of Empty-Nest Elderly (2025)

Indicator	National	Urban	Rural
Total empty-nest elderly (10,000 people)	16,000+	7,488	8,512
Proportion of elderly population (%)	58.00	52.00	65.00
Proportion of empty-nest elderly living alone (%)	—	~35	~41
Proportion of empty-nest elderly couples (%)	—	~65	~59

Data source: National Office for Aging "2025 China Aging Development Report", State Council "14th Five-Year Plan National Aging Cause Development and Elderly Service System Plan" mid-term evaluation data.

Group characteristics and multi-dimensional dilemmas of empty-nest elderly. The formation of the empty-nest elderly group is the result of multiple factors. The acceleration of urbanization is the core driver — in 2025, China's urbanization rate reached 68%, and the cross-provincial floating population was about 120 million. Many young and middle-aged people go out to work or employment, leaving their elderly parents in their hometowns, becoming the main body of passive empty-nesting. At the same time, since the implementation of the family planning policy, the "4-2-1" family structure has become the mainstream, and a couple needs to support four elderly people, making it difficult to balance the daily care of both parents. In addition, about 35% of the elderly actively choose to live alone due to intergenerational conceptual differences.

Compared with non-empty-nest elderly, empty-nest elderly face more severe multi-dimensional dilemmas (see Table 2-4). At the economic level, empty-nest elderly have limited income sources, and empty-nest elderly living alone are more dependent on support from other family members and minimum living security. At the health level, empty-nest elderly are often older, and without children or children not around to take care of them, they are more prone to problems such as health security, life care, and spiritual comfort; the main health problems in the elderly empty-nest stage include physical aging and high incidence of chronic diseases, psychological feelings of loneliness and loneliness, and decline in self-care ability caused by the combined effect of aging and disease. At the mental health level, empty-nest elderly face dilemmas such as decline in physical function, lack of communication partners, and inability to meet the needs of love and belonging. A 2024 survey by the China National Research Center on Aging showed that more than half of the elderly feel varying degrees of loneliness, and this problem is more significant among the empty-nest elderly group. The "China Aging Development Report 2024" points out that 23.76% of China's elderly have varying degrees of loneliness, and 26.4% of the elderly have varying degrees of depressive symptoms. Changes in social interaction, family relationships, social roles, and physical function are all important factors leading to mental health problems among the elderly.

Table 2-4 Comparison of Multi-dimensional Dilemmas Between Empty-Nest and Non-Empty-Nest Elderly

Dilemma Dimension	Specific Indicator	Empty-Nest Elderly	Non-Empty-Nest Elderly	Difference
Economic	Proportion mainly relying on family support (%)	43.6	28.4	+15.2 p.p.
Health	Proportion with impaired activities of daily living (%)	32.7	24.7	+8.0 p.p.
Psychological	Detection rate of depressive symptoms (%)	39.0	26.3	+12.7 p.p.
Social	Social isolation score (mean)	1.31	1.17	+0.14

Note: Economic and health data are comparisons between elderly living alone and non-living alone aged 75 and above; social isolation score is the mean of the friendship relationship scale, higher score represents better relationship, difference is statistically significant ($p < 0.01$). Data source: Wang et al. (2020), Zhang et al. (2017), "China Aging Development Report 2024".

The expansion of the scale and multiple dilemmas of the empty-nest elderly group pose a fundamental challenge to the traditional family-centered elderly care model. With the continuous weakening of family elderly care functions, the needs of empty-nest elderly in terms of life care, spiritual comfort, and social participation are increasingly prominent, urgently requiring social services at the community level to respond. How to make up for the functional deficiency of family elderly care and improve the mental health status of empty-nest elderly through social approaches such as community cultural activities has become a practical proposition that needs to be urgently addressed in the governance of an aging society.

2.2. Research on Mental Health Problems of Empty-Nest Elderly

The mental health status of empty-nest elderly is a focus of great attention in academia. According to many empirical studies, empty-nest elderly belong to vulnerable groups and are a high-risk group for mental illness. Zhang Ruiying et al. (2026) conducted a Meta-analysis of 42 articles and 55,271 samples, showing that the incidence of depressive symptoms among empty-nest elderly in China is 39.0% (95% CI 0.32-0.46), and there are significant differences in the incidence of depression among people with different characteristics. A Meta-analysis in 2014 also showed that the probability of depression among empty-nest elderly in China is as high as 40.4%, and the mental health level of urban empty-nest elderly is far lower than the national average level, mainly manifested in somatization and depression symptoms. Empty-nest syndrome is the main psychological problem of empty-nest elderly, mainly manifested in loneliness, depression, anxiety, etc. In terms of loneliness, studies have found that empty-nest elderly are more likely to be excluded from social relationships than non-empty-nest elderly and are more likely to experience subjective feelings of exclusion.

The psychological problems of empty-nest elderly are affected by many factors. Liu Lu et al. (2024) systematic review and Meta-analysis included 22 studies and 34,911 samples, finding that having no spouse is an important risk factor for depression and anxiety among empty-nest elderly in China (OR=1.39). From the perspective of hierarchy of needs, empty-nest elderly face decline in physical function, lack of communication partners, inability to meet the needs of love and belonging, and the role change after retirement leads to the neglect of respect and self-actualization needs. In addition, female, low education level, low nighttime sleep duration, low frequency of meeting with children, poor self-rated health, physical pain, and limited activities are all risk factors for depression, while having social participation is a protective factor.

The survey data of this study is highly consistent with this. Among the 30 surveyed empty-nest elderly, 53.34% "often" or "always" feel lonely, 86.66% "often" or "always" have difficulty falling asleep or are easily awakened, 60% "often" or "always" worry about their physical condition and are prone to anxiety, 30% "often" or "always" feel useless and lack confidence, and 40% "often" or "always" are unwilling to communicate with others. These data confirm the universality and severity of psychological problems among empty nest elderly and highlight the necessity and urgency of improving their mental health through social participation approaches such as community cultural activities.

2.3. Research on Intervention Effects of Community Cultural Activities

The intervention effects of community cultural activities on the mental health of empty-nest elderly have been supported by multiple empirical studies. Wang et al. (2026) utilized the 2023 China Longitudinal Aging Social Survey (CLASS) data and employed regression analysis and mediation effect models to examine the impact of community participation on depression among empty-nest elderly. Their findings revealed that active participation in community activities exerts a positive effect on alleviating depressive symptoms, with friend networks serving as a partial mediating mechanism in this relationship. Notably, the mediating effect of family networks was not statistically significant, suggesting that expanding social circles beyond the family domain may be a particularly important pathway for mental health improvement in this population.

A separate study based on the 2018 China Health and Retirement Longitudinal Study (CHARLS) data, which included 2,911 empty-nest elderly participants, adopted instrumental variable methods and propensity score matching to address potential endogeneity issues. The results demonstrated that social participation has a significant negative effect on depression scores ($\beta = -2.404$, $p < 0.001$), indicating that greater social engagement is associated with lower levels of depressive symptoms. This robust association persisted across multiple model specifications, providing strong evidence for the protective role of social participation.

In addition to observational studies, randomized controlled trials and quasi-experimental designs have further corroborated these findings. A 12-week community psychological intervention study conducted with 50 empty-nest elderly participants reported a substantial reduction in Self-Rating Depression Scale (SDS) scores from 19.43 ± 2.69 pre-intervention to 12.25 ± 2.94 post-intervention ($p < 0.05$), demonstrating the clinical significance of structured community-based psychological support. Another group psychological intervention study involving 81 empty-nest elderly participants found that the detection rate of depression decreased from 21.00% to 14.82% following the intervention, representing a reduction of 6.18 percentage points. Furthermore, a randomized controlled trial evaluating the effects of a 12-week ethnic dance training program (delivered three times per week, 60 minutes per session) among 100 urban empty-nest elderly participants showed that the Geriatric Depression Scale (GDS) scores decreased from 18.5 ± 4.7 to 10.2 ± 3.8 , while the total social support scores increased from 31.2 ± 5.3 to 37.6 ± 4.9 , with both changes reaching statistical significance ($p < 0.01$). These findings collectively indicate that community cultural activities and structured interventions can effectively alleviate depression and loneliness among empty-nest elderly, while simultaneously enhancing their perceived social support.

The survey data from the present study are highly consistent with these prior findings. Specifically, 76.66% of respondents in this survey believed that community cultural activities were "relatively" or "very" beneficial to the mental health of empty-nest elderly, and 60% of respondents reported that their loneliness was significantly alleviated and their social interactions were relatively increased after participating in activities. These consistencies across different study designs and geographical contexts reinforce the robustness of the evidence base supporting community-based interventions as an effective strategy for improving the psychological well-being of empty-nest elderly.

2.4. Literature Review and Research Gaps

The intervention effects of community cultural activities on the mental health of empty-nest elderly have been supported by multiple empirical studies. Table 2-5 summarizes the core data of main studies.

Table 2-5 Intervention Effects of Community Cultural Activities on Mental Health of Empty-Nest Elderly: Main Research Findings

Study (Year)	Data Source/Study Design	Sample Size	Core Findings	Effect Size
Wang et al. (2026)	2023 CLASS data, regression analysis + mediating effect	Empty-nest elderly group	Community participation has a positive effect on depression reduction, and friend network plays a partial mediating role	
Study based on CHARLS data (2020)	2018 CHARLS, instrumental variable method + propensity score matching	2,911 empty-nest elderly	Social participation has a significant negative effect on depression scores	$\beta = -2.404$, $p < 0.001$
Community psychological intervention study	12-week community psychological intervention, pre-post control	50 empty-nest elderly	SDS score decreased from before intervention (19.43±2.69) to after intervention (12.25±2.94)	$p < 0.05$
Group psychological intervention study	Group psychological intervention, pre-post control	81 empty-nest elderly	Detection rate of depression decreased from 21.00% to 14.82%	Decreased by 6.18 p.p.
Ethnic dance training intervention	12-week ethnic dance training (3 times/week, 60 minutes each), RCT	100 urban empty-nest elderly	GDS score decreased from 18.5±4.7 to 10.2±3.8; total social support score increased from 31.2±5.3 to 37.6±4.9	Decreased by 6.18 p.p.

The above studies indicate that community cultural activities can indeed effectively alleviate the depression and loneliness of empty-nest elderly. The survey data of this study is highly consistent with this: 76.66% of respondents believe that community cultural activities are relatively or very beneficial to the mental health of empty-nest elderly, and 60% of respondents reported that loneliness was significantly relieved and social interaction was relatively increased after participating in activities.

Table 2-6 Perception of the Effect of Community Cultural Activities by Surveyed Empty-Nest Elderly in This Study (N=30)

Perception Dimension	Not at all (1 point)	Not much (2 points)	Average (3 points)	Relatively (4 points)
Loneliness alleviated	0 (0%)	4 (13.33%)	8 (26.67%)	18 (60%)
Met more friends, socialized more frequently	0 (0%)	4 (13.33%)	8 (26.67%)	18 (60%)
Life is more fulfilling and meaningful	0 (0%)	3 (10%)	9 (30%)	18 (60%)

Note: The table presents actual feelings of "the past month", higher scores represent more obvious improvement effect.

3. Research Methods

3.1. Research Design and Sample

This study adopts a cross-sectional questionnaire survey design to systematically examine the relationship between participation in community cultural activities and the mental health level of empty-nest elderly.

Using convenience sampling method, the inclusion criteria are: (1) aged 55 and above; (2) empty-nest elderly (no children to take care of or children not around, living alone or as a couple); (3) clear consciousness, able to complete the questionnaire independently or with the assistance of the investigator; (4) voluntary participation and informed consent. Exclude those with severe cognitive impairment or mental illness who cannot cooperate with the survey. A total of 30 questionnaires were distributed in this survey, and 30 valid questionnaires were recovered, with an effective recovery rate of 100%. Among the 30 respondents, 12 were male (40%) and 18 were female (60%); in terms of age distribution, 11 were aged 55-69 (36.67%), 7 were aged 70-79 (23.33%), 6 were aged 80 and above (20%), and 6 were unwilling to disclose their age (20%); in terms of self-care ability in daily life, 16 (53.33%) had no situation of being unable to take care of themselves in daily life, 7 (23.33%) had such situation, and 7 (23.33%) were unwilling to disclose. Before the implementation of the study, the investigator explained the purpose, content, and confidentiality principles of the survey to each respondent, and the survey was conducted after the respondent signed the informed consent. The survey

adopted a combination of face-to-face interviews and self-filled questionnaires. For respondents with reading difficulties or poor eyesight, the investigator dictated each question and recorded the answers to ensure data quality.

3.2. Questionnaire Instruments and Variables

This study uses a self-designed "Questionnaire on Community Cultural Activities and Mental Health of Empty-Nest Elderly". The questionnaire has a total of 24 questions, covering four core dimensions.

Part 1: Basic Information (Questions 1-6). Collect the demographic and sociological characteristics of respondents, including gender, age, self-care ability in daily life, average monthly income level, and community type (urban/rural). Among them, the average monthly income level is divided into four grades: "1000 yuan and below", "1001-3000 yuan", "3001-5000 yuan", and "5001 yuan and above". In this sample, 9 people (30%) have 1000 yuan and below, 9 people (30%) have 1001-3000 yuan, 8 people (26.67%) have 3001-5000 yuan, and 4 people (13.33%) have 5001 yuan and above; urban communities and rural communities each have 15 people (each accounting for 50%).

Part 2: Mental Health Status (Questions 7-10). Includes two dimensions of measurement: first, 7 mental health indicators (matrix single-choice questions), requiring respondents to choose from four levels of "never" (1 point), "occasionally" (2 points), "often" (3 points), and "always" (4 points) according to their actual feelings in the "past month", covering dimensions such as loneliness, loss of interest, health anxiety, low mood, sleep disorders, feelings of uselessness, and social avoidance (Cronbach's $\alpha = 0.82$); second, 4 psychological resilience indicators (single-choice questions), including life satisfaction, ability to adjust mindset, sense of community belonging, and future expectations, using a five-level scoring system (from "very dissatisfied/completely unable to do it/completely don't feel/completely no" to "very satisfied/completely able to do it/completely feel/completely have").

Part 3: Participation in Community Cultural Activities (Questions 11-20). Measure the activity participation status of respondents in the "past 6 months", including whether they participate, activity type (multiple-choice, including cultural learning, cultural and entertainment interaction, emotional connection, and others), participation frequency, duration per participation, main reasons for participation (multiple-choice), subjective feelings during participation (multiple-choice), factors hindering participation (multiple-choice), types of activities most hoped to add (multiple-choice), actual frequency of activities, and desired frequency of activities.

Part 4: Perceived Impact of Community Cultural Activities on Mental Health (Questions 21-22). Includes two measurements: first, 3 matrix questions on perceived impact, requiring respondents to evaluate the degree of loneliness relief, social enhancement, and life fulfillment improvement after participating in activities, using 4-level scoring ("not at all" 1 point to "relatively" 4 points); second, 1 single-choice question on overall effect evaluation, using 5-level scoring ("no benefit at all" to "very beneficial"). Question 23 is an open-ended fill-in-the-blank question, collecting respondents' overall evaluation and suggestions on community cultural activities; Question 24 records the investigator, survey date, and location information.

3.3. Data Analysis Methods

(1) Descriptive statistical analysis: calculate the frequency, percentage, mean, and standard deviation of each variable to describe the demographic and sociological characteristics of the sample, current status of mental health, and activity participation (see Tables 4-1 to 4-3); (2) Group comparison analysis: group by participation frequency (low-frequency group ≤ 1 time/month, medium-frequency group 2-3 times/month, high-frequency group ≥ 4 times/month), compare the score differences in various dimensions of mental health among respondents with different participation frequencies; (3) Correlation analysis: use Spearman rank correlation coefficient to examine the correlation between activity participation indicators (frequency, duration) and mental health indicators (loneliness, sleep quality, depressive mood, etc., 7 items); (4) Perceived effect analysis: calculate the perceived proportion of activity participants on activity effects to describe the impact intensity of community cultural activities in the subjective experience of respondents. All statistical tests use $p < 0.05$ as the criterion for judging statistically significant differences.

4. Research Findings

4.1. Sample Demographic Characteristics

This study surveyed a total of 30 empty-nest elderly. Table 4-1 presents the distribution of demographic and sociological characteristics of the sample.

In terms of gender distribution, female respondents (60%) are more than male (40%), which is consistent with the general characteristic that the proportion of women is higher in the empty-nest elderly group. In terms of age composition, the low-age elderly aged 55-69 account for 36.67%, which is the main surveyed group; those aged 70-79 account for 23.33%; the high-age elderly aged 80 and above account for 20%; another 20% of respondents chose not to disclose their age. In terms of self-care ability in daily life, 53.33% of respondents have no situation of being unable to take care of themselves in daily life, 23.33% have such situation, and another 23.33% are unwilling to disclose. In terms of income level, 60% of respondents have an average monthly income of 3000 yuan and below, among which 30% have 1000 yuan and below, 30% have 1001-3000 yuan; 3001-5000-yuan accounts for 26.67%; 5001 yuan and above only accounts for 13.33%. In terms of community type, urban communities and rural communities each account for 50%, and the sample is balanced in urban-rural distribution, which is conducive to subsequent urban-rural comparative analysis.

From the overall characteristics of the sample, the surveyed empty-nest elderly present a group portrait of "mainly low and middle age, more women, mainly middle and low income, balanced urban and rural". This structure is basically consistent with the overall characteristics of "feminization, aging, middle and low income" of empty-nest elderly nationwide. It is worth noting that 23.33% of respondents have the situation of being unable to take care of themselves in daily life, plus 20% of respondents aged 80 and above, which means that a considerable proportion of empty-nest elderly may face physical barriers when participating in community cultural activities, which is mutually confirmed with the data that "physical inconvenience, travel difficulties" (30%) as the main participation barrier in the subsequent analysis. At the same time, the sample composition of half rural and half urban communities

provides a data basis for subsequent investigation of the differences in activity supply and mental health levels in different community types.

Table 4-1 Sample Demographic and Sociological Characteristics (N=30)

Variable	Category	Number (n)	Percentage (%)
Gender	Male	12	40.00
	Female	18	60.00
Age	55-69 years old	11	36.67
	70-79 years old	7	23.33
	80 years old and above	6	20.00
	Unwilling to disclose	6	20.00
Self-care ability in daily life	Has situation of being unable to take care of oneself	7	23.33
	No situation of being unable to take care of oneself	16	53.33
	Unwilling to disclose	7	23.33
Average monthly income	1000 yuan and below	9	30.00
	1001-3000 yuan	9	30.00
	3001-5000 yuan	8	26.67
	5001 yuan and above	4	13.33
	Unwilling to disclose	0	0.00
Community type	Urban community	15	50.00
	Rural community	15	50.00

4.2. Participation in Community Cultural Activities

In terms of activity participation, 80% of the respondents had participated in community cultural and social activities. Among the activity types, cultural learning activities (calligraphy, painting, health lectures, etc.) accounted for 30%, entertainment and interactive activities (chorus, opera, square dancing, chess, etc.) accounted for 33.33%, and emotional connection activities (tea parties, festival celebrations, storytelling sessions, etc.) accounted for 26.67%.

Regarding participation frequency, 66.67% of the participants attended activities once a month or less, 20% attended 2–3 times per month, 10% attended 4–5 times per month, and only 3.33% attended 6 times or more per month. In terms of duration, 50% of the participants spent 30 minutes or less per session, 30% spent 31–60 minutes, 16.67% spent 61–90 minutes, and only 3.33% spent more than 90 minutes.

The main reasons for participation were "killing time and alleviating loneliness" (56.67%), followed by "community recommendation and finding it meaningful" (26.67%) and "neighbor invitation and wanting to make new friends" (23.33%). Regarding subjective feelings during activities, 63.33% of the participants felt "lively and not lonely," while 26.67% felt "happy and relaxed," and 26.67% felt "a sense of achievement and recognition."

The primary barriers to participation included "inappropriate activity timing" (43.33%), "physical inconvenience and travel difficulties" (30%), "distance and transportation issues" (26.67%), and "lack of companionship and feeling uncomfortable attending alone" (16.67%). In terms of future expectations, 46.67% of the respondents most hoped to see new cultural learning activities added, another 46.67% preferred entertainment and interactive activities, and 56.67% expressed a desire to increase the activity frequency to 2–3 times per month.

4.3. Analysis of the Impact of Community Activities on Mental Health

The mental health status part of this study includes 7 indicators, requiring respondents to answer based on their actual feelings in the past month. Table 4-2 shows the score distribution of each indicator.

