

## Analysis of Patient Satisfaction and Its Influencing Factors in Compact County-level Medical Communities Based on the Andersen Model (Postprint)

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### Abstract

**Background** The construction of compact county-level medical communities plays a key role in improving the utilization efficiency of medical resources at the county, township, and village levels, and enhancing primary healthcare service capabilities. Evaluating the construction of compact county-level medical communities based on patient satisfaction is of great significance for their improvement.

**Objective** To understand the medical care satisfaction and its influencing factors among patients seeking care within the compact county-level medical community in Xinyi City, Jiangsu Province, and to provide references for further improving its construction.

**Methods** Based on the Andersen model, a satisfaction questionnaire survey was conducted among 1,068 patients seeking care within the compact county-level medical community in Xinyi City from October 22, 2020 to December 11, 2020. Factor analysis was used to determine the weights of satisfaction indicators and calculate overall satisfaction, while univariate and multivariate Logistic regression analyses were employed to explore the influencing factors of patient satisfaction.

**Results** A total of 1,100 questionnaires were distributed, with 1,068 valid questionnaires recovered (effective response rate: 97.09%). The overall patient satisfaction rate was 64.23%. Multivariate Logistic regression analysis showed that higher satisfaction was associated with being employees of enterprises or institutions (OR=2.439), having relatively good awareness (OR=1.635) or very good awareness (OR=2.840) of medical insurance policies, seeking care at member

hospitals (OR=1.938), receiving inpatient care (OR=1.994), and having physical disabilities (OR=2.268) ( $P<0.05$ ).

**Conclusion** Patient satisfaction with the compact county-level medical community in Xinyi City is not high. Personal characteristics and healthcare-seeking behavior are the main factors influencing patient satisfaction. It is recommended to strengthen the construction of compact medical communities, enhance the medical service capabilities of core hospitals, improve medical insurance payment policies, and increase publicity for medical communities and related policies.

## Full Text

### Analysis of Patient Satisfaction and Its Influencing Factors in Compact County Medical Community Based on Anderson Model

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## Abstract

**Background:** The construction of compact county medical health communities plays a key role in improving the utilization efficiency of rural medical resources and enhancing primary health service capacity. Evaluating the construction of compact county medical communities based on patient satisfaction is of great significance for their improvement. **Objective:** To understand the satisfaction of patients and its influencing factors within the compact county medical community in Xinyi, Jiangsu, and provide a reference for further improving its construction.

**Methods:** A questionnaire survey was conducted among 1,068 patients within the compact county medical community from October 22, 2020, to December 11, 2020, based on the Anderson Model. The weight of each satisfaction index was determined by factor analysis and overall satisfaction was calculated. Influencing factors of patient satisfaction were explored through univariate and multivariate logistic regression analyses.

**Results:** A total of 1,100 questionnaires were distributed, and 1,068 valid questionnaires were recovered, with a valid recovery rate of 97.09%. The overall satisfaction rate was 64.23%. Multivariate logistic regression analysis showed that occupation as enterprise/institution employee (OR=2.439), knowledge of health insurance policy (relatively well understood: OR=1.635; very well understood: OR=2.840), treatment at member hospitals (OR=1.938), inpatient visits (OR=1.994), and physical disability (OR=2.268) were associated with higher satisfaction ( $P < 0.05$ ).

**Conclusion:** Patient satisfaction in the compact county medical community of Xinyi is relatively low. Personal characteristics and healthcare behaviors are the main factors influencing satisfaction. It is necessary to strengthen the construction of compact county medical communities, enhance the service capacity of core hospitals, improve medical insurance payment policies, and increase publicity of the medical community and related policies.

**Keywords:** Medical alliance; Compact county medical community; Patient satisfaction; Root cause analysis; Anderson model

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## Introduction

Since 2015, China has piloted the construction of county medical communities, a service system that has become increasingly significant in addressing the lack of coordination and service fragmentation among county, township, and village medical institutions, and in improving the overall utilization efficiency of county medical resources [1]. In May 2019, the National Health Commission issued the “Notice on Promoting the Construction of Compact County Medical and Health Communities,” which emphasizes maintaining residents’ health as the center, optimizing service processes and experiences, and striving to provide high-quality, convenient, and economical integrated medical and health services [2]. According to the service requirements of county medical communities that prioritize “resident health-centered care,” evaluating the construction effectiveness from the perspective of patient satisfaction is crucial for improving compact county medical community development. Xinyi City in Jiangsu Province became one of the first national pilot areas for compact county medical communities in 2019 and has vigorously promoted various construction measures.

