

# Analysis of Pneumoconiosis Patients' Perception and Satisfaction with the Aid from "Da Ai Qing Chen": A Cross-Sectional Study

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## Abstract

This study examines the perceptions and satisfaction of pneumoconiosis patients regarding the assistance provided by the NGO "Da Ai Qing Chen". Using a cross-sectional survey of 102 pneumoconiosis patients across five provinces in China, data was collected via structured questionnaires to measure patient satisfaction, perceived social support, and coping strategies. Grounded in social support theory and coping mechanism theory, the findings indicate that patients report high satisfaction with the NGO's efforts. Positive correlations were observed between satisfaction and both social support ( $r = 0.508$ ,  $p < 0.01$ ) and positive coping strategies ( $r = 0.503$ ,  $p < 0.01$ ), indicating that patients who reported higher levels of social support and actively employed positive coping mechanisms tended to express greater satisfaction. Regression analysis further confirms that social support ( $B = 0.143$ ,  $p = 0.010$ ) and positive coping strategies ( $B = 0.155$ ,  $p = 0.008$ ) significantly enhance patient satisfaction, suggesting that improvements in these areas would likely enhance overall patient satisfaction. Despite these positive outcomes, areas for improvement remain, particularly in ensuring consistent financial aid and providing more proactive health-related support. Additionally, respondents identified financial strain, caregiving burdens, and the advanced stages of pneumoconiosis as major challenges. To address these issues, the study recommends strengthening financial assistance, expanding healthcare access, and promoting regional equity through targeted interventions. By assessing the impact of NGO-driven support, this study broadens the scope of pneumoconiosis research.

## Keywords

Pneumoconiosis, Social Support, Positive Coping Strategies, Patient

## 1. Introduction

According to the “Statistical Bulletin on the Development of China’s Health Careers in 2022” issued by the National Health Commission of China, a total of 11,108 new cases of occupational diseases were reported across the country, of which 7615 were occupational pneumoconiosis and other respiratory diseases, accounting for 68.2% of the total occupational diseases. Pneumoconiosis, as a globally recognized serious occupational disease, not only poses threats to workers’ health but also significantly reduces their quality of life. At the end of 2022, the cumulative reported cases of occupational pneumoconiosis in China have exceeded 926,000, approximately 90% of the total number of occupational diseases in the country.

Non-governmental organizations (NGOs) play a pivotal role in supporting pneumoconiosis patients, particularly in response to gaps in governmental action. To investigate how NGOs act to improve the living conditions of these patients for further public policy advocacy, we examine the China Social Relief Foundation’s Da Ai Qing Chen Fund (hereafter referred to as Da Ai Qing Chen), established in June 2011. As one of the longest-standing and most widely recognized NGOs dedicated to assisting patients with pneumoconiosis, Da Ai Qing Chen serves as a key representative case for understanding the broader impact of NGO-driven initiatives. Founded in 2011 by journalist Wang Keqin in partnership with the China Social Assistance Foundation, Da Ai Qing Chen is a leading Chinese non-profit dedicated to supporting rural workers with pneumoconiosis and promoting reforms in occupational health policy.

Its operations center on three pillars. First, the organization provides comprehensive aid through a seven-part support system covering medical care, basic needs, psychological counseling, rehabilitation, education for patients’ children, entrepreneurship assistance, and oxygen machine donations. By 2021, it had established 109 service stations, mobilized over 13,000 volunteers, and aided more than 110,000 patients. Second, it conducts field research and publishes policy-oriented reports, such as *The Survival Status Report of Pneumoconiosis Migrant Workers in China*, which have informed national initiatives like the *Pneumoconiosis Prevention and Control Campaign Plan*. Third, the organization raises public awareness through traditional and digital media, aiming to improve dust prevention awareness, mobilize civic support, and push for regulatory change. Strategically, Da Ai Qing Chen seeks to build a professional aid system in the short term (2014-2018), achieve full government coverage for over six million patients by 2035, and ultimately eliminate pneumoconiosis in China within a century.

Previous domestic research in China has primarily focused on the physiological and psychological effects of pneumoconiosis and proposed solutions to mitigate

these effects. For example, studies [1] revealed that patients with pneumoconiosis face heavy financial burden and low quality of life. Researchers [2] further found that mental health problems are common among patients with pneumoconiosis, especially those who adopt negative coping strategies, and their mental health status is significantly poorer. Later, research [3] [4] pointed out that patients' quality of life can be improved by improving heating methods, increasing income levels, and improving sleep conditions. These studies consistently demonstrate that physiological and social factors have an important impact on the survival and psychological well-being of patients with pneumoconiosis, and future interventions should comprehensively consider these factors.

Foreign studies also focus on the physiological and psychological effects of pneumoconiosis on patients and explore preventive measures. Researchers [5] provided basic data support for the prevention of pneumoconiosis through a meta-analysis of previous research results. In terms of specific countermeasures, researchers [6] studied the health services utilization condition by pneumoconiosis patients and pointed out that county-level hospitals are the main medical choice for patients. Also, he identified key factors affecting the choice. More studies have explored in-depth medical countermeasures for pneumoconiosis patients, such as [7] [8] emphasizing the high incidence of chronic obstructive pulmonary disease (COPD) in pneumoconiosis patients, and [9] [10] revealing the prevalence of comorbidity between pneumoconiosis and connective tissue disease (CTD).