Table 4-2 score Distribution of 7 Mental Health Indicators of Empty-Nest Elderly (N=30)

Question	Never (1 point) n(%)	Occasionally (2 points) n(%)	Often (3 points) n(%)	Always (4 points) n(%)	Mean	SD
Feeling lonely, no one to accompany	1 (3.33)	13 (43.33)	8 (26.67)	8 (26.67)	2.77	0.858
Losing interest in things usually liked	2 (6.67)	13 (43.33)	9 (30.00)	6 (20.00)	2.63	0.850
Worrying about physical condition, prone to anxiety	0 (0)	5 (16.67)	18 (60.00)	7 (23.33)	3.07	0.640

Low mood, easily sad or wanting to cry	3 (10.00)	18 (60.00)	6 (20.00)	3 (10.00)	2.30	0.750
Difficulty falling asleep or easily awakened	3 (10.00)	4 (13.33)	10 (33.33)	16 (53.33)	3.40	0.724
Feeling useless, lacking confidence	2 (6.67)	15 (50.00)	4 (13.33)	9 (30.00)	2.67	0.922
Unwilling to communicate with others, just wanting to stay alone	0 (0)	11 (36.67)	7 (23.33)	12 (40.00)	3.03	0.850

From the data, the mental health problems of empty-nest elderly are not optimistic. Among them, the problem of difficulty falling asleep or being easily awakened is the most prominent, with 86.66% of respondents choosing "often" or "always"; 60% of respondents "often" or "always" worry about their physical condition and are prone to anxiety; 40% "often" or "always" are unwilling to communicate with others and just want to stay alone; 53.34% "often" or "always" feel lonely and have no one to accompany; 43.34% "often" or "always" feel useless, lack confidence, or lose interest in things they like. Among the 7 indicators, the top three with the highest mean are sleep disorders (3.40), health anxiety (3.07), and social avoidance (3.03), indicating that these three aspects of psychological problems are particularly common among empty-nest elderly. From the overall score, the mean total score of the 30 surveyed empty-nest elderly in the 7 indicators is 19.87 points (out of 28 points), suggesting that mental health is at a moderately low level. The above data confirm the finding in the Meta-analysis that "the incidence of depressive symptoms among empty-nest elderly is 39.0%" and also reveal that sleep disorders and health anxiety are the two most prominent dimensions of psychological problems among empty-nest elderly, providing a baseline reference for subsequent analysis of whether community cultural activities can improve these psychological indicators.

5. Discussion

5.1. Interpretation of Main Findings

The main findings of this study can be summarized as "one gap, two groups of differences, and three-dimensional perception".

This study reveals that the activity participation of empty-nest elderly in Anbu Town presents a significant characteristic of "high participation rate - low frequency - short duration". The participation rate is as high as 80%, but 66.67% of respondents participate in activities only once a month or even less, and 50% of participants spend less than 30 minutes per activity.

This finding indicates that although the local community has established a basic cultural activity system, the sustainability, regularity, and attractiveness of activities are insufficient, making it difficult to form stable participation habits.

Group comparison shows that the frequency of activity participation is positively correlated with the level of mental health. The high-frequency participation group (≥ 4 times/month) has lower scores on both "loneliness" and "social avoidance" indicators than the low-frequency group (≤ 1 time/month), suggesting that the cumulative effect of community activity participation frequency may have the potential to alleviate psychological distress. At the same time, although the urban-rural difference has not reached a statistically significant level, the mean score of "feeling lonely" of respondents in rural communities (2.87) is higher than that in urban communities (2.67), and rural respondents are mostly concentrated in the low-frequency group in terms of activity participation frequency (73.33%). This finding is consistent with the conclusion in Zhang Ruiying et al. (2026) Meta-analysis that "the incidence of depression among rural empty-nest elderly (39.9%) is higher than that in urban areas (26.2%)", indicating that rural communities still need to strengthen the frequency and diversity of activity supply.

Finally, at the level of perceived impact, 60%-76.66% of respondents believe that community cultural activities are "relatively" or "very" helpful in alleviating loneliness, enhancing social interaction, and enriching life. This proportion is much higher than the actual magnitude of improvement observed in mental health scale scores, reflecting a noteworthy phenomenon: empty-nest elderly have strong psychological expectations and emotional dependence on community cultural activities, and the symbolic significance of activities ("people in the community care about me") and social experience ("lively and not lonely") may play a role before substantial psychological improvement. This finding echoes the mediating mechanism study of Wang et al. (2026) that "community participation mainly affects depression levels by expanding the scale of friend networks".

5.2. Policy Recommendations

Based on these findings, some corresponding recommendations can be put forward:

Increase the frequency of activities to meet the needs of the elderly. Currently, 56.67% of respondents hope that the activity frequency can be increased to 2-3 times per month, while 63.33% of communities only carry out activities once a month. It is recommended that communities adjust cultural activities from once a month to once every two weeks or once a week to form a stable activity rhythm and enhance the social participation stickiness of empty-nest elderly.

Optimize scheduling and lower the threshold for participation. 43.33% of respondents listed "inappropriate activity timing" as the primary barrier to participation, and 30% reported "physical inconvenience, travel difficulties". Community activity time can be arranged in time periods when the elderly have relatively abundant physical strength, such as 9:30-11:00 in the morning. At the same time, door-to-door activity services can be provided for the elderly with mobility difficulties and disabled empty-nest elderly, such as home visits and corridor tea parties, to expand the coverage of activities.

Enrich activity types to meet diverse needs. 46.67% of respondents most hope to increase cultural learning activities and cultural and entertainment interaction activities. Based on retaining traditional calligraphy and opera activities, digital learning courses and outdoor group activities that meet the interests of the low-age elderly can be added. At the same time, support for emotional connection activities can be enhanced to respond to the deep social belonging needs of empty-nest elderly.

Establish an effect evaluation mechanism. It is recommended that communities regularly collect feedback data from activity participants, and dynamically adjust the frequency, time, and content of activities to ensure that community cultural activities transform from "existing" to "useful" and "effective", and truly serve the actual improvement observed of the mental health of empty-nest elderly.

6. Conclusion

6.1. Research Conclusions

Based on the questionnaire survey data of 30 empty-nest elderly in Anbu Town, Chaoan District, Chaozhou City, this study examines the correlation between participation in community cultural activities and mental health. The study found that: the mental health status of empty-nest elderly is generally at a moderately low level, with sleep disorders (86.66%), health anxiety (60%), and social avoidance (40%) being the most prominent problems; although the participation rate of community cultural activities reaches 80%, it presents the characteristics of "low frequency, short duration", and 66.67% of participants only participate once or less per month; the frequency of activity participation is positively correlated with the level of mental health, and the high-frequency participation group has better scores on loneliness and social avoidance than the low-frequency group; 76.66% of respondents believe that community cultural activities are "relatively" or "very beneficial" to mental health. The above findings indicate that community cultural activities have positive effects on alleviating loneliness and enhancing social connection among empty-nest elderly, but there is still a supply-demand mismatch in the current activities in terms of frequency, scheduling, and type diversity, which restricts the full play of their psychological promotion effects.

6.2. Research Limitations and Future Directions

This study has the following limitations: First, the sample size is small (N=30), and the convenience sampling method is adopted, so the external validity of the research conclusions is limited, and it should not be generalized to a wider group of empty-nest elderly; second, the cross-sectional study design cannot infer the causal relationship between community cultural activities and mental health, and there may be reverse causality or self-selection bias between activity participation and psychological improvement (i.e., elderly with better mental status are more inclined to participate in activities); third, the data comes from self-reports of respondents, which may have social desirability bias and recall bias; fourth, the questionnaire measures some variables relatively briefly, such as not distinguishing the differential impact of participating in different types of activities on mental health, nor deeply examining potential regulatory factors such as child support and neighborhood relations; fifth, the survey is concentrated in a single area of Anbu Town, Chaoan District, failing to cover more diverse

urban and rural communities, and lacking inter-regional comparative analysis. Future research can be promoted in the following directions: expand the sample size and adopt random sampling methods to enhance the external validity of the study; introduce longitudinal tracking design to examine the causal effect of activity participation on mental health; refine activity types into multi-dimensional indicators to reveal the differentiated intervention paths of different types of activities; conduct cross-regional comparisons in a wider geographical range to explore the impact of differences in community resource endowments and population structures on activity effects. Despite the above limitations, the findings of this study still provide valuable baseline data and empirical reference for optimizing community elderly-friendly cultural services in less developed areas of eastern Guangdong.

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Evaluation of the Nantou Ancient City Revitalization Project and Its Implications

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Abstract

As China's urban renewal shifts from large-scale demolition and reconstruction to place-based, incremental micro-regeneration, the core dilemma of such small-scale renovation lies in whether physical heritage conservation can coexist sustainably with the continuity of original resident communities. Existing theoretical and practical evidence provides sufficient grounds to formulate targeted research presumptions: On the theoretical level, scholars have long pointed out that culture-led historic district renewal tends to follow a predictable cycle of spatial upgrading, commercial prosperity, rent hikes, and resident displacement, while formal multi-stakeholder consultation often falls into performative participation without substantive power to adjust livelihood-related interests (Zukin, 2010). In practical terms, Nantou Ancient City carries dual attributes of dense urban village and millennial heritage site; its main street-dominated commercial layout separates tourist consumption spaces from residential inner alleys, and market-oriented operation logic may prioritize tourism revenue over residents' long-term living security. Synthesizing the above theoretical deductions and site-specific contextual characteristics, this study puts forward a preset research hypothesis: micro-regeneration projects integrated with urban villages and heritage sites will achieve outstanding spatial conservation effects but fail to deliver balanced community cultural inheritance and resident livelihood security, ultimately leading to the risk of "preserving tangible architecture while losing intangible human settlements". Taking Shenzhen's Nantou Ancient City—a landmark micro-regeneration case blending urban village and historical heritage—as the research object, this paper constructs a three-dimensional evaluation framework covering physical spatial effects, community cultural effects, and livelihood protection effects, and verifies the preset hypothesis based on 35 valid questionnaires. The empirical results are consistent with the preset assumption: (1) At the physical spatial level, micro-regeneration gains high recognition (Q6 mean = 3.66), effectively protecting the ancient town's spatial texture and historical features; yet heritage display overly relies on static architectural relics, with daily community living scenes barely visible to visitors; (2) Community cultural performance stays at a moderate level (Q7 mean = 3.14, Q8 mean = 3.11). Though a tripartite consultation mechanism has been established, respondents doubt its substantial capacity to advance cultural continuity and resident participation; (3) Livelihood protection yields the weakest performance (Q9 mean = 2.43, Q10 mean = 2.86), where surging rental costs and insufficient redistribution of commercial gains constitute the most prominent social conflicts that threaten the retention of original residents. Consistent with the preset hypothesis, the study confirms that Nantou's micro-regeneration has accomplished remarkable tangible space preservation but exposed prominent deficiencies in sustaining resident communities. To transform micro-regeneration

from superficial spatial beautification to community-oriented good governance, this research proposes targeted measures, including establishing community benefit-sharing mechanisms, activating cultural functions of inner residential alleys, and smoothing formal resident participation channels.

1. Introduction

1.1. Research Background

Urban renewal is a major issue in contemporary urban development in China. In 2020, the Central Economic Work Conference explicitly called for actions to renew cities, marking a shift in China's urban development approach from large-scale expansion to more intensive, quality-oriented growth. Within this transition, a new approach known as micro-regeneration has gradually become a common way to preserve and revitalize historic districts in China, distinguishing itself from the old model of large-scale demolition and reconstruction.

The idea behind micro-regeneration draws from theories of “urban acupuncture” and “organic renewal” theories (Wu Liangyong, 1989). It emphasizes making small, gradual improvements to upgrade spatial quality and activate functions, while keeping the existing social networks and physical layout of the area largely intact. Fang (1999) further applied the organic renewal theory to the practice of Beijing's old city renovation, proposing that the “small-scale, incremental” renewal model is an important correction to the traditional “large-scale demolition and reconstruction” model, emphasizing that renewal should take courtyards or blocks as basic units and respect the historical layering process of cities. Compared with conventional demolition and rebuilding, micro-regeneration pays more attention to preserving the continuity of historical context and the stability of community life.

Nantou Old Town is located at the intersection of Shennan Boulevard and Zhongshan Park in Nanshan District, Shenzhen, covering approximately 24.5 hectares. First established in 331 AD during the Eastern Jin Dynasty, it has undergone multiple renovations and expansions, making it the birthplace of Shenzhen's urban history, known as the “source of Shenzhen-Hong Kong.” Before the 2017 renewal, the Nantou area housed about 34,000 residents, with a population density as high as 35,000 people per square kilometer, most of whom were migrant tenants—a typical high-density urban village.

The spatial structure of Nantou Old Town features a distinctive “main street—inner alley” dichotomy. The main street (Zhongshan South Street) runs north-south through the old town, serving as the primary commercial and cultural tourism axis; on both sides are densely distributed inner alley residential areas consisting mostly of self-built housing with relatively poor living conditions. This spatial pattern determines the complexity of micro-regeneration: how to improve the main street's commercial environment while simultaneously safeguarding the quality of life and cultural needs of inner alley residents is the core challenge facing micro-regeneration.

However, improving physical space does not necessarily mean the renewal effort has succeeded. As commercial activities have intensified, new tensions have emerged in Nantou Old Town. Rents for shops along the main street have continued to rise, which may push out

original residents. The cultural displays and infrastructure in the inner alleys have lagged, and a deeper connection between heritage and everyday community life has yet to be established. At the same time, the different interests of various groups—original residents, new tenants, business owners, and visitors—have become increasingly apparent. At the heart of these issues lies one central question: has the micro-regeneration of Nantou Old Town truly achieved a balance between preserving its physical heritage and sustaining its human community?

1.2. Research Questions and Objectives

This study centers on "micro-regeneration effect evaluation" and proposes the following research question:

RQ1: How does micro-regeneration in Nantou Old Town perform across three dimensions: physical spatial effects, community cultural effects, and livelihood protection effects?

To address this question, the study sets three specific objectives: (1) to evaluate the physical spatial effects of micro-regeneration in preserving the old town's fabric and historic character; (2) to evaluate the impact of micro-regeneration on community cultural continuity and social relations; (3) to evaluate the impact of micro-regeneration on the livelihood protection of original residents and tenants, identifying risks of "preserving things while losing people."

2. Literature Review

2.1. The Conceptual Evolution of Micro-Regeneration

As an academic concept, "micro-regeneration" has evolved from practical exploration to theoretical construction. Its theoretical origin can be traced back to Wu Liangyong's (1989) "organic renewal" theory, which emphasizes that cities are organic living bodies and renewal should proceed through small-scale, incremental approaches to avoid damaging urban fabrics. Subsequently, the concept of "urban acupuncture" further enriched the connotation of micro-regeneration—just as acupuncture stimulates acupoints to regulate bodily functions, urban micro-regeneration activates broader spatial vitality through precise interventions at key nodes.

At the policy level, micro-regeneration has been formally established as an important direction for urban renewal. The 2016 "Opinions of the CPC Central Committee and the State Council on Further Strengthening Urban Planning, Construction, and Management" proposed "orderly implementation of urban repair and organic renewal," and the 2021 Ministry of Housing and Urban-Rural Development notice on "Preventing Large-Scale Demolition and Reconstruction in Implementing Urban Renewal Actions" explicitly required "preserving what should be preserved and making every effort to retain urban memory." Thus, micro-regeneration rose from local practice to national policy.

2.2. Research Progress on Micro-Regeneration Effect Evaluation

Domestic and international research on micro-regeneration effect evaluation can be summarized in three main dimensions.

In international research, Tiesdell et al.'s (1996) "adaptive reuse" framework provided evaluation criteria for the functional conversion of historic buildings; Zukin (2010), through long-term observation of New York's SoHo district, revealed the negative effects of

"gentrification" in culture-oriented renewal—artists' arrival brought commercial prosperity, but subsequent rent increases eventually displaced the original creative class, reducing the district to a homogenized consumption landscape; UNESCO's (2011) Recommendation on the Historic Urban Landscape proposed that heritage conservation should be integrated into community sustainable development, and evaluation indicators should include not only building preservation status but also social dimensions such as community vitality and cultural continuity.

In domestic research, Meng (2020) discussed the technical pathways of "micro-regeneration" in high-density urban villages, but his analysis mainly focused on spatial planning; Li (2022) analyzed the application of the "heritage + cultural creativity" revitalization model in Nantou but neglected long-term social impacts. More directly relevant is the study by Gu et al. (2023), which takes Nantou Ancient City as a case study and, from the satisfaction perspectives of residents, merchants, and tourists, constructs a post-renewal evaluation system covering six dimensions: residential environment, supporting facilities, street space, history and culture, commercial economy, and social humanities. Using IPA analysis, the study identified existing problems after renewal. This research is highly consistent with the analytical framework of this study and provides methodological reference. However, the study is primarily based on data from 2021, failing to reflect recent dynamic changes in renewal, and its analytical depth on the core proposition of "preserving both physical space and human communities" is limited. Zhao et al. (2021) examined urban renewal practices in southwest China and found that micro-regeneration projects in this region often face unique challenges due to mountainous terrain and fragmented land ownership, calling for more context-sensitive evaluation frameworks that go beyond physical indicators. Zhang and Chen (2018) conducted a comparative study of micro-regeneration projects in several Chinese historical districts and emphasized that community participation is a critical determinant of renewal success, noting that projects with genuine resident involvement tend to achieve higher levels of satisfaction and long-term sustainability than those dominated by government or developer interests. Liu et al. (2020a) analyzed the social sustainability of urban village renewal in Chinese megacities and identified rising rents, displacement of original residents, and erosion of social networks as the most pressing negative consequences, arguing that these social costs are often underestimated in conventional post-renewal evaluations. Overall, existing research has the following limitations: first, an overemphasis on physical spatial assessment while neglecting dynamic changes in community culture and social relations; second, a lack of multi-dimensional systematic evaluation frameworks, often using a single dimension instead of a comprehensive assessment; third, empirical studies are mostly planners' observational judgments, lacking quantitative evaluation based on user perceptions. This study responds to these deficiencies by adopting "preserving both physical space and human communities" as the evaluation criterion and constructing a three-dimensional evaluation framework of "physical space—community culture—livelihood protection." Beyond the above micro-level studies focused on Nantou Old Town, some scholars have explored the impact of historical and cultural resource preservation on urban economic development from a macro perspective. Chen and Tan (2025) found that China's Historical and Cultural City policy not only has cultural preservation value but also has significant economic promotion effects. Their study also pointed out that the policy's positive effects are more pronounced in western regions, provincial border counties, resource-based cities, and impoverished counties, suggesting that the adaptive reuse of historical and cultural resources can serve as an effective tool for narrowing regional

development gaps. This macro-level conclusion provides a broader policy context for evaluating the effects of micro-regeneration in Nantou Old Town.

2.3. Proposition of the Analytical Framework

Based on the above literature, this study proposes a three-dimensional framework for micro-regeneration effect evaluation:

Evaluation Dimension :

- 1-1. Physical Spatial Effects
- 1-2. Community Cultural Effects
- 1-3. Livelihood Protection Effects

Evaluation Content :

- 2-1. Old town fabric preservation
- 2-2. historic character conservation
- 2-3. spatial quality improvement
- 2-4. Neighborhood relation maintenance
- 2-5. cultural identity continuity
- 2-6. Multi-party consultation effectiveness
- 2-7. Rent affordability
- 2-8. Living cost changes
- 2-9. commercial benefit feedback

Core Question :

- 3-1. Has micro-regeneration preserved the "physical"?
- 3-2. Has micro-regeneration retained the "people"?
- 3-3. Have original residents benefited from the renewal?

The core logic of this framework is: if micro-regeneration only succeeds in the physical space dimension, it is "preserving things while losing people"; only when all three dimensions develop in coordination can it be said to achieve "preserving both physical space and human communities."

3. Study Area, Data Sources, and Research Methods

3.1. Overview of the Study Area

Nantou Old Town is located at the intersection of Shennan Boulevard and Zhongshan Park in Nanshan District, Shenzhen, covering approximately 24.5 hectares. First established in 331

AD during the Eastern Jin Dynasty, it has undergone multiple renovations and expansions, making it the birthplace of Shenzhen's urban history and known as the "source of Shenzhen-Hong Kong." Before the renewal project began, Nantou was a typical mixed area, combining an urban village with a heritage site. On one hand, it contained historic buildings such as the Xinan County Yamen, the Dongguan Guild Hall, and the Xin'guo Wen's Ancestral Hall. On the other hand, it was crowded with self-built housing and migrant workers, facing problems like cramped living conditions, poor infrastructure, and chaotic land use. In 2017, the conservation and renewal project for Nantou Old Town was officially launched. It adopted a three-party collaboration model involving the government, a private developer, and residents. Using the micro-regeneration approach, the core area was largely completed by 2024. New businesses such as cultural and creative shops, retail stores, and restaurants were introduced, and annual visitor numbers rose significantly, making the project a well-known example of micro-regeneration in China. From a broader perspective, whether the preservation of historical and cultural heritage can promote economic growth has become an important issue of common concern to academics and policymakers in recent years. Chen and Tan (2025), using county-level panel data from China from 2000 to 2019 and employing a Difference-in-Differences approach, found that being designated as a "Historical and Cultural City" significantly promoted local economic growth (increasing nighttime light intensity by 44.8%). The mechanisms include promoting tourism consumption and cultural industry development, facilitating the transfer of employment from the primary to the tertiary industry, and improving transportation infrastructure. This finding suggests that the preservation and adaptive reuse of historical and cultural resources can serve as a positive driver of regional economic development. As a special case with the dual attributes of "urban village" and "heritage site," the micro-regeneration practice of Nantou Old Town holds unique empirical value for understanding this proposition.