In recent years, Anderson’s Model has been widely applied in research on factors influencing individual healthcare behaviors in the health service field [3]. This model enables comprehensive and systematic selection of measurement indicators and posits that healthcare outcomes are influenced by three factors: contextual characteristics, individual characteristics, and healthcare behaviors [4-5]. Based on this, our study uses Xinyi City as the research area to analyze patient satisfaction and its influencing factors within the compact county medical community using Anderson’s Model, providing theoretical basis and practical reference for strengthening patient-centered construction of compact

county medical communities.

## Methods

**1.1 Study Population** The compact county medical community in Xinyi has established an integrated management model with the county hospital as the core, township health centers as the hub, and village clinics as the foundation. From October 22 to December 11, 2020, we conducted a survey of the compact county medical community with Xinyi People's Hospital as the core institution. Using stratified cluster sampling, we selected 1 core hospital (Xinyi People's Hospital) and 7 member hospitals (1 community health service center and 6 township health centers with their village clinics). Outpatients, emergency patients, and inpatients were randomly selected from each institution for the questionnaire survey.

**Inclusion criteria:** (1) Aged 18 years or older; (2) Capable of objective judgment; (3) Informed consent to participate. **Exclusion criteria:** (1) Cognitive or mental disorders; (2) Unwillingness to participate. This study was approved by the Ethics Committee of Xuzhou Medical University (Approval No.: XZHMU-ZK-2021057), and all participants signed informed consent forms.

### 1.2 Survey Instruments and Methods 1.2.1 Theoretical Framework:

Anderson's Model has undergone multiple revisions and improvements, with patient satisfaction now incorporated into the model. Domestic and international scholars have applied this model in patient satisfaction research with good results [6-8]. Based on Anderson's Model and the characteristics of compact county medical communities, we constructed an influencing factor model for patient satisfaction, categorizing factors into three groups: (1) **Personal characteristics** including predisposing characteristics (gender, age, occupation, education, marital status, awareness of family doctor contract services, awareness of medical community, awareness of medical insurance policy), enabling resources (urban-rural distribution, monthly personal income, medical insurance type, low-income status), and need factors (chronic disease status, self-rated health status, medication status, impact of illness on daily life, physical disability, activities of daily living (ADL)); (2) **Healthcare behaviors** including hospital type, treatment type, and utilization of medical community services; (3) **Contextual characteristics** including walking time to the nearest medical institution [7]. The Anderson Model used in this study is shown in Figure 1 [Figure 1: see original paper].

**1.2.2 Questionnaire Design:** A self-designed questionnaire was administered face-to-face. The survey included demographics, socioeconomic status, health status, healthcare behaviors, awareness and utilization of relevant policies, and satisfaction. The satisfaction evaluation section used a five-point Likert scale ranging from 1 (very dissatisfied) to 5 (very satisfied). The Cronbach's  $\alpha$  coefficient for the survey scale was 0.954, indicating high reliability.

**1.2.3 Quality Control:** One-on-one interviews were conducted with on-site supervisors monitoring the process. At the end of each day, questionnaires were checked for omissions, errors, and logical inconsistencies, with unqualified questionnaires excluded. Double data entry was performed to ensure accuracy.

**1.2.4 Statistical Analysis:** Data were double-entered using EpiData 3.1 and analyzed using SPSS 23.0. Categorical data were expressed as relative frequencies. The Kolmogorov-Smirnov test was used for normality testing. Non-normally distributed continuous data were expressed as median (quartile range) [M(QR)]. Factor analysis was used to determine the weight of each satisfaction index and calculate overall satisfaction. Overall satisfaction score was used as the dependent variable (score  $\geq 4 = satisfied$ ,  $< 4 = dissatisfied$ ) to analyze influencing factors. Univariate analysis used  $\chi^2$  test or Fisher's exact test. Variables with statistical significance in univariate analysis were included in multivariate logistic regression analysis with  $\alpha=0.05$ .