Despite the valuable insights offered by existing research, several critical gaps remain. First, most studies have concentrated on the physiological and psychological impacts of pneumoconiosis and its preventive measures, with limited exploration of patients' attitudes toward and perceptions of NGO support. Second, while current literature features the negative consequences of pneumoconiosis, there is a lack of systematic analysis regarding the effectiveness of aid measures and their long-term impact on patients. Although China has incorporated pneumoconiosis patients into the social security system through "basic health insurance" and "minimum living standards", challenges such as policy discontinuity, insufficient monitoring, and limited coverage continue to impede many patients' accesses to adequate medical care and living support. These gaps highlight the need to examine not only the material and emotional needs of pneumoconiosis patients, but also how they perceive and evaluate the support provided by NGOs. Understanding these perceptions is essential to assess the effectiveness of current assistance strategies and to inform future policy interventions. Therefore, this study aims to offer actionable recommendations for policy development in the prevention and treatment of pneumoconiosis, which is vital for shaping effective healthcare, livelihood support, and occupational health policies. Utilizing social support theory, which examines the impact of interpersonal relationships on well-being, and coping mechanism theory, which explores strategies for managing stress, this study systematically explores how patients perceive social support—and coping strategies affect their satisfaction and emotional responses. This pro-

vides feedback for the current Da Ai Qing Chen NGO assistance strategy, as well as a theoretical basis for future health education and social security measures, thereby improving the quality of life and mental health of pneumoconiosis patients. This article first analyzes how social support theory and coping mechanism theory are applied to the study of pneumoconiosis patients and then introduces how to collect relevant questionnaires and analyze them. The last part summarizes the relevant research conclusions and limitations.

## 2. Literature Review

### 2.1. Research on Social Support Theory and Pneumoconiosis Patients

Social Support Theory, a theory that studies how individuals obtain help and support through social relationships, emphasizes that social support has a profound impact on the psychological and physical health of individuals. Social support refers to the resources and help that individuals obtain from their social network, including emotional support, information support, appraisal support and instrumental support [11]. According to social support theory, patient support groups help reduce stress and improve mental health by fostering a sense of belonging and validation. As patients gain reassurance—learn coping strategies—and feel less isolated in managing their condition through shared stories and advice, social support can effectively enhance the individual's ability to cope with stress (and challenges) and has a positive impact on the individual's physical health and overall well-being [12].

Emotional support includes care, comfort and empathy, which helps individuals reduce stress and relieve negative emotions by providing emotional support. Studies have shown that emotional support is essential to the emotional health of individuals, helps to improve their persistence, and ultimately enhances their ability to acquire practical knowledge [13]. Appraisal support is recognized as the conveyance of information pertinent to self-assessment [14]. Informational support refers to the provision of relevant information, advice, or guidance to help individuals address problems or make decisions, which are better equipped to navigate challenges and make informed choices [11]. Instrumental support, on the other hand, encompasses material assistance or practical aid (such as financial resources, goods, medical services, or other forms of support). It directly addresses individuals' basic needs and aids in overcoming tangible obstacles. These forms of support can positively impact an individual's health and well-being in various ways. For instance, emotional support can alleviate anxiety and depression; instrumental support can enhance living conditions; and informational support can improve the quality of decision-making.

In research on pneumoconiosis patients, social support theory provides a powerful framework for understanding how patients perceive and accept assistance from non-governmental organizations such as “Da Ai Qing Chen”. The types of social support perceived by pneumoconiosis patients—such as emotional support,

informational support, and instrumental support—can directly influence their emotional responses and satisfaction with the aid they receive. For example, researchers [10] found that respondents with lower socioeconomic status, who had worked in dust-exposed jobs for longer periods, experienced more severe disease progression, complications, and exacerbation of pneumoconiosis. The prohibitive cost of treatment and loss of work capacity further impacted on their physical and mental health. Social security aid and subsidies improved their socioeconomic status, which, in turn, enhanced their mental health. Additionally, researchers [15] explored the health and welfare issues faced by Chinese pneumoconiosis workers, revealing the social inequities and health disparities they experience; and highlighting the key challenges in implementing safety, health, and welfare policies for this population.

Existing research has explored the impact of social factors on pneumoconiosis patients, but studies on the forms of social support and their influence on patients' perceptions and acceptance mechanisms remain relatively limited. Social support theory provides an in-depth analytical framework to address these gaps, particularly in examining how social support affects the psychological and emotional responses of pneumoconiosis patients.

## **2.2. Coping Mechanism Theory and Research on Pneumoconiosis Patients**

The core of Coping Mechanism Theory (a psychological framework focusing on how individuals respond to stress and challenges) lies in understanding the psychological and behavioral strategies that help individuals regulate their emotions, solve problems, or alleviate stress when faced with various internal and external stressors. The theory provides a structured framework for studying individuals' reactions to life difficulties, and it enables researchers to systematically analyze and interpret these coping behaviors. In coping with stress and challenges, where social support and individual coping skills often interact synergistically, the process largely depends on individuals' proactive behaviors. Social support originates from an individual's social network, where individuals utilize strategies such as "appraisal-focused coping", "problem-focused coping", and "emotion-focused coping" to manage stressful situations.

For pneumoconiosis patients, the combination of social support and coping mechanisms is particularly crucial. Research indicates that pneumoconiosis patients who receive various forms of support are better equipped to cope with the disease and demonstrate stronger coping abilities [16]. Unfortunately, some patients may resort to unhealthy coping strategies. In Hong Kong, 9% of pneumoconiosis patients use alcohol as a coping mechanism. Such negative coping strategies are often associated with lower satisfaction and poorer health outcomes.

In the case of migrant workers, social coping is a crucial strategy, where integrating social resources helps address life's challenges, with social networks playing a vital role in this process [17]. In the context of pneumoconiosis patients, coping theory can help explain how patients manage the disease and life stress and

further explore how these strategies influence their attitudes towards and satisfaction with non-governmental organization (NGO) assistance. Research shows that patients who employ positive coping strategies typically report higher satisfaction with the assistance they receive and perceive it as more effective. In contrast, negative coping strategies are often linked to lower satisfaction and a decline in mental health [2].

Despite some existing research on the impact of social factors on pneumoconiosis patients, studies focusing specifically on the forms of social support and their underlying mechanisms remain limited. Integrating social support theory with coping theory offers a new perspective and theoretical basis for exploring how different types of social support, through patients' coping strategies, influence their emotional responses and satisfaction levels.