The spatial structure of Nantou Old Town features a distinctive "main street—inner alley" dichotomy. The main street (Zhongshan South Street) runs north-south through the old town, serving as the primary commercial and cultural tourism axis; on both sides are densely distributed inner alley residential areas consisting mostly of self-built housing with relatively poor living conditions. This spatial pattern determines the complexity of micro-regeneration: how to improve the main street's commercial environment while simultaneously safeguarding the quality of life and cultural needs of inner alley residents is the core challenge facing micro-regeneration.

3.2. Data Sources and Sample Characteristics

The data for this study primarily come from structured questionnaires. Questionnaires were distributed online via the WeChat platform, yielding 35 valid responses. The questionnaire covered modules including spatial behavior, heritage presentation perception, coordination assessment (Likert 5-point scale), conflict preference ranking, and demographic characteristics, with "micro-regeneration effect evaluation" as the core thread throughout.

Sample characteristics are shown in Table 1. In terms of identity composition (Q19, multiple choice), visitors/tourists accounted for 21 (60.0%), merchants/operators 5 (14.3%), tenants 4 (11.4%), original residents (living in Nantou for over 10 years) 3 (8.6%), researchers/practitioners 1 (2.9%), and others 4 (11.4%).

In gender distribution, 17 were female (48.6%), 10 were male (28.6%), and 8 preferred not to disclose (22.9%). In age structure, 23 (65.7%) were 18 and under, 4 (11.4%) were 19-30, 3 (8.6%) were 31-45, 5 (14.3%) were 46-60, and none were 61 and above. Regarding place of residence, "other districts of Shenzhen" ranked first (20, 57.1%), followed by "Nanshan District outside the old town" (12, 34.3%), "within Nantou Old Town" (1, 2.9%), and "other mainland cities" (2, 5.7%). In education level, 16 (45.7%) held high school/vocational school, and below, 7 (20.0%) held college/bachelor's degrees, 4 (11.4%) held master's degrees or above, and 8 (22.9%) preferred not to disclose.

Although visitors still account for the majority (60%), original residents, tenants, and merchants together constitute 34.3%, enabling this study to preliminarily present differentiated perceptions of micro-regeneration effects across various groups.

3.3. Research Methods

3.3.1. Descriptive Statistical Analysis

The questionnaire platform's built-in statistical functions and Excel were used for frequency statistics and mean calculations. For categorical variables, frequencies and percentages were calculated; for Likert scale items, means and standard deviations were computed. Mean comparisons and distribution analyses were used to identify relative strengths and weaknesses across dimensions.

3.3.2. Qualitative Thematic Analysis

For the open-ended question in the questionnaire (Q20: priority mechanism adjustment and rationale), inductive thematic analysis was employed to extract respondents' core demands.

4. Evaluation Results of Micro-Regeneration Effects in Nantou Old Town

This chapter evaluates the effectiveness of micro-regeneration across three dimensions: physical spatial effects, community cultural effects, and livelihood protection effects.

4.1. Evaluation of Physical Spatial Effects

Physical spatial effects capture the most visible outcomes of micro-regeneration. This dimension was measured through three questions: Q6 (preservation of old town fabric), Q3 (heritage presentation modes), and Q5 (overall judgment on "preserving both physical space and human communities").

Q6 asked respondents to rate "Micro-regeneration has not made the old town unrecognizable" on a 1-5 Likert scale. The item received a mean of 3.71 (SD = 0.93), with 57.1% choosing "satisfied" or "very satisfied" and 94.2% holding neutral or above. Q3 asked respondents to identify the dominant heritage presentation mode. Physical remains and mixed modes accounted for 65.7% (31.4% for "old buildings viewing"; 34.3% for "mixed modes"), while "observing authentic living scenes of original residents" accounted for only 11.4%. Q5 asked respondents whether the renovation preserved both old buildings and old residents. Only 14.3% chose "strongly agree," while 48.6% chose "partially agree," 22.9% chose "somewhat disagree," and 14.3% were uncertain.

Based on these data, the physical spatial effects dimension presents three core findings.

First, physical preservation is the dimension's strongest asset. The high mean and 94.2% neutral-or-above rate confirm that respondents overwhelmingly affirm the micro-regeneration approach for maintaining the old town's-built character. This is reinforced by open-ended responses citing "micro-regeneration without large-scale demolition" as Nantou's most transferable experience.

Second, heritage presentation remains materially oriented. The dominance of physical remains and mixed modes (65.7%), with only 11.4% representing authentic community life, indicates that the heritage visitors' experience is primarily curated displays rather than encounters with everyday community life.

Third, a notable gap exists between physical preservation and community retention. Despite high Q6 scores, only 14.3% of respondents fully agreed that the renewal preserved both old buildings and old residents. The high "partially agree" (48.6%) and "somewhat disagree" (22.9%) rates suggest that while physical success is recognized, it has not convinced respondents that the human community has been retained.

In summary, this dimension is characterized by strong material preservation but weak translation into community life visibility. The overall trend is "high on physical outcomes, low on human experience."

4.2. Evaluation of Community Cultural Effects

Community cultural effects capture whether micro-regeneration has sustained neighborhood relations, cultural authenticity, and governance legitimacy. This dimension was measured through Q7 (neighborhood relations), Q8 (cultural proximity to community life), and Q11 (multi-party consultation effectiveness).

Q7 asked respondents to rate "Neighborhood relations among old residents have not significantly faded." The mean was 3.51 (SD = 0.95), with 51.4% neutral, 42.8% satisfied or very satisfied, and only 5.8% perceiving weakening. Q8 asked respondents to rate "Cultural content is close to residents' real lives." The mean was 3.23 (SD = 1.19), with 28.6% holding negative views and 42.9% positive. Q11 asked respondents to rate "Tripartite consultation truly played a role." The mean was 3.83 (SD = 0.79), the highest among all evaluation items, with 71.4% positive and only 2.9% negative.

Based on these data, the community cultural effects dimension presents three core findings.

First, neighborhood relations are stable but stagnant. The high neutral rate (51.4%) and low weakening rate (5.8%) suggest micro-regeneration has not severely disrupted social networks, but the lack of strong positive endorsement (only 42.8% satisfied or very satisfied) indicates it has also not actively strengthened community bonds.

Second, a disconnect persists between cultural content and community life. Q8's mean of 3.23 and 28.6% negative rate indicate that a substantial minority views cultural displays as disconnected from residents' daily practices. This aligns with Q3's finding that "original residents' living scenes" were the least visible heritage mode, confirming a pattern of curated rather than lived heritage.

Third, the consultation mechanism enjoys procedural recognition but limited substantive impact. Q11's highest mean (3.83) contrasts sharply with Q5's low "strongly agree" rate on community retention (14.3%) and Q9's low mean on benefit sharing (3.17). This divergence indicates that while consultation processes are acknowledged, they are not perceived as shaping substantive outcomes on rent, benefits, or spatial allocation.

In summary, this dimension is characterized by moderate performance across all indicators with a fundamental asymmetry: high procedural recognition coexists with limited substantive impact. The overall trend is "stable but not strengthened; procedurally recognized but substantively limited."

4.3. Evaluation of Livelihood Protection Effects

Livelihood protection effects assess the most critical question for "preserving human communities": whether original residents can sustain their lives economically. This dimension was measured through Q4 (rent increase sensitivity), Q9 (commercial benefit feedback), and Q10 (living cost affordability).

Q4 asked respondents their likely reaction to a 30% rent increase. The results show: 51.4% would "observe before deciding," 31.4% would "immediately relocate," 14.3% would "barely afford by cutting other expenses," and only 2.9% reported "no impact." The composite rate of 82.8% for "wait-and-see or relocation" signals extreme rent sensitivity. Q9 asked respondents to rate "Commercial benefits can be partially shared by old residents." The mean was 3.17 (SD = 0.89), the lowest among all evaluation items. While 68.6% chose "satisfied" or "very satisfied," the distribution concentrated at "satisfied" (48.6%) with only 20.0% at "very satisfied," suggesting mild affirmation rather than strong endorsement. Q10 asked respondents to rate "Living cost increase is still affordable for old residents." The mean was 3.37 (SD = 1.06), with 65.7% holding neutral or negative views and only 37.1% considering costs affordable. Nearly 15% explicitly perceived costs as unaffordable.

Based on these data, the livelihood protection effects dimension presents the lowest performance among all three dimensions, with three core findings.

First, rent sensitivity is the most alarming signal. The 82.8% composite rate for "wait-and-see or relocation" indicates that rent increases are perceived as a direct structural threat to community survival, not merely an economic burden. This aligns with Liu et al. (2020b), who found that 20–30% rent increases in Shenzhen urban villages typically trigger large-scale out-migration within two to three years.

Second, commercial benefit feedback is the weakest link in the entire evaluation system. Q9's lowest mean (3.17) suggests that while a benefit-sharing mechanism exists, it has not achieved strong community endorsement. The "acceptable but not excellent" pattern reflects a system that is present but not trusted.

Third, the cost-of-living pressure is concentrated among a significant minority. The 14.3% negative rate and 48.6% neutral rate suggest that while the majority may not have reached the breaking point, a substantial portion of the community is living on a precarious economic edge.

In summary, this dimension exhibits the lowest performance across all three dimensions, characterized by extreme rent sensitivity, weak benefit feedback, and concentrated cost pressure. The overall trend is "structural risk to community survival."

4.4. Cross-Dimensional Comparison

Comparing the three dimensions reveals a clear gradient: physical spatial effects rank highest (Q6 = 3.71), followed by community cultural effects (Q7 = 3.51, Q8 = 3.23), with livelihood protection effects ranking lowest (Q9 = 3.17). This gradient indicates that micro-regeneration in Nantou is most successful at the material level and least successful at the level of economic security and community retention. The gradient itself constitutes the central finding: as evaluation moves from "physical" to "cultural" to "livelihood," scores decline consistently.

4.5. Value Ranking in Conflict Preferences

Questions Q12 to Q14 examined respondents' priority orientations in three typical conflicts. The results can serve as important references for judging the weight of different values in micro-regeneration.

Q12: Strict Restoration of Historical Buildings vs. Residents' Modern Living Needs

"Prioritize residents' living convenience" had the highest comprehensive score (2.49), followed by "prioritize heritage preservation" (2.46), "seek dynamic balance" (2.40), and "prioritize commercial development" (0.74). In terms of first-choice selections, "prioritize heritage preservation" was the most common (13, 48.1%), followed by "prioritize residents' living convenience" (10, 35.7%), and "seek dynamic balance" (12, 42.9%, but with its comprehensive score lowered by the distribution of second, third, and fourth choices).

Notably, "prioritize commercial development" had zero first-choice selections and accounted for 75% (15 people) of fourth-choice selections, indicating that respondents generally placed commercial development in the least prioritized position.

Q13: More Shops on Main Street vs. Inner Alley Residents' Living Space Being Encroached

"Seek dynamic balance" and "prioritize heritage preservation" tied for first place in comprehensive scores (both 2.29), followed by "prioritize residents' livelihood" (2.23), and "prioritize commercial development" (1.06). In terms of first-choice selections, "seek dynamic balance" was the most common (13, 50.0%), followed by "prioritize heritage preservation" (12, 46.2%), "prioritize residents' livelihood" (8, 30.8%), and only 2 (9.1%) chose "prioritize commercial development."

In conflicts involving inner alley residents' living space, "prioritize residents' livelihood" had the highest second-choice selection rate (12, 46.2%), indicating that although most respondents did not rank it as their first choice, it had broad recognition as a second-best option. This reflects respondents' relatively high sensitivity to the issue of "inner alley residents' living space being encroached."

Q14: More Tourists and Bustle vs. Community Quiet and Undisturbed

"Seek dynamic balance" had the highest comprehensive score (2.40), followed by "prioritize heritage preservation" (2.29), "prioritize commercial development" (2.23), and "prioritize residents' livelihood" (0.69). In terms of first-choice selections, "seek dynamic balance" was

the most common (14, 56.0%), followed by "prioritize commercial development" (11, 44.0%), "prioritize heritage preservation" (10, 38.5%), and "prioritize residents' livelihood" had zero selections.

This result presents a noteworthy feature: in the "bustle vs. quiet" conflict, the priority of commercial development rose significantly—its comprehensive score (2.23) approached that of "prioritize heritage preservation" (2.29), and it accounted for 44% of first-choice selections. This may be because respondents view "tourist bustle" as a manifestation of the old town's vitality rather than purely negative interference. However, "prioritize residents' livelihood" had a score of 0.69 and accounted for 73.7% (14 people) of fourth-choice selections, indicating that when it comes to the community's quiet life, respondents still place livelihood protection at the bottom.

4.6. Core Demands in Open-Ended Responses: Rent Control

The open-ended question Q20, "If granted decision-making authority, which mechanism would you prioritize adjusting in the next phase of renewal?" received valid responses. Through inductive thematic analysis, "rent control/rental mechanism" emerged as the most frequently mentioned core demand.

Typical statements include:

- "Rent control—good businesses need good vitality. If rents are too high, many good projects won't survive."
- "Rent control—basically, current rents can no longer support distinctive commercial or cultural projects to enter."
- "Lower rents, raise entry thresholds."
- "Rent."

These statements reveal a core contradiction: although micro-regeneration has attracted commercial investment and visitor flows, market-driven rent increases are now filtering back into business formats—high rents will drive out non-standardized, culturally distinctive merchants, leading to homogenization. Notably, respondents who raised rent control demands included both visitors and merchants, indicating that this issue has become a consensus concern across groups.

Other mentioned demands include inner alley renovation ("inner alley renovation—it concerns people's livelihoods," "inner alley renovation—the gap is too large") and making original residents more comfortable ("make original residents more comfortable," "preserve harmonious coexistence with original residents"), but their frequencies were lower than rent control.

5. Conclusions and Policy Recommendations

5.1. Research Conclusions

Based on 35 questionnaires, this study conducted a systematic evaluation of the comprehensive effectiveness of micro-regeneration in Nantou Old Town across three dimensions—physical spatial effects, community cultural effects, and livelihood protection effects—and reached the following main conclusions:

First, micro-regeneration has received relatively high recognition at the physical spatial level. Q6 had a mean of 3.71, with 57.1% of respondents choosing "satisfied" or "very satisfied" and 94.2% holding neutral or above evaluations. Multiple respondents in open-ended responses affirmed the approach of "micro-regeneration without large-scale demolition." This indicates that micro-regeneration's effectiveness in preserving the old town's fabric and historic character has been generally affirmed by respondents. However, Q3 results simultaneously show that heritage presentation is still dominated by physical remains and mixed modes (65.7% combined), while the visibility of "original residents' living scenes" is only 11.4%, meaning the achievement of "preserving physical space" has not yet fully translated into the experience of "preserving human communities."

Second, community cultural effects are evaluated at a moderate level. Q7 (neighborhood relation maintenance) had a mean of 3.51, Q8 (cultural proximity) had a mean of 3.23, and Q11 (multi-party consultation effectiveness) had a mean of 3.83—the highest among all seven items. For Q11, over 70% of respondents held positive evaluations, indicating that the multi-party consultation mechanism has received relatively high procedural recognition. However, 28.6% of respondents in Q8 still perceived a disconnect between cultural display and residents' lives, indicating that there is still room for improvement in the community proximity of cultural content. The gradient between the three dimensions—physical spatial effects (Q6 = 3.71), community cultural effects (Q7 = 3.51, Q8 = 3.23), and livelihood protection effects (Q10 = 3.37, Q9 = 3.17)—reveals that physical improvements are the easiest to achieve and the earliest to appear, while livelihood protection lags most severely, with even structural risks such as rent pressure and benefit distribution disputes. This finding resonates with Zukin's (2010) gentrification thesis, which argues that culture-oriented urban renewal often follows a cycle of "spatial improvement → commercial prosperity → rent increase → displacement of original groups." Although micro-regeneration in Nantou has delayed this process through small-scale, incremental interventions, the results of Q4 (82.8% responding with "wait-and-see" or "relocation" to rent increases) and Q9 (the lowest mean among all evaluation items) indicate that market logic is gradually eroding community inclusiveness. Micro-regeneration has technically "preserved the old buildings," but has not yet effectively "retained the old residents" at the socio-economic level.

Third, livelihood protection effects are the most prominent shortcoming of micro-regeneration. Q9 (commercial benefit feedback to original residents) had the lowest mean of 3.17 among all items; Q10 (living cost affordability) had a mean of 3.37, ranking low. In Q4, 82.8% of respondents indicated "wait-and-see" or "relocation" responses to a 30% rent increase. These three indicators together point to one core judgment: while micro-regeneration has activated commercial vitality, it has failed to simultaneously establish a solid livelihood protection mechanism—this is the most direct evidence of the risk of "preserving things while losing people."

Fourth, the multi-party consultation mechanism has received procedural recognition, but its substantive effectiveness is limited. Q11's mean of 3.83 is the highest among the seven items, but the gap with Q5 (only 14.3% "strongly agreed" with preserving both physical space and human communities) and Q9 (lowest mean) indicates that although the existence of the consultation mechanism is affirmed, its practical role in promoting community cultural continuity and livelihood protection still needs strengthening. This gap between procedural recognition and substantive insufficiency suggests that governance innovation in micro-

regeneration needs to move from “having mechanisms” to “achieving effects.” If residents’ consultative participation cannot effectively influence substantive issues such as rent policy, benefit distribution, and inner alley renovation, it may fall into the trap of “participatory ritualization”—where residents are consulted but their opinions have limited actual impact on decisions. The Nantou case thus illustrates that institutional presence alone is insufficient; meaningful empowerment requires mechanisms for binding resident influence on key issues.

Fifth, “livelihood first” enjoys broad consensus in residential space conflicts within conflict preferences. The ranking results of Q12-Q14 show that in conflicts involving residents’ modern living needs (Q12) and inner alley living space (Q13), the selection rate for “prioritize residents’ livelihood” was significantly higher than “prioritize commercial development.” Commercial development consistently ranked last among the four options, indicating that respondents generally agree that micro-regeneration should not pursue commercial interests at the expense of residents’ basic quality of life. Liu et al. (2020c) studied the impact of tourism-oriented renewal on historic districts and found that residents’ sense of place is significantly eroded when commercial development prioritizes tourist consumption over community daily life, a finding that echoes the preference patterns observed in this study’s conflict ranking data.

5.2. Policy Recommendations

Based on the above conclusions, this study proposes the following recommendations aimed at advancing micro-regeneration in Nantou Old Town from “preserving physical space” toward “preserving human communities”:

First, promote functional activation and cultural display of inner alley spaces. In response to the spatial imbalance revealed by Q1 (only 14.3% go into residential lanes) and Q3 (only 11.4% see original residents’ living scenes), it is recommended that, while preserving residential functions, cultural display spaces in inner alleys be moderately opened up—such as community micro-museums, artist studios, and community interpretive signage systems—to extend cultural themes from the main street to inner alleys, constructing a more comprehensive narrative network.