## Results

**2.1 Participant Characteristics** A total of 1,100 questionnaires were distributed, and 1,068 valid questionnaires were recovered (valid recovery rate: 97.09%). Among the 1,068 patients, 410 (38.39%) were from the core hospital and 658 (61.61%) from member hospitals. Demographic characteristics included: 504 males (47.19%) and 564 females (52.81%); age distribution: 254 aged 18-39 (23.78%), 314 aged 40-59 (29.40%), 428 aged 60-79 (40.08%), and 72 aged  $\geq 80$  (6.74%); education: 464 with primary school or below (43.45%), 349 with junior high school (32.68%), 145 with high school/technical secondary school (13.58%), and 110 with college or above (10.30%); marital status: 920 married (86.14%); household registration: 803 rural (75.19%) and 265 urban (24.81%); occupation: 478 farmers (44.76%), 342 enterprise/institution employees (32.02%), 98 self-employed (9.18%), and 150 with no fixed occupation (14.04%).

**2.2 Patient Satisfaction with Xinyi Compact County Medical Community**  
**2.2.1 Factor Analysis:** Factor analysis was performed with KMO=0.936 and Bartlett's test  $\chi^2=23079.180$  ( $P<0.001$ ), indicating strong correlations suitable for factor analysis. Using eigenvalue  $>1$  as the criterion, three common factors were extracted, cumulatively explaining 78.977% of total variance (Table 1).

**2.2.2 Factor Naming and Interpretation:** The factor loading matrix was rotated using varimax rotation. Based on the rotated loadings, the three factors were named: Factor 1 "Medical Service," Factor 2 "Medical Insurance Policy," and Factor 3 "Medical Cost" (Table 2).

**2.2.3 Composite Satisfaction Score:** The three extracted factors were used as secondary indicators for comprehensive satisfaction evaluation. Weights were determined using the contribution rates to total variance explained in factor

analysis [9]. The composite score formula was:

$$F = \sum [\theta_n / (\theta_1 + \theta_2 + \theta_3)] F_n = 0.360F_1 + 0.348F_2 + 0.292F_3$$

Since factor score coefficients reflect the contribution of independent variables to dependent variables, to obtain actual patient satisfaction, actual weights for each indicator in the original model were determined using:

$$\text{Actual weight of variable } X_i = C_i / \left( \sum_{i=1}^{19} C_i \right)$$

where  $C_i$  is the coefficient of  $X_i$  in the factor score model.

The calculated actual satisfaction was:

$$F = 0.052X_1 + 0.056X_2 + 0.055X_3 + 0.057X_4 + 0.053X_5 + 0.057X_6 + 0.058X_7 + 0.051X_8 + 0.052X_9 + 0.054X_{10} + 0.054X_{11} + 0.054X_{12} + 0.054X_{13} + 0.054X_{14} + 0.054X_{15} + 0.054X_{16} + 0.054X_{17} + 0.054X_{18} + 0.054X_{19}$$

Weighted summation yielded overall satisfaction. Normality test showed non-normal distribution ( $Z=0.130$ ,  $P<0.001$ ) with overall satisfaction score of  $[4.00(0.77)]$ . Using \$4 as satisfied and  $<4$  as dissatisfied, 686 patients (64.23%) were satisfied with the compact county medical community. Satisfaction was highest for medical service (89.51%) and lowest for insurance policy (59.18%), with statistically significant differences among the three dimensions ( $P<0.05$ ) (Table 3). Core hospital patients showed lower satisfaction than member hospital patients across all dimensions and overall satisfaction ( $P<0.05$ ) (Table 4).

**2.3 Univariate Analysis of Satisfaction Influencing Factors** In terms of predisposing characteristics, satisfaction differed significantly by age, occupation, awareness of family doctor contract services, awareness of medical community, and awareness of medical insurance policy ( $P<0.05$ ). For enabling resources, satisfaction differed by monthly income, medical insurance type, and low-income status ( $P<0.05$ ). For need factors, satisfaction differed by chronic disease status, medication status, self-rated health, impact of illness on daily life, physical disability, and ADL status ( $P<0.05$ ). For healthcare behaviors, satisfaction differed by hospital type, treatment type, and medical community service utilization ( $P<0.05$ ). For contextual characteristics, satisfaction differed by walking time to nearest medical institution ( $P<0.05$ ) (Table 5).