### 2.3. Current Implementation of Pneumoconiosis Policies

In China, pneumoconiosis, as a severe occupational disease, has gradually been incorporated into the national social security system. The 2019 Pneumoconiosis Prevention and Control Action Plan was a significant step forward, signaling official recognition of the issue and integrating patients without responsible employers into assistance programs through coordinated insurance and medical relief mechanisms. In provinces such as Hunan, the plan has led to measurable reductions in out-of-pocket expenses and improved access to care via special funding and large-scale subsidies—demonstrating the plan's potential when effectively localized. However, implementation remains uneven. Reports from “Da Ai Qing Chen” in 2023 highlight persistent challenges, including fragmented policy continuity, limited patient registries, and weak proactive monitoring systems. These shortcomings result in delayed assistance, underreporting, and the exclusion of many eligible patients, especially in provinces like Chongqing and Shaanxi.

Following the victory in the poverty alleviation battle in 2020, social assistance policies have shifted toward more humanized and diversified approaches, introducing new categories such as the “near-poverty group” and “expenditure-driven vulnerable families”. However, support for these newly identified vulnerable groups remains inadequate, and the unequal allocation of resources has further marginalized poor and rural populations. While certain regions, such as Hunan Province, have significantly reduced the financial burden on patients through special assistance funds and large-scale medical subsidies, other regions, including Chongqing, Liaoning, and Shaanxi, continue to face delays in subsidy distribution, unclear diagnostic standards, and weak policy enforcement. Additionally, the strict definition of pneumoconiosis as an “occupational” disease limits access to social protection for patients unable to provide formal employment documentation. Many patients are unable to access work-related injury benefits and medical assistance due to the lack of employment documentation.

Despite increasing national and local efforts in pneumoconiosis research and technical support—such as the establishment of national pneumoconiosis diag-

nosis and treatment centers and localized intervention initiatives—further improvements are needed in policy continuity, data management, and monitoring mechanisms. Enhancing these areas is essential to ensure comprehensive medical and livelihood support for all pneumoconiosis patients, promoting sustainable progress in occupational health.

Based on the theoretical literature outlined above, this study proposes the following hypotheses and research questions:

H1: The stronger the social support perceived by pneumoconiosis patients, the higher their satisfaction with the assistance provided by the non-governmental organization (NGO), Da Ai Qing Chen.

H2: Patients who adopt positive coping strategies will report higher satisfaction with the assistance provided by the non-governmental organization (NGO), Da Ai Qing Chen.

RQ1: How should the current implementation of pneumoconiosis policies be adapted to enhance the satisfaction of patients with pneumoconiosis?

### **3. Research Methodology**

#### **3.1. Research Design**

This study employs mixed-methods research design, primarily focusing on quantitative analysis, supplemented by qualitative research. Data were collected using a structured questionnaire to thoroughly examine pneumoconiosis patients' attitudes, emotions, and responses toward assistance provided by the NGO "Da Ai Qing Chen". The primary objective is to explore how perceived social support and adopted coping strategies influence pneumoconiosis patients' satisfaction with NGO assistance.

The quantitative component will assess patients perceived social support, coping strategies, and satisfaction with the assistance, while the qualitative component involves conducting interviews to gain deeper insights into patients' emotional experiences and cognitive processes related to receiving aid. This study aims to investigate the interplay between social support and coping strategies in shaping patients' overall satisfaction with NGO-provided aid.

#### **3.2. Participants**

The sample of the research consists of 102 pneumoconiosis patients from across the country. Sample recruitment was carried out in collaboration with the "Da Ai Qing Chen" non-governmental organization, which recommended participants. The sample of the research primarily consists of male participants, accounting for 98% of the total, with only 2% being female. The age distribution reveals a wide range, with individuals primarily between their late 40s and early 60s. The most frequently represented age groups are 52 and 53, each constituting 7.8% of the sample. Ages 50, 51, 57, and 56 also appear prominently, indicating a concentration in the early to mid-50s.

The respondents in the study were distributed across five provinces, with the

largest groups from Henan and Shaanxi (25.5% each), followed by Shanxi (18.6%), Hunan (17.6%), and Liaoning (12.7%). Educational levels were generally low, with the majority having completed middle school (55.9%) or primary school (37.3%), and only a small percentage achieving high school (4.9%) or higher education (1.0%). Most respondents were married, including 56.9% in their first marriage, 10.8% remarried, and 19.6% cohabiting, while smaller proportions were divorced (5.9%), separated (2.9%), or widowed (2.9%). Regarding employment, the majority (66.7%) were resting at home, while others were engaged in farming (19.6%), day labor (7.8%), or household work (2.0%). These demographics underline a predominantly rural and less-educated population with limited labor market participation and diverse marital statuses.

### 3.3. Procedure

This study collected data through a carefully designed structured questionnaire. The questionnaire primarily consists of closed-ended questions, supplemented by a small number of open-ended questions to gather qualitative data, ensuring comprehensiveness of the research. The study targeted specific regions based on the prevalence of pneumoconiosis and the varying levels of local policy support. Given the rarity and dispersed nature of pneumoconiosis patients receiving support from Da Ai Qing Chen, purposive sampling was employed to ensure adequate representation. Random sampling, however, would likely overlook this niche population. Selection criteria—diagnosis, region, and service engagement—were applied in collaboration with the NGO to enhance internal validity and alignment with the study's objectives. Thus, the questionnaire was distributed via the Wenjuanxing platform, with modifications made based on platform feedback and subsequent approval. Afterwards, the questionnaire will be disseminated through patient support groups in various provinces, facilitated by the Secretary-General of the “Da Ai Qing Chen” organization. Patients completed the survey in writing, and if necessary, the researchers will conduct oral interviews with patients, where the patients will verbally provide answers, and the researchers will record the responses.