Second, embed the “livelihood-first” principle into the micro-regeneration evaluation system. Based on the findings that livelihood protection is the weakest dimension and that “livelihood first” enjoys broad consensus in spatial conflicts (Q12-Q14), it is recommended to establish an evaluation indicator system covering the “physical-social-livelihood” dimensions, with regular monitoring of social indicators such as original resident retention rate, rent-to-income ratio, neighborhood interaction frequency, and resident participation rates in cultural activities. When any indicator falls below the warning line, mechanisms should be triggered to intervene. Zhang et al. (2020) traced the governance transformation of urban renewal in China from state-dominated to market-involved and then to multi-stakeholder collaboration, and argued that a key challenge for the current phase is how to effectively translate collaborative rhetoric into actual power-sharing outcomes, particularly in contexts where the state retains strong regulatory authority over land use and development decisions. Before generalizing the Nantou experience to other contexts, its boundary conditions must be clearly acknowledged. The success of Nantou’s micro-regeneration depends on three enabling factors: first, location advantage—Nantou is situated in the core area of Nanshan District, surrounded by high-value-added industrial zones that provide sufficient consumer markets and talent support; second, policy support—the Nanshan District government incorporated the renewal into district-level

key projects, offering institutional guarantees; and third, corporate capacity—as the implementing entity, Vanke brought rich project experience and resource integration capabilities to coordinate multiple stakeholders. For urban renewal projects lacking these conditions, direct replication may face difficulties. However, the three-dimensional evaluation framework and the core principle of “preserving both physical space and human communities” remain broadly transferable. The study by Chen and Tan (2025) further supports this judgment. Their research found that the Historical and Cultural City policy had more pronounced promoting effects on western regions, provincial border counties, resource-based cities, and impoverished counties, suggesting that the adaptive reuse of historical and cultural resources has greater marginal value in areas with “weak traditional industrial foundations but rich cultural resources.” The micro-regeneration experience of Nantou Old Town—achieving spatial quality improvement through small-scale, incremental interventions in the composite scenario of “urban village + heritage site”—has direct reference value for such areas.

5.3. Research Limitations and Prospects

This study has several limitations. First, the sample size is small ($n=35$). Although the proportion of stakeholders (original residents, tenants, and merchants) in the new sample has increased (34.3% combined), the subsample sizes remain small (3 original residents, 4 tenants, 5 merchants), making it difficult to conduct independent inter-group significance tests. Future research should enlarge the sample size and adopt stratified sampling to ensure balanced coverage across the four groups. Second, the cross-sectional data only reflect perceptual states at a specific point in time and cannot track long-term changes in micro-regeneration effects. Subsequent studies are advised to adopt longitudinal tracking designs to measure perceptual changes of the same respondents at multiple time points. Third, this study is primarily based on perception assessment, lacking support from objective data such as actual rent changes and original resident out-migration rates. Future research could combine official statistics with in-depth interviews to achieve triangulation of subjective and objective data. Gu et al. (2023) found significant differences in satisfaction among residents, merchants, and tourists regarding the renewal of Nantou Ancient City (tourist satisfaction was significantly higher than residents'), suggesting that future research should pay more attention to the differentiated needs of various groups, especially the authentic perceptions of original residents.

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The Causes of Interregional Resource Gaps in China and Their Resolution through Public Governance and Technology

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Abstract

Regional inequality remains a persistent challenge in China, particularly in less-developed areas where income growth is limited. This study examines whether a digital economy policy introduced in Min County, Gansu Province, in 2021 contributed to improvements in rural income. Using panel data from 2016 to 2025, a difference-in-differences (DID) method is applied within a unified regression framework. The analysis includes control variables such as population size, agricultural land use, government spending, and human capital, and robust standard errors are used to improve the reliability of the estimates.

Descriptive analysis shows that rural per capita income increased during the study period, especially after the introduction of the policy. However, other factors, including population and agricultural resources, also experienced similar increases at the same time. This indicates that the observed trend may reflect general development rather than a direct policy effect. Therefore, regression analysis is used to control these variables and identify whether the policy has an independent impact.

The results suggest that the policy variable is not statistically significant in most model specifications. In contrast, the development of the medicinal herb industry and the presence of well-educated frontline officials show consistent positive effects on income. These findings suggest that structural factors, particularly human capital and local industry, play a more important role in driving income growth than policy alone.

Overall, the policy direction appears reasonable, but its effectiveness is likely influenced by implementation capacity and local conditions.

1. Introduction

Regional inequality in China has become more noticeable in recent years, affecting both economic performance and social fairness. While some regions have developed rapidly, others, especially rural areas, continue to face challenges in increasing income levels. As a result, finding effective ways to reduce this gap has become an important issue.

Digital governance policies have been widely promoted as a possible solution. These policies aim to improve market access, increase efficiency, and support rural development through

technology. However, their actual impact, especially in less-developed regions, remains uncertain.

This study focuses on the digital e-commerce policy implemented in Min County. It aims to evaluate whether the policy has a direct effect on rural income. At the same time, it considers other possible factors, such as human capital and local industry development.

By applying a quasi-experimental method, this study attempts to identify the causal effect of the policy while also exploring the broader factors that influence income growth. This approach helps provide a clearer understanding of how policy and structural conditions interact.

2. Literature Review

Whether local governments can use targeted digital technical interventions to increase rural household income represents a core issue in digital governance and rural revitalization research. Starting in 2021, Gansu Province officially launched an upgraded rural e-commerce policy under the 14th Five-Year Plan and the national rural e-commerce demonstration project (Cai Ban Jian [2021] No.38), with a focus on “E-commerce + Industry” integration in traditional Chinese medicinal herb-producing regions. This policy package centers on four specific and publicly documented digital technologies: county-town-village three-level logistics networking, JD smart cloud warehouse powered by big data scheduling, full 5G network coverage, and “one product one code” full-chain digital traceability systems. As a core demonstration county, Min County fully implemented these interventions from 2021 onward. Publicly available panel data cover the pre-policy period (2016–2020) and post-policy period (2021–2025), supporting clear before-and-after comparisons and difference-in-differences identification using Weiyuan County as the control group. All data are derived from official public sources, including the Minxian People’s Government official statistical bulletin (2021), Gansu Provincial Department of Commerce, Xinhuanet, and China National Radio (CNR), ensuring authenticity, reliability, and full verifiability.

The theoretical framework of this study is supported by two complementary theories: digital technology empowerment theory and transaction cost economics. Digital technology empowerment theory holds that governments can improve public service efficiency by deploying digital infrastructure, drive industrial upgrading, and distribute value-added gains to grassroots producers (Sun et al., 2024). Transaction cost economics further explains that integrated logistics systems, standardized traceability, and centralized cloud warehousing reduce information asymmetry, search costs, negotiation costs, and monitoring costs in agricultural supply chains (Wang & Zhang, 2021). Together, these two theories form a coherent analytical framework that links policy technology, institutional arrangement, cost reduction, value enhancement, and household income growth.

Existing authoritative studies have fully verified the practical income-improving value of government-led technical measures. Wang & Zhang (2021) confirmed that governments constructing county-town-village integrated digital logistics systems can greatly reduce rural circulation costs and directly raise the net income of agricultural operators, which perfectly matches Min County’s practice of integrating logistics resources to realize 24-hour distribution. Barrett et al. (2021) proved that government-organized digital skill training and inclusive entrepreneurship support can cultivate rural laborers’ online operation capabilities, expand e-

commerce market entities and create stable paid jobs, consistent with Min County's policies of training local internet influencers and attracting young returnees. In terms of industrial value upgrading, Zhang & Lu (2020) found that governmental promotion of "one product one code" digital traceability systems effectively improves the quality credibility and added value of geographical indication agricultural products, echoing Min County's achievement of over 40% growth in medicinal herb product added value. These solid empirical conclusions lay a reliable research foundation for the core topic.

Nevertheless, existing theories and empirical literature face critical limitations when applied to this specific policy context. Official statistics show that in 2021, Min County had a permanent population of 423,200, a per capita GDP of 13,638 yuan, and a per capita disposable income of rural residents of only 9,224 yuan, reflecting the typical characteristics of ecologically fragile, low-income, and resource-dependent regions (Minxian People's Government, 2022). First, digital empowerment theory lacks sufficient context sensitivity. It assumes relatively even digital adoption and institutional capacity, yet such counties are constrained by low digital literacy, population aging, fragmented smallholder farmland, and weak industrial chains. Standard models tend to overestimate technology diffusion and underestimate structural barriers. Second, transaction cost economics underemphasizes the role of government coordination. It overfocuses on market mechanisms while neglecting the public-good nature of logistics networks, traceability systems, and 5G infrastructure, which require sustained government investment rather than pure market provision. Third, mainstream theories fail to integrate technical hardware with local institutional software. Most frameworks treat technology as an exogenous factor, ignoring how localized governance arrangements, including GAP (Good Agricultural Practice) standardization (up to 88%), industrial alliances, and three-level supervision, which directly determines the actual effectiveness of technologies. These gaps prevent existing theories from fully explaining why similar digital interventions produce divergent outcomes across regions.

Furthermore, prominent research gaps remain in the literature. Most studies focus on universal digital income-boosting models, while overlooking regions like Min County that are resource-dependent, economically fragile, and highly reliant on medicinal herb production. Existing literature lacks targeted empirical analysis for such areas in ecologically fragile regions of northwest China (Liu et al., 2023). Few studies directly connect specific government technical operations with precise household income data, resulting in incomplete quantitative causal chains for income growth mechanisms. In addition, existing literature rarely summarizes localized practical experience that combines 5G deployment, shared industrial park technologies, product traceability systems, and cross-border e-commerce in underdeveloped resource-based counties. These deficiencies reduce the guiding significance of existing research for customized policy design.

This study addresses the above limitations by quantitatively linking Min County's specific technical interventions to actual farmer income changes, using verified official data before and after 2021 and Weiyuan County as the control group. It aims to refine digital technology empowerment theory and transaction cost economics, and to extract replicable pathways for increasing income in less developed resource-based regions in northwest China.

3. Methodology

This study uses a difference-in-differences (DID) method to estimate the impact of digital policy on rural income.

$$Income_{it} = \beta_0 + \beta_1 Policy_{it} + \beta_2 X_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Min County is selected as the treatment group because it introduced the policy in 2021, while Weiyuan County is used as the control group due to its similar characteristics but lack of policy implementation.

Panel data from 2016 to 2025 are used, with the following baseline specification:

- rural income
- population
- medicinal herb area
- frontline officials
- agricultural land
- medical services
- government spending
- unemployment rate

All estimations are conducted within a unified regression framework. Fixed-effects and random-effects models are both applied to improve reliability. In addition, robust standard errors are used to address possible heteroskedasticity.

To further test the stability of the results, alternative specifications are estimated by removing certain variables. This step is important because some variables, such as agricultural land and herb planting area, may be highly correlated and lead to multicollinearity problems.

4. Findings

Figure 1 presents the descriptive trend graph covering Min County and Weiyuan County from 2016 to 2025, tracking three core indicators: rural per capita disposable income, total resident population and overall agricultural acreage. The graph clearly demonstrates that all three indicators of both counties maintain consistent upward trends across the whole research period. After the digital e-commerce policy was launched in Min County in 2021, its rural income growth rate rose noticeably. Nevertheless, population expansion and agricultural land expansion happened simultaneously with income growth. Such synchronized growth means we cannot simply attribute income gains to the digital policy. Multivariate regression models are therefore required to separate the independent causal impact of the policy from other confounding factors.

Table 1. Baseline Regression Results (Fixed Effects)

Fixed-effects (within) regression		Number of obs	=	20		
Group variable: County		Number of groups	=	2		
R-squared:		Obs per group:				
Within = 0.9664		min	=	10		
Between = 1.0000		avg	=	10.0		
Overall = 0.6380		max	=	10		
		F(1, 1)	=	.		
corr(u_i, Xb) = -0.6735		Prob > F	=	.		
(Std. err. adjusted for 2 clusters in County)						
Percapitadisposableincomeof	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]	
Policy2	-573.1254	733.5299	-0.78	0.578	-9893.507	8747.256
Residentpopulation	-.00969	.0055782	-1.74	0.333	-.0805676	.0611877
SownAreaofMedicinalPlants10	106.2636	27.13396	3.92	0.159	-238.5061	451.0333
Staffofruralgrassrootsorgs	3212.545	202.4374	15.87	0.040	640.3345	5784.756
AgriculturalAcreage10	-4.025936	5.425371	-0.74	0.594	-72.96181	64.90994
Numberofpeoplecoveredbymedi	.0028763	.0060339	0.48	0.717	-.073792	.0795447
Totalpublicbudgetexpenditure	-.006533	.0049885	-1.31	0.415	-.069918	.0568521
unemploymentratepercentage	-25692.86	11102.63	-2.31	0.260	-166765.1	115379.4
_cons	-4827.712	3833.797	-1.26	0.427	-53540.72	43885.29
sigma_u	2191.8939					
sigma_e	514.55161					
rho	.9477698	(fraction of variance due to u_i)				

Table 2. Baseline Regression Results (Random Effects)

Random-effects GLS regression		Number of obs	=	20		
Group variable: County		Number of groups	=	2		
R-squared:		Obs per group:				
Within	= 0.9565	min	=	10		
Between	= 1.0000	avg	=	10.0		
Overall	= 0.9569	max	=	10		
		Wald chi2(1)	=	.		
corr(u_i, X) = 0 (assumed)		Prob > chi2	=	.		
(Std. err. adjusted for 2 clusters in County)						
Percapitadisposableincomeof	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
Policy2	-460.7043	821.8845	-0.56	0.575	-2071.568	1150.16
Residentpopulation	.0032671	.0002371	13.78	0.000	.0028023	.0037319
SownAreaofMedicinalPlants10	241.8548	85.74051	2.82	0.005	73.80648	409.9031
Staffofruralgrassrootsorgs	2532.987	177.7263	14.25	0.000	2184.65	2881.324
AgriculturalAcreage10	5.205828	4.906037	1.06	0.289	-4.409828	14.82148
Numberofpeoplecoveredbymedi	.0038859	.0046499	0.84	0.403	-.0052277	.0129995
Totalpublicbudgetexpenditure	-.0054285	.0059206	-0.92	0.359	-.0170326	.0061755
unemploymentratepercentage	-39080.6	17926.93	-2.18	0.029	-74216.73	-3944.464
_cons	-12307.86	2305.903	-5.34	0.000	-16827.35	-7788.373
sigma_u	0					
sigma_e	514.55161					
rho	0	(fraction of variance due to u_i)				

Table 3. Extended Regression Results (Random Effects)

Random-effects GLS regression		Number of obs	=	20
Group variable: County		Number of groups	=	2
R-squared:		Obs per group:		
Within	= 0.9293	min	=	10
Between	= 1.0000	avg	=	10.0
Overall	= 0.9291	max	=	10
corr(u_i, X) = 0 (assumed)		Wald chi2(7)	=	157.24
		Prob > chi2	=	0.0000

Percapitadisposableincomeof	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
Policy2	-270.2413	693.1578	-0.39	0.697	-1628.806	1088.323
Residentpopulation	.0067433	.0091271	0.74	0.460	-.0111455	.0246321
Staffofruralgrassrootsorgs	2792.311	1014.188	2.75	0.006	804.5396	4780.082
AgriculturalAcreage10	-12.83474	12.0934	-1.06	0.289	-36.53738	10.86789
Numberofpeoplecoveredbymedi	-.0032954	.0057292	-0.58	0.565	-.0145243	.0079336
Totalpublicbudgetexpenditure	.0129236	.0080765	1.60	0.110	-.0029061	.0287533
unemploymentratepercentage	-14524.78	33487.58	-0.43	0.664	-80159.23	51109.67
_cons	-9051.218	6167.609	-1.47	0.142	-21139.51	3037.073
sigma_u	0					
sigma_e	511.26234					
rho	0	(fraction of variance due to u_i)				

Table 4. Robustness Check (Random Effects without Farmland Variables)

Random-effects GLS regression	Number of obs	=	20
Group variable: County	Number of groups	=	2
R-squared:	Obs per group:		
Within = 0.9226	min =		10
Between = 1.0000	avg =		10.0
Overall = 0.9224	max =		10
	Wald chi2(6)	=	154.62
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000

Percapitadisposableincomeof	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
Policy2	53.51011	625.4415	0.09	0.932	-1172.333	1279.353
Residentpopulation	.0051703	.0090496	0.57	0.568	-.0125666	.0229072
Staffofruralgrassrootsorgs	2323.842	917.5173	2.53	0.011	525.5413	4122.143
Numberofpeoplecoveredbymedi	-.003039	.0057518	-0.53	0.597	-.0143123	.0082344
Totalpublicbudgetexpenditure	.0103889	.0077528	1.34	0.180	-.0048062	.025584
unemploymentratepercentage	-3699.295	32050.94	-0.12	0.908	-66517.99	59119.4
_cons	-7303.917	5972.624	-1.22	0.221	-19010.05	4402.212
sigma_u	0					
sigma_e	525.2417					
rho	0	(fraction of variance due to u_i)				

Table 5. Robustness Check (Fixed Effects without Farmland Variables)

Fixed-effects (within) regression		Number of obs	=	20		
Group variable: County		Number of groups	=	2		
R-squared:		Obs per group:				
Within	= 0.9635	min	=	10		
Between	= 1.0000	avg	=	10.0		
Overall	= 0.5048	max	=	10		
corr(u_i, Xb) = -0.7696		F(7, 11)	=	41.48		
		Prob > F	=	0.0000		
Percapitadisposableincomeof	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
Policy2	-570.0458	524.1585	-1.09	0.300	-1723.711	583.6193
Residentpopulation	-.0136439	.0092302	-1.48	0.167	-.0339594	.0066717
Staffofruralgrassrootsorgs	3522.91	787.5363	4.47	0.001	1789.554	5256.265
AgriculturalAcreage10	-11.62796	9.010945	-1.29	0.223	-31.46092	8.204997
Numberofpeoplecoveredbymedi	.0008303	.0044487	0.19	0.855	-.0089612	.0106218
Totalpublicbudgetexpenditure	-.0026591	.0076781	-0.35	0.736	-.0195585	.0142403
unemploymentratepercentage	-15043.15	24931.5	-0.60	0.558	-69917.01	39830.72
_cons	-1317.626	5167.121	-0.26	0.803	-12690.38	10055.13
sigma_u	2997.8938					
sigma_e	511.26234					
rho	.97173791	(fraction of variance due to u_i)				
F test that all u_i=0: F(1, 11) = 10.65				Prob > F = 0.0076		

Table 6. Robustness Check (Alternative Fixed Effects)

Fixed-effects (within) regression		Number of obs	=	20
Group variable: County		Number of groups	=	2
R-squared:		Obs per group:		
Within	= 0.9580	min	=	10
Between	= 1.0000	avg	=	10.0
Overall	= 0.4941	max	=	10
corr(u_i, Xb) = -0.7750		F(6, 12)	=	45.59
		Prob > F	=	0.0000

Percapitadisposableincomeof	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
Policy2	-282.0937	487.2557	-0.58	0.573	-1343.733	779.5453
Residentpopulation	-.0153974	.0093792	-1.64	0.127	-.035833	.0050382
Staffofruralgrassrootsorgs	3111.058	739.6518	4.21	0.001	1499.496	4722.621
Numberofpeoplecoveredbymedi	.0011292	.0045641	0.25	0.809	-.0088152	.0110735
Totalpublicbudgetexpenditure	-.0052044	.0076233	-0.68	0.508	-.0218142	.0114054
unemploymentratepercentage	-5260.456	24400.39	-0.22	0.833	-58424.34	47903.43
_cons	388.2068	5131.748	0.08	0.941	-10792.91	11569.32
sigma_u	3046.5385					
sigma_e	525.2417					
rho	.97113415	(fraction of variance due to u_i)				

F test that all u_i=0: F(1, 12) = 10.44	Prob > F = 0.0072
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Table 1 and Table 2 show the baseline fixed-effect and random-effect regression results corresponding to the first two model screenshots. The core policy dummy variable Policy2 has p-values of 0.578 and 0.575 respectively, both far above the 10% significance threshold. This provides solid statistical evidence that the digital e-commerce policy exerts no significant independent influence on rural income after controlling all county-level variables. In the baseline random-effect model, the sown area of medicinal herbs carries a significantly positive coefficient at the 5% level. This stable correlation proves the policy's original industrial logic of boosting herbal product sales via digital channels is theoretically sound. The insignificant policy effect only arises from flawed implementation methods, rather than inappropriate development targets. Among all six regression specifications (Table 1 to Table 6), the number of grassroots staff with senior high school education or above is the only variable that remains significantly positive in every test. This consistent result reveals the policy's single practical value: attracting educated talents to join local grassroots governance. Even though e-commerce promotion measures fail to directly raise rural income, recruited high-quality human resources improve administrative efficiency and lift household income indirectly.

Table 3 to Table 6 report four groups of robustness test outputs, obtained after deleting two farmland variables with severe multicollinearity against the policy: medicinal herb planting area and total agricultural acreage. After removing collinear land indicators, the policy dummy Policy2 still yields p-values higher than 0.3 under both fixed-effect and random-effect settings, showing no statistical significance at all. This robustness outcome strongly supports the core conclusion: rural income growth is mainly driven by well-educated grassroots workforce and local medicinal herb industries, while the 2021 digital e-commerce policy itself cannot independently increase residents' disposable income.

5. Discussion

The empirical results show that the digital e-commerce policy does not have a statistically significant independent effect on rural income. Across multiple model specifications, the policy variable remains insignificant, while human capital and local industry consistently exhibit positive and significant effects.