**2.4 Multivariate Logistic Regression Analysis** Using overall satisfaction as the dependent variable (satisfied=1, dissatisfied=0), variables significant in univariate analysis were included in multivariate logistic regression. Results showed that enterprise/institution employees ( $OR=2.439$ ), patients with

relatively good (OR=1.635) or very good (OR=2.840) knowledge of medical insurance policy, those treated at member hospitals (OR=1.938), inpatients (OR=1.994), and patients with physical disability (OR=2.268) had higher satisfaction ( $P<0.05$ ) (Table 6).

## Discussion

**3.1 Overall Satisfaction in Compact County Medical Community is Relatively Low** The study found that overall patient satisfaction in Xinyi's compact county medical community is relatively low (64.23%), lower than the 76.0% satisfaction rate reported in Anhui county medical communities [10]. Among the three dimensions, insurance policy satisfaction was lowest at only 59.18%. This indicates that while patients expect medical insurance to reduce their financial burden, current medical insurance payment reforms may not effectively meet patients' medical security needs despite controlling medical costs.

**3.2 Predisposing Characteristics and Healthcare Behaviors are Main Influencing Factors** The study found that occupation and medical insurance policy awareness in the predisposing characteristics dimension, and hospital type and treatment type in the healthcare behaviors dimension, significantly influenced satisfaction. Enterprise/institution employees showed higher satisfaction, possibly because these organizations regularly arrange employee physical examinations and health education sessions, increasing exposure to and understanding of compact county medical community services. Additionally, these employees have more comprehensive welfare systems contributing to higher satisfaction. Better knowledge of medical insurance policy was associated with higher satisfaction, consistent with previous research [11]. Studies show that lack of policy understanding affects satisfaction [12]; while objective factors like healthcare resources are primary influences, subjective misunderstanding of insurance policies can negatively impact satisfaction.

Regarding healthcare behaviors, patients at member hospitals reported higher satisfaction than those at core hospitals, consistent with findings from Guangzhou [13-14]. As compact county medical communities develop and high-quality medical resources 下沉 (sink to lower levels), patients perceive reform effects more clearly at primary-level institutions. This suggests that while core hospitals support member hospitals, they should also enhance their own capacity for treating critical and complex cases. Inpatient satisfaction was significantly higher than outpatient satisfaction, likely because basic medical insurance emphasizes inpatient reimbursement while outpatient compensation is relatively limited, and inpatients have more opportunities to experience the convenience of integrated services during examination, treatment, and rehabilitation.

**3.3 Need Factors Influence Patient Satisfaction** Physical disability in the need dimension significantly influenced satisfaction. Patients with physical

disabilities reported higher satisfaction, possibly because as disease severity increases, patients utilize medical services more frequently and better appreciate the convenience brought by medical community reforms. Demographic characteristics like gender, age, and education, and socioeconomic factors like income, low-income status, and insurance type did not significantly affect satisfaction, suggesting that reforms have achieved some equity in healthcare access across population groups [15].

## Conclusion

Patient satisfaction with Xinyi's compact county medical community is relatively low. Occupation, medical insurance policy awareness, treatment type, hospital type, and physical disability status significantly influence satisfaction. To improve satisfaction and promote medical community development, we recommend: (1) Medical insurance departments should improve payment policies, develop disease catalogs for different medical institutions, and combine differential compensation ratios to promote rational medical seeking while reducing patients' financial burden; (2) Strengthen compact county medical community construction through unified talent management, performance distribution, and medical business management to enhance support for member hospitals and improve core hospitals' service capacity; (3) Increase publicity of compact county medical communities and related policies through multiple media channels to promote comprehensive public understanding.

Currently, China is vigorously promoting compact county medical community construction, and patient satisfaction is an important indicator of success. Research on patient satisfaction within these communities remains limited. This study uses a modified Anderson Model to analyze influencing factors, providing scientific rigor and innovation in perspective and methodology. However, limitations exist: we only surveyed selected medical institutions in one compact county medical community in Xinyi City. Since construction timelines, progress, and effectiveness vary across regions, the generalizability of our findings may be limited.

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## Author Contributions

QIN Zhaohui: research design, survey coordination, data analysis, and manuscript writing with overall responsibility. CHEN Lijiang: data analysis and manuscript writing. HU Chuanfeng, TANG Jing, ZHENG Ruini: research design and field survey coordination. GUAN Xueling, HUANG Wenhao: data collection and analysis.