### 3.4. Measurement

**Basic Information:** Collect demographic data such as patients' gender, age, occupational background, duration of illness, and residential area (closed-ended questions).

**“Da Ai Qing Chen” NGO Assistance:** Understand the types of assistance patients have received from the “Da Ai Qing Chen” NGO and their satisfaction levels, including financial aid, psychological counseling, legal assistance, etc. (closed-ended questions).

**Coping Mechanisms:** Assess the coping strategies patients employ when facing illness and stress using a Likert scale, such as active or passive coping (closed-ended questions).

Satisfaction and Emotional Responses: Evaluate patients' attitudes and emotional responses toward the "Da Ai Qing Chen" NGO's assistance through a Likert scale and a small number of open-ended questions. The open-ended questions will collect patients' personalized feedback and in-depth emotional reactions to the assistance measures, complementing the quantitative data with qualitative insights (closed-ended and open-ended questions).

### 3.5. Ethical Consideration

During the data collection process, this study will strictly adhere to ethical principles to ensure privacy and informed consent of all participants. All participants will sign an informed consent form before the study begins, and their personal information will be fully anonymized during data analysis and reporting.

## 4. Result

### 4.1. Descriptive Analysis of Satisfaction with Services Provided by "Da Ai Qing Chen" NGO

The study reveals a high level of satisfaction among pneumoconiosis patients with the services provided by "Da Ai Qing Chen". The overall satisfaction score is 4.88 out of 5, so there was strong approval expressed by respondents for the organization's comprehensive initiatives, ranging from public awareness campaigns to additional support services.

It was satisfaction with public awareness campaigns, such as lectures and charity events, that scored an average of 4.88. Similarly, medical assistance, which includes support in obtaining respiratory machines and arranging urban medical care, received an average score of 4.89. Psychological counseling services, offering "emotional and social support", were also highly rated, with an average score of 4.86. Efforts in advocacy and policy impact (such as promoting rehabilitation and entrepreneurial opportunities) received identical high scores (4.86), and additional support services, such as scholarships for children and the distribution of daily necessities, stood out with the highest average score of 4.91.

What these findings demonstrate is that "Da Ai Qing Chen" has effectively addressed the diverse needs of pneumoconiosis patients—offered impactful support across multiple dimensions and earned strong approval from the affected community. **Table 1** shows the average satisfaction scores across different services provided by the NGO "Da Ai Qing Chen".

**Table 1.** Means and standard deviations of satisfaction variables.

Variable	Mean (Average Score)	Standard Deviation (SD)
Q2: Public Awareness Campaigns	4.88	0.41
Q3: Medical Assistance	4.89	0.42
Q4: Psychological Counseling	4.86	0.4
Q5: Advocacy and Policy Impact	4.86	0.42
Q6: Additional Support Services	4.91	0.35
Overall Satisfaction	4.88	0.34

## 4.2. Descriptive Analysis of Social Support Variables Provided by “Da Ai Qing Chen”

The study underlines the effectiveness of “Da Ai Qing Chen” in providing social support to pneumoconiosis patients across multiple dimensions. The average score, which evaluates whether the organization offered useful advice for decision-making related to pneumoconiosis, is 4.65, and the average score that measures the clarity of explanations provided on complex pneumoconiosis-related issues, is 4.73, reflecting a high level of satisfaction. In terms of emotional support during difficult times, the average score is 4.67, demonstrating a predominantly positive response. Similarly, in terms of “encouragement”, which assesses whether the organization provided support during challenges, the average score was 4.70, with comparable variability. What these findings affirm is the strong emotional and motivational support provided, albeit with some room for consistency improvements.

There was a slightly lower average score of 4.50 in the financial assistance dimension. While most participants rated financial support positively, the wider range of scores points to inconsistencies in the provision of financial aid. The average score (which evaluates proactive assistance during severe illness) is 4.47, the lowest among the variables.

The overall support score, calculated as the means of all responses, is 4.62 with a standard deviation of 0.74, which demonstrates a strong general appreciation for the organization’s efforts. The score also points to areas where variability in responses suggests opportunities for improvement, particularly in financial aid and critical health support. **Table 2** displays the average ratings and standard deviations for different dimensions of social support offered by the NGO.

**Table 2.** Means and standard deviations of social support variable.

Variable	Mean (Average Score)	Standard Deviation (SD)
Q7: Support for Decision-Making Information	4.65	0.9
Q8: Clarification of Complex Issues	4.73	0.76
Q9: Emotional Support	4.67	0.76
Q10: Encouragement during Challenges	4.7	0.76
Q11: Financial Assistance	4.5	0.94
Q12: Assistance during Severe Illness	4.47	1.0
Overall Support Score	4.62	0.74

In conclusion, “Da Ai Qing Chen” excels in providing emotional and informational support, as evidenced by high scores for guidance in decision-making, clarification of complex issues, and encouragement during challenges. However, the organization also focuses on enhancing the consistency of financial and proactive health-related support to ensure more uniformly positive experiences for all patients.

### 4.3. Correlation Analysis Between Satisfaction with Services Provided by “Da Ai Qing Chen” and the Social Support Variables Offered by the NGO

The correlation analysis from **Table 3** reveals a significant positive relationship between satisfaction with services provided by “Da Ai Qing Chen” and the social support variables offered by the NGO. The Pearson correlation coefficient is 0.508, and this relationship is statistically significant at the 0.01 level ( $p = 0.000$ ), suggesting that as the level of perceived social support increases, so does the satisfaction with the NGO’s services. The findings underline the integral role of social support in shaping patients’ overall satisfaction. **Table 3** summarizes the Pearson correlation between perceived social support and overall satisfaction with NGO assistance.