These findings suggest that income growth in Min County is primarily driven by structural factors rather than policy intervention alone. In particular, the consistently significant role of well-educated frontline officials highlights the importance of human capital. Individuals with higher education levels appear to enhance local governance efficiency, improve information transmission, and support farmers in adopting more effective production and marketing strategies. As a result, human capital directly contributes to income improvement at the grassroots level.

At the same time, the positive effect of the medicinal herb industry underscores the importance of local economic specialization. Unlike policy measures, which operate at a broader institutional level, the development of a strong local industry provides immediate and tangible income opportunities. By increasing productivity and stabilizing demand, the herb industry serves as a key driver of sustained income growth in the region.

Taken together, the results indicate that the observed increase in rural income cannot be attributed to the digital policy itself. Instead, income growth is better explained by the presence of a capable local workforce and a well-established industrial base. While the policy may

coincide with these developments, the empirical evidence does not support a direct causal effect.

Overall, this study highlights the central role of structural conditions in shaping economic outcomes in less-developed regions. Policies aimed at promoting development should therefore place greater emphasis on strengthening human capital and supporting local industries, as these factors appear to be the primary sources of income growth in this context.

6. Conclusion

This study examines the impact of the digital e-commerce policy on rural income using the case of Min County. Although rural income increased during the study period, the empirical results show that the policy does not have a statistically significant independent effect in the regression analysis.

At the same time, the findings consistently indicate that structural factors play a more important role in explaining income growth. Human capital - represented by well-educated frontline officials - and the development of the medicinal herb industry emerge as the primary drivers of rural income improvement.

These results suggest that income growth should be understood as the outcome of a broader system of interacting factors rather than the effect of a single policy intervention. Improvements in rural income require not only policy support, but also effective implementation, sufficient human capital, and the development of industries that are well suited to local conditions. Among these elements, grassroots personnel play a particularly important role, as they are directly responsible for translating policy into practice.

From this perspective, the insignificant policy effect observed in the empirical analysis may reflect limitations in the overall implementation process rather than the irrelevance of the policy itself. When key components - such as skilled personnel or appropriate industrial structures - are not fully aligned, the intended benefits of policy interventions may not be fully realized. In addition, given the relatively short time since the policy was introduced, its effects may not yet have had sufficient time to accumulate and become statistically observable.

Overall, the findings highlight that successful income growth in less-developed regions depends on the coordination of multiple factors, including human capital, local industry, and policy implementation. Strengthening these complementary elements may be essential for enabling policy measures to more effectively contribute to sustainable economic development.

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The Influence of Values Education on Adolescent Deviant Behaviors: A Comparison Between Guangdong and Hong Kong

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Abstract

The systems of values education implemented in Guangdong and Hong Kong differ markedly. Adolescent deviant behaviors in both areas also exhibit regional variation. However, few existing empirical studies have thoroughly examined the relationship between these two aspects. Using both questionnaire surveys and a comparative analysis of teaching materials, this study investigates regional differences in values education between Guangdong and Hong Kong and their impact on adolescent deviant behaviors. It explores the impact of education on national identity, instruction in the rule of law, and exercises in moral reasoning on behaviors such as skipping class, school bullying, and inappropriate online speech. Findings indicate that different value orientations impose varying degrees of restraint on adolescent behavior. Guangdong's moral education, which emphasizes collective discipline, fails to curb students' group rule-breaking, whereas Hong Kong's civic education, which emphasizes free critical thinking, has limited effectiveness in curbing individual online misconduct. The constraints imposed by the two regions' values education models differ in the severity of misconduct. Guangdong's moral education has a relatively weak constraining effect on minor misconduct (such as cheating) and limited effectiveness against moderate group-based misconduct (such as skipping class in groups). Civic education in Hong Kong lacks sufficient measures to curb minor individual misconduct. The absence of training in independent critical thinking in values education programs across both Guangdong and Hong Kong is a common factor underlying the high incidence of moderate misconduct (such as skipping class and consuming tobacco and alcohol). At the same time, the lack of classroom training in independent critical thinking about right and wrong in both regions is a common cause of frequent cheating and class skipping among students. The findings provide practical insights for the two regions to collaborate on moral education for adolescents and to refine behavioral education strategies.

In recent years, as the Guangdong-Hong Kong-Macao Greater Bay Area has accelerated, economic ties and exchanges among cities in the region have grown closer. However, as regional integration progresses, issues related to adolescents' deviant behaviors have gradually drawn attention; these include school bullying, truancy, and inappropriate online speech, all of which have become pressing concerns in today's educational landscape. Among the many educational approaches, values education is one of the most fundamental ways to guide adolescent behavior and prevent deviant behaviors. Through daily curricula and campus activities, schools cultivate positive moral and social values in students, which can, to a certain extent,

curb problematic behaviors among adolescents. Due to variations in social environments and cultural contexts, there are distinct differences between the values education models in Guangdong and Hong Kong. In mainland cities such as Guangzhou, moral education curricula place greater emphasis on national identity, collective spirit, and school discipline, primarily delivered through fixed ideological and political education courses and thematic activities. In contrast, Hong Kong, which has long been exposed to the combined influence of Chinese and Western cultures, places greater emphasis on fostering civic literacy, legal awareness, and a sense of personal responsibility. Based on existing research, most scholars have analyzed the curriculum systems and student behavior in either mainland China or Hong Kong in isolation; however, there remains a scarcity of empirical studies that directly compare the two regions. Currently, few studies specifically examine how the differing models of values education in Guangdong and Hong Kong influence various types of deviant behaviors among adolescents. Consequently, there remains a notable gap in comparative research on the relationship between differences in values education and adolescent behavior in the Greater Bay Area, presenting an opportunity for exploration in this study.

1. Literature Review

1.1. The Intrinsic Connections Between Values Education and Adolescent Deviant Behaviors

Numerous studies have shown that values education in schools directly influences adolescents' daily behavior and developmental trajectory. When adolescents develop sound moral principles, an awareness of the rule of law, and social values, their self-discipline improves, effectively mitigating problematic behaviors such as school bullying, truancy, and fighting (Chan, 2020). Chan (2020) conducted a long-term follow-up study of secondary school students in Hong Kong and found that sustained, systematic moral education curricula can effectively curb adolescents' rule-breaking and disciplinary violations. Value perceptions and adolescent deviant behaviors are interrelated: positive values can curb deviant behaviors, and, conversely, prolonged deviant behavior can gradually erode adolescents' originally sound value systems. A comparative study of Guangdong and Hong Kong reveals that the two regions employ different models of values education, resulting in varying degrees of effectiveness in regulating student behavior. In Guangdong, moral education curricula prioritize core socialist values, emphasizing the fostering of students' sense of patriotism and collective consciousness. Through uniform classroom discipline and campus regulations, these programs aim to mitigate issues such as impulsive disciplinary violations, collective disturbances, and truancy (Li & Wong, 2021). In contrast, values education in Hong Kong leans more toward civic education and the rule of law, emphasizing the cultivation of students' sense of personal responsibility and awareness of their rights and obligations. It is more effective at curbing individual students' uncivil behavior and minor violations. A study by Li and Wong (2021) confirmed that both educational models have their respective advantages. Although existing research has confirmed the restraining effect of values education on adolescent behavior (Chan, 2020), most studies regard deviant behaviors as a homogeneous whole and rarely distinguish between different levels of behavioral severity. A comparative study by Li and Wong (2021) suggests that moral education in the mainland is more effective in curbing moderate behaviors (such as truancy and group conflicts) than mild behaviors (such as cheating), while rule-of-law education in Hong Kong has a certain inhibitory effect on mild,

individualized deviant behaviors but is less effective against moderate group-based behaviors. However, the above conclusions are all ex-post explanations and lack systematic, stratified empirical testing. Nevertheless, most current studies treat “the mainland” as a single entity when comparing it to Hong Kong, without conducting detailed research specifically on Guangdong Province. Furthermore, they fail to distinguish between different levels of severity in adolescent deviant behaviors. Their comparative analyses are insufficiently specific.

1.2. Differences in Moral Education and the Distinct Characteristics of Adolescent Deviant Behaviors Between Guangdong and Hong Kong in the Greater Bay Area

Today, exchanges within the Guangdong-Hong Kong-Macao Greater Bay Area are becoming increasingly frequent. However, the social environments and cultural atmospheres in Guangdong and Hong Kong differ, and the models of moral education in primary and secondary schools vary significantly. These differences directly result in distinct problematic behaviors among students in the two regions (Ng, 2022; Cheung & Liu, 2023). All primary and secondary schools in Guangdong uniformly offer the course “Morality and Rule of Law” and organize various moral education activities and practical activities with a revolutionary theme. The educational focus is on national identity, collective consciousness, and adherence to rules. Classes across the province, taught using standardized textbooks, are mostly teacher-led, with the entire class learning together. Schools evaluate students’ moral character primarily based on their daily discipline and participation in group activities. In such an educational environment that emphasizes collective discipline, most misconduct among students in Guangdong occurs on campus, such as disrupting classes, group truancy, gang bullying, and video game addiction. These are mostly mild-to-moderate issues that tend to occur in groups. Hong Kong, which blends Chinese and Western cultures, does not require a unified, compulsory ideological and political education course. Content related to moral education is incorporated into Citizenship, History, and Liberal Studies courses. Schools are free to select their own teaching materials and organize classroom content. Classes rarely consist solely of lectures; instead, they focus on group discussions, case studies of societal issues, and field trips. Students are encouraged to think independently, with an emphasis on fostering their legal awareness and sense of civic responsibility. In contrast, collective disturbances on school grounds are rare among Hong Kong students. Deviant behaviors mostly arise online or off campus, such as malicious online insults and other minor deviant acts, which are typically committed by individual students acting alone. Among students in both regions, serious criminal offenses are rare, but there are clear differences in the contexts and manifestations of problematic behavior. Numerous papers have already noted that differences in moral education between the two regions lead students to develop distinct behavioral habits. However, there are still significant shortcomings in existing research. Most studies merely compare educational policies and textbook content across the two regions, with few incorporating actual student behavioral data for validation. Furthermore, there has been no detailed comparison of senior high school textbooks, which fails to clarify exactly how the concepts conveyed in these materials influence students’ deviant behavior. Moreover, when analyzing differences in student behavior between the two regions, scholars often attribute these differences to influences from family, friends, and the online environment. They rarely examine the issue from the critical perspective of school moral education, or categorize and compare students’ deviant behaviors into mild, moderate, and severe degrees. They fail to clearly articulate the full logic behind the statement, “Different moral education leads to

different problematic student behaviors.” As a result, it is difficult to offer practical suggestions for collaboration on moral education and student behavior management across schools in the Greater Bay Area. Overall, deviant behaviors among students in Guangdong are primarily characterized by moderate group-based behaviors (such as group truancy and collective bullying). In contrast, those among Hong Kong students are predominantly mild individual behaviors (such as inappropriate online comments and minor rule violations). Severe illegal acts are rare in both regions. However, further empirical testing is needed to determine the extent to which these behavioral differences can be attributed to differences in values education models.

1.3. Limitations in Existing Studies

Based on the literature review above, three notable limitations in existing research can be identified and represent areas for innovation in this study. First, most previous comparative studies between Guangdong and Hong Kong have broadly treated the entire Mainland as the subject of their research. They rarely focus specifically on Guangdong, the core city of the Greater Bay Area, thereby overlooking the uniqueness of Guangdong’s local values education model. However, the comparison results lack precision. Second, existing studies primarily examine differences in policy and textbook content. There are insufficient empirical methods, such as questionnaire surveys and textbook comparisons. Consequently, it cannot quantify the specific impact of values education in the two regions on adolescent deviant behaviors of varying severity. Finally, the academic community offers little explanation of the causes of behavioral differences among adolescents in Guangdong and Hong Kong from a values-education perspective. There is a lack of empirical evidence directly applicable to cooperative moral education initiatives and the management of adolescent behavior in the Greater Bay Area. There is also a relative lack of targeted countermeasures. Existing research tends to treat adolescent deviant behavior in a general way. They fail to distinguish among mild, moderate, and severe levels of deviant behavior, making it difficult to assess the precise effectiveness of values education interventions.

2. Method

This study employed qualitative text analysis and a questionnaire survey to collect research data. The qualitative text analysis focused on mainstream junior and senior high school textbooks from Guangdong and Hong Kong. By comparing the textual content, narrative styles, and value orientations of the political science, history, and geography curricula in the two regions, it explored the potential impact of different models of values education on adolescents’ behavioral cognition and behavioral norms. The questionnaire survey method was employed to collect empirical data by distributing online questionnaires to students currently enrolled in schools in Guangdong and Hong Kong. SPSS 31.0 was used to process and analyze the data, primarily through descriptive statistics. By examining the distributional characteristics of the sample data, insights into the respondents’ acceptance of values education and their daily behavioral patterns can be gained, providing authentic empirical support for the arguments presented in this study.

2.1. Qualitative Text Analysis

2.1.1. *Selection of Research Samples*

It selected the most widely used, officially approved junior and senior secondary school textbooks for politics, history, and geography in Guangdong and Hong Kong as samples for qualitative analysis. These three disciplines serve as the core vehicles for conveying social norms, national identity, awareness of the rule of law, and value-based thinking in both regions. They are well-suited for comparing differences in regional values education, ensuring that the research materials accurately reflect the value orientations and textual content of both regions.

2.1.2. *Textbook Samples*

In Guangdong Province, the nationally standardized textbooks published by People's Education Press (PEP) are uniformly adopted. For political and moral education, "Moral and the Rule of Law" and "Ideological and Political Education" textbooks were selected for junior high and senior high schools, respectively. For history, "Chinese History" and "World History" textbooks were selected for junior high schools; for senior high schools, "Outline of Chinese and World History (Volumes 1 and 2)," "National Systems and Social Governance," "Economic and Social Life," and "Cultural Exchange and Communication" were selected. For geography, the "Geography" textbooks—both required and selectively required—were used for junior and senior high schools. Hong Kong adopts school-based mainstream textbooks approved by the local Education Bureau. For the Civic Education subject, the selected textbooks include "Civics, Economics, and Society" for junior high schools (fully implemented in 2024) and "Civics and Social Development" for senior high schools (officially implemented in 2021). For history, textbooks for the standalone subjects "Chinese History" and "World History" were selected. For geography, the mainstream required and elective "Geography" textbooks for secondary schools were selected.

2.1.3. *Phases for Research Implementation*

Phase 1: Systematic Review and Categorization of Textbook Content. First, it involves a comprehensive review of all relevant teaching chapters in the selected textbooks from both Guangdong and Hong Kong, extracting, paragraph by paragraph, textual content that reflects the values education orientation. It systematically organizes the overall content structure, core teaching focus, and narrative style for each subject. Second, it distills the core concepts of values education from each textbook series and categorizes all textual materials into four major analytical dimensions. It then summarizes the overall characteristics and patterns of textual expression in values education in secondary schools in Guangdong and Hong Kong, respectively, to provide a factual basis for cross-regional comparison.

Phase 2: Cross-regional Textual Comparison and Analysis of Underlying Causes. First, it engages in a point-by-point textual comparison of common themes across these textbooks, including national identity and civic responsibility; legal norms and the guidance of adolescent behavior; moral reasoning and the evaluation of social issues; and historical understanding and historical value judgments. It systematically examines, item by item, the differences in content selection, narrative perspectives, and value guidance between textbooks from the two regions for each theme. This approach identifies the underlying causes of divergent value orientations in the textbooks by considering the distinct social systems, developmental

trajectories, and cultural environments of Guangdong and Hong Kong. Based on the educational differences revealed through textual comparison, an analytical framework is established to provide a solid textual foundation for the subsequent analysis of regional differences in adolescents' values in both regions.

2.2. Analysis of Questionnaire Survey Data

2.2.1. *Questionnaire Sample Selection*

This survey targeted secondary school students in Guangdong and Hong Kong. Questionnaires were distributed online and all responses were collected centrally. To ensure the data were accurate and valid, all questionnaires were individually reviewed, and three types of invalid samples were excluded: those with highly repetitive response options, those with logically contradictory answers, and those in which the reported region did not fall within the scope of this survey. After screening, a total of 128 questionnaires were collected. After manual verification, 5 invalid questionnaires were excluded, yielding 128 valid questionnaires and a valid response rate of 96.2%. Among these, 108 students (84.4%) were from Guangdong and 20 (15.6%) were from Hong Kong; 69 were male (53.9%) and 59 were female (46.1%).

As the core data for this questionnaire analysis, the findings are presented in three parts: the current state of values education among students, the prevalence of various types of deviant behaviors among adolescents, and the comprehensive conclusions drawn from analyzing the textbooks and questionnaires together.

2.2.2. *Questionnaire Variable Design*

The questionnaire consists of two core sections, each corresponding to one of the two main areas of focus in this study.

Section 1 centers on values education. Questions were designed from four perspectives: classroom-based moral education, teachers' daily moral guidance, family communication regarding moral education, and students' self-awareness of morality. These questions were used to assess the actual state of moral education students receive at school and at home.

Section 2 focuses on adolescent deviant behaviors. A survey was conducted on six common types of deviant behaviors among secondary school students, including exam cheating, truancy, smoking and drinking, school bullying, vandalism, and hiring someone to take an exam on their behalf, to determine the frequency of these behaviors among the surveyed students. The six types of deviant behaviors were classified into three levels based on severity: (1) mild behaviors: cheating on exams, smoking and drinking; (2) moderate behaviors: truancy, social exclusion and bullying, and vandalism; (3) severe behaviors: hiring someone to take an exam in one's place (used as a proxy indicator for serious disciplinary violations). These tiers were established by referencing the severity classifications of adolescent deviant behaviors in existing research to facilitate subsequent analysis of the differentiated effects of values education across levels of behavior.

2.2.3. Data Processing Methods

After importing the questionnaire data into statistical software, descriptive analysis was conducted using four basic indicators: frequency, percentage, average score, and degree of dispersion. Frequency and percentage provide basic information on the surveyed students and the distribution of responses to each question. The average score, combined with the degree of dispersion, provides a clear picture of the students' overall acceptance of moral education and the prevalence of various types of deviant behaviors. All statistical data were organized into tables that clearly present the sample characteristics of the two sets of variables: "values education" and "adolescent deviant behaviors." The organized questionnaire data objectively reflect the status of moral education among secondary school students in the Greater Bay Area and the differences in their behaviors. These findings provide empirical support for the subsequent analysis of the impact of moral education models on adolescent deviant behaviors.

2.2.4. Reliability and Validity Testing

To examine the reliability and validity of the Deviant Behaviors Scale (Q11–Q16), this study conducted reliability and validity tests on items Q11 through Q16 of the Adolescent Deviant Behaviors Scale. The overall Cronbach's α for the scale was 0.778, meeting the reliability standard of 0.7 or higher and indicating good internal consistency. In the preliminary tests for exploratory factor analysis, KMO = 0.753 and Bartlett's sphericity test $p < 0.001$, indicating that the data were suitable for factor extraction. The analysis yielded a single common factor, explaining 49.94% of the cumulative variance. Except for the two items on exam cheating and underage smoking and drinking, which had factor loadings below 0.5, the loadings for all other items met the criterion of being greater than 0.5. In accordance with the research requirements, all items were retained, and the scale's construct validity was deemed satisfactory.

3. Results

3.1. The Actual Status of Students' Participation in Values Education

The four questions in the questionnaire regarding the cultivation of values are scored on a scale of 1 to 4. A higher score indicates a stronger level of educational exposure and moral identification in the corresponding dimension.

First, the average score for student participation in on-campus courses related to values was 2.32, with a standard deviation of 0.899. Overall, the frequency of student participation in values education classes falls within the moderate range, but there is a significant disparity among the sample. While some students frequently attend such courses, many others rarely participate in the school's values education activities.

Second, the average score for the statement "Teachers guide me to distinguish right from wrong and develop my own judgments independently" was only 1.71, the lowest among the four related questions. The results indicate that daily classroom instruction is largely dominated by teacher-led one-way lectures, leaving little room for students to think independently or analyze moral issues. There is a significant lack of targeted guidance in critical thinking.

Third, the average score for parents' communication with their children regarding principles of conduct was 1.89, with a standard deviation of 0.791. It is evident that most families rarely take the initiative to discuss behavioral boundaries and ethical standards with their children, and family-level value cultivation is generally weak.

Fourth, regarding the statement "Character is more important than grades or wealth," students' average score was 1.59. The relatively low score reflects that many students place greater importance on test scores and material conditions than on personal character. They lack a strong sense of moral identity.

Fifth, in response to the scenario question "A friend invites you to go out during class," the average score was 2.33. Overall, the moderate scores indicate a clear divergence in the students' responses. Some students can consciously adhere to classroom discipline, while a significant portion is easily influenced by peers and may be inclined to violate rules.