No conflicts of interest declared.

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## References

- [1] YU JX, TU YX, WU C. Exploring the Chinese solution for integrated medical and health service system: Based on the investigation of county medical communities in Anhui, Shanxi and Zhejiang [J]. *Governance Studies*, 2020, 36(1): 5-15, 2. DOI: 10.15944/j.cnki.33-1010/d.2020.01.001.
- [2] National Health Commission. Notice on promoting the construction of compact county medical and health communities [EB/OL]. (2019-05-15) [2022-06-02]. [http://www.gov.cn/zhengce/zhengceku/2019-10/08/content\\_{5437020}.htm](http://www.gov.cn/zhengce/zhengceku/2019-10/08/content_{5437020}.htm).
- [3] DAI SY, GU XY, XU AJ. Analysis of inpatient satisfaction and influencing factors: Based on the sixth health service survey data in Jiangsu Province [J]. *Health Economics Research*, 2019, 36(11): 41-43. DOI: 10.14055/j.cnki.33-1056/f.2019.11.012.
- [4] LI YE, LU S. Review of the theoretical construction and analytical path evolution of Anderson's Model [J]. *Chinese Health Service Management*, 2017, 34(5): 324-327, 334.
- [5] MAO Q, YU Y, LIU XQ, et al. Study on influencing factors of hypertension patients' medical seeking behavior based on Anderson's Model [J]. *Chinese General Practice*, 2020, 23(3): 333-337. DOI: 10.12114/j.issn.1007-9572.2019.00.777.
- [6] FORTIN M, BAMVITA JM, FLEURY MJ. Patient satisfaction with mental health services based on Andersen's Behavioral Model [J]. *Can J Psychiatry*, 2018, 63(2): 103-114. DOI: 10.1177/0706743717737030.
- [7] MAO J, WAN Y, ZHAXI DW, et al. Analysis of inpatient satisfaction and influencing factors in Tibet Autonomous Region [J]. *Modern Preventive Medicine*, 2021, 48(11): 2006-2009, 2013.
- [8] LU S, LI YE. Anderson's health service utilization behavior model: Interpretation and operationalization of indicator system [J]. *Chinese Health Economics*, 2018, 37(9): 5-10. DOI: 10.7664/CHE20180901.
- [9] WANG HM, YANG L, PU QR. Research on the implementation of urban-rural integration of basic medical insurance: An empirical analysis based on policy awareness and satisfaction of Beijing residents [J]. *Scientific Decision Making*, 2019(8): 51-80. DOI: 10.3773/j.issn.1006-4885.2019.08.051.
- [10] WANG WT. Research on the implementation status and countermeasures of county medical service community policy in Anhui Province [D]. Hefei: Anhui Medical University, 2017.

- [11] CHEN WQ, ZHANG M, ZHONG XG, et al. Analysis of satisfaction with interests of doctors and patients under the background of new rural cooperative medical system payment reform [J]. Chinese Journal of Hospital Administration, 2018, 34(5): 359-365. DOI: 10.3760/cma.j.issn.1000-6672.2018.05.002.
- [12] YU BH, JIN TT, SHEN J, et al. Research on satisfaction and influencing factors of urban and rural residents' basic medical insurance: A case study of Shanghai [J]. Price: Theory & Practice, 2019(7): 104-107. DOI: 10.19851/j.cnki.cn11-1010/f.2019.07.024.
- [13] WU SJ, LIU JR. Comparative study on patient satisfaction between tertiary hospitals and community health service centers in Guangzhou [J]. Chinese Hospitals, 2017, 21(11): 43-45. DOI: 10.3969/j.issn.1671-0592.2017.11.015.
- [14] ZHANG Y, LIU YJ, GULINAZAR · AKB, et al. Application of data mining based on patient satisfaction in precise management and decision-making of medical institutions [J]. Chinese Hospitals, 2020, 24(2): 24-26. DOI: 10.19660/j.issn.1671-0592.2020.02.07.
- [15] AO Q, JIA LG, LIU JA, et al. Research on residents' satisfaction with basic public health services in urban and rural primary medical and health institutions: A case study of Hubei Province [J]. Chinese Journal of Health Policy, 2018, 11(4): 73-76. DOI: 10.3969/j.issn.1674-2982.2018.04.015.

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