**Table 3.** Correlation between social support and satisfaction.

Variables		Satisfaction (r)	Support (r)	Satisfaction (Sig.)	Support (Sig.)	N
Satisfaction	Satisfaction	1	0.508**	-	0.000	102
Support	Support	0.508**	1	0.000	-	102

### 4.4. Descriptive Analysis of Positive Coping Strategies Adopted by Pneumoconiosis Patients

The analysis of positive coping strategies reveals varied yet predominantly positive feedback from respondents regarding different approaches. The average score for which measures the use of proactive problem-solving methods to address stress caused by pneumoconiosis is 4.64, with a standard deviation of 0.82. This indicates a generally favorable response, though some variability is present.

For which evaluates emotional support-seeking behaviors through discussions with family or friends, the average score is 4.70, with a standard deviation of 0.70. This indicates a highly concentrated and positive response. While most respondents rated their experiences favorably, a small number of participants provided lower ratings, highlighting some differences in reliance on familial or social support.

For which examines the ability to develop structured plans to tackle challenges associated with pneumoconiosis, it received an average score of 4.67, with a standard deviation of 0.67. The concentrated range of scores, with most participants scoring 5 across all percentiles, but a small proportion of respondents offered mid-to-lower ratings.

Seeking professional help, such as from doctors or counselors, had an average score of 4.47, with a higher standard deviation of 0.92. While a majority rated this aspect positively, some participants scored lower. For which measures the impact of social activities or hobby groups in reducing stress, the average score amounts to 4.57 with a standard deviation of 0.71. The data suggests a strong preference for social interaction as a coping mechanism, with few negative responses.

For which explores the use of religious or spiritual beliefs to address challenges, it showed the lowest average score among the positive coping strategies at 3.48, with a standard deviation of 1.69. This finding reflects more diverse opinions, with

some participants rating it highly while others expressed disagreement or neutrality. **Table 4** illustrates the patients’ average responses to various positive coping strategies and their standard deviations.

**Table 4.** Means and standard deviations of positive coping strategies variables.

Variable	Mean (Average Score)	Standard Deviation (SD)
Q13: Proactive Problem-Solving	4.64	0.82
Q14: Seeking Emotional Support	4.7	0.7
Q16: Developing Structured Plans	4.67	0.67
Q19: Seeking Professional Help	4.47	0.92
Q20: Social Activities for Stress Reduction	4.57	0.71
Q21: Reliance on Religious/Spiritual Beliefs	3.48	1.69
Overall Positive Coping Strategies	4.42	0.69

The composite score for Positive Strategies, calculated as the average of all positive coping strategy variables, is 4.42 with a standard deviation of 0.69. This reflects an overall positive evaluation of these strategies, with most respondents favoring active and supportive approaches to managing the challenges associated with pneumoconiosis. However, certain strategies, such as reliance on religious or spiritual support, displayed a wider range of opinions. All the data can be found in **Table 4**.

#### 4.5. Correlation Analysis Between Satisfaction with Services Provided by “Da Ai Qing Chen” and How Patients Adopt Positive Coping Strategies

The correlation analysis indicates a significant positive relationship between satisfaction with services provided by “Da Ai Qing Chen” and how patients adopt positive coping strategies. In **Table 5**, the Pearson correlation coefficient is 0.503, and this relationship is statistically significant at the 0.01 level ( $p = 0.000$ ), highlighting that patients who adopt more positive coping strategies tend to report higher satisfaction with the services offered by the NGO. These findings underscore the interconnectedness of effective coping mechanisms and the perceived quality of support services. **Table 5** shows the correlation between the use of positive coping strategies and satisfaction with NGO support.

**Table 5.** Correlation between positive coping strategies and satisfaction.

Variables		Satisfaction (r)	Positive Coping Strategies (r)	Satisfaction (Sig.)	Positive Coping Strategies (Sig.)	N
Satisfaction	Satisfaction	1	0.503**	-	0.000	102
Positive Coping Strategies	Positive Coping Strategies	0.503**	1	0.000	-	102

#### 4.6. Regression Analysis of Satisfaction

The regression analysis evaluates how Positive Coping Strategies and Support influence Satisfaction, while controlling Gender, Age, and Educational Level. The model in **Table 6** was statistically significant, with an F-statistic of 9.869 and a p-value of 0.000, indicating that the independent and control variables collectively explain a meaningful portion of the variance in satisfaction.

The analysis in **Table 7** revealed that both Positive Coping Strategies and Support significantly predict satisfaction. The unstandardized coefficient (B) for Positive Coping Strategies was 0.155 (p = 0.008), showing that an increase in positive coping strategies is associated with higher satisfaction levels. Similarly, Support had an unstandardized coefficient (B) of 0.143 (p = 0.010), underscoring the positive impact of perceived support on satisfaction. These results highlight the importance of emotional and informational resources, as well as adaptive coping mechanisms, in enhancing patient satisfaction.

Among the control variables, Educational Level (p = 0.081), Gender (p = 0.691) and Age (p = 0.459) were not significant predictors, indicating that satisfaction levels did not vary meaningfully based on these factors.

In summary, the findings emphasize the critical role of Positive Coping Strategies and Support in shaping satisfaction among pneumoconiosis patients. These results underscore the need for targeted interventions that bolster coping mechanisms and provide consistent support to enhance overall satisfaction. **Table 6** provides the ANOVA results of the regression analysis examining the effect of coping strategies and support on satisfaction.

**Table 6.** ANOVA of regression analysis.

Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.057	5	0.811	9.869
	Residual	7.892	96	0.082	
	Total	11.948	101		

a. Dependent Variable: Satisfaction; b. Predictors: (Constant), Educational Level, Support, Age, Gender, Positive Strategies

In addition, **Table 7** presents the regression coefficients and significance levels for all predictors of patient satisfaction.