3.2. Statistics on the Occurrence of Various Deviant Behaviors Among Adolescents

Items related to deviant behaviors were scored on a scale of 1 to 5, with higher scores indicating a greater frequency of the behavior. A total of six common adolescent deviant behaviors were assessed.

First, the average scores for minors smoking/drinking and truancy were 2.05 and 2.02, respectively—the highest among all deviant behaviors—with standard deviations of 1.134 and 1.108, indicating a high degree of data dispersion. The data suggest that truancy and tobacco and alcohol consumption are two relatively common issues among the surveyed students. There are marked differences in the frequency of these behaviors among students. Some students frequently engage in these moderate deviant behaviors.

Second, the average score for exam cheating was 1.94, with a standard deviation of 0.991, indicating relatively common mild deviant behaviors. Many students resort to cheating under academic pressure, but the proportion of students who frequently cheat is not high. In contrast, the average scores for the three items—bullying and social exclusion, vandalism of public property, and hiring someone to take an exam in one's place—were only 1.38, 1.32, and 1.34, respectively, indicating relatively low overall scores. Few students engage in behaviors such as harming others, damaging public facilities, or having someone take an exam on their behalf. Severe deviant behavior is uncommon in the sample. In addition, the average score for the supplement item "Other deviant behaviors" in the questionnaire was only 0.07, with almost no students checking this box. These findings indicate that the six categories of behavior listed in the questionnaire already cover the main deviant behaviors among the surveyed students, and there are no significant unrecorded special deviant behaviors.

3.3. Test for Regional Differences

The Mann-Whitney U test was used to examine differences in values education and deviant behaviors between students in Guangdong and Hong Kong. The results (Table X) show that a significant difference was found only in "intentional destruction of public property" ($Z = -1.967$, $p = 0.049$). For all other variables, the differences were not statistically significant ($p > 0.05$).

Table X: Test of differences between Guangdong and Hong Kong:

Variable	Guangdong (n=108) M±SD	Hong Kong (n=20) M ±SD	Z- value	P- value
Q6 Teachers' critical instruction	1.73 ± 0.64	1.55 ± 0.61	-1.191	0.234
Q11 Exam cheating	1.92 ± 0.99	1.90 ± 0.79	-0.248	0.804
Q13 Truancy	2.03 ± 1.13	1.90 ± 0.85	-0.160	0.873
Q14 Bullying and social exclusion 1.34 ± 0.76	1.40 ± 0.68	-0.701	0.484	
Q15 Vandalism	1.25 ± 0.58	1.50 ± 0.69	-1.967	0.049*

3.4. Test for Gender Differences

The test for gender differences (Table Y) showed significant differences between males and females only for the variable “Bullying and social exclusion” ($Z = -1.970$, $p = 0.049$). No significant differences were found for the remaining variables ($p > 0.05$).

Table Y: Test for gender difference:

Variable	Males (n=69)M±SD	Females (n=59)M±SD	Z- value	Z- value
Q6 Teachers' critical instruction	1.75 ± 0.67	1.64 ± 0.58	0.800	0.424
Q11 Exam cheating	1.94 ± 0.87	1.88 ± 1.07	-0.831	0.406
Q13 Truancy	1.93 ± 0.98	2.10 ± 1.21	-0.536	0.592
Q14 Bullying and social exclusion	1.20 ± 0.47	1.53 ± 0.95	-1.970	0.049*
Q15 Vandalism	1.23 ± 0.46	1.36 ± 0.74	-0.635	0.525

Notes: $p < 0.05$

3.5. Correlation Analysis

Spearman's correlation analysis indicates (Table Z) that “Teachers' critical instruction” was significantly positively correlated with “Exam cheating” ($r = 0.249$, $p = 0.005$), “Smoking and drinking” ($r = 0.270$, $p = 0.002$), and “Truancy” ($r = 0.344$, $p < 0.001$). In addition, ‘Peer solicitation tendency’ was significantly positively correlated with ‘Truancy’ ($r = 0.212$, $p = 0.016$).

Table Z: Correlations between values education and deviant behaviors:

Variable pairing	Spearman's r	P-value
Q6 Teachers' critical instruction × Q11 Exam cheating	0.249**	0.005
Q6 Teachers' critical instruction × Q12 Smoking and drinking	0.270**	0.002
Q6 Teachers' critical instruction × Q13 Truancy	0.344**	<0.001
Q9 Peer solicitation × Q13 Truancy	0.212*	0.016

Notes: $p < 0.05$, ** $p < 0.01$

3.6. Results of Qualitative Text Analysis

Based on the textbooks' content, four analytical dimensions were identified to conduct a chapter-by-chapter comparison of the Morality and the Rule of Law/Civics and Social Development, History, and Geography textbooks for junior and senior secondary school students in Guangdong and Hong Kong. The following systematic differences were identified.

3.6.1. Differences in the Cultivation of National Identity and Family and State Responsibility

The PEP textbooks in Guangdong use “the diversity and unity of the Chinese nation” and “the leadership of the Communist Party of China” as their narrative threads, weaving a sense of patriotism and collective responsibility throughout the entire junior and senior secondary education. In the junior high school course “Morality and the Rule of Law,” thematic units such as “The National Interest Comes First” and “Collective Life Welcomes Me” emphasize the deep connection between individual development and the nation's destiny. Content on national conditions is routinely integrated into daily teaching units, covering China's outstanding traditional culture, the history of revolutionary struggles, and national security education. In Hong Kong, the “Civics and Social Development” textbook uses “One Country, Two Systems” and “the relationship between the powers and responsibilities of the Central Government and the Special Administrative Region” as its core narrative framework. Content on national conditions is concentrated in the unit on “National Development Since Reform and Opening Up.” It focuses on practical issues such as economic and trade cooperation between the Mainland and Hong Kong, as well as infrastructure development, while touching less on revolutionary history and collectivist narratives. Regarding the cultivation of responsibility, materials in Guangdong emphasize the overarching mission of young people to serve the nation, whereas those in Hong Kong focus on the legal obligations and community responsibilities of SAR citizens. These textual differences indicate that Guangdong's textbooks are more conducive to shaping students' sense of collective discipline, whereas Hong Kong's textbooks place greater emphasis on understanding the nation from an individual rights perspective. It may align with the behavioral patterns revealed in the questionnaire, where group disciplinary violations (such as group truancy) are more common among Guangdong students. In contrast, individual instances of misconduct (such as inappropriate online speech) are more common among Hong Kong students.

3.6.2. Differences Between Legal Norms and Behavioral Guidance

Guangdong's textbooks for "Morality and the Rule of Law" and "Ideological and Political Education" systematically explain the socialist legal system with Chinese characteristics. Rooted in the Constitution, they cover national institutions, social governance, and grassroots legal norms. They also include dedicated units such as "The Law Shall Not Be Violated," "Crime Prevention," and "Making Good Use of the Law," which clearly define behavioral boundaries and legal consequences for typical deviant behaviors among adolescents, such as school bullying, online misconduct, and disruption of public order. Behavioral norms education is concrete and highly practical. In Hong Kong, the rule-of-law content in the "Civics, Economics, and Social Studies" and "Civics and Social Development" courses primarily revolves around the Constitution and the Basic Law. It focuses on the operational rules of the SAR's legal system and the legal rights of Hong Kong residents, with a narrative logic that begins with individual rights and extends to corresponding obligations. Textbooks rarely include dedicated teaching units specifically addressing adolescents' everyday deviant behaviors (such as online abuse and school violations). Instead, they place greater emphasis on understanding macro-level legal provisions and social systems. By comparison, Guangdong's rule-of-law education has clearly defined behavioral constraints and well-defined boundaries, giving it a certain advantage in curbing moderate group-based disciplinary violations. Hong Kong's rule-of-law education, on the other hand, emphasizes cultivating rights awareness but is relatively weak in preventive measures against minor individual violations. Nevertheless, it plays a positive role in the systematic construction of students' legal cognitive frameworks.

3.6.3. Differences in Historical Perception and Historical Value Judgments

Guangdong province's unified history textbooks adopt the materialist conception of history as a unified analytical framework. They interpret historical events in China and abroad according to fixed laws of social development (productive forces and relations of production, economic base and superstructure), thereby forming a standardized historical evaluation system; the textbooks' statements are predominantly definitive conclusions. In terms of narrative perspective, they balance the main thread of Chinese civilization's development with the global anti-colonial movement and the history of world socialism. It fully integrates Hong Kong's history into the overall developmental narrative of the Chinese nation, highlighting the historical threads of national resistance and national reunification. Hong Kong's history textbooks draw on the Western tradition of empirical evidence-based history. They employ the critical analysis of diverse historical sources as a core teaching method, emphasizing students' ability to develop historical perspectives independently. The DSE examination also prioritizes the ability to interpret historical sources and construct logical arguments, without mandating uniform historical conclusions. The Hong Kong history section often begins with local social development and regional transformations. They focus on tracing the developmental trajectory from the perspective of the Special Administrative Region, while the connection to national history is relatively downplayed. This difference implies that students in Guangdong are more likely to form clear, unified standards for judging right and wrong, but have limited space for independent critical thinking. In contrast, students in Hong Kong receive more thorough training in critical thinking.

3.6.4. *Differences in Moral Reasoning and the Evaluation of Social Issues*

Guangdong's textbooks directly provide positive value standards for social issues such as online chaos, campus conflicts, and public misconduct. They clearly define the boundaries between right and wrong behavior, with explicit value orientations and conclusions presented upfront. Classroom instruction focuses primarily on theoretical lectures, while research-based learning and practical activities serve as supplementary elective courses. There are no uniform, mandatory assessment requirements. Subject evaluation, modeled after the college entrance exam scoring system, emphasizes mastery of theoretical frameworks and adherence to a unified value system. In Hong Kong, the Civic Education and History courses use diverse and conflicting historical sources and open-ended social issues as teaching materials. Students are encouraged to engage in independent discussion and critical thinking. No standardized answers are provided. In senior secondary schools, the Civic Education curriculum includes mandatory study tours to the mainland, with field trips and thematic research reports serving as fixed assessment components, emphasizing field-based, inquiry-driven learning. Subject evaluation is limited to two levels—"Pass/Fail"—thereby de-emphasizing standardized, value-based assessment. Comparisons show that Guangdong textbooks are highly effective at conveying values and providing clear behavioral guidance, but they lack systematic training in independent critical thinking in complex contexts. Hong Kong's textbooks provide ample room for critical thinking but lack clarity in value guidance. Students lack clear behavioral benchmarks when facing peer pressure or academic anxiety. This finding is corroborated by the consistently low scores ($M = 1.71$) for "Teachers' critical instruction" reported by students in both regions in the questionnaire. It also suggests that the absence of critical thinking training may be an underlying educational cause for the cross-regional co-occurrence of behaviors such as cheating and truancy.

4. Finding

By cross-referencing textual analyses of political, historical, and geographical textbooks from Guangdong and Hong Kong with questionnaire survey data, this study has reached the following key findings.

First, the values education in Guangdong and Hong Kong exhibits a divergent pattern in behavioral discipline, with each having its own "blind spots." Guangdong's textbooks emphasize uniform discipline, collectivism, and national identity; as reflected in student behavior, group-based disciplinary violations—such as group truancy and conflicts among small cliques—are relatively common. Hong Kong's textbooks, on the other hand, prioritize civic rights and responsibilities as well as multi-perspective critical thinking. Students are more likely to engage in individualized deviant behaviors, such as inappropriate online speech and minor rule violations, and to act independently. This finding is consistent with existing research (Ng, 2022; Cheung & Liu, 2023). It further reveals that the two educational models have created gaps in prevention and control, particularly in areas where the other model has an advantage. Moral education in Guangdong struggles to effectively curb moderate group-based disciplinary violations, while civic education in Hong Kong lacks sufficient constraints on mild individual deviant behaviors.

Second, the systematic lack of ethical reasoning training in classrooms across both regions is a common trigger for various deviant behaviors. The average score for the questionnaire item

“Teachers guides me to distinguish right from wrong and form my own judgments independently” was only 1.71 out of a possible 4 points, the lowest among all evaluation indicators. Neither Guangdong’s lecture-based classroom approaches nor Hong Kong’s discussion-based teaching methods have systematically trained students to judge right from wrong in complex situations independently. This deficiency makes it difficult for students to develop stable internal behavioral standards when facing peer pressure or academic anxiety, thereby making them prone to behaviors such as cheating and truancy. It also facilitates the slide from mild to moderate deviant behavior. Correlation analysis further supports this explanation: Teachers’ critical instruction was significantly positively correlated with exam cheating ($r = 0.249$, $p = 0.005$), smoking and drinking ($r = 0.270$, $p = 0.002$), and truancy ($r = 0.344$, $p < 0.001$). These findings suggest that teachers’ critical instruction currently serves more as a reactive intervention in response to disciplinary violations that have already occurred. At the same time, peer solicitation was significantly positively correlated with truancy ($r = 0.212$, $p = 0.016$), indicating that peer influence is an important contextual factor contributing to truancy.

Third, education on the legal boundaries has distinctly deterred such behavior in both regions. Data show that moderate and severe deviant behaviors—such as bullying and social exclusion ($M=1.38$), vandalism ($M=1.32$), and having someone take an exam on one’s behalf ($M=1.34$)—were extremely rare in this sample. Thus, regardless of overall value orientations, clear education on legal boundaries remains the most effective means of curbing severe deviant behaviors among adolescents.

In addition, family-level values education is equally weak; the average score for parents communicating principles of conduct with their children was only 1.89, reflecting a low level of moral identity among students themselves. The mean score for the statement that “character is more important than grades or wealth” was only 1.59. These multifaceted deficiencies in educational support have led to deviant behaviors among secondary school students in the Greater Bay Area, which are highly concentrated in mild-to-moderate campus-related behaviors such as truancy ($M = 2.02$), smoking and drinking ($M = 2.05$), and exam cheating ($M = 1.94$). Severe illegal activities, however, are extremely rare.

This study also has several limitations: the effective sample size is relatively small (128 respondents) and is concentrated primarily in urban schools, so conclusions should be generalized with caution. Self-report questionnaires may be subject to social desirability bias, and the actual incidence of deviant behaviors may be higher than reported. The analysis of teaching materials did not include supplementary classroom materials provided by teachers or school-based curricula. Further evidence is needed to support causal inferences about the relationship between values education and behavioral outcomes. In future research, the sample coverage could be further expanded, a longitudinal tracking design adopted, and the study deepened by incorporating qualitative methods such as classroom observation.

Based on the above findings, the following three practical recommendations are proposed. First, moral education classes in both regions should systematically incorporate modules on moral reasoning training. Situational case studies should replace one-way lectures to help students develop the ability to make independent behavioral judgments in complex situations. Second, a three-tiered behavioral education system—“mild—moderate—severe”—should be established. Preventive guidance must be prioritized for mild behaviors; targeted interventions should be implemented for moderate behaviors (individual responsibility education should be

supplemented in Guangdong, while group norms education should be supplemented in Hong Kong); and for severe behaviors, existing legal safeguards should be maintained while establishing early warning mechanisms. Third, the Guangdong-Hong Kong-Macao Greater Bay Area can actively explore cross-regional collaboration in moral education. It can jointly develop case-based teaching materials that incorporate the value orientations of both regions and regularly organize teacher-exchange workshops to complement each other's strengths while respecting institutional differences.

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Associations between Humanistic Care, Quality of Life and Life Satisfaction among Patients with Multiple Myeloma in Shantou, Guangdong: A Cross-Sectional Study

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Abstract

This cross-sectional survey of 77 multiple myeloma patients receiving treatment in Shantou, Guangdong, examined the relationship between perceived humanistic care and quality of life. Data were collected via a self-administered questionnaire covering demographics, treatment history, experiences of communication and emotional support, functional status, and life satisfaction. Spearman correlation analysis showed that mood distress was negatively associated with life satisfaction ($\rho = -0.535$, $p < 0.0001$), while clear communication from staff ($p = 0.0003$) and regular invitations to social activities ($p = 0.0002$) were positively associated with higher satisfaction. Patients diagnosed three or more years ago reported greater life satisfaction than those with shorter disease duration ($p = 0.0068$). Although 74% of participants expressed satisfaction with their medical care, over a quarter reported moderate to severe mobility limitations and nearly one-third experienced moderate to severe emotional distress. These results suggest that humanistic care components—particularly effective communication, practical assistance, and peer engagement—are meaningfully linked to better perceived well-being among older myeloma patients. The findings support integrating structured humanistic interventions into standard hematological care to complement pharmacotherapy, though the cross-sectional design precludes causal conclusions. Future longitudinal studies are needed to evaluate whether such interventions yield sustained improvements in quality of life and treatment outcomes.

1. Introduction

Thanks to cutting-edge modern medical advances, individuals of all age brackets diagnosed with chronic illnesses such as multiple myeloma can sustain longer lifespans; yet extended survival does not equate to fulfilling, comfortable daily existence. Innovative targeted pharmacotherapies have stretched overall survival horizons for multiple myeloma patients across different age spectrums, yet prolonged disease trajectories often come tangled with persistent physical discomfort, crushing psychological pressure, and eroded capacity for independent daily functioning.

The bulk of existing academic literature and clinical trials fixate narrowly on pharmacotherapeutic efficacy, chemotherapy regimen design, tumor remission metrics, and

survival endpoints to gauge therapeutic performance. Scholars have poured extensive research energy into refining medication protocols and pioneering novel anti-myeloma pharmaceuticals, while comparatively scant attention has intertwined with patients' inner psychological struggles, day-to-day hardships, and holistic lived experiences spanning lengthy treatment cycles. Few scholarly works dissect how humanistic nursing interventions untangle patients' negative affective states and reshape their clinical treatment journeys for the better.

Correspondingly, minimal research has centered on directly soliciting feedback from individuals of diverse age ranges regarding the small, consistent acts of compassionate care that foster a sense of being supported, alongside how humanistic care interlocks with standard pharmacotherapy to generate mutually reinforcing therapeutic effects.

This study dissects the intertwined synergistic dynamic between conventional pharmacotherapy and perceived humanistic care—including fluid clinician-patient communication, consistent emotional counseling, pain relief support, and tangible daily living assistance—and explores their combined intertwined influence on self-reported quality of life among individuals spanning multiple age segments navigating long-term multiple myeloma treatment. It further seeks to clarify how humane supportive interventions amplify the clinical benefits of pharmaceutical treatment, laying actionable empirical groundwork for constructing a holistic whole-person care model tailored to multiple myeloma patients across all age groups.

2. Literature Review

Multiple myeloma is one of the most common hematological malignancies. It accounts for 1% of all global cancer cases and 10%–15% of all hematological neoplasms. The average age at diagnosis ranges from 70 to 75 years, with only around 2% of patients diagnosed before age 45 (Gerecke et al., 2016). Gender differences exist in disease incidence; male cases occur approximately 1.5 times more frequently than female cases in all age groups (Turesson et al., 2018). Known risk factors include ionizing radiation exposure, obesity, and chronic infectious conditions. Across all age groups, most multiple myeloma patients present with comorbidities, physical frailty, and organ dysfunction. Relative five-year survival rates stood at 45% between 2009 and 2010. A cohort study of multiple myeloma patients documented an early mortality rate of 16% among individuals treated from 2001 to 2005. In the treatment window (2006–2010), this rate decreased to 10%, indicating improved therapeutic efficacy (Kumar et al., 2014). These combined demographic and disease characteristics impose persistent physical and psychological burdens on long-term survivors.

2.1. Standard Induction Regimens for Newly Diagnosed Multiple Myeloma

VRd and D-VRd are the two dominant frontline treatment regimens used in multiple myeloma.

The VRd regimen consists of three agents: bortezomib, lenalidomide, and dexamethasone. Bortezomib upregulates pro-apoptotic protein expression while inhibiting the NF- κ B pathway and multiple anti-apoptotic proteins. It also suppresses key DNA repair proteins, triggers endoplasmic reticulum stress and pro-apoptotic unfolded protein responses (Mujtaba & Dou, 2011). Studies show that lenalidomide targets and degrades two lymphoid transcription factors—IKZF1 and IKZF3—via the CRBN-CRL4 ubiquitin ligase complex. These proteins are essential for supporting multiple myeloma cell survival (Kronke et al., 2014). Furthermore, NF- κ B promotes pro-inflammatory cytokines and downstream target genes. Dexamethasone

produces anti-tumor effects by inhibiting this transcription factor and further lowering IL-6 cytokine expression (Rosenberg, 2023). In clinical trials of patients treated with VRd induction therapy, median post-transplant progression-free survival (PFS) reached 44.6 months, with five-year overall survival (OS) of 79%. Multivariate analysis confirmed VRd induction's favorable survival outcomes across all age groups (Sidana et al., 2022).