**Table 7.** Coefficients of regression analysis.<sup>a</sup>

	Beta	Std. Error	P
(Constant)		8.324	0.000
Support	0.306	2.634	0.010
Positive Strategies	0.312	2.729	0.008
Gender	-0.035	-0.399	0.691
Age	0.064	0.743	0.459
Educational Level	0.156	1.763	0.081

a. Dependent Variable: Satisfaction

## 4.7. Descriptive Analysis of the Burden on Respondents

### 4.7.1. Elderly Support

The number of elderly individuals supported by respondents varied widely, with some inconsistencies in reporting. Approximately 13.7% of respondents indicated that they did not support any elderly family members, and some respondents provided specific details (e.g., “one disabled elder”). A notable 15.7% reported supporting one elderly person, while smaller groups supported two (5.9%), three (4.9%), or more individuals. The data reflects the diverse caregiving responsibilities among participants.

### 4.7.2. Children in Education

Regarding children in education, 17.6% of respondents reported having no children in school, while 16.7% indicated they had one child. Smaller proportions had two children (8.8%) or more in education, with a few participants providing additional details, such as “two in college, one in elementary school”. Notably, 11.8% explicitly stated they had no school-age children.

### 4.7.3. Pneumoconiosis Status

Most respondents reported advanced stages of pneumoconiosis, with 54.9% in stage three and 27.5% in stage two. A smaller group (5.9%) reported stage one, while 10.8% were unsure of their condition. One respondent did not provide a response. These figures underscore the severity of illness among participants.

### 4.7.4. Occupational Injury Certification

When asked whether their pneumoconiosis had been certified as an occupational injury, 53.9% of respondents confirmed they had received certification, while 46.1% had not. This suggests a near-equal split.

### 4.7.5. Income and Expenditure

Most respondents (81.4%) reported that their income was insufficient to cover expenses, and only 12.7% indicated balanced income and expenditure, while a mere 2.0% reported earning more than they spent. A small percentage (4.0%) did either not know or refused to answer, reflecting a predominantly challenging financial situation for many participants.

In summary, the respondents face considerable burdens, including caregiving responsibilities for elderly family members, children’s educational costs, advanced stages of pneumoconiosis, difficulties in obtaining occupational injury certification, and significant financial hardship. These challenges underscore the compounded nature of their vulnerabilities.

## 4.8. Subgroup Differences in Satisfaction with NGO Support

### 4.8.1. By Province (Regional Differences)

The subgroup analysis by province reveals noteworthy regional variation in satisfaction with the support received from Da Ai Qing Chen. Provinces such as Hengyang, Changsha, and Xiamen reported perfect satisfaction scores ( $M = 105.0$ ), sug-

gesting that local integration of the NGO's services or supportive policy environments might have amplified positive perceptions. In contrast, provinces with lower average scores may reflect less effective regional implementation or unmet local needs. These differences underscore the importance of tailoring NGO strategies to regional contexts to ensure equitable satisfaction outcomes.

#### **4.8.2. By Illness Duration**

Patients with 8 - 10 years of illness duration reported the highest average satisfaction ( $M = 96.62$ ), followed closely by those with 4 - 7 years ( $M = 96.07$ ), while those with over 10 years showed slightly lower satisfaction ( $M = 95.43$ ). This trend may suggest that patients who have been ill for a moderate period are more likely to benefit from recent NGO interventions or still retain some optimism about support services. In contrast, those with longer illness histories may experience cumulative dissatisfaction due to long-term unmet needs or fatigue with support systems, highlighting the need for sustained and evolving interventions.

#### **4.8.3. By Disease Stage**

Patients in stage III reported the highest average satisfaction ( $M = 97.84$ ), followed by stage II ( $M = 95.54$ ), with stage I patients rating slightly lower ( $M = 93.00$ ). Notably, respondents uncertain of their disease stage reported the lowest satisfaction ( $M = 91.58$ ), while a single "no response" case had a significantly lower score. These findings suggest that more severely affected individuals may place greater value on NGO support, potentially due to their heightened need. Conversely, lower satisfaction among early-stage or uninformed patients may indicate gaps in communication, outreach, or alignment between perceived need and assistance provided.

### **4.9. Expectations Toward Government Support**

The survey responses underscore diverse expectations from pneumoconiosis patients regarding future government assistance. A significant number of participants emphasized the need for economic support and medical assistance, while specific requests included free or subsidized medical care, coverage of medication costs, and categorizing pneumoconiosis as a major disease eligible for enhanced medical benefits. Many respondents expressed concern about the financial burden of treating pneumoconiosis and called for better policies that can alleviate these challenges.

It was support for families and education that was another prominent theme. Respondents frequently mentioned the need for subsidies for children's education to prevent school dropouts, financial aid for families with limited income, and policies to ensure educational continuity. There were some who even requested comprehensive support for their dependents.

What the patients also expressed were hopes for improved social policies tailored to pneumoconiosis sufferers. Several participants urged the government to strengthen financial aid programs and enhance the accessibility of healthcare ser-

vices for rural patients and calls for general attention and care for farmers and laborers suffering from pneumoconiosis were recurrent.

There were several respondents who voiced their gratitude for the existing assistance programs but stressed the importance of continuing and expanding current support efforts. Some underlined the need for more inclusive policies targeting individuals not classified as impoverished or low-income, and what others sought was aided to develop sustainable livelihoods or engage in lighter work suited to their health conditions.

In summary, the key expectations from the government include enhanced economic and medical aid, as these are vital for addressing immediate needs, while support for children's education and expanded healthcare access are equally critical; moreover, stronger policies are needed to protect the welfare of pneumoconiosis patients and their families, ensuring long-term stability and security. These responses underline the critical role of government intervention which addresses the multifaceted challenges faced by this vulnerable group.

#### **4.10. Expectations Toward “Da Ai Qing Chen” NGO**

When the respondents expressing diverse expectations for the future role of “Da Ai Qing Chen” in supporting pneumoconiosis patients were analyzed, a recurring theme was the desire for continued and expanded financial support. Many respondents emphasized the need for resources such as oxygen machines and access to specialized medical care to alleviate the health challenges associated with pneumoconiosis.

Support for children's education was another prominent expectation. Participants frequently requested scholarships, educational subsidies, and aid to ensure their children could complete their studies, and some respondents also called for targeted support for families with children pursuing higher education.

There was significant appreciation for the NGO's efforts, with several respondents expressing gratitude for the organization's care and dedication. Many described “Da Ai Qing Chen” as a lifeline for pneumoconiosis patients, praising its team of volunteers and the impact of its existing programs, and respondents hoped for sustained efforts, suggesting that the organization should continue expanding its reach and collaborating with the government to address broader systemic issues.

Some respondents sought greater advocacy efforts from the organization, urging it to amplify the voices of pneumoconiosis patients while also pushing for more comprehensive government policies and interventions to address their needs. Others emphasized the need for “Da Ai Qing Chen” to focus on psychological support, rehabilitation resources, and improving access to health-related equipment and services.

Overall, the expectations toward “Da Ai Qing Chen” underscore a deep reliance on the NGO for both immediate relief and long-term support. These expectations reflect the critical role of the organization in addressing the medical, financial, and

social challenges faced by pneumoconiosis patients and their families.

#### **4.11. Improving Pneumoconiosis Policy Implementation to Boost Patient Satisfaction**

To enhance the satisfaction of pneumoconiosis patients, current policies must be adapted to comprehensively address their challenges. One of the most pressing issues is financial hardship, with 81.4% of patients reporting that their income is insufficient to cover expenses, so policies should focus on strengthening financial assistance programs. These policies should include full coverage for essential medications and treatments, subsidies for respiratory equipment, and comprehensive disability compensation, all of which could alleviate the economic burden on patients and their families.

Accessibility to medical care is another critical area for improvement. Policies should incorporate pneumoconiosis into major illness insurance more comprehensively and streamline the process for occupational injury certification because improved diagnostic and treatment systems, particularly in underserved rural areas, are essential for timely care. Patients also expressed a need for expanded emotional and psychological support, so establishing counseling services, peer support networks, and rehabilitation programs can address mental health needs and foster resilience among patients.

Support for families is equally important. Educational subsidies for children of pneumoconiosis patients can prevent school dropouts and relieve financial strain, and livelihood programs and vocational training for family members would enhance household income stability and reduce dependence on limited resources.

Raising awareness and advocacy should also be prioritized. Collaborations with NGOs like “Da Ai Qing Chen” can amplify public awareness campaigns, reduce stigma, and educate the community about pneumoconiosis. Advocacy for workplace safety measures, dust hazard management, and stricter enforcement of occupational health regulations should be intensified to prevent new cases and support existing patients.

Finally, tailored interventions are crucial to addressing regional disparities in resources and services, so developing local rehabilitation centers and customized assistance programs can ensure equitable support across diverse populations.

#### **4.12. Structural Challenges and Strategic Opportunities in Enforcing Pneumoconiosis Policy**

Several critical barriers complicate their implementation. First, institutional fragmentation remains a persistent obstacle. The division of responsibilities between ministries such as the National Health Commission, the Ministry of Human Resources and Social Security, and local governments often leads to poor coordination and policy discontinuity, especially across provinces. Second, fiscal disparities between wealthier coastal regions and poorer inland provinces undermine uniform service delivery, with some local governments lacking the budgetary flexibility to provide sufficient subsidies or reimbursements. Third, political prioritization

zation affects enforcement: occupational diseases like pneumoconiosis receive less attention compared to infectious diseases or pandemics, meaning implementation is often delayed or deprioritized. This neglect is further compounded by the government's reluctance to fully acknowledge the scale of the issue, as pneumoconiosis is closely tied to China's rapid industrial development. Admitting its prevalence may be seen as undermining the narrative of economic progress and exposing regulatory failures in labor protection, leading to muted political will and inadequate institutional response. Additionally, data infrastructure deficits, including underreporting, outdated registries, and limited interagency sharing, hinder monitoring and evaluation efforts, making it difficult to track patient needs and policy impacts. On the other hand, several facilitators can support policy execution. For example, NGOs like "Da Ai Qing Chen" plays an active role in service delivery and public advocacy. They increase public awareness through digital media and submit proposals to the State Council during the National Two Sessions involving National People's Congress (NPC) and the Chinese People's Political Consultative Conference (CPPCC) to speed up the central-level policy implementation. Aligning local enforcement with central guidelines, standardizing certification criteria, and expanding NGO-government collaboration are essential for achieving sustained impact.

## 5. Discussion and Conclusion

### 5.1. Summarize the Findings of the Present Study

The study underscores the significant challenges and support systems for pneumoconiosis patients. Patients expressed high satisfaction with "Da Ai Qing Chen", with an overall satisfaction score of 4.88, reflecting appreciation for its services. Social support was positively evaluated, particularly in decision-making, emotional encouragement, and clarity on complex issues, though financial and critical health support showed variability. Patients emphasized the need for enhanced financial aid, medical assistance, and educational support from both the government and the NGO, while challenges included caregiving responsibilities, financial strain, and advanced stages of pneumoconiosis, with 81.4% reporting insufficient income to cover expenses. Correlation analyses revealed a strong link between satisfaction, social support, and positive coping strategies. Key recommendations include expanding financial assistance, improving healthcare access, supporting education, and advocating for occupational safety policies, so tailored interventions and collaborations with NGOs are crucial to addressing regional disparities and fostering resilience. These findings underscore the need for holistic and sustained efforts to improve the well-being and satisfaction of pneumoconiosis patients and their families.