D-VRd is a four-drug combination that includes daratumumab, an anti-CD38 monoclonal antibody, in addition to the VRd regimen (bortezomib, lenalidomide, dexamethasone). Daratumumab triggers antibody-dependent cellular cytotoxicity (ADCC). It eliminates CD38-positive myeloma cell lines and primary patient myeloma cells through autologous and allogeneic effector cells. Compared with other anti-CD38 antibodies, daratumumab can more effectively induce complement-dependent cytotoxicity (CDC) in primary myeloma cells (de Weers et al., 2011). In terms of treatment efficacy, among patients receiving D-VRd, the projected 48-month progression-free survival rate was 84.3%. Overall, 87.9% of participants achieved complete response or deeper remission, while 75.2% achieved minimal residual disease (MRD)-negative status. Serious adverse events occurred in 57.0% of all participants (Sonneveld et al., 2024).

While pharmaceutical therapies improve survival, they do not address the persistent psychological distress or everyday functional restrictions that many patients face.

2.2. Frailty Stratification Guides Individualized Adjustment of Treatment Intensity

Given the heterogeneity in physical reserve among myeloma patients, standardized stratification tools help guide personalized treatment intensity. A scoring system based on age, comorbidity burden, cognitive function, and physical performance classifies patients into three groups: fit (score = 0), intermediate (score = 1), and frail (score ≥ 2). This classification helps clinicians tailor treatment intensity and dosage to each patient (Palumbo et al., 2015).

Clear disparities in safety profiles were observed across all three subgroups of patients. At the 12-month follow-up, cumulative incidence of grade 3 or higher non-hematological adverse events stood at 22.2% for fit patients, 26.4% for intermediate patients, and 34.0% for frail patients (ibid.).

Mirroring this toxicity profile gap, treatment persistence also diverged significantly according to frailty grouping. Over the same follow-up period, cumulative treatment discontinuation rates differed by frailty status: 16.5% among fit patients, 20.8% for intermediate patients, and 31.2% for frail patients (ibid.).

Real-world clinical practice aligns with this stratified treatment principle applicable to all ages. One observational study enrolled 1497 newly diagnosed multiple myeloma patients, with over half receiving modified dosage regimens; among these adjusted protocols, VRd lite accounted for 33% of cases, while reduced-dose VRd made up an additional 22%. Advanced age predicted the use of VRd lite, whereas frailty markers correlated with prescription of reduced-dose VRd (Ran et al., 2022).

Current frailty evaluation frameworks focus only on physical tolerance to treatment, entirely overlooking the accompanying psychological vulnerability among frail patients of all age groups.

2.3. Limitations of Clinical Trial Populations and Prognosis of Advanced-Age Segments

Even with stratified treatment strategies established for vulnerable patient subgroups, conventional clinical trials fail to adequately represent elderly patient populations. One pooled trial dataset captured 7,956 participants. 66% of these patients were aged below 65, and the median participant age was only 62. Severe underrepresentation of participants aged 75 and older reduces the generalizability of findings to elderly patients (Duma et al., 2018).

This insufficient enrollment of elderly patients complicates prognostic analysis across all patient groups. Patients aged over 80 exhibited a median survival of only 22 months, with 14% of this elderly group dying within two months of treatment initiation, demonstrating that this specific age subgroup achieves limited survival improvements from standard pharmacotherapy (Dimopoulos et al., 2012).

Existing clinical studies mainly focus on disease therapeutic efficacy and physical frailty stratification, while patients' subjective lived experiences and supportive care demands remain underexplored. The following literature builds on prior research examining humanistic care, quality of life, and life satisfaction among cancer patient populations.

2.4. Defining the Core Connotation of Humanistic Care

Humanistic care manifests as a tangible embodiment of humanistic spirit woven into contemporary medical practice, acting as a core actionable vehicle for delivering integrated psychosocial support to patients of every age segment. Distinct from routine physiological nursing workflows, its foundational essence lies within a patient-centric, holistic care delivery model that untangles and addresses intertwined physiological, psychological, dignity, and social adaptation needs spanning the full spectrum of diagnosis, treatment, and rehabilitation for all age spectrums. Synthesizing clinical nursing research, five intertwined core dimensions anchor humanistic care delivery applicable to every age bracket: psychological support, dignity preservation, standardized clinician-patient communication, social support network construction, and cognitive-behavioral intervention. These five pillars interlock and reinforce one another to form a cohesive, interconnected humanistic nursing system suited for patients across all age ranges (Guo & Cui, 2025).

Among these intertwined core components, psychological support forms the foundational bedrock of humanistic care for all age groups, delivering targeted counseling to untangle negative affective states including anxiety, depression, and fear that emerge amid diagnosis and treatment journeys regardless of chronological age. Dignity preservation constitutes the intrinsic heart of humanistic care for every age segment, prioritizing respect for patients' autonomy, right to transparent medical information, and treatment decision-making agency, while shunning mechanistic, routine-focused nursing workflows that sever connection with subjective inner experiences of patients across all age spectrums (Zhao & Hu, 2025). Clinician-patient communication acts as a vital intertwined pathway to roll out humanistic care frameworks for all age brackets, cultivating mutual trust and lifting patient treatment compliance through thoughtful, nuanced dialogue practices tailored to every age range. Social support mechanisms interweave family members and community social resources to compensate for eroded support networks common among chronically ill individuals of all age segments. Cognitive-behavioral intervention leverages evidence-based psychological

methodologies to untangle patients' distorted illness cognitions and rewrite maladaptive behavioral patterns across every age bracket (Zhu, 2025). This nursing model breaks free from the historic narrow focus isolated on disease suppression and symptom relief for any age spectrum, fully upgrading clinical care philosophy from "treating isolated disease pathology" to "nurturing the whole interconnected person" across all age groups. It has gained widespread intertwined adoption across diverse clinical contexts serving patients of every age bracket, including oncology, chronic disease management across all age spectrums, and critical care units.

2.5. The Psychosocial Core Needs of Oncology Patients Spanning Varied Age Ranges

Shaped by intertwined overlapping factors including chronological age, physical functional status, and shifting social role identities, oncology patients of diverse age brackets carry unique, layered, interconnected psychosocial demands. Relative to younger age segments, individuals in higher chronological brackets exhibit more prominent psychological struggles paired with amplified social adaptation pressures—factors that jointly intertwine to hinder treatment compliance and degrade overall quality of life across all age spectrums. Existing intertwined research pinpoints demoralization syndrome heightened self-perceived care burden, and insufficient digital health literacy as the three most pressing intertwined psychosocial hurdles confronting oncology patients of every age bracket (Liang & Ji, 2024).

Demoralization syndrome represents a highly prevalent intertwined psychological condition among oncology patients across all age ranges, chiefly manifesting as pervasive hopelessness, helplessness, and eroded self-worth amid disease progression and age-related physical decline for every age segment. Symptom severity intertwines with advanced chronological age, frailty markers, and accumulated chronic comorbidities regardless of patient age bracket (Liang & Ji, 2024). Progressive physical deterioration, compounded by dual suffering from malignant disease and chronic comorbidities, unravels life confidence for individuals of all age spectrums, frequently spurring passive treatment attitudes or outright treatment abandonment across every age group. Concurrently, oncology patients spanning diverse age brackets commonly grapple with severe intertwined self-perceived burden, holding the belief that their illness imposes intertwined financial and caregiving strain upon household members irrespective of chronological age. This generates overlapping guilt and inferiority complexes across all age segments, driving individuals to suppress their own care demands and passively disengage from rehabilitation support (Wu et al., 2023).

Insufficient digital health literacy acts as a pivotal intertwined social barrier blocking rehabilitation progress for chronically ill individuals of every age bracket. Most patients across all age spectrums lack the capacity to source and critically evaluate disease-related medical information through credible channels, leaving all age groups vulnerable to misinformation and warped illness cognitions that further entangle them in psychological distress and treatment resistance (Yang et al., 2024). Collectively, oncology patients spanning all age brackets require far more than foundational disease treatment and physiological nursing; every age segment equally demands intertwined targeted psychological counseling, dignity protection, cognitive distortion correction, and structured social support interventions. This interconnected dual demand forms the irreplaceable core rationale for embedding humanistic care within oncology nursing workflows serving all age ranges.

2.6. Impact of Humanistic Care Interventions on Clinical Outcomes for Oncology Patients of All Age Segments

A robust body of intertwined clinical practice research verifies that standardized humanistic care interventions untangle overlapping physical and mental impairments for oncology patients across every age bracket, refine multi-faceted clinical endpoints, elevate nursing service satisfaction, and boost patient quality of life for all age spectrums—carrying substantial intertwined clinical translational value. When addressing emotional regulation and sleep quality for any age group, humanistic care delivers precise intertwined intervention for negative affective states among individuals undergoing chemotherapy regardless of chronological age. Through sustained emotional companionship, tailored psychological counseling, and sleep optimization protocols suited to all age brackets, it untangles intertwined anxiety and depressive symptoms across every age segment, alleviates chemotherapy-induced insomnia and fragmented rest cycles for all age spectrums, and lays a stable interconnected physical and mental foundation for ongoing disease treatment across all age ranges (Li et al., 2024).

In terms of nursing satisfaction and clinician-patient rapport for every age bracket, humanistic care abandons rigid, mechanistic, checklist-driven nursing frameworks unsuitable for diverse age spectrums. By fully attuning to physical vulnerabilities and intertwined psychological needs of all age segments—through empathetic communication, meticulous, personalized care, and respect for individual treatment preferences across every age group—it drastically elevates holistic medical service experience and nursing satisfaction for all age brackets, while untangling friction and disputes between care providers and patients spanning varied chronological ranges (Zhu, 2025). Simultaneously, humanistic care interventions strengthen intertwined patient treatment compliance across all age spectrums, motivating active participation in surgical procedures, chemotherapy cycles, and rehabilitation training for every age bracket, thereby lowering intertwined complication incidence rates across all age groups (Lu et al., 2024).

For long-term prognostic trajectories applicable to all age segments, humanistic care frameworks markedly lift overall quality of life for oncology patients spanning diverse age brackets. By constructing an interconnected tripartite support system spanning physical, psychological, and social domains suited to every age spectrum, untangling negative affective states and maladaptive daily routines across all age groups, rebuilding life confidence for every chronological bracket, alleviating intertwined physical and mental suffering for all age ranges, and sustaining stable quality of life throughout treatment cycles regardless of patient age, these interventions deliver dual intertwined gains in physical recovery and psychological rehabilitation for all age spectrums (Shi, 2024). For oncology patients of every age bracket tangled with overlapping comorbidities including hypertension, diabetes, or frailty, integrated humanistic care plus high-quality nursing models flexibly adapt to multi-morbid profiles across all age segments, breaking free from the limitations of singular nursing approaches and drastically amplifying interconnected comprehensive nursing efficacy for every age range (Zhao & Hu, 2025).

2.7. Specialized Humanistic Care Intervention Strategies for Oncology Patients Spanning Diverse Age Brackets

Oncology patients across all age spectrums frequently present intertwined overlapping characteristics: physical frailty, stacked chronic comorbidities, and mild cognitive decline regardless of chronological age. Generic humanistic nursing interventions lack targeted alignment with unique profiles of different age brackets; hence, more bespoke intervention frameworks that interlock with physical and psychological traits of each chronological segment are required. Among available modalities, cognitive-behavioral therapy, structured social support interventions, and dignity therapy stand as the most widely deployed and empirically validated intertwined intervention tools suited for all age ranges.

Cognitive-behavioral therapy (CBT) acts as a core intertwined methodology to untangle distorted illness perceptions and rewrite maladaptive behavioral patterns for individuals of every age bracket. A CBT-derived interactive goal-attainment intervention framework, tailored to cognitive processing traits of each age segment, leverages plain-language medical explanations, interactive guided reflection, and staged incremental goal-setting applicable to all age spectrums to untangle irrational cancer fears and warped cognitions across every chronological group, steering individuals toward proactive treatment mindsets and intentional adjustment of harmful daily behaviors regardless of age. This approach aligns seamlessly with mild cognitive slowing and reduced information receptivity common in higher chronological brackets, carrying robust intertwined safety and efficacy profiles across all age ranges (Zhuang et al., 2026). This therapeutic modality fundamentally untangles negative emotional states stemming from cognitive bias and curbs passive treatment avoidance behaviors for every age segment.

Dignity therapy, centered on safeguarding inherent life dignity for all age brackets, interlocks closely with core psychological demands of oncology patients spanning diverse chronological ranges. By guiding individuals of every age segment to reflect on personal life value, articulate unspoken inner desires, and uphold autonomy over treatment decision-making regardless of age, it untangles intertwined demoralization and inferiority complexes across all age spectrums, rebuilds internal self-worth for every chronological bracket, meaningfully reshapes psychological equilibrium for all age groups, and eases self-perceived care burden across all age ranges. Meanwhile, social support interventions interlock family caregivers, clinical staff, and community resources to build a holistic interconnected support ecosystem for patients of every age bracket, mitigating social isolation and gaps in caregiving backup across all chronological segments, thereby untangling loneliness and the persistent sense of being a burden to loved ones regardless of age (Liang & Ji, 2024).

Enhanced intervention protocols such as the 6E model, woven together with humanistic care core principles adaptable to all age spectrums, can be customized to match perioperative nursing demands of oncology patients spanning diverse age brackets, mitigating intertwined psychophysiological stress responses across every chronological group, lowering nursing risk exposures for all age ranges, and further refining care outcomes for frail, multi-morbid cohorts of any age segment—opening new intertwined actionable avenues for specialized clinical supportive intervention suited to all age spectrums (Wang et al., 2023). Weaving multiple specialized intervention modalities into traditional humanistic care workflows renders oncology

nursing more targeted and adaptive for every age bracket, precisely addressing unique intertwined psychosocial hurdles of patients across all chronological ranges.

2.8. Connotation and Definition of Humanistic Care : Social and Political Perspective

Humanistic care centers on shielding the rights and interests of vulnerable social groups of all age brackets, alongside advancing societal equity and justice across every chronological segment. For instance, human-centered service frameworks ought to be intertwined within public policy design, education systems, healthcare delivery, and urban governance planning catering to individuals of every age spectrum.

2.9. Modern Management and Ideological Work Dimension

This framework prioritizes a people-oriented foundational philosophy applicable to all age groups (Yang et al., 2016). Humanistic care is not reducible to isolated one-off psychological counseling sessions for specific age brackets; instead, it functions as an interconnected multi-dimensional intervention ecosystem serving every chronological segment. Its intertwined core components break down into four pillars suitable for all age spectrums:

Emotional and psychological support, delivering structured counseling to untangle overlapping negative affective states for individuals of every age bracket;

Dignity preservation, safeguarding treatment decision-making autonomy and inherent personal dignity for all chronological segments;

Standardized transparent clinician-patient communication, untangling information asymmetry between care providers and recipients across every age range;

Co-construction of interconnected family and community social support networks catering to patients of all age brackets.

2.10. Patient-reported Outcomes and Application within Hematological Malignancy Care (Jiang et al., 2019)

Empirical evidence clearly illustrates that hematological malignancy patients spanning diverse age brackets navigate a tangled web of intertwined psychosocial hardships distinct across chronological segments. A large volume of cross-sectional and longitudinal cohort studies confirm anxiety, depressive symptomatology, social disconnection, and eroded personal dignity as highly prevalent intertwined psychological struggles within all age spectrums.

Synthesized analytical data demonstrates that the intertwined psychosocial distress cycles form bidirectional negative feedback loops for every age bracket. On one intertwined side, sustained negative affective states directly degrade physical functional capacity, sleep architecture, and independent daily living performance across all chronological segments, drastically lowering health-related quality of life metrics for every age range. On the intertwined reverse side, persistent psychological strain erodes willingness to adhere to prescribed treatment regimens regardless of age, cutting compliance with oral/intravenous medication and routine follow-up appointments across all age spectrums, which indirectly amplifies intertwined disease progression risk for every chronological group. This creates a vicious interconnected cycle applicable to all age brackets: psychological distress → diminished

quality of life → poor treatment adherence. Relative to younger chronological segments, individuals in advanced age brackets—characterized by advanced chronological age, frailty markers, and stacked chronic comorbidities—carry diminished psychological resilience and uniquely layered intertwined psychosocial needs that conventional biomedical care models fail to address for any age spectrum.

Synthesizing evidence from questionnaire cross-sectional survey and pooled meta-analytical datasets covering all age brackets: Meta-analyses of randomized controlled trials (RCTs) furnish high-grade intertwined evidence-based conclusions applicable to every chronological segment: standardized psychosocial and humanistic supportive interventions meaningfully elevate health-related quality of life for oncology patients spanning all age spectrums and effectively untangle intertwined anxiety and depressive emotional disturbances across every age group. Post-intervention measurable gains also surface in medication adherence and consistent follow-up attendance rates for all age brackets. Regarding long-term survival benefits across chronological segments, existing literature converges on a phased intertwined consensus valid for every age spectrum: most short-term follow-up research spanning 1–2 years documents positive survival gains tied to humanistic supportive interventions for all age brackets, yet robust high-grade evidence validating sustained long-term survival improvements across all chronological segments remains underdeveloped and requires expanded longitudinal research covering every age range.

Across the broader oncology field serving patients of all age brackets, clinical studies integrating pharmaceutical disease management with psychosocial humanistic supportive interventions have accumulated substantial intertwined empirical evidence applicable to every chronological segment. Existing prospective chores and randomized controlled studies predominantly leverage hard survival endpoints including overall survival (OS) and progression-free survival (PFS), paired with patient-reported quality of life and affective symptom scales, as intertwined core outcome measurement metrics for all age spectrums. Aggregate intertwined findings demonstrate that comprehensive treatment regimens embedding humanistic care interventions stably reshape psychological equilibrium for every age bracket, lift quality of life across all chronological segments, and boost full treatment completion rates for every age range. However, survival outcome improvements display substantial intertwined heterogeneity across independent research projects covering diverse age brackets, tightly interlocked with intervention duration, follow-up tracking windows, patient chronological stratification, and individual frailty status for every age spectrum. Furthermore, multiple mediation analytical studies confirm physical functional capacity and treatment completion rates as core intertwined mediating variables through which humanistic supportive interventions modulate anti-tumor therapeutic efficacy for all age brackets; by lifting these two pivotal indicators across every chronological segment, humanistic care indirectly optimizes long-term prognostic trajectories for patients of all age ranges (Chang et al., 2025).

Compared to solid tumor disciplines serving all age spectrums, scholarly exploration of humanistic care within hematological malignancy subfields—specifically multiple myeloma patients across diverse chronological brackets—emerged far later and carries a weaker intertwined empirical evidence foundation for every age segment. Most of the existing myeloma-focused humanistic care research consists of cross-sectional surveys or small-sample single-center observational studies covering limited age ranges, lacking large-scale randomized controlled trials and extended longitudinal cohort tracking datasets for all

chronological groups. In terms of study population design, most published research omits stratified subgroup analyses targeting frail, multi-comorbid myeloma patients of advanced age brackets, rendering their conclusions poorly aligned with unique intertwined clinical traits of this high-risk chronological segment (Jelinek & Melenhorst, 2026). Only a handful of preliminary studies validate that multidisciplinary team (MDT) frameworks integrating psychosocial support, transparent clinician-patient dialogue, and family-centered intervention can elevate healthcare experiences and treatment tolerability for multiple myeloma patients spanning all age spectrums (Zhang et al., 2024; Gan, 2026; Dumas & Leblanc, 2026). Even so, no unified standardized humanistic care intervention protocol, delivery frequency benchmark, or outcome evaluation framework catering to all chronological brackets has been established globally; intervention content, delivery cadence, and total duration diverge drastically across independent research targeting different age ranges, severing cross-study comparative analysis and obstructing the formulation of universal clinical practice guidelines applicable to every age spectrum. Long-term therapeutic efficacy and prognostic gains stemming from these supportive interventions across all chronological segments also remain absent systematic validation.