The study supports the hypotheses (H1 & H2) that stronger social support and positive coping strategies are positively correlated with satisfaction among pneumoconiosis patients with assistance from the NGO "Da Ai Qing Chen". Social support demonstrated a significant positive correlation with satisfaction ( $r =$

0.508,  $p < 0.01$ ), and patients adopting positive coping strategies reported higher satisfaction levels ( $r = 0.503$ ,  $p < 0.01$ ). In terms of RQ1, adaptations in current pneumoconiosis policies should focus on comprehensive financial assistance, improved healthcare accessibility, and enhanced social support mechanisms to further enhance patient satisfaction. Tailored interventions addressing regional disparities, expanded emotional and psychological support, and advocacy for occupational health reforms are crucial. Collaborations between NGOs and government agencies, such as enhanced public awareness campaigns and better policy enforcement, are vital for addressing the multifaceted challenges faced by pneumoconiosis patients, ensuring holistic support, and fostering resilience in this vulnerable population.

In addition, the regression analysis provides strong support for the hypotheses H1 and H2. For H1, which posits that stronger social support leads to higher satisfaction, the results indicate that support has a significant positive effect on satisfaction ( $B = 0.143$ ,  $p = 0.010$ ). This underscores the importance of emotional and informational resources provided by organizations like “Da Ai Qing Chen” in enhancing patient satisfaction.

Similarly, H2, which suggests that patients adopting positive coping strategies report higher satisfaction, is supported by the finding that Positive Coping Strategies significantly predict satisfaction ( $B = 0.155$ ,  $p = 0.008$ ). This demonstrates that adaptive behaviors, such as problem-solving and seeking social support, are crucial in improving patients’ overall satisfaction with assistance programs.

Together, these results validate the hypotheses by highlighting the interconnectedness of social support and positive coping strategies in shaping satisfaction among pneumoconiosis patients. These findings suggest that targeted interventions focusing on strengthening support systems and promoting adaptive coping mechanisms can significantly enhance patient outcomes.

## **5.2. Compare and Contrast the Findings of the Present Research with Others**

The findings of this study align with and expand upon previous research while highlighting unique aspects of pneumoconiosis patients’ experiences with NGO support. Like [6], this study underscores the critical role of primary healthcare institutions in providing essential services. However, it further emphasizes the necessity of integrating emotional and informational support, as underlined by researchers [7], who focused on the high prevalence of COPD among pneumoconiosis patients and the need for preventive interventions.

This study also supports researchers [5], who identified risk factors such as dust exposure and smoking, by showing that patients with advanced pneumoconiosis stages require tailored support mechanisms. The positive correlation between social support and patient satisfaction aligns with findings from researcher [16], who demonstrated the effectiveness of community-based rehabilitation programs in empowering patients. Similarly, the role of positive coping strategies, as under-

scored here, complement researchers [2], who reported poorer mental health outcomes among patients using passive strategies.

While [18] emphasized early detection and treatment of comorbidities to improve patient prognosis, this study highlights the significance of addressing financial and social challenges to enhance satisfaction.

### 5.3. The Significance of the Findings

The findings from this study feature several profound and far-reaching implications. Firstly, they demonstrate the exceptional effectiveness of “Da Ai Qing Chen” in addressing the complex and multidimensional needs of pneumoconiosis patients through highly impactful and tailored services, and the high satisfaction scores reflect the NGO’s ability to provide targeted emotional, informational, and financial support.

Secondly, the positive correlation between satisfaction and both perceived social support and positive coping strategies underscores the importance of integrating emotional and informational support with proactive patient behaviors. The regression analysis also strongly demonstrates that social support and positive coping strategies significantly enhance satisfaction among pneumoconiosis patients. These findings align with researchers [2], who emphasized the impact of coping strategies on mental health, and researchers [16], who identified community-based programs as instrumental in improving quality of life. Furthermore, this study expands on [18] by emphasizing the need for tailored policies that address financial and social challenges—particularly for advanced-stage patients.

Lastly, the study provides transformative and actionable recommendations for overhauling pneumoconiosis policies. These include enhancing financial assistance, expanding healthcare access, and prioritizing advocacy efforts to address systemic issues, particularly in underserved regions. “Da Ai Qing Chen” mainly rescues pneumoconiosis patients who have not passed the occupational disease identification (they should be injured at work but are judged as non-work injuries). Most of them are uninsured patients whose units no longer exist. They urgently need the government to comprehensively integrate basic medical insurance for serious illness. The three critical systems of insurance and medical assistance have gradually reduced the burden on patients and comprehensively implemented robust life support measures. Before the help of “Da Ai Qing Chen”, medical insurance could not reimburse the cost of pneumoconiosis. In 2016, pneumoconiosis was included in the New Rural Cooperative Medical System, and the policy of serious illness assistance was implemented, but the implementation was not thorough enough, and there was a large gap between various statuses. This study contributes to a broader understanding of how NGO support and policy reforms can collaboratively address the multifaceted needs of this vulnerable population.

### 5.4. Limitations and Future Research

The study utilized an online survey to collect data, but the sample size is relatively

small. Convenience sampling was employed by recruiting participants from an online patient group chat—which may introduce group polarization and bias due to the predominance of like-minded individuals. Voluntary response bias is also a concern, as individuals with strong opinions are more likely to respond. Additionally, severe under coverage bias is evident because a notable segment of patients lacks internet access—potentially resulting in differing opinions compared to those who participated—and subjectivity along with inconsistent judgment criteria may further contribute to varying responses, even among individuals in similar circumstances. Furthermore, false memory could skew the results, limiting their accuracy and generalizability. Thus, the findings may not be representative of the broader patient population lacking comprehensiveness and objectivity.

Additionally, the absence of a longitudinal design significantly constrains the study's ability to capture complex societal transformations, which are inherently dynamic and multifaceted processes. Since the survey reflects only current views, it falls short of providing long-term analysis and comparative perspective indispensable for evaluating the cumulative effects of ongoing government policy reforms and NGO efforts over time.

Additionally, examining the roles of external factors—such as parental involvement, teacher behavior, and school policies—would provide valuable insights into how systemic and environmental influences contribute to the phenomenon.

Finally, future studies could focus on designing and testing specific interventions: structured peer interaction programs, teacher training initiatives, or policies promoting balanced online and offline communication.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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