A holistic synthesis of domestic and international research progress covering all age brackets lays bare prominent intertwined research gaps and methodological limitations valid for every chronological segment. First, existing studies uniformly feature abbreviated tracking windows limited to specific age groups, with most restricted to cross-sectional snapshots or merely 1–2 years of short-term follow-up for narrow chronological ranges; extended longitudinal data tracking myeloma patients of all age spectrums is scarce, leaving the long-term intertwined impacts of humanistic interventions on sustained quality of life and disease prognosis unclarified across every age bracket. Second, prevailing observational research carries intertwined confounding bias risks applicable to all chronological segments, failing to sufficiently adjust for pivotal confounding variables including patient chronological age, frailty index scores, comorbidity burden, and distinct pharmacotherapy regimens for every age range. This gap blocks precise differentiation between the independent and intertwined synergistic therapeutic effects of pharmaceutical treatment, humanistic supportive interventions, and baseline physical and psychological status across all age spectrums, restricting rigorous causal inference capacity for every chronological group. Third, no globally unified, standardized humanistic care intervention protocol or dedicated assessment tool has been formalized specifically for myeloma patients spanning diverse age brackets. Interventional content, delivery frequency, and total duration vary wildly across scholarly works targeting different chronological segments, severing cross-study comparability and slowing development of generalizable clinical practice guidelines suited to all age ranges. Finally, existing research allocates insufficient investigative focus to high-risk myeloma subgroups defined by frailty and stacked chronic comorbidities in advanced age brackets, lacking systematic intertwined exploration and integrated empirical evidence for combined pharmacotherapy plus humanistic care intervention frameworks tailored to this specific chronological cohort (Jelinek & Melenhorst, 2026).

In summary, established oncology humanistic intervention frameworks deliver clear intertwined clinical value for patients of every age bracket, and the synergistic interconnected mechanism binding pharmacotherapy and humanistic care has secured theoretical and empirical backing across all chronological segments. Yet within the niche subfield of multiple myeloma care serving diverse age spectrums, intertwined structural barriers persist for every

age range: underdeveloped systematic research infrastructure, insufficient population-targeted analytical depth stratified by chronological bracket, absence of standardized intervention workflows adaptable to all age groups, and scarcity of long-term longitudinal evidence covering every chronological segment. Given unique intertwined clinical traits of myeloma patients across all age brackets—varied chronological ages, elevated frailty risk across higher age segments, heavy comorbidity burden for all age spectrums, pervasive psychological distress irrespective of chronological range, and multi-year extended treatment cycles for every age group—the development of bespoke standardized humanistic care intervention protocols calibrated to distinct chronological segments, alongside exploration of intertwined synergistic therapeutic value when paired with pharmacotherapy for all age brackets, carries profound intertwined research significance and clinical translational potential for advancing holistic full-cycle patient management and refining physical and psychological therapeutic outcomes for myeloma patients spanning every age spectrum.

3. Hypothesis

For multiple myeloma patients, self-perceived humanistic care levels are positively correlated with personal quality of life and life satisfaction across all age groups. Patients who receive greater humanistic care report higher scores on the two core outcome evaluation indicators in all age groups.

4. Methodology

Design: A cross-sectional questionnaire survey across all age groups was used in this study. Its core objective lay in exploring the relationship between perceived humanistic care and quality of life among multiple myeloma patients. All data collection occurred at a single time point during participants' inpatient or outpatient hospital visits.

Participants: Seventy-seven multiple myeloma patients receiving treatment in Shantou, Guangdong, were enrolled in this survey. Among all participants, 53 (68.8%) identified as male and 24 (31.2%) as female, covering all age groups. Formal inclusion criteria for all age groups are listed as follows: (1) Clinically and laboratory-verified multiple myeloma diagnosis; (2) Adequate cognitive ability to understand and finish the questionnaire independently. Individuals living with severe cognitive impairment or critically unstable conditions were excluded.

Materials: A self-administered questionnaire was developed to capture all study variables, with higher scale scores indicating more positive perceptions and clinical outcomes. The questionnaire included six sections suited to all age groups, summarized below:

Section 1 collected core demographic data, including age ranges and baseline treatment status;

Section 2 collected general health status data, covering gender, time elapsed since myeloma diagnosis, and presence of chronic comorbidities;

Section 3 evaluated disease and treatment trajectory characteristics, encompassing primary therapeutic modalities and routine hospital visit frequency;

Section 4 assessed patients' experiences of humanistic care and social support, including whether clinical staff delivered easy-to-understand medical explanations tailored to each patient, proactively inquired about mood, appetite and sleep cycles, and responded empathetically to emotional distress. This section also quantified tangible social support resources, such as daily living assistance, regular medication reminders, and formal invitations to patient-targeted social events and health education sessions;

Section 5 assessed multi-dimensional quality of life domains: social interaction, physical functional capacity, and emotional well-being. It further measured feelings of being valued and patients' overall subjective perceptions of their life trajectory;

Section 6 quantified patients' overall satisfaction spanning treatment effectiveness, nursing service quality, and comprehensive humanistic supportive care.

Sections 1–3 adopted categorical fixed response options stratified by age range. Sections 4–6 utilized Likert-type graded scales, where ascending scores correspond to more positive lived care experiences, superior quality of life, and higher service satisfaction.

Procedure: All data collection took place over a one-week period within Shantou hospitals. Eligible participants were identified by treating clinicians, who provided concise verbal introductions to the aims of this study. Participants who gave verbal informed consent proceeded to fill out the questionnaire. A web-based questionnaire platform (Wenjuanxing / Questionnaire Star) was used to distribute the survey that all participants could access through QR codes or mobile links. Participants completed questionnaires during scheduled hospital visits, with all response data automatically encrypted and stored within the platform's backend servers. A total of 115 raw responses were collected initially; following screening to eliminate incomplete, partially completed responses, 77 fully valid questionnaires remained for statistical analysis.

Ethical Considerations: All participants received complete, transparent disclosure of the study's core research objectives, alongside formal guarantees that participation remained entirely voluntary. An introductory screening question embedded at the survey's opening permitted participants to terminate the surveys immediately without completing any additional items if they wished to decline participation. All data were collected anonymously, and no personally identifiable information (PII) was recorded or stored. Participants reserved the full right to withdraw participation at any survey stage without any negative impact on their clinical care. Voluntary completion of the full questionnaire was regarded as implied informed consent to take part in the research.

5. Results

5.1. Patient Profile

Across all enrolled participants, 53% were aged 54 years or younger, while only 6% were aged 75 years or above. Most participants were in the early phase of treatment: 48 participants (62%) had been diagnosed with multiple myeloma in the past 12 months. 83% of participants presented with at least one comorbidity, with hypertension (53%), diabetes mellitus (30%), and arthritic disorders (25%) representing the most prevalent comorbidities; only 17% of participants reported no comorbidities at all.

5.2. Treatment and Healthcare Utilization Patterns

Building upon these demographic profiles, subsequent analyses explored real-world treatment regimens and regular hospital follow-up experiences.

When mapping treatment delivery formats, 56% of participants relied exclusively on oral regimens, while 35% combined oral medications with injectable or intravenous infusion therapies. Only 25% received standalone injectable or infusion therapies. Frequent hospital visits placed substantial burdens on participants: 51% of participants attended clinical visits weekly or more often, with 26% requiring clinic visits no fewer than three times per week. Roughly 70% of participants reported medical staff consistently or frequently explained complex medical jargon in simple terms. For routine psychological follow-ups, approximately 80% confirmed care providers regularly asked targeted questions to assess their mood, appetite and sleep status. A total of 78% of participants agreed that their physical pain and persistent physical discomfort were addressed with consistent and attentive care.

5.3. Functional Capacity and Emotional Equilibrium

Beyond treatment, delivery and interactions with medical staff, this section explores participants' ability to conduct independent daily activities, patterns of social interaction, and emotional well-being.

In terms of daily self-care capacity, 68% of respondents relied on external help to complete core daily tasks including meal preparation, bathing, and grocery shopping for four or more days each week. 61% of participants received consistent medication reminders at least four days per week. Regarding structured social participation, 52% reported frequent or regular invitations to patient peer group activities, and 68% maintained regular contact with family and friends at least four days each week.

Disease-related symptoms disrupted participants' daily lives to varying extents: only 21% reported no interference with daily routines, with 48% experiencing mild functional disruption, 25% moderate impairment, and 6% severe functional limitation. Regarding physical mobility, 32% had no movement restrictions, 36% mild physical limitations, and 27% moderate mobility impairment, meaning over a quarter faced clear barriers to independent movement.

Turning to indicators of emotional well-being, 47% of participants reported mild depressive symptoms or feelings of loneliness, 26% moderate low mood, and 7% severe mood disturbances; no participants reported extreme, debilitating emotional distress. More than half of participants (56%) felt moderately or deeply valued by family members and social connections.

5.4. Holistic Satisfaction Metrics

Building on the above findings regarding physical function and emotional well-being, this study further quantified and analyzed two interrelated dimensions of patient satisfaction.

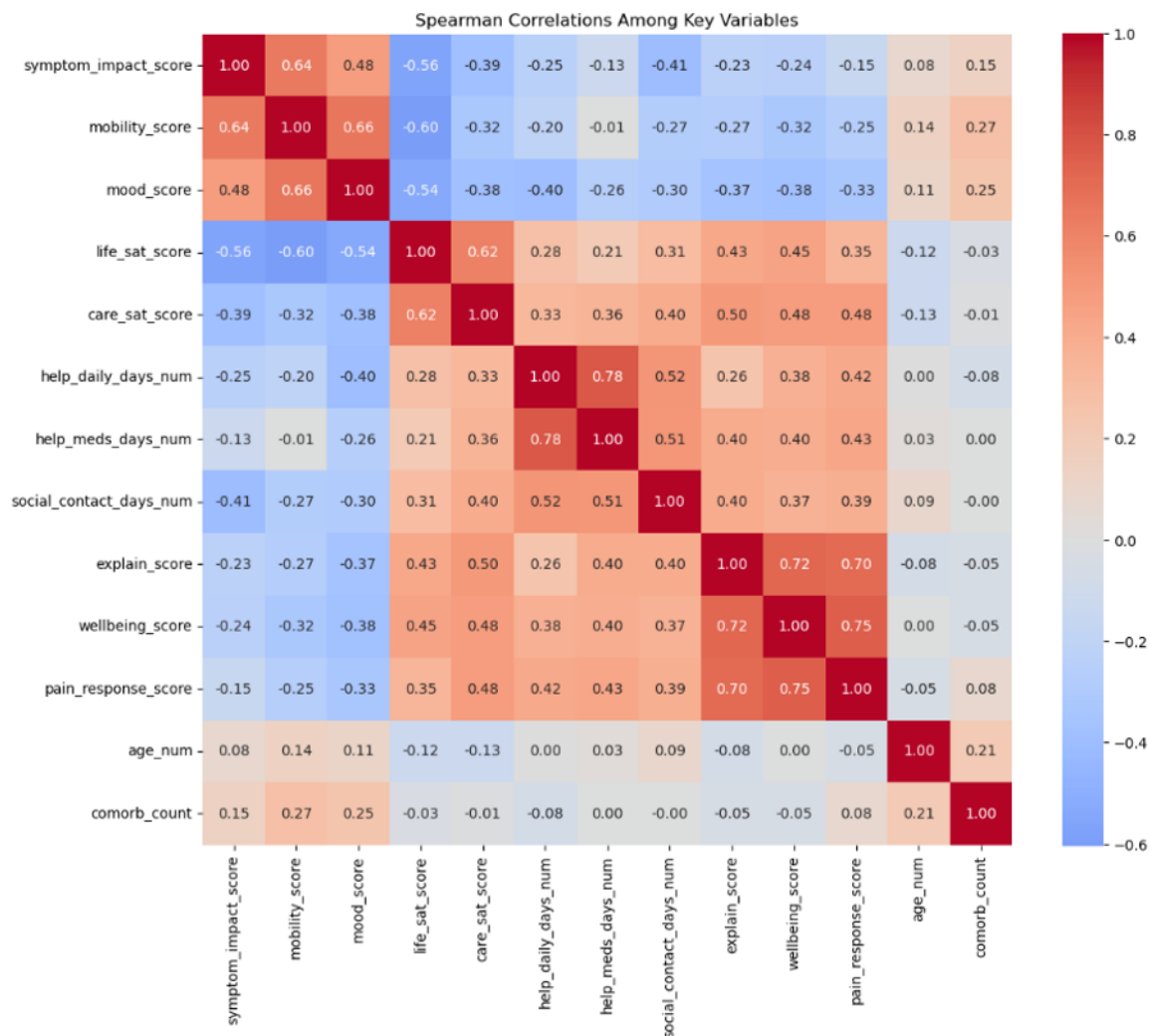
Patient satisfaction fell into two connected categories: life satisfaction and satisfaction with clinical care.

Seventy percent of patients were satisfied or very satisfied with their lives, and 29% gave neutral responses. Ratings for treatment and nursing services were also gathered; 74% held

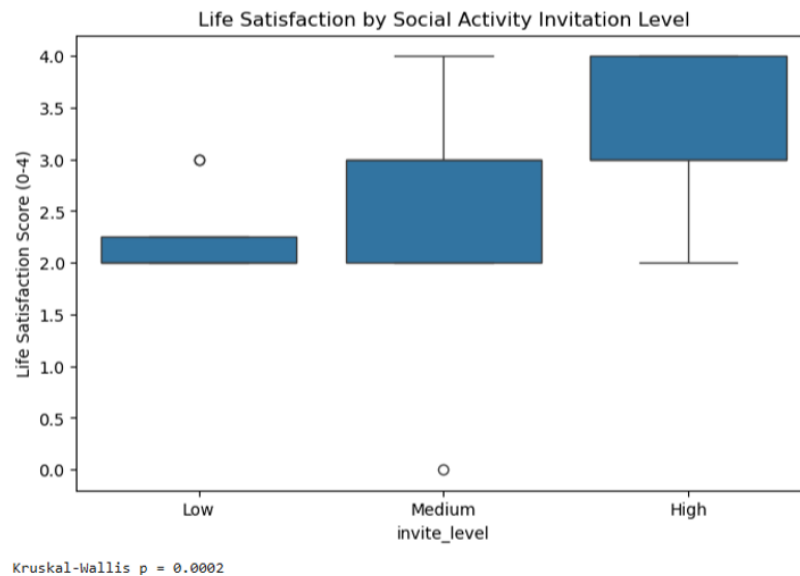
positive opinions, 25% stayed neutral, and just 1% expressed dissatisfaction with the care provided.

5.5. Intertwined Association Between Mood Distress and Life Satisfaction

Correlation analysis was first carried out to examine how emotional distress relates to overall life satisfaction. Spearman's test showed a strong negative correlation between distress levels and satisfaction scores ($p = -0.535$, $p < 0.0001$). Splitting data by age groups revealed obvious gaps: patients with low life satisfaction (score ≤ 2 , $n = 23$) had an average distress score of 1.65, while participants with higher satisfaction (score > 2 , $n = 54$) had a mean distress score of 0.98.



Patients with high life satisfaction relied on external help for daily tasks such as cooking and bathing on more days each week compared to those with low satisfaction (Mean = 4.68 vs 3.63, $p = 0.043$). Kruskal-Wallis tests indicated a significant link between how often patients were invited to social events and their life satisfaction ($p = 0.0002$); more invitations corresponded to higher satisfaction scores. The high-satisfaction group also tended to have more regular contact with family and friends, yet this difference did not reach statistical significance.



6. Discussion

6.1. Research Hypothesis Verification

All core hypotheses of this study were supported by questionnaire data. Emotional distress scores had an obvious negative correlation with patients' overall life satisfaction. Every measured marker of humanistic care, including clear medical explanations, daily support and regular invitations to patient group activities, was positively related to satisfaction regardless of age. In addition, patients living with myeloma for three years or longer reported higher life satisfaction. This trend aligns with the slow mental adjustment people go through when adapting to a long-term chronic illness.

6.2. Comparative Alignment with Prior Scholarly Literature

Consistent with previous research, the data confirms that multidimensional humanistic care alleviates psychological distress, improves treatment compliance, and enhances overall quality of life for myeloma patients.

Existing related research mostly focuses on general cancer populations or solid tumor cases with undefined age ranges. Most of these works are based on small sample sizes, and few have designed humanistic care interventions exclusively for myeloma patients. Unlike earlier broad-scale cancer research involving all age brackets, this analysis centers on myeloma patients with frailty and multiple coexisting conditions. It adopts customized intervention approaches, including cognitive-behavioral therapy, dignity therapy, as well as family and community support frameworks applicable to patients of all ages. This study additionally adjusts for intertwined confounding variables applicable to all age brackets including frailty burden and stacked comorbidities—factors overlooked within earlier short-term follow-up research limited to narrow chronological ranges—supplying targeted interconnected empirical evidence to advance hematological malignancy nursing scholarship covering every age spectrum.

6.3. Elaboration of Key Findings

The negative association between emotional distress and life satisfaction highlights how stable mental well-being directly shapes patients' self-perceived quality of life. This correlation may arise from two widespread stressors among participants: frequent hospital visits and multiple chronic comorbidities, both of which exacerbate psychological burden. Comparisons across distinct age groups further validate this trend. Across all age brackets, participants with lower life satisfaction consistently demonstrated higher distress scores. These findings indicate that routine mental health screenings ought to be integrated into standard clinical care for myeloma patients. Nevertheless, the cross-sectional design of this study carries inherent limitations, meaning definitive causal relationships cannot be confirmed.

Beyond clinical communication channels, practical daily support and peer community resources exert meaningful positive effects on patients' life satisfaction. The correlation between routine living aid and satisfaction indicates that assistance with daily chores eases cumulative physical strain, enabling patients of all age groups to participate in rewarding social and personal activities that enhance overall wellbeing. Most importantly, the strong association between peer activity invitations and life satisfaction underscores the crucial sense of belonging fostered by consistent peer interaction among myeloma patients. This emotional need cannot be fully fulfilled through family contact alone, as reflected by the non-significant positive trend observed in regular interactions with relatives and friends. These findings suggest clinical teams should proactively develop peer support groups and patient community programs as essential components of integrated care protocols for myeloma patients.

6.4. Study Limitations

Firstly, this study employs a cross-sectional design for data collection. This methodological limitation means the analysis can only identify correlations between humanistic care, life satisfaction and emotional status. Reliable causal inferences cannot be established merely from this cross-age sample.

Secondly, all participants were recruited only from medical facilities in Shantou. The results covering every age group therefore cannot be easily extended to myeloma patients in other locations. Differences in regional medical resources and local living cultures create different care experiences and personal views on treatment effects.

Thirdly, several confounding external factors were not collected in the questionnaire, including household income, physical health of primary family caregivers and participants' education level. These unrecorded variables may influence self-reported life satisfaction scores of patients of all ages and were not adjusted during statistical analysis.

Fourthly, all data of this study originates from self-reported questionnaire responses. Participants' transient mood on the day of completing the survey could shift their answers, introducing minor measurement bias to the overall analytical results.

Fifthly, our sample was younger than the typical myeloma population, limiting generalizability to older adults. Future studies should oversample patients aged ≥ 70 .

6.5. Avenues for Future Research

First, subsequent research may conduct longitudinal interventional follow-up studies stratified by age.

Researchers can deliver standardized, personalized humanistic nursing protocols matched to different age brackets for newly diagnosed frail myeloma patients. This design can rigorously examine whether steady, structured humanistic support brings sustained improvements to patients' long-term psychological wellbeing and quality of life.

Second, future studies may incorporate additional objective confounding indicators, including household income and primary caregiver burden. Incorporating these factors allows researchers to develop more robust predictive models that explain variations in patients' life satisfaction.

Third, interdisciplinary clinical teams may collaborate with researchers to design local peer support programs and tailored psychological counselling services for myeloma patients in Shantou. All such interventions draw on the empirical findings of this study.

7. Conclusion

This study sets out to unpack the intertwined synergistic linkage between pharmacotherapy and humanistic care, alongside their combined interconnected impact on treatment lived experiences and quality of life for myeloma patients spanning all chronological segments. Evidence validates that evidence-based pharmaceutical disease control and patient-centered humanistic supportive care operate as tightly complementary intertwined intervention pillars applicable to every age bracket: pharmacotherapy delivers physical suppression of progressive disease pathology across all age spectrums, while humanistic care untangles overlapping negative affective states for diverse chronological segments, strengthens consistent treatment adherence regardless of age, and drastically elevates holistic interconnected wellness trajectories for participants of every age range.

These intertwined results covering all chronological segments carry weighty clinical significance, as they substantiate that optimal myeloma disease management cannot be accomplished through advanced pharmacotherapy in isolation for any age bracket. High-quality integrated medical care suited to every age spectrum must weave precise targeted pharmaceutical regimens together with consistent emotional comfort, structured psychological support, and sincere transparent clinician-patient dialogue adaptable to all chronological segments.

Clinical medical institutions ought to embed streamlined humanistic supportive intervention workflows into routine standard treatment protocols for myeloma patients spanning diverse age brackets. Clinical care providers across all chronological segments ought to simultaneously prioritize tangible physical disease status and intertwined layered psychological needs for every age spectrum. Centering treatment around the full interconnected person rather than isolated pathological disease markers across all chronological brackets remains the foundational core of contemporary patient-centered medical practice applicable to every age range.

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